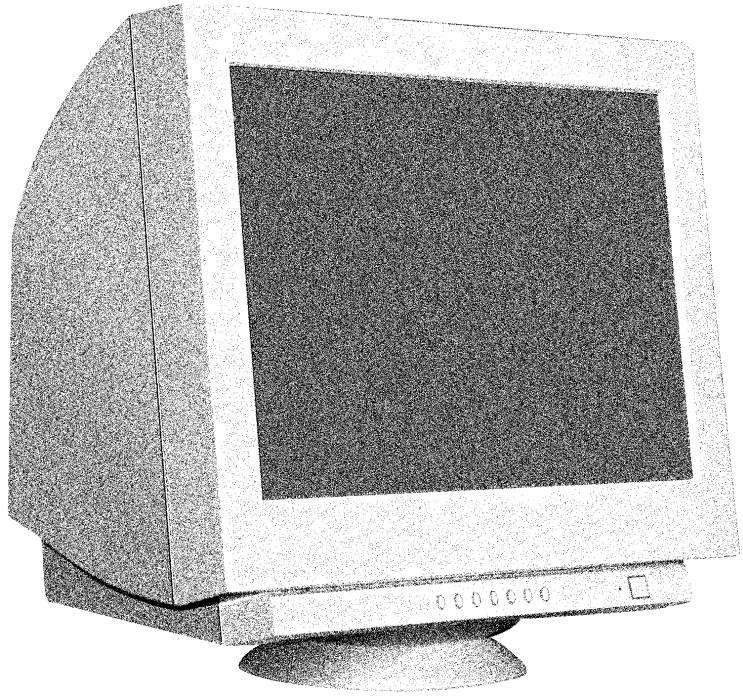
SERVICE MANUAL

HIGH RESOLUTION DISPLAY MONITOR

Diamond Pro 2060u
NSZ2107STTUW



NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION
MARCH 2001

CBB-S5730

Contents

1. Circuit description

1.1 Power block

1.1.1 Outline

(1) The power block is compatible with 100 to 120VAC/220 to 240VAC(50/60Hz).

(2) The active filter circuit is adopted to suppress the higher harmonic current and improve the power factor.

(3) The circuit that supplies the electric power to the secondary side is divided into two circuits that are respectively called the main power and sub power.
Though both main and sub circuits supply the power to the secondary side in the normal operation mode, the power is supplied from the sub power only in the power save mode since the main power is stopped.
The main power is the configuration used the flyback converter type switching control IC of the simulative resonant operation. Moreover, the sub power is the configuration used PRC (OFF width fix) control IC.

(4) The output on the secondary side is shown in Table 1.
(Refer to the power system diagram1-3 in Pages 1-3, 1-4 and 1-5.)

Power block	Output voltage	Application	When power save
Main power side	+215V	H. deflection circuit, Video cut off circuit	OFF
	+80V	Video circuit, DBF circuit, High voltage circuit	OFF
	+15V	H/V deflection circuit, etc.	OFF
	-15V	H/V deflection circuit, etc.	OFF
	+12V	Video circuit, H. deflection circuit, etc.	OFF
	+7.5V	Heater	OFF
Sub power side	+5V	MPU, etc.	ON
	P-OFF+5V	Video circuit, etc.	OFF

Table 1

1.1.2 Rectifying circuit

(1) The AC input voltage is rectified in the full wave mode with the diode bridge in D901.

(2) In the higher harmonic circuit of the section 1.1.4, the AC input current becomes the sine wave form in the same phase with the AC input voltage waveform, but the interference is given to other peripheral devices since the noise of the switching current appears on the input side owing to the switching waveform. Therefore, L902 and C906 are inserted to suppress the noise that is caused by the switching current.

1.1.3 Surge current suppression

(1) TH901 (thermistor) suppresses the rush current that flows when the power switch is turned ON. Moreover, D933 is added to protect D902 from the rush current.

1.1.4 Higher harmonic circuit

(1) The pulsating waveform rectified in the full wave mode by D901 is switched throughout the full cycle by the frequency of several tens kHz or more. Through this, the input current waveform becomes an average of the switching currents of the partial cycles, thus becoming the sine waveform in the macro. (See Fig.1)

(2) For the AC input voltage, the AC input current of the sine wave type in the same phase flows to achieve the power circuit of improved power factor and reduced higher harmonic wave component.

(3) L903 is the choke coil, Q901 is MOS FET, D902 is the rectifying diode, C911 is the block capacitor, and IC901 is the power factor improved controller. The power factor improved controller uses MC33262P of Motorola. (See Fig. 2)

(4) After the sub power circuit operates, P-SUS signal becomes HI when +5V voltage is supplied to the MPU. Then, Q902 is turned ON, the voltage of approx. +18V is supplied to pin8 (VCC terminal) of IC901 through D929 from pin2 of T902, and the following operation is started.

(5) The pulsating voltage waveform rectified in the full wave mode by D901 is divided with R904, R905, R906, R907 and R908 (100VAC : 1.1Vp-p and 240VAC: 2.9Vp-p), and is input to pin3 of IC901 (Multiplier input). Moreover, the output (+side of C911: 400VDC) of the higher harmonic circuit is divided with R913, R914, R915, R916 and R917 (2.5VDC), and is input to pin1 of IC901 (error amplifier input).

(6) The output of the error amplifier and the divided waveform of the pulsating voltage input to pin3 of IC901 sets the threshold voltage of the current sense comparator to control the Q901 flowing current from zero to the peak line of the AC input voltage in the sine wave pattern.

(7) When Q901 is turned ON, the drain current of Q901 flows to R910 and R937 to drop the voltage, and the voltage generated by the voltage drop is input to pin4 (current sense input) of IC901. When the voltage reaches the threshold voltage of the current sense comparator, Q901 is turned OFF.

(8) When Q901 is turned OFF, the accumulated energy of L903 starts to be supplied to the load through D902.

(9) As the accumulated energy of L903 drops, the auxiliary coil voltage (pin8 of L903) also drops. When it reaches the threshold voltage of *zero current detector, Q901 will be turned ON again.

* Pin 5 of IC901 is the zero current detection terminal to input the auxiliary coil voltage of pin10 of L903. The zero current detector monitors that the auxiliary coil voltage drops beyond the thresh old voltage. Thus, the accumulated energy of L903 is indirectly detected.

(10) The above operation is repeated to continue the oscillating operation. Thus, the DC voltage (L903, Q901, D902 and C911 compose the voltage rise circuit.) is gained on the output, and the AC input current of the sine wave in the same phase with the AC input voltage is gained on the input side.

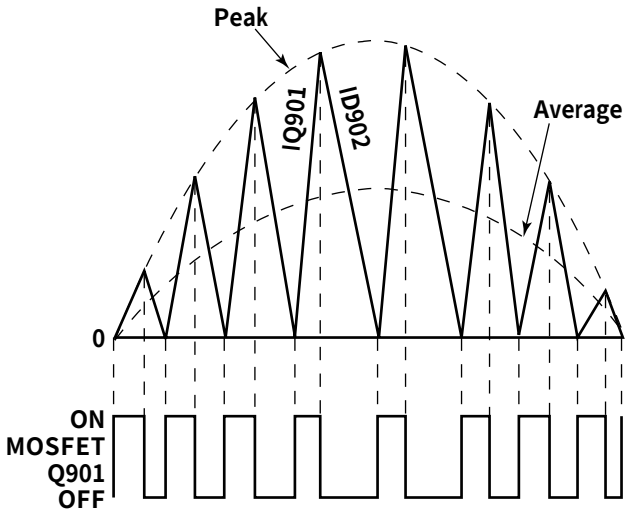


Figure 1. L903 coil current

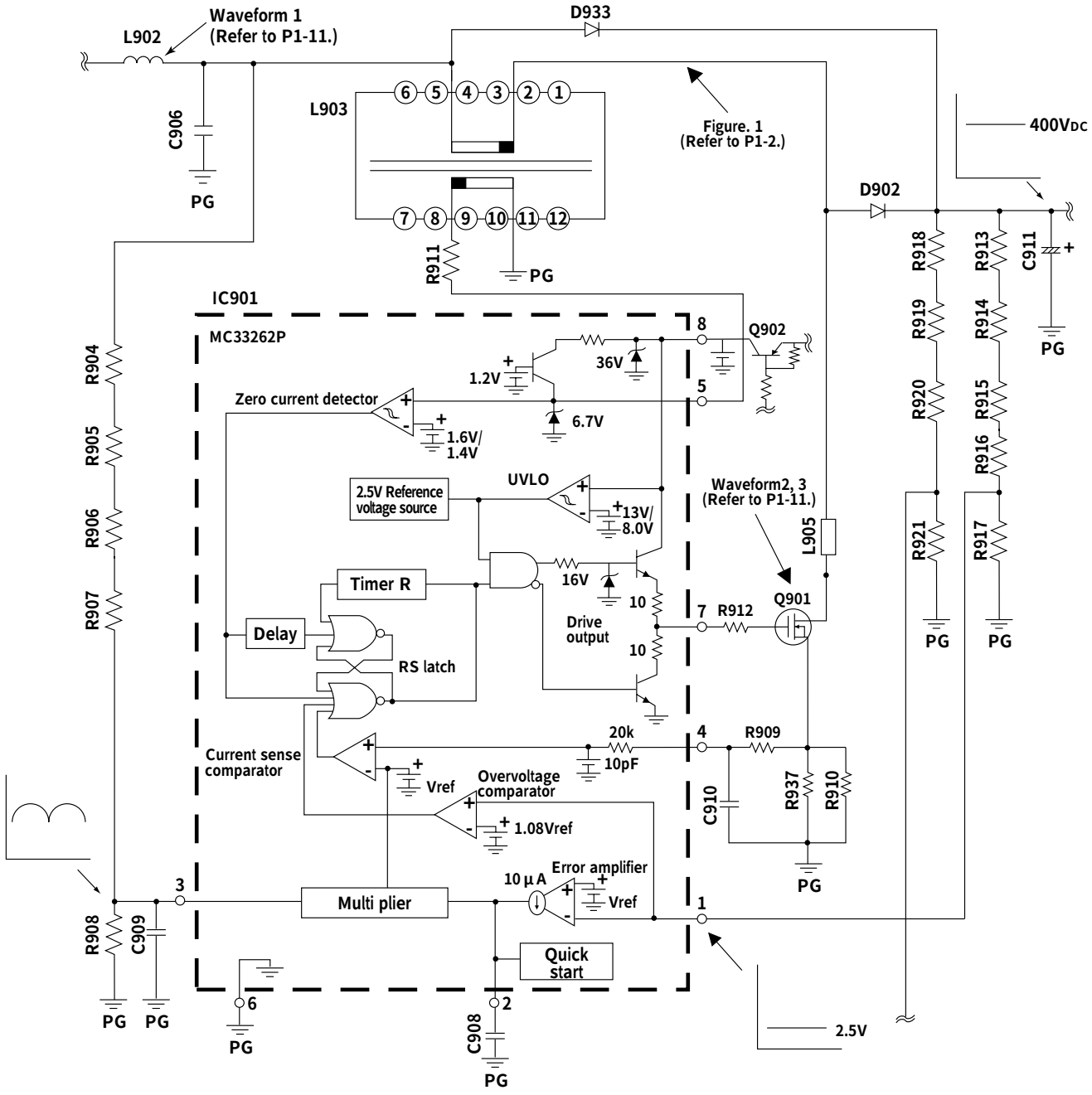


Figure 2. High harmonic waveform circuit

1.1.5 Sub power circuit

(1) The sub power uses PRC control regulator STR-G6352 (IC903) produced by Sanken Electric. (See Fig.3)

(2) When the power switch is turned ON, the rectified and smoothened DC voltage (AC voltage x $\sqrt{2}$) is supplied to pin4 of IC903, through R950, R951 and R952. When pin4 reaches approx. 17V, the built-in output FET is put into operation. (Since Q902 is OFF, IC902 and IC 903 do not operate.)

(3) This also induces the voltage at pin2 of T902 and on the secondary side. These outputs are respectively rectified, and are used as the power for control on the primary side and the power for the MPU.

(4) IC903 monitors +5V and -15V output on the secondary side by IC922 (Shunt regulator), and suppresses the voltage regulation by feeding back to pin 5 of IC903 via IC912 (Photocoupler).

(5) When the voltage on the secondary side starts, the MPU will be put into operation and the P-SUS signal line will become HIGH.

(6) This information is transmitted to the primary side via IC913 to turn ON Q902.
When Q902 is turned ON, the power for control on the primary side will be supplied to IC901 and IC902 to operate the higher harmonic circuit. Thus, the main power circuit will be put into operation.

1.1.6 Main power circuit

(1) The main power circuit adopts the flyback type switching power of pseudo-reosonance operation. This is composed of a Sanken brand hybrid IC STR-F6676 (IC902) that integrates the power MOS-FET and control IC.
The circuit operation is described as follows. (See Fig. 4.)

(2) The timing at that the power MOS-FET is turned ON is consistent with the bottom point of the voltage resonant waveform after the transformer (T901) discharges the energy to the secondary side, that is, a half cycle of the resonant frequency determined by LP value (primary coil inductor value) of T901, and C914 (resonant capacitor). This is called pseudo-reosonance operation. The advantage of such an effect is that the switching loss is reduced by turning it ON when the voltage between the drain sources of the power MOS-FET becomes the lowest.

(3) Like the higher harmonic circuit, voltage of approx. +18V is supplied to the Vcc terminal (Pin 4) of IC902 (STR-F6676) via D929 from pin2 of T902 when Q902 is turned ON by the P-SUS signal from the MPU.
When the voltage of Pin 4 of IC902 reaches 16V, the control circuit will be put into operation to turn ON the integrated MOS-FET.

(4) When MOS-FET is turned ON, the capacitor C1 in IC will be charged to approx. 6.5V. On the other hand, the drain current flows to R928, and the voltage generated by the voltage drop is applied to pin1 (OCP/FB terminal) of IC902.
When the voltage of Pin 1 reaches approx. 0.73V, the comparator (Comp. 1) in IC will be activated to turn OFF MOS-FET.

(5) The voltage between both ends of C1 drops to approx. 3.7V. the oscillator output will be reversed again to turn ON MOS-FET.
The above is repeated to continue the oscillation operation.

(6) Here, IC902 monitors +215V of the output on the secondary side with IC921 (error amplifier) and feeds back it to pin1 of IC902 via IC911 (photocoupler), thus suppressing the voltage fluctuation of the primary side.

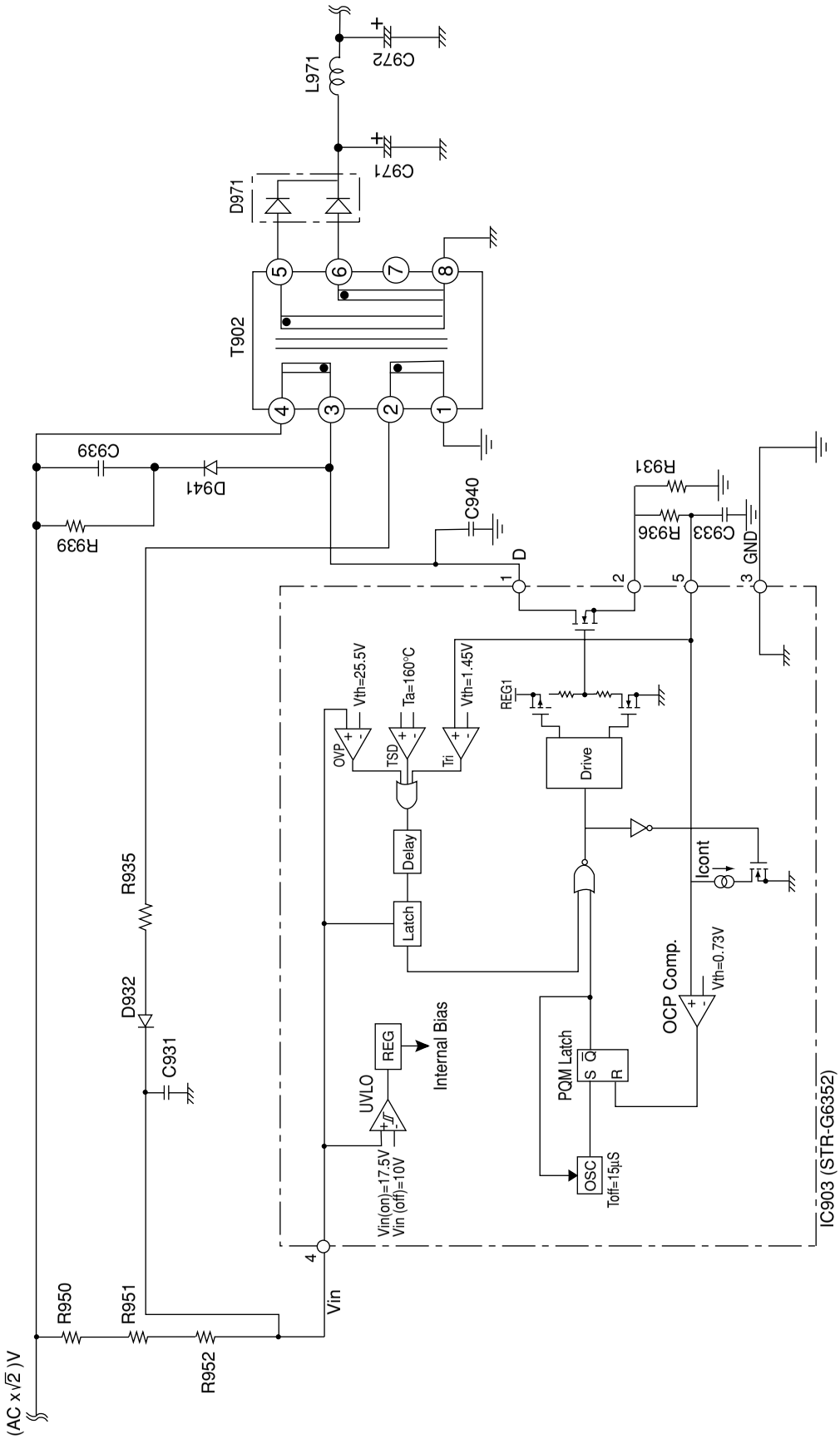


Figure 3. IC903 (STR-G6352) block diagram and peripheral circuit

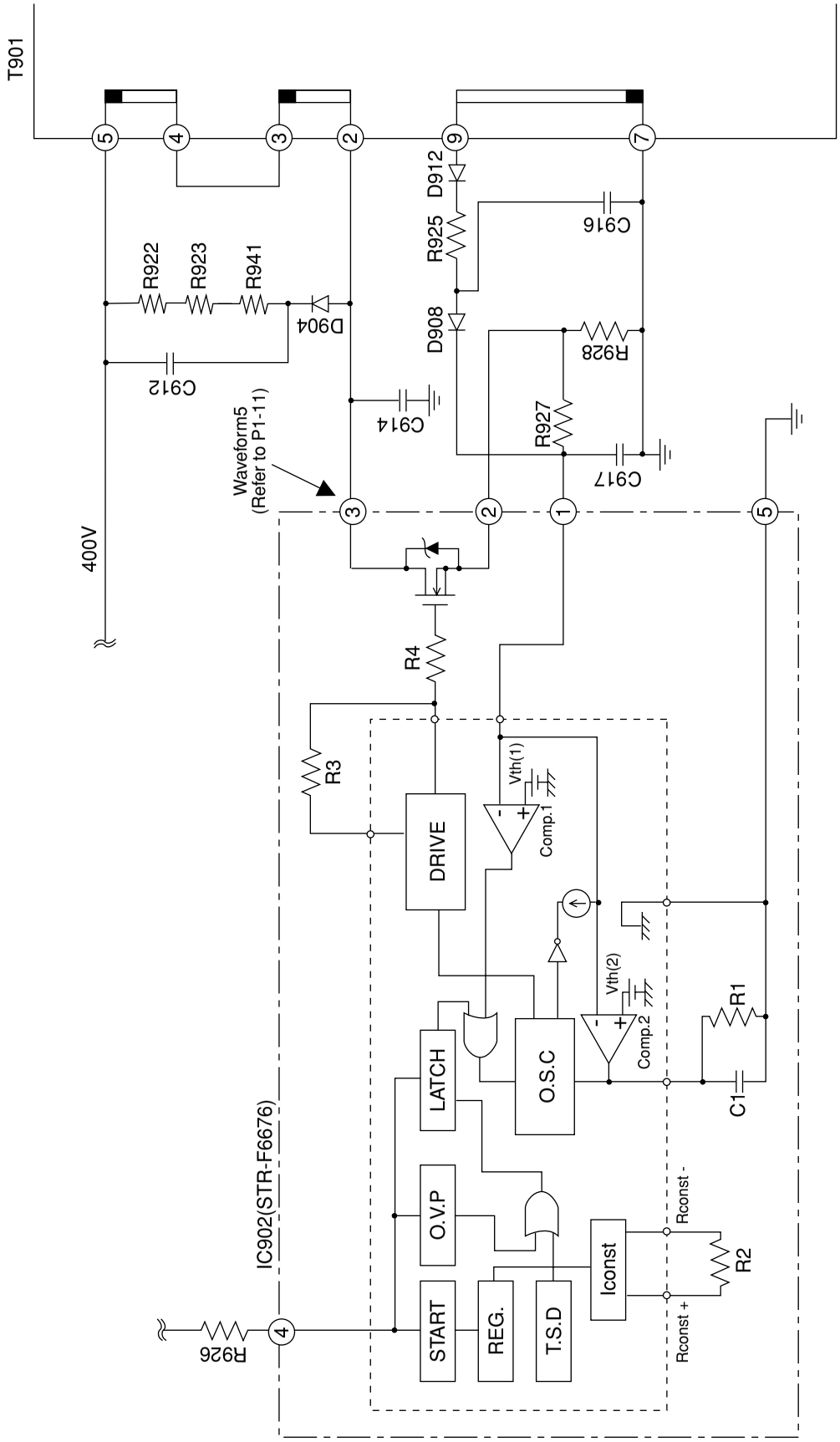


Figure 4. IC902 (STR-F6676) block diagram and peripheral circuit

1.1.7 Degaussing circuit

(1) The automatic and manual degaussing circuit is provided.
The circuit prevents the picture from dropping its quality due to the magnetization on CRT, and operates as follows.

(2) When powering ON, Q963 flows to activate RY901 by DG signal output by the MPU.
This will make the current flow through the demagnetizing coil for demagnetization. The demagnetizing time is approximately 5 seconds.
Manual demagnetization becomes possible by selecting the demagnetizing menu on the OSD picture.

1.1.8 Power management circuit

Turn ON the power management setting on the menu picture of OSD, and the energy saving mode shown in Table 2 will be ready depending on whether the horizontal/vertical sync. signal is present or not.

Power Save	H-sync	V-sync	Video	Power consumption	Recovery time	LED indicator
OFF	On	On	Active	140W	—	Green
ON	Off	On	Blank	≦3W	5 sec.	Amber
	On	Off	Blank			
	Off	Off	Blank			

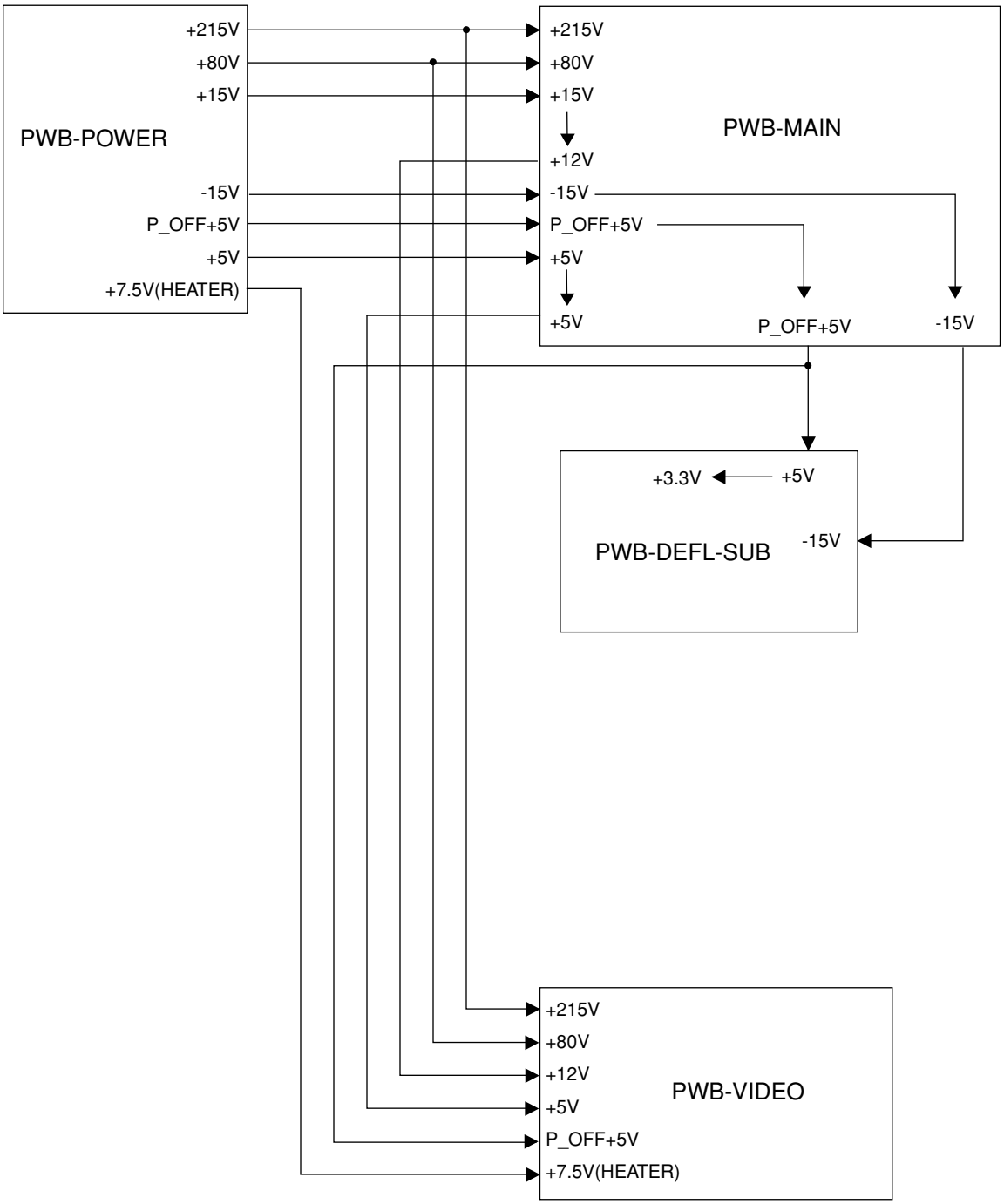
1.1.9 Protective circuit

(1) Overcurrent protective circuit (primary side)
IC902 is provided with an overcurrent protective circuit. The voltage drop generated by the drain current that flows into R928 is input to Pin 1 (OCP/FB terminal) of IC902. When the voltage reaches 0.73V, the overcurrent protective circuit will be activated.

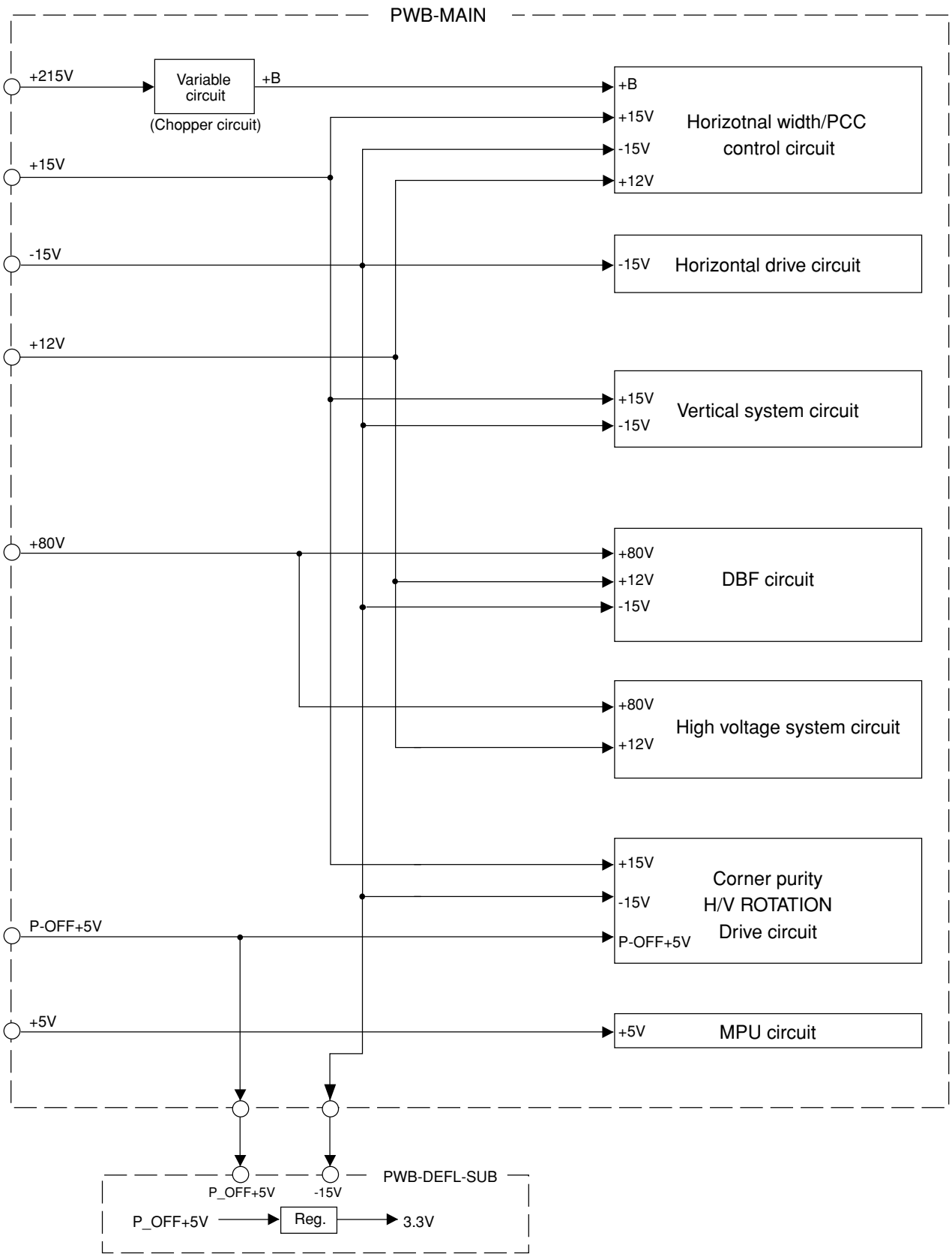
(2) Overcurrent protective circuit (secondary side)
To protect the parts on the secondary side, the short-circuit detection circuit is provided on the secondary side output (+215V, +80V, +/-15V, +7.5V), one for each. As an example of +215V, the output line of +215V is monitored with R964, R965, D966 and Q961. If it drops beyond approx. +140V for any reason, Q961 will be turned ON to transmit the information to the MPU. Then, since the MPU sets P-SUS signal at LOW, Q902 will be turned OFF to cut off the power to IC902 in order to stop IC902. (IC901 will be also stopped at the same time.) The overcurrent protective circuit is designed to be activated when the output voltage drops approx. 30 to 40%.

(3) Overvoltage protective circuit
R918, R919, R920 and R921 are used to detect the overvoltage in the higher harmonic circuit, and the tertiary coil (Pin 9) of T901 is used to detect the overvoltage of the voltage on the secondary side. They are both connected to the overvoltage protective circuit (Q904, Q905) on the primary side. If any overvoltage results for any reason, Q905 will be turned ON to turn ON Q904. Then Q902 will be stopped. Since the power for IC901 and IC902 is cut off as Q902 is stopped, the switching operation will be stopped.

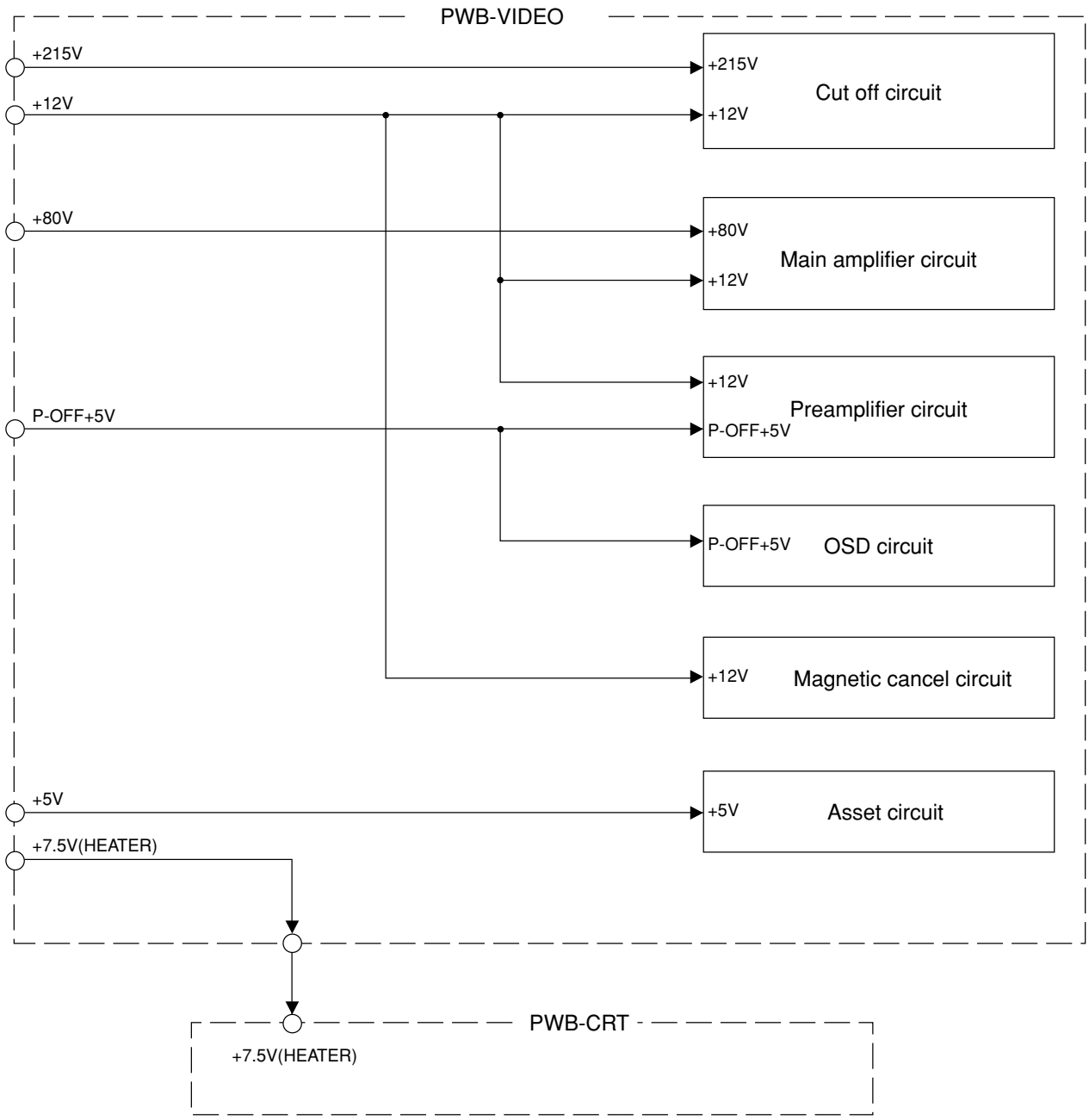
~ Power system diagram 1 ~

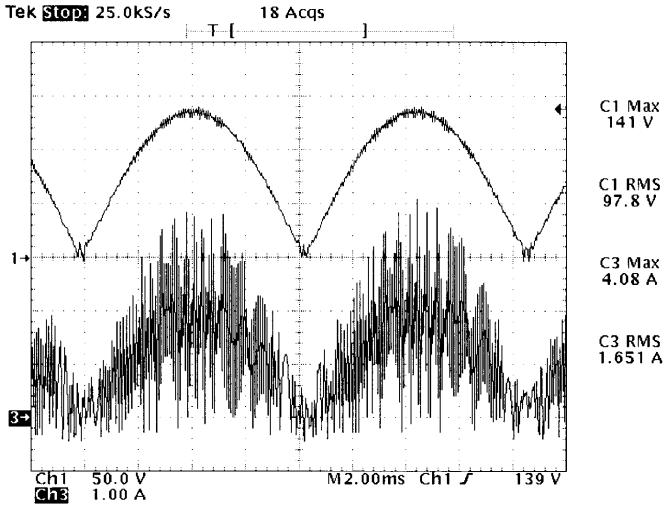


~ Power system diagram 2 ~

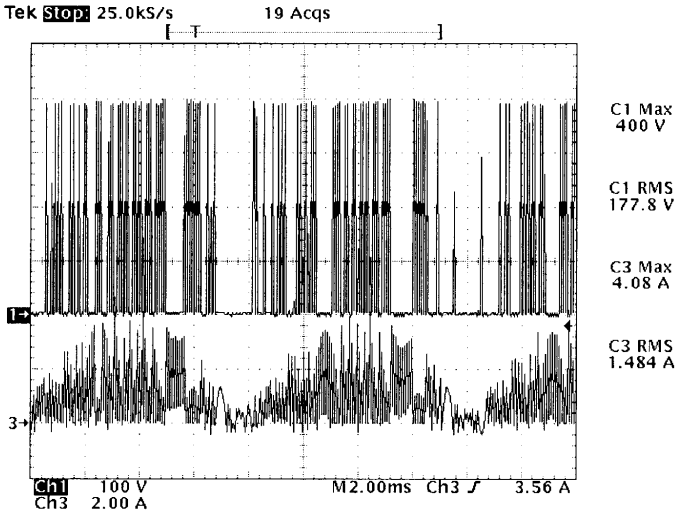


~ Power system diagram 3 ~

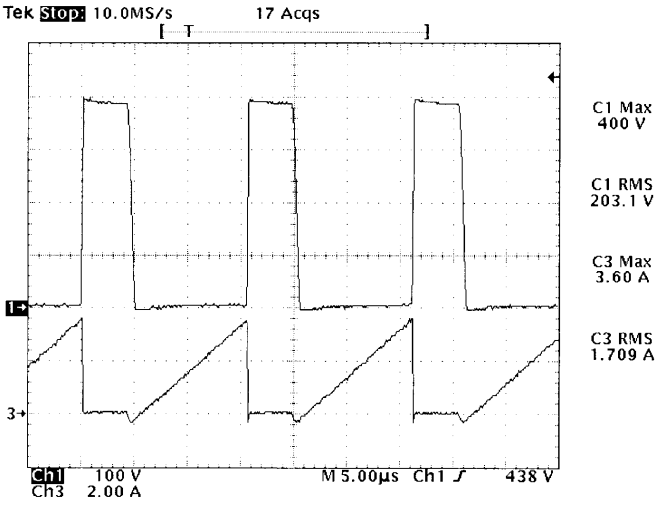




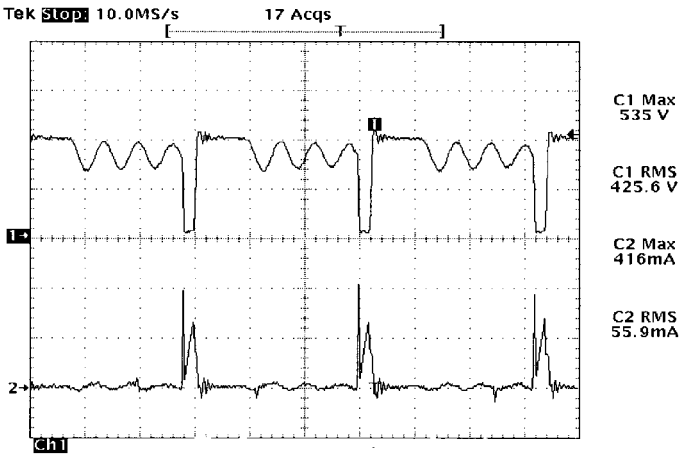
Waveform 1. Top :AC input voltage
Bottom :AC input current



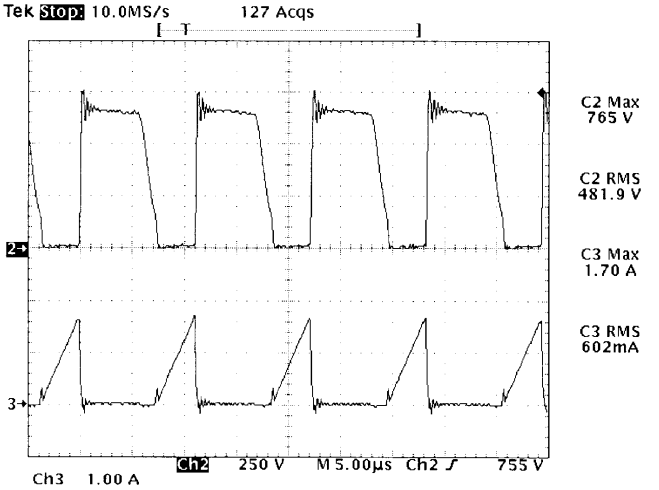
Waveform 2. Top :Q901 drain voltage
Bottom :Q901 drain current



Waveform 3. Top :Q901 drain voltage
Bottom :Q901 drain current



Waveform 4. Top :IC903 drain voltage
Bottom :IC903 drain current



Waveform 5. Top :IC902 drain voltage
Bottom :IC902 drain current

1.2 Horizontal deflection block

The operating principle of the horizontal deflection circuit is given below.

The Q502 operates as horizontal output, and the D503 as the dumper diode.

As shown in Fig. 5, the horizontal output transistor Q502 turns to ON/OFF by means of the drive pulse in pin 25 of IC601 in substrate DEFL-SUB through the drive transformer T501, drive transistor Q501, or Q560, Q561, Q562, etc.

The deflection current Idy during Q502 ON gets increased to the maximum level Ip according to the equation shown below:

$$Idy = (Vcc/Ldy) \times Ton$$

The maximum Ip is approximately 8A at full scan when fh = 106k.
Here;

Vcc: Output voltage of Q504
Ldy: Parallel value of the Lh value of DY (=62μH) and the horizontal output transformer (=5mH)
TON: The ON time of Q502

When the drive pulse has negative polarity, Q502 turns OFF and Idy starts flowing to charge C506 until the collector voltage reaches the maximum level Vcp.

$$Vcp = Vccx\{1 + (\pi/2)x(Ts/Tr)\}$$

With the maximum Vcp attained, the charges accumulated in C506 flow into DY as the discharge current. This charge/discharge current is called retrace time, and is expressed by the equation given below.

$$Tr = \pi\sqrt{(Ldy \bullet Cr)} \quad * Cr = C506 \text{ value}$$

In the present model, the retrace time is set to approx. 1.8μs.
Ts is called trace time, and is expressed by the equation given below with the horizontal cycle as T.

$$T = Ts + Tr$$

With Vcp = 0, the dumper diode D503 turns ON and Idy gets decreased from –Ip to 0 ampere. Since Q502 ON time and dumper diode ON time are set to overlap at 0 ampere point of Idy, the crossover distortion is prevented from occurring at 0 ampere point of Idy.
The D503 causes the transient current to flow in the high-speed dumper diode.
The horizontal output transformer T502, connected in parallel to the deflection yoke, operates as a choke coil. Figs. 6 and 7 show the image of circuit operation and the waveforms in actual machine.

1.2.1 Distortion compensation waveform generating circuit

The deflection distortion compensation waveform for horizontal size system is output from pin 64 of IC601. This waveform is output from 1-bit DAC, with 3.3V pulse waveform with resolution 25MHz output at pin 64. This pulse waveform is leveled by the low-pass filters R632 and C622 to obtain the vertical cycle compensation waveform, with the amplitude 1.0 to 1.2Vp-p and connected to pin5 of IC5J1.
The compensation waveform circuit carries out horizontal size and trapezoid compensation, side pin compensation, side pin top and bottom compensation, side pin S-shape compensation and side pin W compensation. (Refer to Compensation Image Diagram in Fig. 22)
The deflection compensation waveform for horizontal phase system is output from pin 57 of IC601. The pin 57 has 1-bit DAC output and outputs the 3.3V pulse waveform with 25MHz resolution. This pulse waveform is then leveled by the low-pass filters R619, R614, C604 and C601 to obtain the vertical cycle waveform, which is then electrically added to the horizontal system PLL filter (pin 20 of IC601) to carry out the deflection distortion compensation of the horizontal phase system. It carries out parallelogram distortion compensation and side pin balance (top and bottom) correction. (Refer to the Compensation Image Diagram in Fig. 22.)

The control of horizontal screen width and the side PCC control are carried out by IC5J1, Q503 and Q504. First, the horizontal width signal and each distortion compensation signal impressed in pin 5 of IC5J1 from pin 64 of IC601 are compared with the AFC pulse signal rectified and fed back to pin 13 of IC5J1. The signals are further compared with the constant-inclination type saw-tooth wave synchronized with the horizontal cycle created inside IC before turning into the PWM signal of square wave. This PWM signal output from pin 9 of IC5J1 carries out the above control by driving the Q504 gate. Fig. 8 shows the block diagram of IC5J1 and Fig. 9 the operation image waveforms.

IC5K1 connected to pin 8 of IC5J1 is a transistor with 2 circuits.
Pins 1 and 3 of IC5K1 are for the base, pin 2 is for GND and pins 4 and 5 are for the collector.
Pin 32 of IC101 connected to pin 3 makes pins 5 and 2 open/short by P-SUS signal.
When P-SUS signal is LOW, pin 8 of IC5J1 is led into GND from pin 5 of IC5K1, and make SYNC input of IC5J1 LOW. As IC5J1 stops operation without SYNC input, Q504 turns OFF and horizontal deflecting output stops.
Due to this process, destruction by wrong pulse is prevented when it exceeds in Q502.
The Q503 works as a ripple filter in 215V line and keeps the Q503 emitter voltage constant even if there is a slight fluctuation in the collector voltage of Q503. The Q503 collector has 215V applied to it, with the emitter output being stable at 203V. This is mainly effective in dynamic regulation.

The horizontal raster position is adjusted by using Q5A1, Q5A2, VR5A1 and T502. The reference voltage is obtained from the connecting point of Cs and is then input into pin 2 of T502. When the emitter voltage in Q5A1 and Q5A2 has the DC level increased by adjusting VR5A1, the current flows to DY side, causing the raster to move left. Reversely, when the DC level of the emitter voltage is decreased, the current flows to Q5A2 side, causing the raster to move right.

The Idy DC level is adjusted by varying the emitter voltage of Q5A1 and Q5A2 at the timing No. 25 (120kHz/85Hz) using VR5A1, so that the raster position comes at the center of CRT. The operation image is shown in Fig. 10.
This adjustment, however, is confined to the factory, and is not open to the users.

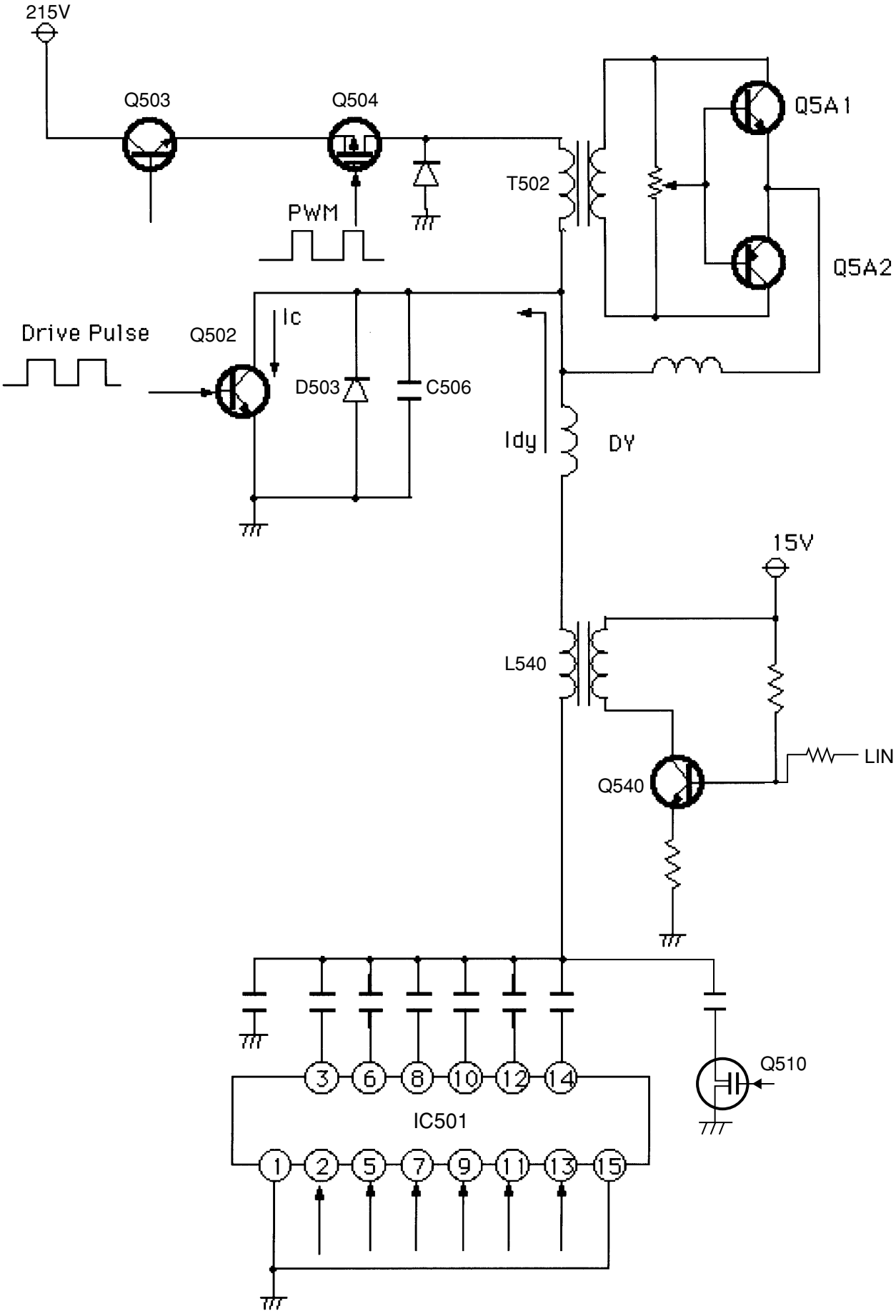


Figure 5 Horizontal deflection circuit

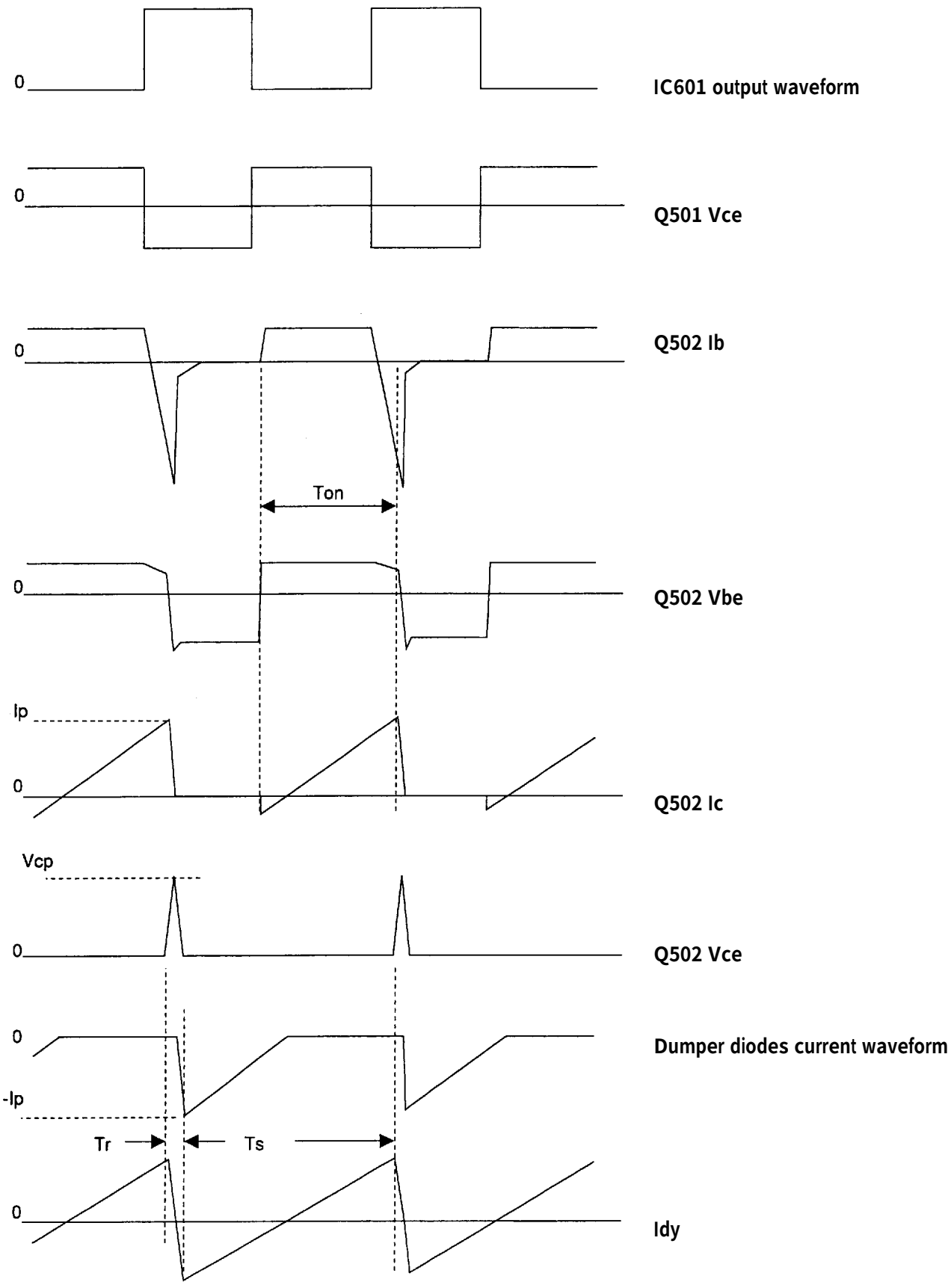
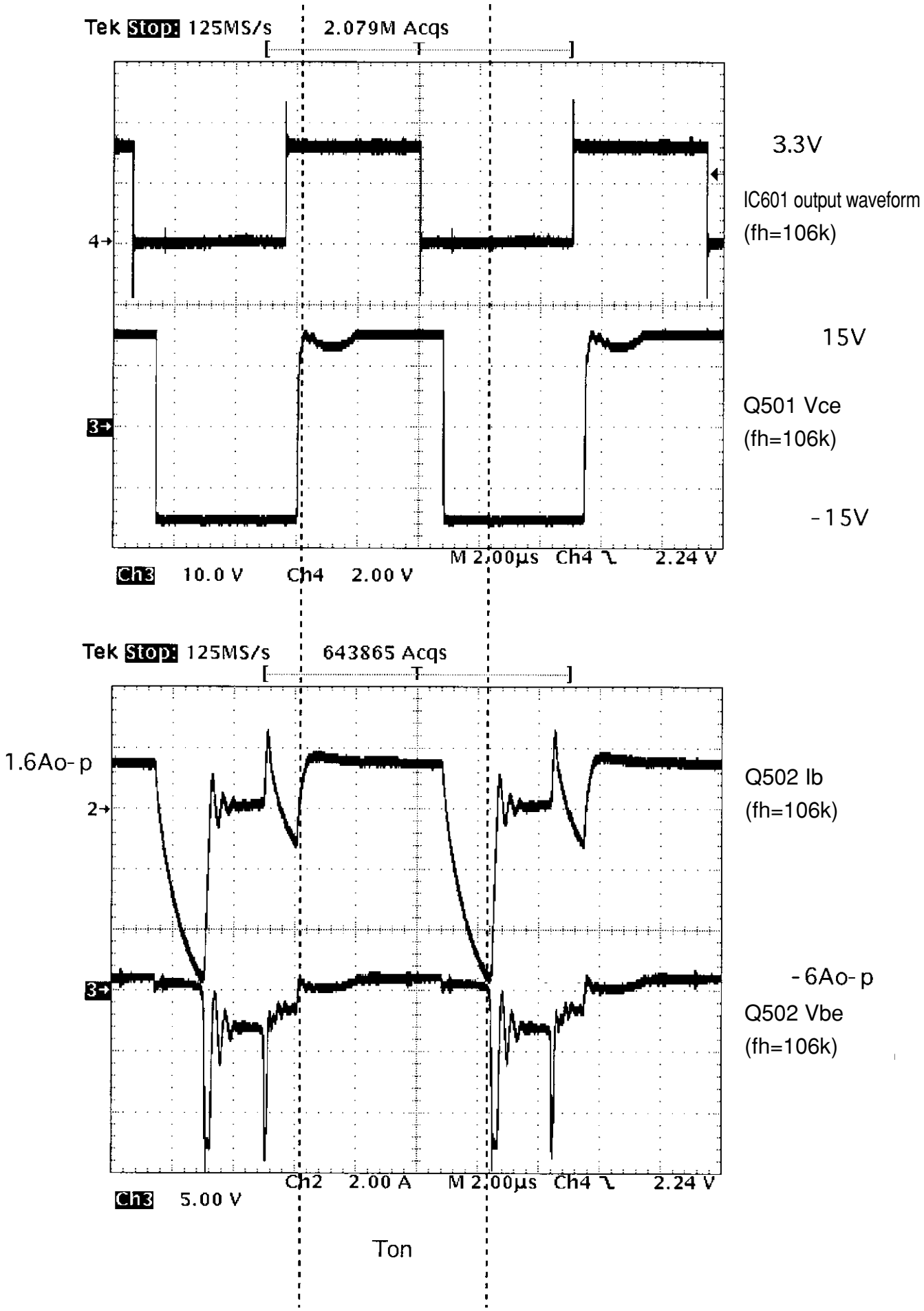
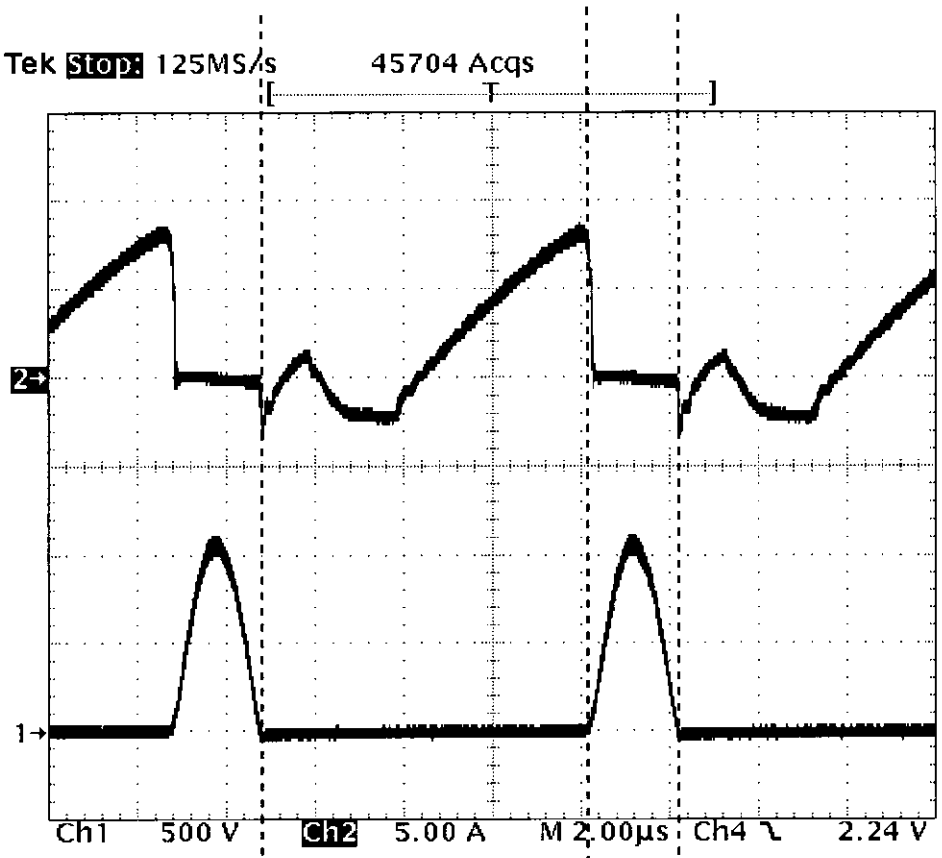


Figure 6 Horizontal deflection circuit operation image

Figure 7. Deflection circuit waveform while fh=106k



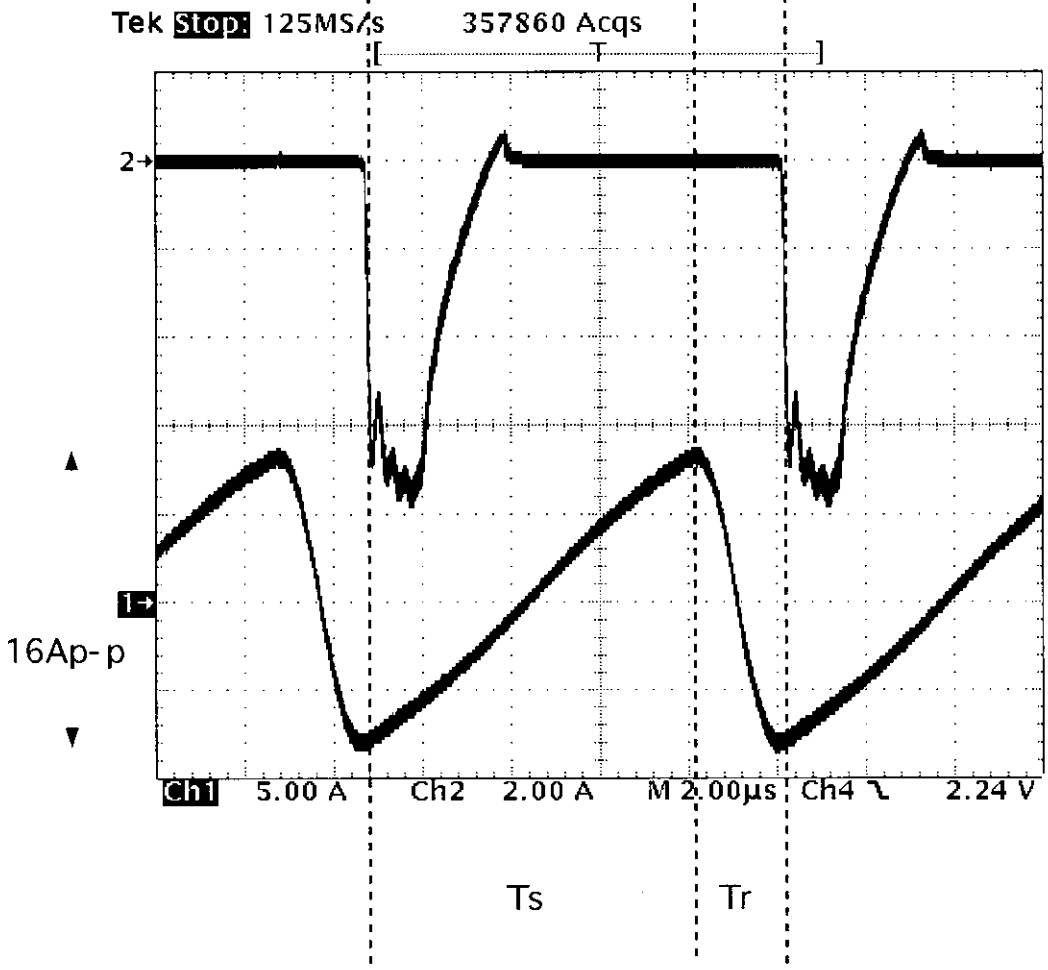


8Ao-p

Q502 Ic
(fh=106k)

1100Vp

Q502 Vce
(fh=106k)



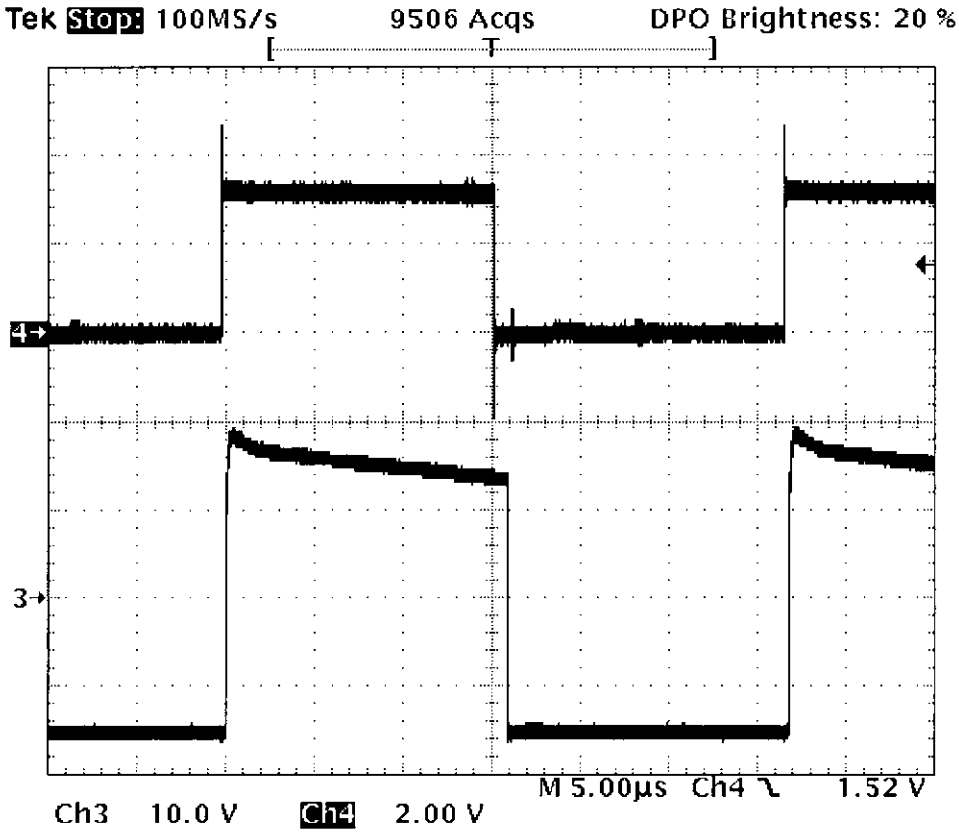
16Ap-p

Damper diode
Current waveform
(fh=106k)

-7.5Ao-p

Idy
(fh=106k)

Deflection circuit waveform while fh=31.5k



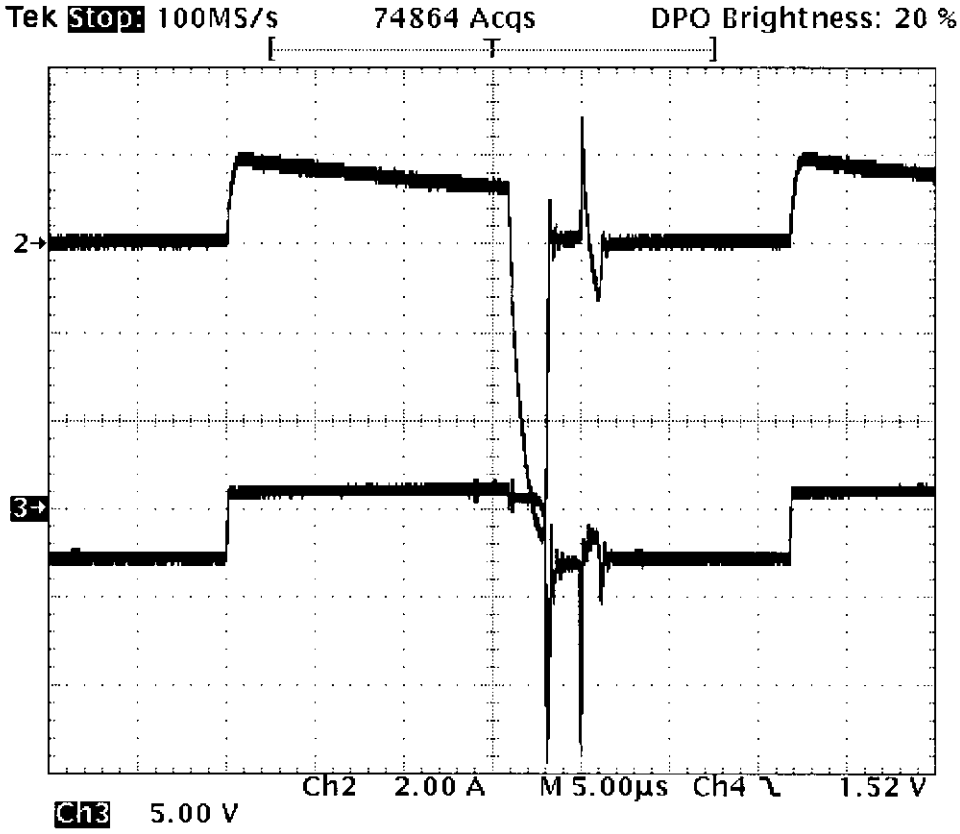
3.3V

IC601 output waveform
(fh=31.5k)

20V

Q501 Vce
(fh=31.5k)

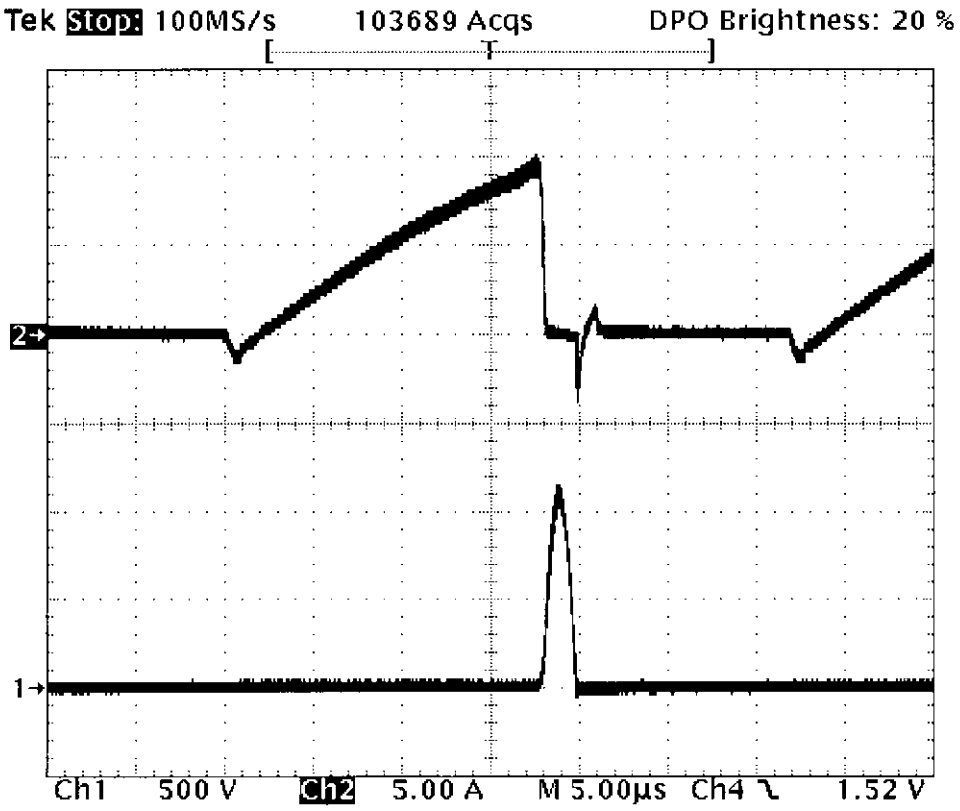
-15V



Q502 Ib
(fh=31.5k)

-7Ao-p

Q502 Vbe
(fh=31.5k)



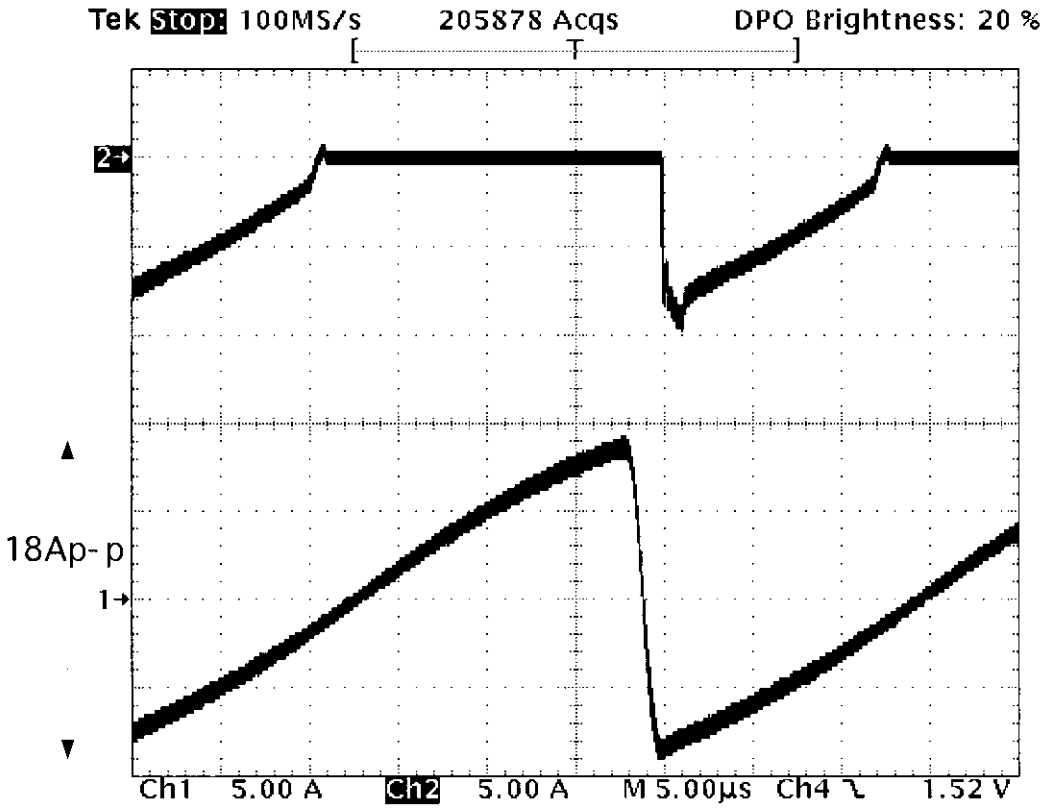
9Ao-p

Q502 Ic

(fh=31.5k)

1150Vp

Q502 Vce
(fh=31.5k)



Damper diode
Current waveform

(fh=31.5k)

-9Ao-p

Idy
(fh=31.5k)

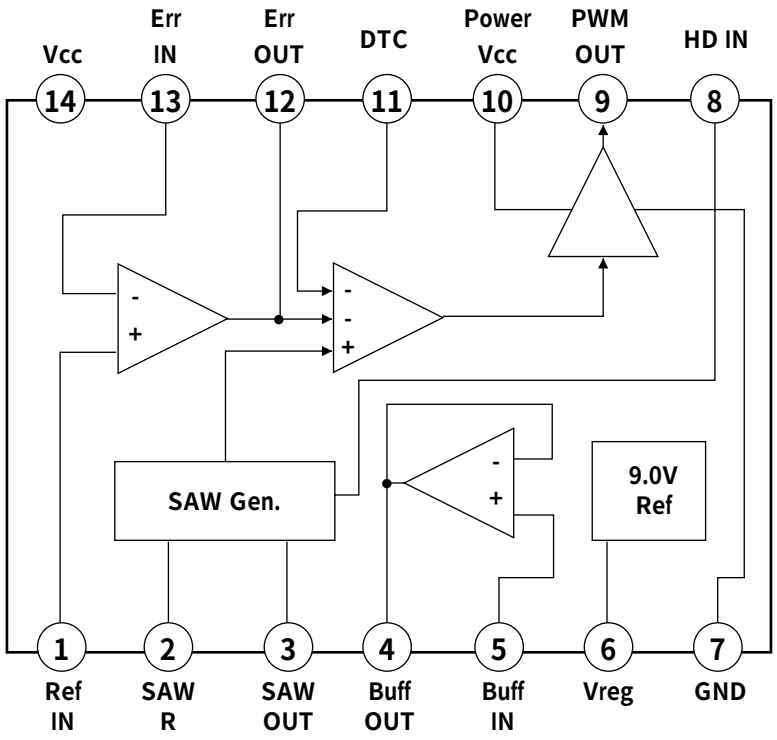


Figure 8. IC5J1 block diagram

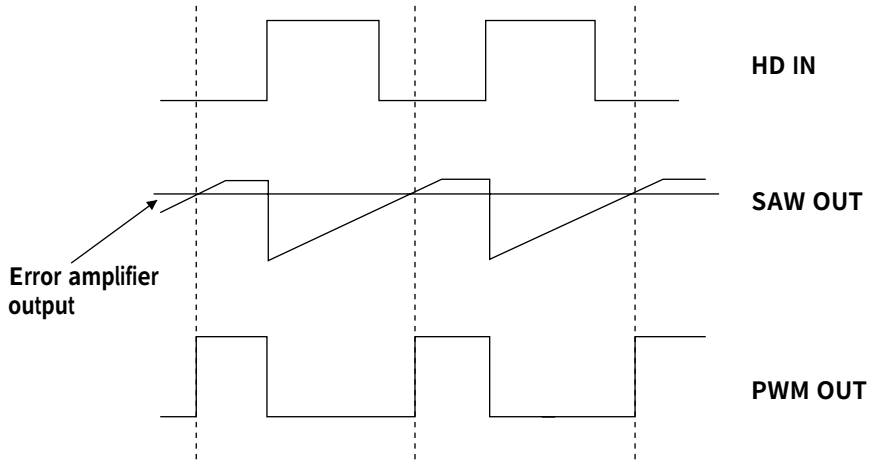


Figure 9. Operation image

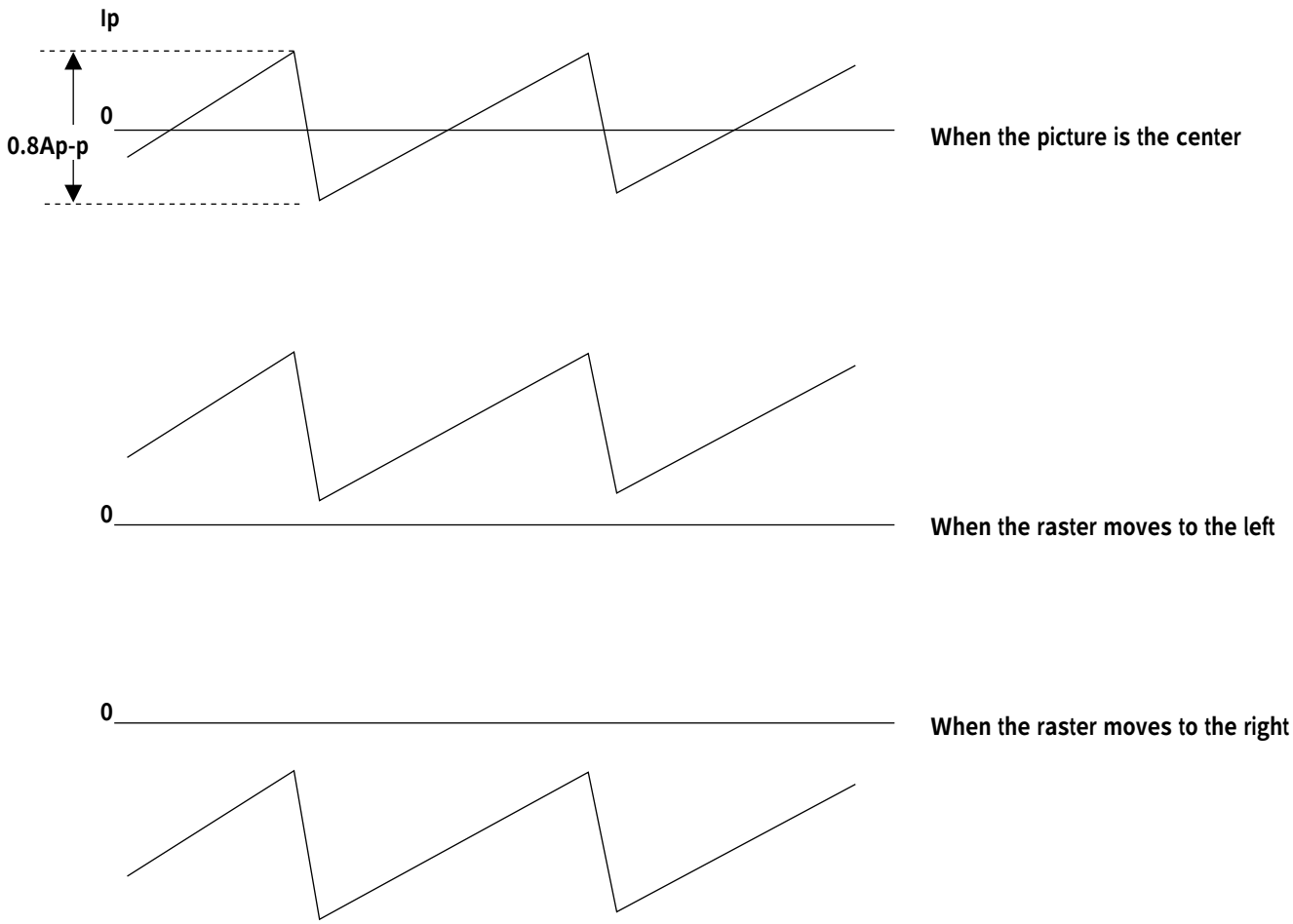


Figure 10 Horizontal position adjustment image

1.2.2 Deflection current compensation circuit

As the picture becomes flatter, the arrival distance of the deflected electronic beam becomes more different between the center and both ends of the picture. Therefore, there is a tendency for the image to be contracted at the center of the picture and expanded at both ends of the picture. Moreover, the left side of the picture is more expanded than the right side of the picture owing to the characteristics of the circuit. CS applies S type compensation to the deflection current with the resonant effect of the deflection yoke and contracts at both ends of the horizontal axis. The linearity coil increases the inductance of the starting section of the deflection current with the supersaturated reactor, and works to contract the left side of the horizontal axis.

As the frequency is lower, the capacity of CS is generally increased and the linearity coil with a larger impedance value is used. In the practical circuit, seven CS capacitors are prepared, and are combined as desired. The linearity coil changes inductance by letting the control current corresponding to the horizontal frequency flow to the control coil.

(1) S type compensation with CS

CS is switched in seven steps by FET. IC501 element with six FETs included and Q510 are used. On IC501, pins 2, 5, 7, 9, 11 and 13 are used as the gate, and pins 3, 6, 8, 10, 12 and 14 are used as the drain. Pins 1 and 15 are used as the ground, and each source are grounded to the earth. The binary value signal of HIGH (5V) or LOW (0V) is input to each gate by IC102. In case of HIGH, FET is turned ON. In case of LOW, FET is turned OFF. The correspondence to the signals from the capacitor and IC102 are as follows.

Table 3

	G	D	Capacitor	Signal
FET1	2	3	C523	CS2
FET2	5	6	C524	CS1
FET3	7	8	C525	CS5
FET4	9	10	C526	CS6
FET5	11	12	C527	CS3
FET6	13	14	C528	CS4
FET7 (Q510)	—	—	C529	CS7

The column of G and D is Pin No.

(2) Compensation with linearity coil

The linearity coil compensates the left expansion of raster by changing the inductance value through the current value flow in order to keep the horizontal linearity to appropriate level. In the actual circuit, L540 stands for the linearity coil.

The newly adopted linearity coil is provided with a control winding capable of controlling the current characteristics of the inductance value. The control voltage (DC) corresponding to each horizontal frequency is supplied from pin 2 of IC101 to pass the control current to the control winding through IC103 and Q540. This controls the current characteristics of the inductance value, and eventually keeps the horizontal linearity to appropriate level. An image of characteristic of linearity coil is as fugure 11.

As shown in the Table 4 below, CS is switched on the horizontal frequency bands. 1/0 in the table express the signals from IC101 with 1 for HIGH and 0 for LOW. Here, the column of the frequency expresses the lower limit value.

Table 4

User Timing

Fh (kHz)	CS7 0.024	CS6 0.056	CS5 0.15	CS4 0.24	CS3 0.47	CS2 0.82	CS1 1.3	com 0.173	total
31	1	1	1	1	1	1	1	0.173	3.233
34	0	0	0	1	0	1	1	0.173	2.533
36.5	0	0	1	0	0	1	1	0.173	2.443
39	0	0	1	1	1	1	0	0.173	1.853
45	0	1	0	0	1	1	0	0.173	1.519
47.5	0	1	0	0	1	1	0	0.173	1.519
49	1	1	1	1	1	0	0	0.173	1.113
52	1	1	1	1	1	0	0	0.173	1.113
55	0	0	1	1	1	0	0	0.173	1.033
59	1	0	0	1	1	0	0	0.173	0.907
61	0	0	0	1	1	0	0	0.173	0.883
63	0	0	0	1	1	0	0	0.173	0.883
66	1	1	1	1	0	0	0	0.173	0.643
70	1	1	1	1	0	0	0	0.173	0.643
73	0	1	1	1	0	0	0	0.173	0.619
76	0	0	1	1	0	0	0	0.173	0.563
78.5	1	1	0	1	0	0	0	0.173	0.493
81.5	0	1	0	1	0	0	0	0.173	0.469
83	0	1	0	1	0	0	0	0.173	0.469
86.5	0	1	1	0	0	0	0	0.173	0.379
89	0	1	1	0	0	0	0	0.173	0.379
92	0	0	1	0	0	0	0	0.173	0.323
94	0	0	1	0	0	0	0	0.173	0.323
97	0	0	1	0	0	0	0	0.173	0.323
104	1	1	0	0	0	0	0	0.173	0.253
108	1	1	0	0	0	0	0	0.173	0.253
111	0	1	0	0	0	0	0	0.173	0.229
114	0	1	0	0	0	0	0	0.173	0.229
116	1	0	0	0	0	0	0	0.173	0.197
125	0	0	0	0	0	0	0	0.173	0.173

Preset Timing

timing	CS7 0.024	CS6 0.056	CS5 0.15	CS4 0.24	CS3 0.47	CS2 0.82	CS1 1.3	com cs	total Cap.
31k/60	1	1	1	1	1	1	1	0.173	3.233
46k/75	0	1	0	0	1	1	0	0.173	1.519
60k/75	1	0	0	1	1	0	0	0.173	0.907
68k/85	0	1	1	1	0	0	0	0.173	0.619
80k/75	0	0	1	1	0	0	0	0.173	0.563
91k/85	1	1	1	0	0	0	0	0.173	0.403
93k/75	0	0	1	0	0	0	0	0.173	0.323
106k/85	1	1	0	0	0	0	0	0.173	0.253
112k/75	0	1	0	0	0	0	0	0.173	0.229
120k/85	1	0	0	0	0	0	0	0.173	0.197

1: ON 0: OFF

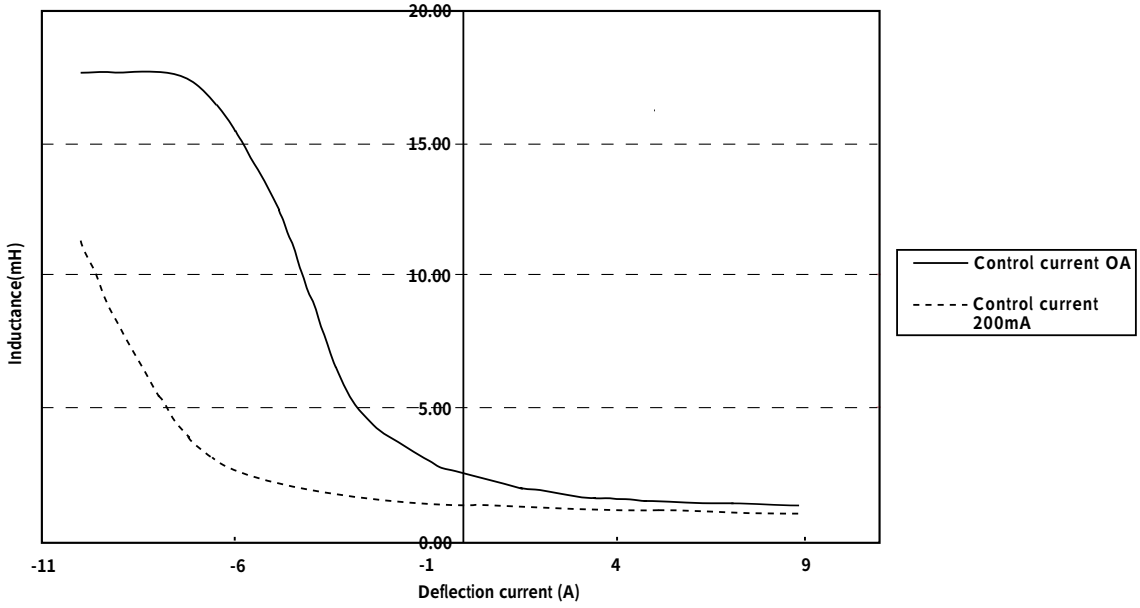
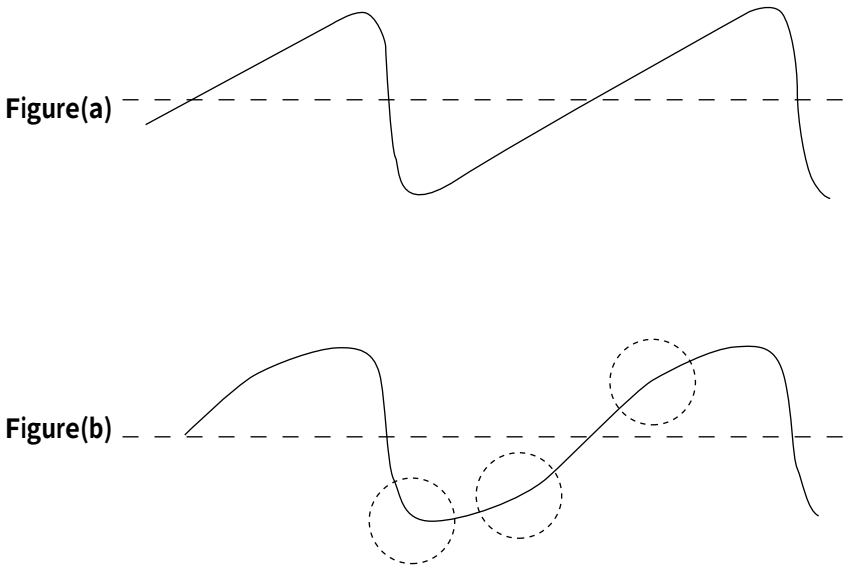


Figure 11 Characteristic of variable lineality

The waveform of the deflection current is compensated from Fig. (a) to Fig. (b) through the above. The starting section of the current is smoothened, and the linear section becomes the S type.



1.3 Vertical output block

The vertical deflection circuit controls the vertical width and vertical position with IC601 on the DEFL_SUB substract, and IC603 controls the linearity. Moreover, the signal output from IC603 is input to the vertical deflection output IC401.

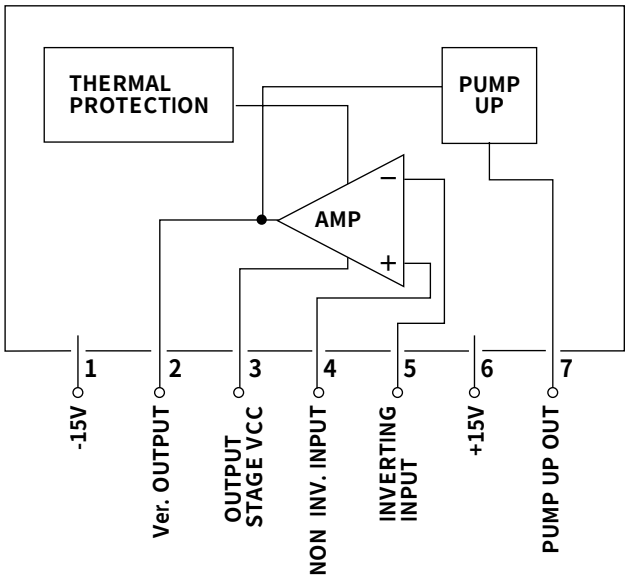


Figure 12 IC401(LA7841L) Pin connection & Function Block diagram

1.4 High voltage block

The high voltage circuit is composed of the high-voltage regulator IC701, MOS-FET Q701 flyback transformer (FBT) T701, operation amplifier IC702 and their peripheral circuits.

1.4.1 High voltage control circuit

The IC701 is an IC for high voltage control, with the block diagram given in Fig.13. The OFF trigger PWM control system is adopted to carry out high voltage control. The built-in VCO circuit gets synchronized when the horizontal synchronous signal (hereafter SYNC signal) is input from Pin 3 of IC701 (horizontal synchronous input terminal). Thus, the MOS-FET Q701 is controlled to turn OFF with the timing of the SYNC signal changing over to HI, and is called OFF trigger system.
Further, the DC voltage, output after the feedback signal (IC701 Pin 11) from FBT T701 is compared with the high-voltage set voltage (IC701 Pin 12) from IC101 in the internal error amplifier, is compared with the saw-tooth-waveform of VCO to control the pulse output DUTY so as to keep the high voltage constant (PWM control).
The timing chart for OFF trigger PWM control system is given in Fig.14. Set the high voltage by selecting [HVADJ] in OSD and manipulating +/- button (Standard value: 27.0kV).

1.4.2 Protective function circuit

(1) Start and stop of high-voltage regulator IC701
The IC701 starts operation when Vcc voltage (power voltage applied to Pin 2 and Pin 10) attains the level of 8.4 Vtyp, and the operation stops when the Vcc voltage is less than 7.4 Vtyp.

(2) IC701 overcurrent protection (OCP) function
It detects the peak value of the drain current in MOS-FET Q701 per pulse and stops DRIVE when the voltage in Pin 6 of IC701 detecting the end-to-end voltage of the source resistors (R706 and R707), exceeds 1.0 Vtyp until the next SYNC signal is input.

(3) IC701 overload protection (OLP) function
This function brings the system to the latch stop when OCP gets continuously activated due to continuous overload.
It forms time constant using C716. With OCP activated and C716 charged and the voltage in Pin 8 of IC701 exceeding 2.5 Vtyp, IC701 gets set to Latch mode, bringing the control operation to stop. This status does not get released (reset) until the Vcc voltage (power voltage applied to Pin 2 and Pin 10) in IC701 is less than 7.4 Vtyp.

(4) Over-voltage protection function for anode voltage (X-ray protector)
A voltage proportional to the high voltage is generated in Pin 6 of T701 due to the winding ratio between secondary and tertiary winding inside FBT T701. This voltage is then rectified by D707 and C708 and is further divided by R708 and R709 before being input in Pin 17 of microcomputer IC101 for comparison with the X-Pro set value. In case the voltage exceeds the set value, the output in Pin 33 of microcomputer IC101 gets fixed to LOW (P-OFF mode). With the mode set to P-OFF, the application of voltage Vcc to IC701 stops, causing the IC701 operation to stop. The status continues until the power SW is turned OFF. The overvoltage protection function is set to operate when the high voltage level reaches 30kV (with the beam current is approx. 1mA).

(5) Overcurrent protection function for beam current (beam protector)
The beam current is supplied from +12V power source through R722. Since the end-to-end voltage of R722 varies according to the beam current, the voltage drop due to R722 becomes large if the beam current increases. The voltage in Pin 9 of FBT T701 (the voltage obtained by subtracting the voltage drop due to beam current from the +12V power voltage) undergoes resistance division by R723 and R724, and is then input into Pin 6 of operation amplifier IC702 for comparison with Pin 5 of IC702 (reference voltage). The voltage is then output (Pin 7 of IC702) and is input into Pin 16 of microcomputer IC101. The voltage in Pin 7 of IC702 (output terminal) is output linearly due to the fluctuation in beam current. However, if the terminal voltage in Pin 16 of IC101 exceeds Beam-Pro setting value (ABL data +70 : Max. 254), the output of Pin 33 of IC101 gets fixed to LOW (P-OFF mode). With the mode set to P-OFF, the application of Vcc voltage to IC701 stops, causing the IC701 operation to stop. This status continues until the power switch is turned OFF. The overcurrent protection function is set to operate when the beam current reaches the level of approximately 1300μA.

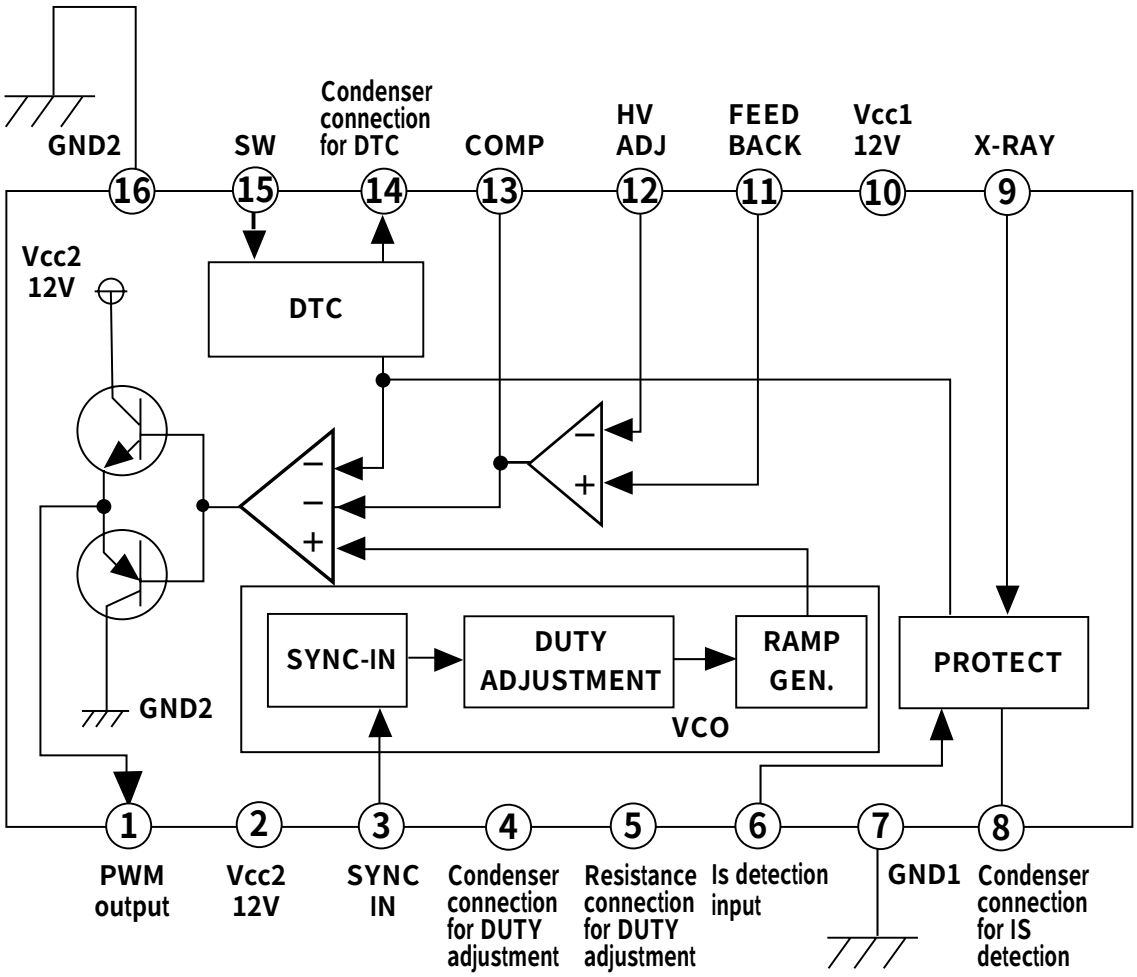


Figure 13. High voltage regulator IC701 block diagram

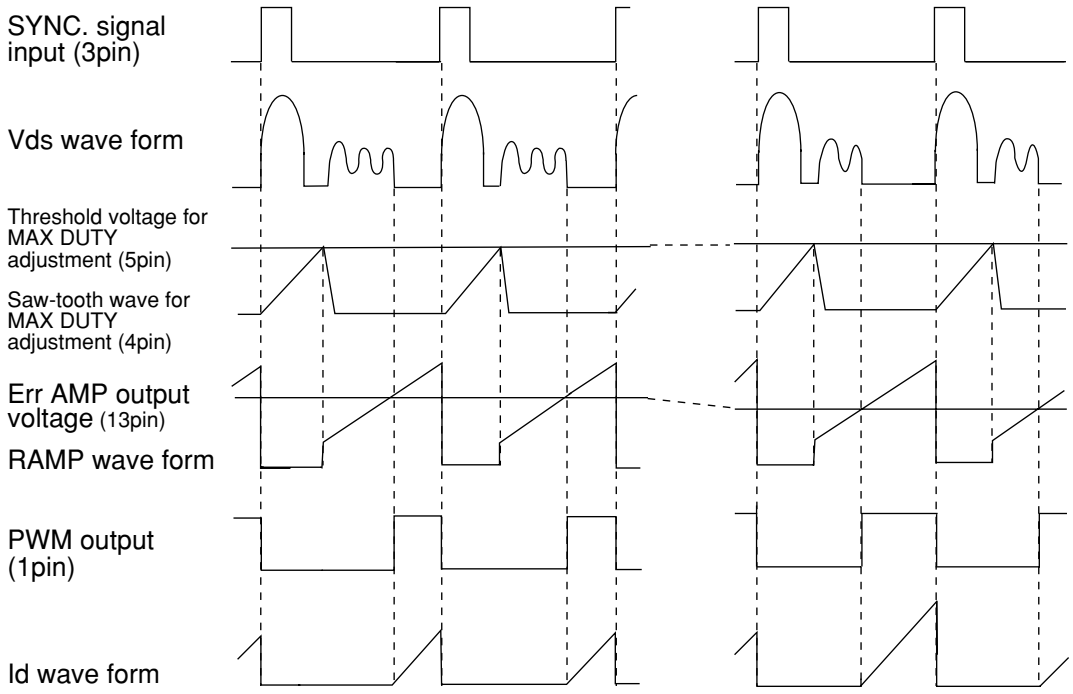


Figure 14. OFF trigger PWM control system timing chart

1.4.3 DBF (Dynamic Beam Focus) circuit

Since the display is flattened, the focus becomes unequal between the center and circumference of the picture. To compensate for it, it is necessary to superimpose the parabola voltage of 370Vp-p in the horizontal cycle with the static focus (with the horizontal width is 396mm) and the parabola voltage of 145Vp-p in the vertical cycle. The slight voltage that is generated from the parabola voltage generating circuit is amplified and reversed to generate the high voltage in order to keep the focus equal. This circuit is called DBF circuit.

As shown in Fig. (16), the circuit is composed of the parabola voltage generating circuit IC601, amplifier section IC6A1 in the front step, Q7A1 to Q7B5 of amplifier section in the rear step, T7A1, and so on.

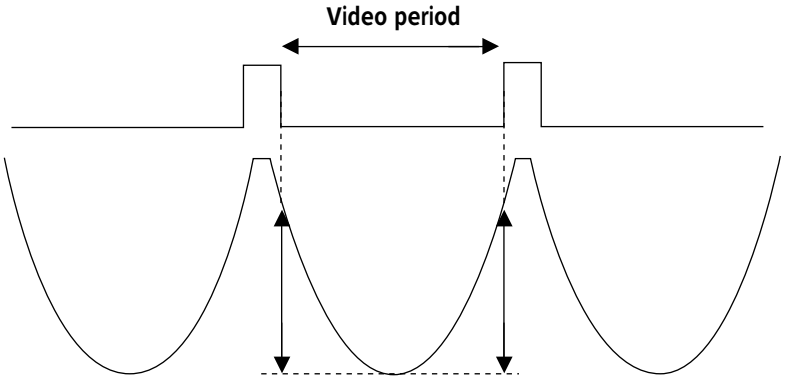


Figure 15

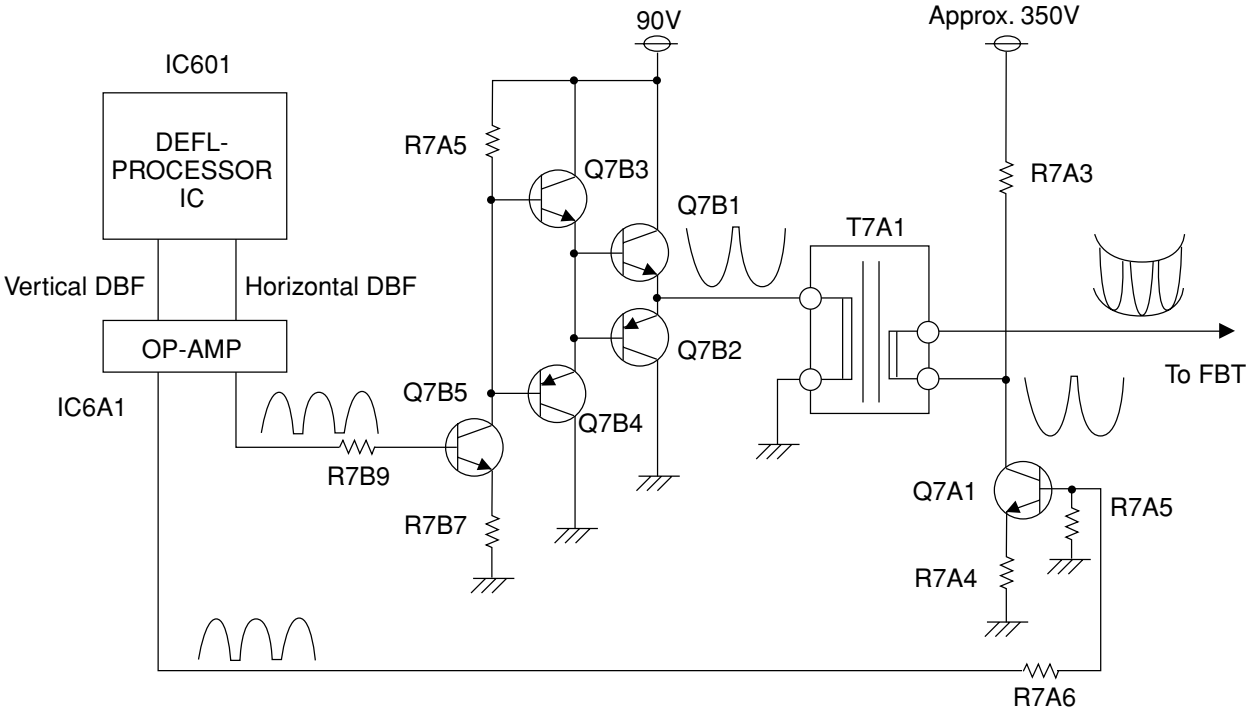


Figure 16

After the horizontal and vertical DBF voltage are separately generated, they are amplified and are finally composed.

<Horizontal section>

The voltage (approx. 0.5Vp-p) of the parabola waveform shown in Fig. (a) is output from the deflection processor IC (IC601), and is amplified approx. 10 times by OP-AMP (IC6A2). Thereafter, it is amplified to 50 to 60Vp-p by the transistor (Q7B1 and Q7B2). The amplification ratio is determined by the ratio between the resistors R7B6 and R7B7, being approx. 10 times. Moreover, the waveform is reversed as shown in Fig. (b) at this time. Then, it is amplified to approx. 500Vp-p by DBF transformer (T7A1). The coil ratio between the primary and secondary coils of the DBF transformer is 1: 10, being the amplification ratio of approx. 10 times.

<Vertical section>

The voltage (approx. 1.0Vp-p) of the parabola waveform shown in Fig. (a) is output from the deflection processor IC (IC601), and is amplified approx. 4 times by OP-AMP (IC6A2). Thereafter, it is amplified to approx. 160Vp-p by the transistor (Q7A1). The amplification ratio this time is determined by the ratio between R7A3 and R7A4, being approx. 40 times.

The horizontal and vertical DBF voltages amplified and reversed are composed by applying vertically synchronous modulation to the output on the secondary side as shown in Fig. (c). The composed voltage is input to Pin 12 of the flyback transformer (T701).

Figure (a)

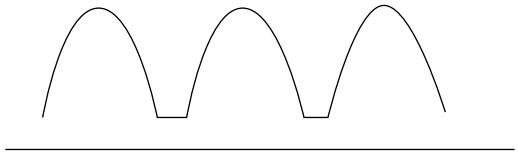


Figure (b)

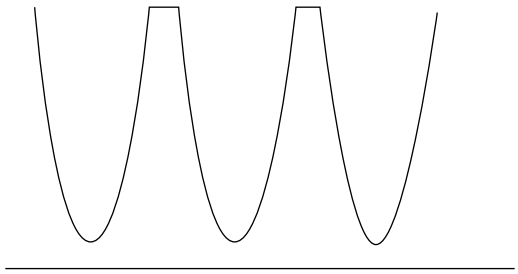
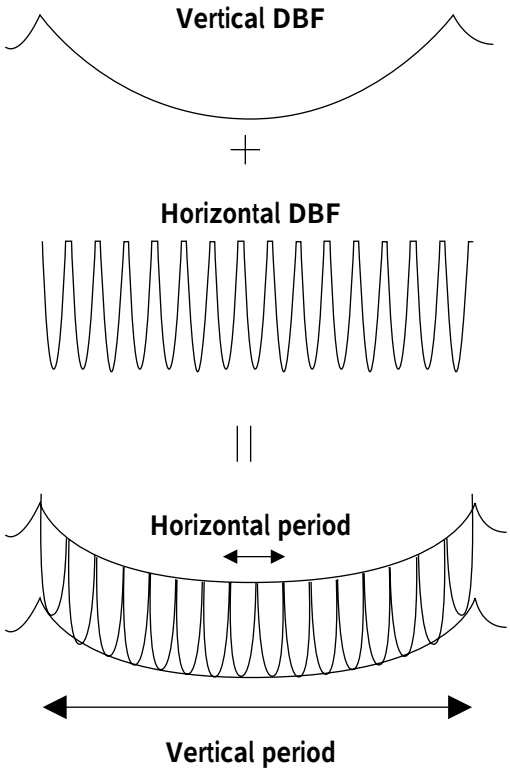


Figure (c)



1.5 CRT compensation block

1.5.1 Rotation circuit

The rotation circuit is a circuit to compensate the picture inclination caused by the earth magnetism by letting DC current flow to the rotation coil wound on the front side of DY for adjustment. It is controlled to 0 to 5V with the reference of 2.5V by IC103 pin 3 (PWM_DAC), and DC current of +/-90mA (max) is made to flow to the rotation coil by IC804 pin 2.
This correction circuit has two functions; (1) User adjustment (OSD display) and (2) Southern/ Northern horizontal magnetic field rotation cancellation, as follows.

(1) User adjustment (OSD display)
User provides DC current to the rotation coil according to the value displayed on OSD.

(2) Southern/Northern horizontal magnetic field rotation cancellation
Southern/Northern horizontal magnetic field rotation cancellation is to automatically adjust the variation of raster rotation by earth magnetism.
Detection voltage and direction of the southern/northern horizontal magnetic field (pin 2 of IC214) is detected by IC214 (Earth magnetism sensor unit), and pin 18 of IC101 (CPU_ADC) reads the detected voltage and provides DC current to the rotation coil according to the prescribed control program.

1.5.2 Corner purity circuit

The corner purity circuit is a circuit to compensate for the color shade and color deviation of the picture corner. On the rear side of CRT, it is adjusted by DC current flowing to the corner purity coils installed in the four corners on the display surface.
The compensation circuit is composed of the following four functions of (1) User adjustment (OSD display), (2) Aging variation compensation, (3) High/low temperature drift compensation and (4) Southern / Northern horizontal magnetic field landing cancellation.

(1) User adjustment (OSD display)
The user causes DC current of +/-60mA (max.) to flow to the purity coil of each corner according to the value displayed on OSD.

(2) Aging variation compensation
As the electronic beam collides with the aperture grille, it is thermally expanded and contracted. The thermal expansion/contraction is varied according to the elapse of the power ON/OFF time of the monitor. The color shade and deviation of the picture corner thus generated are automatically adjusted.
The voltage of the beam current supply pin (T701 pin 9) is detected with R723/R724, and the voltage that detects the time elapse of the power ON/OFF of the monitor is read from the CR charge (integration) circuit composed of C723 and R736 and CR discharge (integration) circuit, composed of C723 and R737 through IC702 (buffer amplifier) by IC101 pin 15 (CPU_ADC), and the DC current of +/-17mA(max) flows to the purity coil on each corner according to the specified control program.

(3) High/low temperature drift compensation
The front panel (glass) is thermally expanded and contracted as the temperature varies in the installation environments of the monitor. The color shade and deviation of the picture corner are automatically adjusted. The voltage that detects the temperature variation of the installation environments of the monitor is read from the environment temperature detection circuit composed of TH101 (thermistor) arranged near the front panel (glass) by IC101 pin 14 (CPU_ADC), and DC current of +/-13mA (max) is made to flow to the purity coil on each corner according to the specified control program.

(4) North-south horizontal field landing cancel

The north-south horizontal field landing cancel carries out automatic adjustment of color shading and color shift occurring appeared in the opposite derection at the top and bottom end of the monitor display surface in the horizontal direction.

The detecting voltage and direction of the north-south horizontal field (IC214 pin 2) are detected by IC214 (geomagnetic sensor unit), the detecting voltage is read by IC101 pin 18 (CPU_ADC), and the direct current of ±20mA (max) flows in each corner purity coil according to the specified control program. (Four-corner interlock control)

- The left upper corner on the display surface is controlled with 0 to 5V of 2.5V reference by IC101 pin 6 (PWM-DAC), and the DC current of the above value is made to flow to the purity coil on the left upper corner by IC803 pin 2.
- The right upper corner on the display surface is controlled with 0 to 5V of 2.5V refer ence by IC101 pin 7 (PWM-DAC), and the DC current of the above value is made to flow to the purity coil on the right upper corner by IC803 pin 8.
- The left lower corner on the display surface is controlled with 0 to 5V of 2.5V reference by IC101 pin 8 (PWM-DAC), and the DC current of the above value is made to flow to the purity coil on the left lower corner by IC801 pin 2.
- The right lower corner on the display surface is controlled with 0 to 5V of 2.5V reference by IC101 pin 9 (PWM-DAC), and the DC current of the above value is made to flow to the purity coil on the right lower corner by IC801 pin 8.

1.5.3 Earth magnetism cancel circuit

The earth magnetism cancel circuit has a south-north horizontal magnetic field canceling function and a vertical magnetic field canceling function.

IC214 (earth magnetism sensor unit) detects the voltage and direction of the south-north horizontal magnetic field (IC214 pin 2) and the vertical magnetic field (IC214 pin1), and IC101 pins 18 and 19 (CPU_ADC) reads the detected voltage to automatically control the following canceling function according to the specified control program.

Here, the output voltage of IC214 (earth magnetism sensor unit) operates as follows.

- South-north horizontal magnetic field (IC214 pin 2): 0.8V(-0.04mT) to 2.5V(+/-0.00mT) to 4.2V(+0.04mT)
- Vertical magnetic field (IC214 pin 1) : 3.3V (-0.04mT) to 2.5V (+/-0.00mT) to 0.5V (+0.10mT)

<South-north horizontal magnetic field canceling function>

(a) Horizontal magnetic field landing cancel

The horizontal magnetic field landing cancel circuit is a circuit to compensate for the color shade and deviation that appear in the horizontal direction that becomes the opposite direction at the upper and lower ends on the monitor display surface, and the automatic adjustment is done by DC current flowing to the corner purity coil that is wound around the display surface. (synchronized control for four corners)

(Refer to 1.5.2 (4) for detail.)

(b) Horizontal magnetic filed convergence cancel

The horizontal magnetic field convergence cancel circuit is the circuit to compensate for the misconvergence that results after the vertical convergence of RED and BLUE in the whole display area of the monitor deteriorates, and it is automatically adjusted by DC current flowing to the 4V convergence compensation coil mounted on DY. It is controlled with the DC component (V-CONVERGENCE) by IC601 pin 60 (4V_SC), and DC current of +/-30mA (max) is flowen to the 4V convergence compensation coil by IC8A1 pin 6 (Power Opamp).

<Vertical magnetic field canceling function>

The vertical magnetic field landing cancel circuit is the circuit to compensate for the color shade and deviation that reaches its maximum at the center in the horizontal axis direction and its minimum at the upper and lower ends on the monitor display surface, and the adjustment is done by DC current according to the value displayed on OSD flowing to the speed modulating coil installed in the neck part of CRT.

It is controlled with 0 to 5V of 2.5V reference by IC101 pin 4 (PWM-DAC), and DC current of +/-140mA (max) is made to flow to the speed modulating coil by IC804 pin 8.

1.5.4 Digital dynamic convergence clear (DDCC) circuit

In the digital dynamic convergence clear (hereafter called DDCC) circuit, the convergence compensating current waveform is produced and amplified, and the convergence is compensated by the compensation current flowing to the sub yoke that is installed as the rear unit of the deflection yoke.

Though the principle of the convergence compensation with the sub yoke is same as the CP ring, the CP ring is used for the static variation with the parallel movement in the whole picture in the uniform magnetic field with the permanent magnet but the sub yoke is used for dynamic variation that compensates a desired position on the picture by controlling the current waveform that flows to the coil of the electric magnet.

(See Fig. 18)

(1) Production of compensation current waveform

There are 30 kinds of compensation elements, and they are programmed in IC601(CP267P151=uPD61882BGC) one by one by using the functions. The amplitude of the current is controlled by inputting the compensation coefficient into the function.

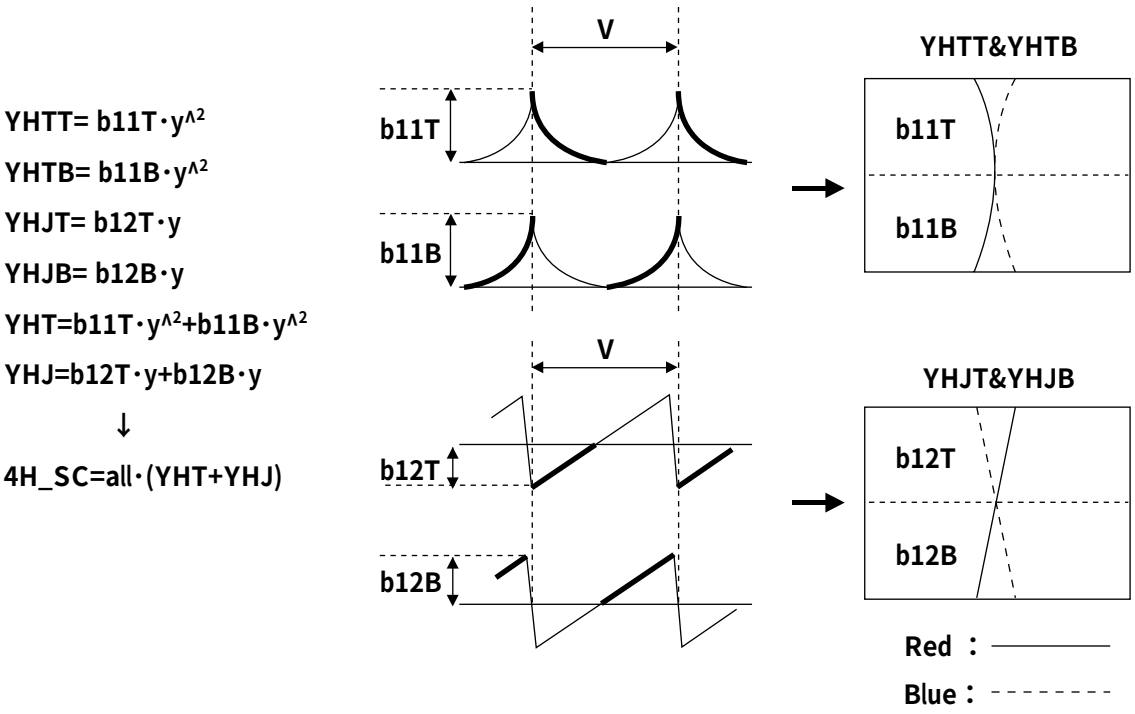


Figure 17 DDCC compensation image

Examples of the functions and current waveform/compensation operation of YH(YHTT, YHTB, YHJT, YHJB) are shown as follows.
In the above formulas, b11T, b11B, b12T and b12B express the compensation coefficients, and y and y^2 express the primary and secondary functions of the vertical frequencies. The other parts except the compensation coefficients are programmed, and desired amplitudes (= compensation amount) are gained by varying the coefficients.

YHTT and YHTB compensate the upper and lower parts of the picture of the characteristic components of their DYs to compensate the upper and lower parts of the picture of the axis deviation component. The component gained by adding YHT and YHJ is multiplied by the offset compensation coefficient a11. The resultant component is regarded as 4H_SC, and is output from IC601 (CP267P151=uPD61882BGC) pin 61.

(2) Waveform, and operation on the picture

The case in which the currents flow through 4H coils of the sub yoke is explained. Regarding YHT (secondary function in the vertical frequency), in case of Fig 17 as an example, the current is large in the same direction at the start (upper end of the picture) and the end (lower end of the picture) of the vertical frequency, and is zeroed on the X axis of the picture. Therefore, the magnetic field that is proportional to it is generated, and RED and BLUE vary in the same direction only at the upper and lower ends of the picture. As aforementioned, YHT can be independently controlled at the upper part (b11T.y^2) and lower part (b11B.y^2).
Moreover, regarding YHJ (Primary function in the vertical frequency), if the flowing direction of the current is opposite at the start (upper end of the picture) and the end (lower end of the picture) of the vertical frequency as an example, RED and BLUE vary in the opposite direction only at the upper and lower ends of the picture. Compensation in the vertical direction can be done by making the current flow to the 4V coil.
Fig.19(a) and (b) shows the image of each adjustment item of the DDCC adjustment.

(3) Adjustment method

Before the adjustment with the compensation circuit, it is necessary that they are properly adjusted at the center (H-STATIC and V-STATIC), on the X axis (XH slider, B-Bow 4P, XV differential coil) and on the Y axis (YH volume, YV volume).
Though DC current is superimposed on the sub yoke, H-STATIC and V-STATIC are pushed to the greatest possible extent by the adjustment with CP ring in order to reduce the stress of the driver IC8A1 (STK391-110).
Moreover, since 4H and 4V coils alone are installed on the chassis, it is first necessary that the convergence of RED, BLUE and GREEN (6H, 6V) satisfy the specifications for the performance of ITC(CRT&DY).
As the adjustment procedure, the adjustment values of 30 elements are not respectively zeroed but they are adjusted to nearest to zero with a total balance in good order.
In other words, the balance (compromise) adjustment with each adjustment item is applied.

The correspondence of the names of DDCC adjustment mode to the coefficients of all 30 elements is shown below.

＜Factory mode＞

4H Coil	b11T	YHTT	y^2	b11B	YHTB	y^2	b12T	YHJT	y	b12B	YHJB	y
	b21L	XHL	x^2	b21R	XHR	x^2						
	b31TL	S3HTL	x^2・-(y^3+y^4+y^5+y^6)	b31TR	S3HTR	x^2・-(-y^3+y^4+y^5+y^6)	b31BL	S3HBL	x^2・-(-y^3+y^4-y^5+y^6)	b31BR	S3HBR	x^2・-(-y^3+y^4-y^5+y^6)
	b41TL	PQHTL	x^2・y^4	b41TR	PQHTR	x^2・y^4	b41BL	PQHBL	x^2・y^4	b41BR	PQHBR	x^2・y^4
4V Coil	c11T	YVTT	y^2	c11B	YVTB	y^2	c12T	YVJT	y	c12B	YVJB	y
	c21L	XVL	x^2	c21R	XVR	x^2						
	c31TL	S3VTL	x^2・-(y^3+y^4+y^5+y^6)	c31TR	S3VTR	x^2・-(-y^3+y^4+y^5+y^6)	c31BL	S3VBL	x^2・-(-y^3+y^4-y^5+y^6)	c31BR	S3VBR	x^2・-(-y^3+y^4-y^5+y^6)
	c41TL	PQVTL	x^2・y^4	c41TR	PQVTR	x^2・y^4	c41BL	PQVBL	x^2・y^4	c41BR	PQVBR	x^2・y^4

＜User & Factory mode＞

4H Coil	a11	H-CONVERGENCE	DC
4V Coil	a12	V-CONVERGENCE	DC

Table 5

(4) Block diagram

Fig. 20 shows the block diagram of the DDCC circuit.

The components 4H_DC(pin 6), 4H_SC(pin 61), 4V_DC(pin 8) and 4V_SC(pin 60) supplied from IC601(CP267P151=uPD61882BGC) to 4H-Coil and 4V-Coil are output, the dynamic component (4H_DC, 4V_DC) is amplified with IC6A1(TL084), and the static component (4H_SC, 4V_SC) is amplified with IC6A2(KIA4558).

DCC(pin 7) output from IC601 (CP267P151=uPD61882BGC) and DEFL_+3.3V(pin 3) output from IC602 (TA48M033F) are respectively the reference voltage of Op-Amp(IC6A1:TL084) that amplifies the above dynamic component (4H_DC, 4V_DC) and the reference voltage of Op-Amp(IC6A2:KIA4558) that amplifies the static component (4H_SC, 4V_SC).

On each of 4H and 4V, the waveform added with the dynamic component and static component is input to IC8A1 pin 3 and pin 4 (STK391-110) allow the specified current to flow to each convergence compensation coil.

For four poles magnetic field

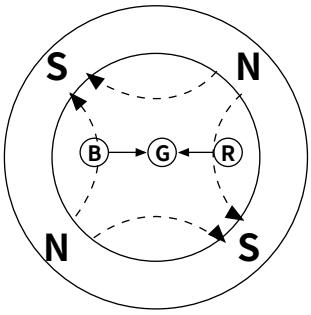
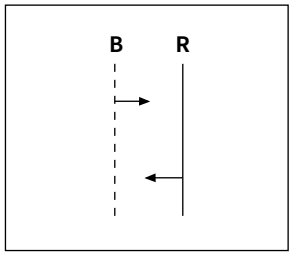
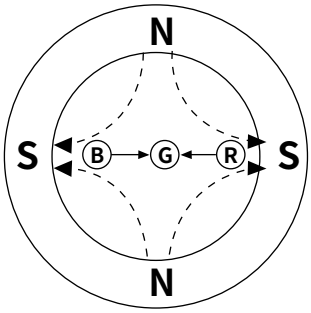
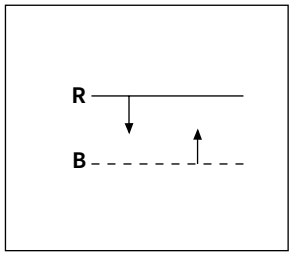
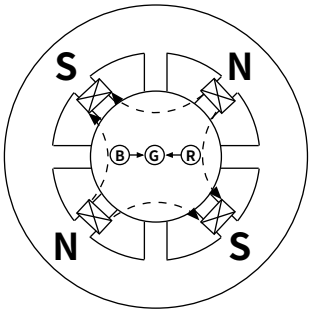
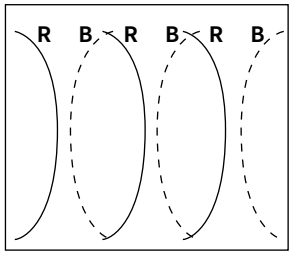
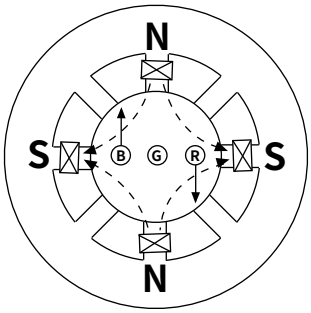
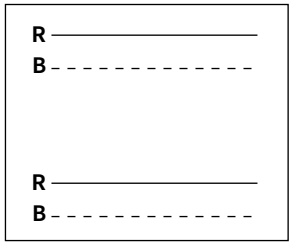
Static change by the eternal magnetic field (Parallel shifting totally)		
		
Dynamic change by electromagnet (Compensate at the optional position on the picture.)	4H coils 	 YHT compensate
	4V coils 	 YVT compensate

Figure 18 The principle of DDCC compensation

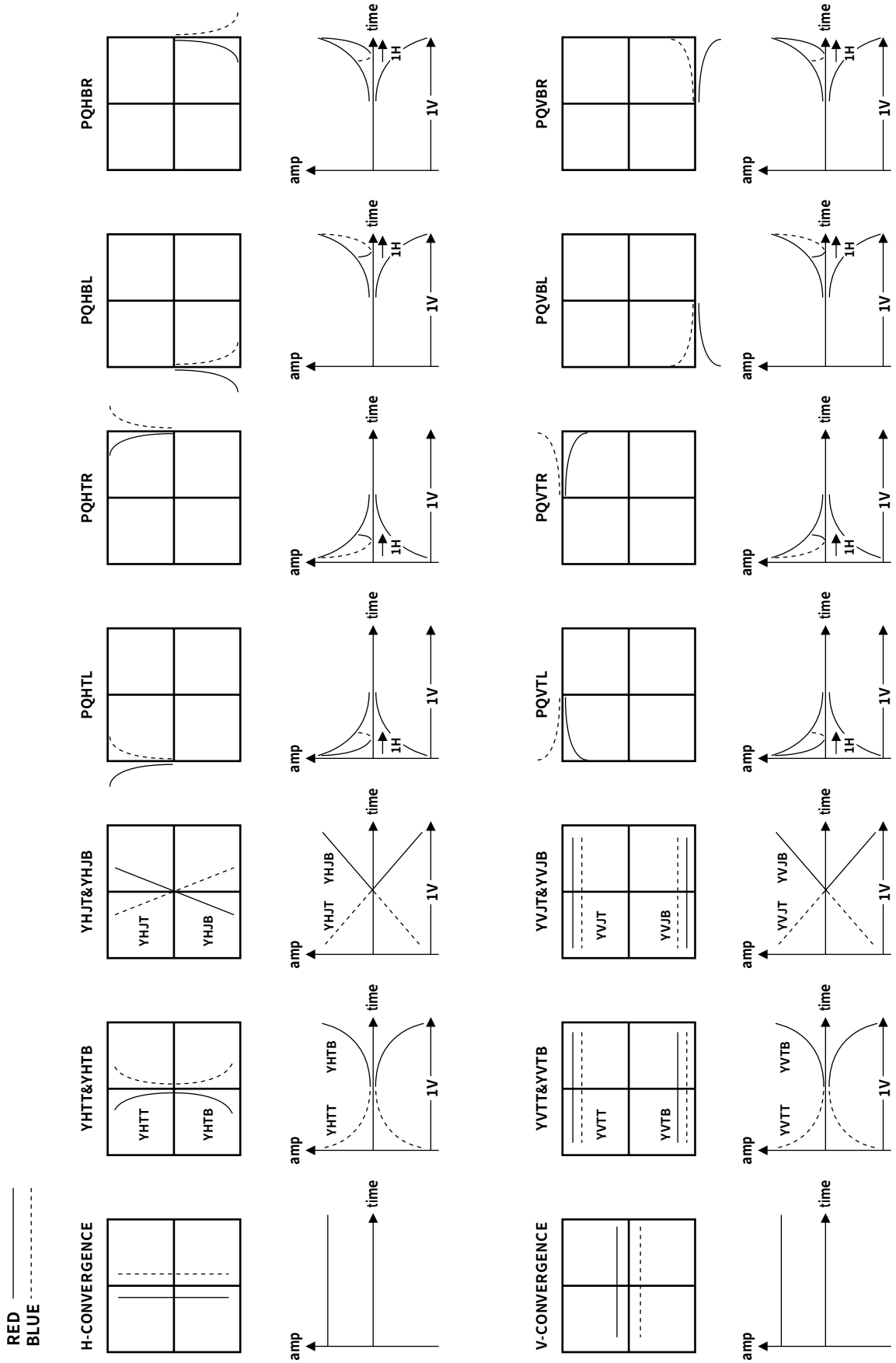


Figure 19 (a) DDCC adjustment item

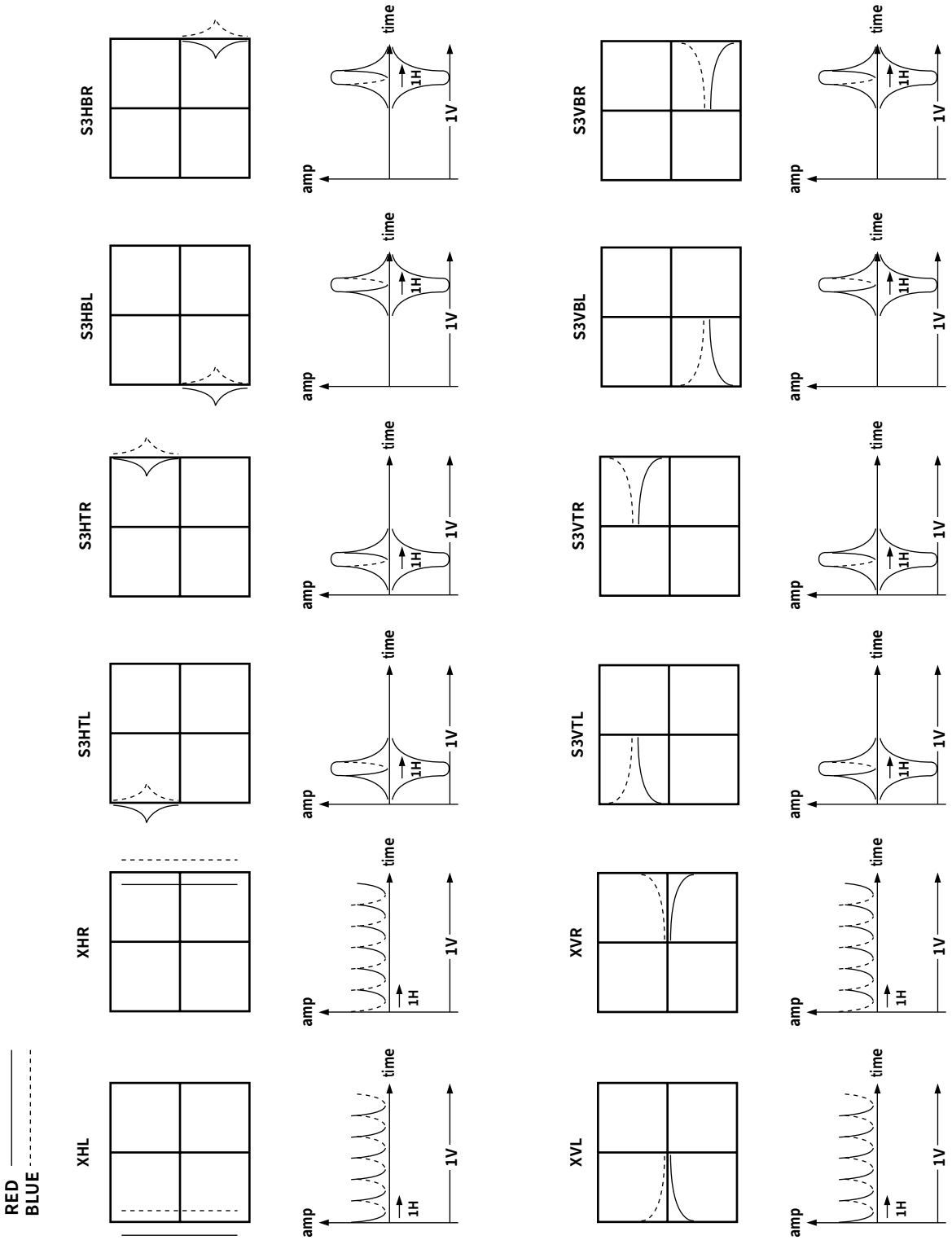


Figure 19 (b) DDCC adjustment item

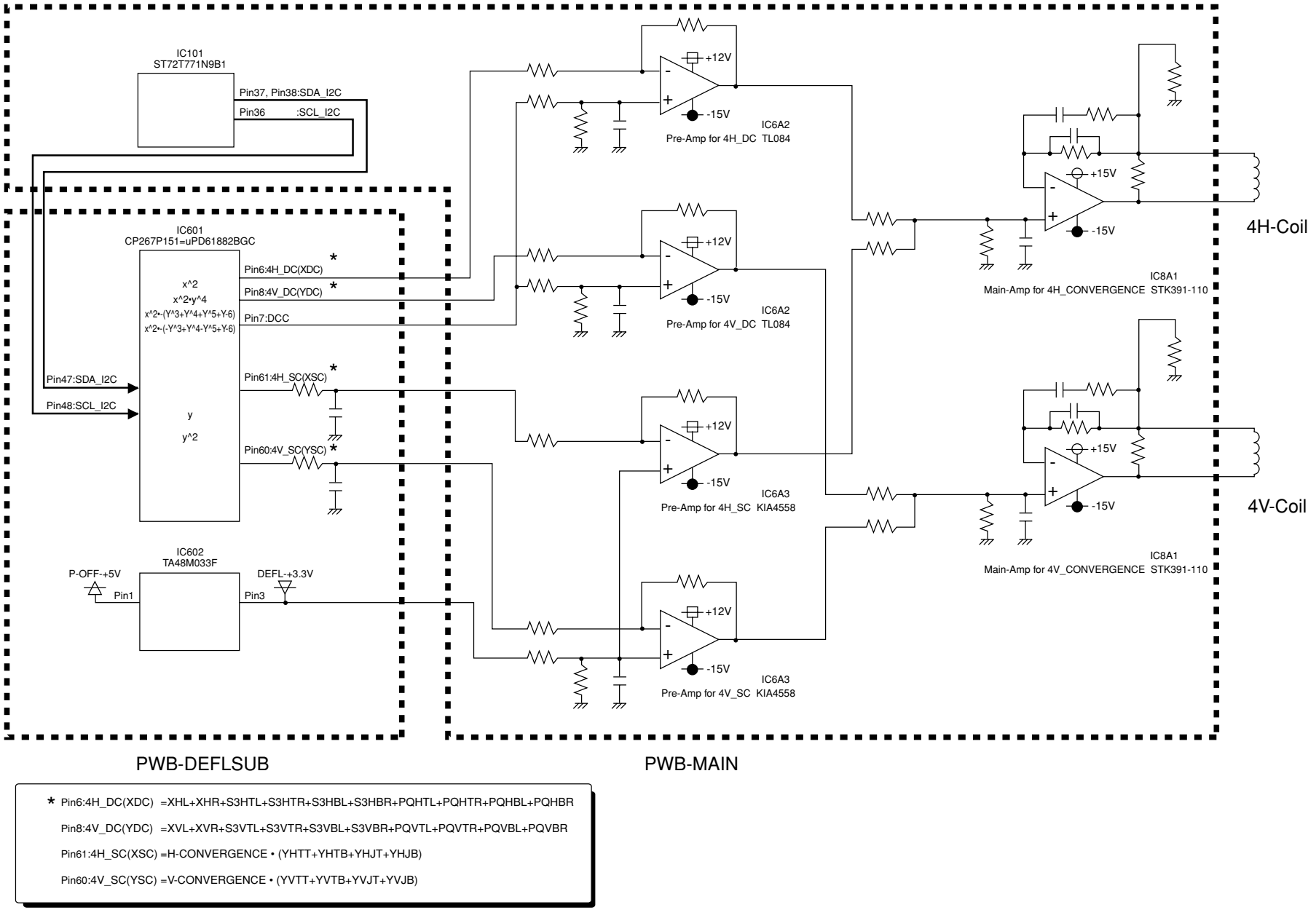


Figure 20 DDCC circuit diagram

1.6 Control block

The control block is composed of the following:
Monitor MPU IC101 to process the sync. signals, control the inside of the monitor and communicate with the external, EEPROM IC104 to memorize the picture adjustment values, I/O expander IC102 to output CS and V-LIN, etc.

1.6.1 Sync. signal process

When HSYNC or Composite Sync is input from the VIDEO board to the MPU IC101 pin 30 and VSYNC is input to the MPU IC101 pin 20 the frequency/polarity of SYNC will be discriminated. Then, HS_OUT will be output from pin 27 for beam deflection and OSD display and VS_OUT will be output from pin 26 as the polarity POSI.
If SYNC is not input or abnormal SYNC is input, the MPU IC101 will output simulative SYNC. The frequency of the simulative SYNC is near that of the previously input SYNC.
(Initial values: FH:31kHz and FV:60Hz)

1.6.2 Front button

When any tact switch of SW1X0 to SW1X8 on the front panel is pressed, the voltage of +5V will be divided with the resistor according to the button.
The signal is converted into the digital value with the A/D converter of the MPU IC101 pin 12 and pin 13 to discriminate which button is pressed.

1.6.3 I2C bus control

The IC control inside the monitor is carried out using pin 36: SCL-I2C, pin 37 and pin 38: SDA-I2C I2C bus.
The adjustment data corresponding to the input timing is read out from EEPROM and transmitted to each IC. For this I2C bus, the master always works as microcomputer. EEPROM IC104, deflection processor IC601, OSD-IC IC212, and pre-amplifier IC211 work as slaves, transmit control data. Each slave address is as mentioned in Table 6.
The MPU IC 101 pin 46 is a write protect signal of EEPROM IC 104. At normal state (when data is not written onto EEPROM), this signal is HI. When data is written onto EEPROM, this signal turns to LO.
With the SDA_12C (input) of MPU IC 101 pins 37 and 38 turned to LO level for 2 seconds or more, the system regards the situation as I2C bus error, bringing the system forcibly to POWER SAVE state.

Table 6 Slave address list

Device	Symbol No.	ADR(HEX)
EEPROM	IC104	A0(Write) / A1(Read)
Deflection processor	IC601	DC
Preamplifier	IC211	78(Write) / 79(Read)
OSD	IC212	7A(Write) / 7B(Read)

1.6.4 Power control

The normal state and power management state are switched according to pin 33 P-OFF signal and pin 32 P-SUS signal.
"Power save" of the OSD adjustment item is turned to "ON", and the power management is activated when either H/VSYNC goes out.
In the power management mode, P-OFF+5V is turned OFF by setting pin 33 P-OFF signal at LOW, other power supplies except +5V and heater are turned OFF by setting pin 32 P-SUS signal at LOW.

Moreover, if pin 39 PRO 1 signal is at HI for 1 second or more, it will be regarded as a short circuit of the power of the secondary side to forcibly turn ON POWER SAVE in order to prevent trouble from being escalated.

1.6.5 ABL, Beam Protector

The feedback signal ABL of the beam current is input into MPU IC101 pin 16.
In case the signal ABL exceeds the voltage level given below, the contrast setting of the preamplifier IC211 is lowered down to prevent the excessive flow of the beam current.
ABL specified voltage: {5 * (OSD item ABL) / 256} (V)
Further, in case the signal ABL exceeds the 4.7 V level continuously for 2 seconds or more, the situation is judged as circuit error, bringing the system forcibly to POWER SAVE mode.

1.6.6 CRT support

(1) Geomagnetism
The voltage conversion signal of horizontal magnetic field is output from pin 2 of the Geomagnetism sensor IC214, and the one of vertical magnetic filed is output from pin 1 of the Geomagnetism sensor IC214. These are buffered or reversed and amplified by IC103 operational amplifier, and input to A/D converter of pins 18 and 19 of microcomputer IC101. These signals are converted to digital values, and the Geomagnetism around the monitor is detected.

(2) Temperature
The signal that divides the P_OFF_+5V at the thermistor TH100, R136 and R137 is input into the A/D converter of MPU IC101 pin 14 and converted into digital value. Thus, the temperature inside the monitor is detected.

(3) ON time
The monitor ON time signal BEAM TIME is input into the A/D converter of MPU IC101 pin 15 and converted into digital signal to detect the monitor ON time.
In order to cancel the deterioration in purity and convergence due to the aforesaid in (1) ~ (3) geomagnetism, temperature and variation with time, the cancel current is passed to each C_PURITY 4V coil.
Each C_PURITY ROTATION controls the PWM DAC output (pin 3 and pin 6 to pin 9) of MPU IC101 by means of the signal smoothened by R and C.
The digital signal transmitted to the deflection processor IC601 from the microcomputer through I2C bus and converted into analog voltage by IC601 is output from pin 60 then it controls the convergence 4V.

1.6.7 High voltage control

The high output voltage control is carried out by means of HV-ADJ signal smoothening the PWM DAC output of the microcomputer MPU IC101 pin 1 using R133 and C114.
The high voltage feedback signal X-PRO is input into the A/D converter of MPU IC101 pin 17. When this voltage exceeds the specified level for 600 msec or more, the situation is regarded as high voltage error, setting the monitor to POWER SAVE mode.
The specified voltage level is obtained from {5 * (OSD item XPRO LEVEL) / 256} (V)

1.6.8 Display Data Channel

The DDC2B/2Bi function belongs to IC101 (microcomputer).
DDC2B: Immediately after the monitor power is turned ON, the microcomputer reads the EDID data from IC104. It outputs the EDID data according to the clock input into pin 34 SCL-DDC.
DDC2Bi: The monitor adjusts the picture etc. corresponding to DDC2Bi command which is input to pin 34 SCL-DDC and pin 35 SDA-DDC of microcomputer. This DDC2Bi command is used for the adjustment operated at factory. In case general user uses this, he/she needs specified application and adapter.

Table 7 IC101 (MPU) Pin assignment

PIN#	FUNCTION	ASSIGNMENT	PIN#	FUNCTION	ASSIGNMENT
1	DA0	H/V-ADJ(D/A)	56	VPP/TEST	GND
2	DA1	LIN(D/A)	55	IRIN	GND
3	DA2	ROTATION(D/A)	54	NOT(RESET)	RESET(IN)
4	DA3	VCANCEL(D/A)	53	PA0	SEL(OUT)
5	DA4	PWM-HEAT(D/A)	52	PA1	DATA(OUT)
6	DA5	TL(D/A)	51	PA2	CLOCK(OUT)
7	DA6	TR(D/A)	50	PA3	HSK(OUT)
8	DA7	BL(D/A)	49	PA4	USB-RST(OUT)
9	DA8	BR(D/A)	48	PA5	INT-SUB(OUT)
10	VSSA	GND	47	PA6	NC
11	VDDA	+5V	46	PA7/BLANKO	WP(OUT)
12	PB7/AN7	KEY-4DIR(A/D)	45	OSCIN	CRYSTAL-IN
13	PB6/AN6	KEY-PUSH(A/D)	44	OSCOUT	CRYSTAL-OUT
14	PB5/AN5	THERM(A/D)	43	USBVCC	NC
15	PB4/AN4	BEAM-TIME(A/D)	42	USBDP	NC
16	PB3/AN3	ABL(A/D)	41	USBDM	NC
17	PB2/AN2	X-PRO(A/D)	40	USBGND	GND
18	PB1/AN1	X-OUT(A/D)	39	PC7/TDO(SCI)	PRO1(IN)
19	PB0/VFBACK/AN0	Y-OUT(A/D)	38	PC6/RDI(SCI)	SDA-I2C(IN)
20	VSYNCI1	V-SYNC(IN)	37	PC5/SDAI(I2C)	SDA-I2C(OUT)
21	PC7/VSYNCI2/ITD	DEGAUSS(OUT)	36	PC4/SCLI(I2C)	SCL-I2C(OUT)
22	PD6/CLAMP0	CLP(OUT)	35	PC3/SDAD(DDC)	SDA-DDC(SIO)
23	PD5/ITA	LOCK(IN)	34	PC2/SCLD(DDC)/RX	SCL-DDC(SIO)
24	PD4/ITB	LED(OUT)	33	PCI/HSYNCI2	P-OFF(OUT)
25	PD3/ITC	SPARK(OUT)	32	PC0/OCMP/HFBACK	P-SUS(OUT)
26	PD2/VSYNCO	VS-OUT(OUT)	31	VDD	+5V
27	PD1/HSYNCO	HS-OUT(OUT)	30	HSYNCI1	H-SYNC(IN)
28	OD0/CSYNCI	G-SYNC(IN)	29	VSS	GND

1.6.9 LED

J100 pin 1 is connected to the anode of the green LED, J100 pin 3 is connected to the anode of the amber LED, and pin 2 is connected to the cathodes of both. Since P_OFF_+5V is normally supplied, the current flows to J100 pin 1 to turn OFF Q100. Therefore, any current does not flow to J100 pin 3.
(The green LED only is lit.)
Since P_OFF_+5V is turned OFF in the power management mode, no current is not flowed to

J100 pin 1 to turn ON Q100. Therefore, the current flows to J100 pin 3. (The amber LED only is lit.)

1.6.10 Clamp pulse

The clamp pulse signal CLP is output from pin 22 of the MPU IC101 with the polarity POSI. When "FRONT" is selected in the OSD adjustment item "CLAMP PULS POSITION", the signal is triggered at the front edge of HSYNC, and when "BACK" is selected, the signal is triggered at the rear edge.

1.6.11 SPARK

If it is electrically discharged in the CRT tube, the GND level of the high-voltage system circuit is considerably varied. GND of this high-voltage system is connected to the MPU IC101 pin 25 via C103. The voltage level of MPU IC101 pin 25 is normally set at HI. If GND in the high-voltage system varies since it is electrically discharged in the CRT tube, the current will flow to R130 to set MPU IC101 pin 25 at the LO level. Pin 25 is the external interrupt terminal that detects the trailing edge. When the trailing edge is detected, the MPU forcibly applies S/W RESET. (It is the same as when the power SW is turned ON.)
The above operation prevents the monitor from going out of control when it is electrically discharged in the CRT tube.

1.6.12 Avoidance operation during input SYNC switching

The horizontal LOCK output signal of the deflection processor IC601 pin 46 is connected to the MPU IC101 pin 23. MPU IC101 pin 23 is the external interrupt terminal of the trailing edge detection. Though the voltage level of the LOCK signal is normally set at HI, IC601 outputs LO when the horizontal deflection lock is released since the input SYNC is switched.
When the MPU detects the trailing edge, the HSK signal of IC101 pin 50 is set at HI, and the simulative SYNC that is near the original frequency is output from pin 26 and pin 27. HSK signal is used to set +B, voltage at MIN.
This reduces the stress when the input SYNC is switched for a short time.

1.6.13 CS switch and vertical linearity switch

Microcomputer IC101 outputs CS switch signal and vertical linearity switch signal via I/O expander IC102, and corrects the linearity in the screen.
Patterns of vertical linearity switch are shown in the table below.
As for CS switch pattern, refer to Table 4.

Table 8 SW_VLIN1, SW_VLIN2 select pattern (IC102)

Vertical frequency	SW-VLIN1 Pin 12	SW-VLIN2 Pin 13
50Hz～78Hz	LO	LO
78Hz～90Hz	HI	LO
90Hz～125Hz	LO	HI
125Hz～160Hz	HI	HI

1.6.14 H/W RESET

The +5V power is connected to pin 2 of the voltage detector IC100, and IC100 pin 1 output is connected to the MPU IC101 pin 54.
On the voltage detector, pin 1 is the open drain output, being turned OFF when pin 2 voltage is 4.5V or more, and ON when it is 4.5V or less. When the power switch is turned ON, IC100 pin 1 is turned ON and the MPU pin 54 level is set at 0V since +5V has not started up.

When the voltage of IC100 pin 2 becomes 4.5V or more, IC100 pin 1 will be turned OFF, and the voltage of the MPU pin 54 rises with the time constants of R100 and C100.
When the voltage of the MPU pin 54 becomes 3.5V or more, the MPU will start operating.

1.6.15 Oscillation circuit

The crystal oscillator X100 is connected to the MPU IC101 pin 45 and pin 44. Pin 45 is the clock input, and pin 44 is the amplification circuit output in the MPU. The operation frequency of the crystal oscillator is 24MHz. The basic clock is divided in the MPU to operate the program and circuits of the MPU.

1.6.16 I/O expander

Pin 51 CLOCK and pin 52 DATA of microcomputer are a serial interface for transmit the output data to I/O expander IC102. I/O expander inside is a shift resister, and interface only transmits the data to this shift resistor in order and sends the ratch signal.

1.7 Software

1.7.1 Outline

(1) Input frequency
- •Horizontal : 30kHz to 121kHz (Lower limit : 29.5kHz, Upper limit: 125kHz)
- •Vertical : 50Hz to 160Hz (Lower limit: 47Hz Upper limit: 162Hz)

(2) Memory timing number
- •Preset timing : 10 timing (22 timing max.)
- •User timing : 15 timings can be memorized.

1.7.2 Frequency variation detection function

At normal signal input, this function checks the input frequency and polarity per VSYNC input and judges that input signal has been transmitted if the conditions a, b and c given below are satisfied 4 times continuously against the first synchronous signal state.

Condition a: There is no change in the input synchronous signal polarity both in horizontal and vertical directions.
Condition b: The horizontal frequency difference is less than 0.4kHz.
Condition c: The vertical frequency difference is less than 0.4Hz.

On detecting the change in input signal, this function compares, in the order given below, the directory data written in EEPROM with the directory data of the input signal before reading and outputting the screen data.

(1) If the input signals satisfy conditions a, b and c, they are judged to be the same as the signals registered in the directory, and the timing data are read from EEPROM and are output.
Condition a: The polarities of the input sync. signal are the same in both horizontal and vertical directions.
Condition b: Horizontal frequency difference is 0.6kHz
Condition c: Vertical frequency difference is 0.6Hz.

The sequence of the compared directories is as follows:
PRESET1 → PRESET2 → ••• → PRESET10 → USER1 → USER2 → ••• → USER15
If the same timing is judged on the way, the comparison work is stopped there, and the adjustment value for each corresponding timing is read out from EEPROM.

(2) If the conditions of (1) are not satisfied (when the new timing is input), the horizontal frequency reads the backup picture data of the nearest preset timing and outputs it.

1.7.3 Memory of user timing

The new timing is input. When the picture adjustment is executed, the directory data (frequency and polarity) and picture data will be memorized in EEPROM.
If 15 user timings (MAX) are memorized, the memory of the oldest user timing (directory data and picture data) is deleted, and the new timing information is memorized there.
USER1 → USER2 → ••• → USER15 → USER1 → USER2 → ••• →

1.7.4 Picture adjustment

(1) The monitor has the function to do the picture adjustment with OSD and communication.
The function has the following adjustment modes.
a: Normal mode
b: Factory mode
For entry into each adjustment mode, refer to Item "Adjustment method".

(2) High voltage adjustment supplement
High voltage under normal conditions is decided by "HVAD" setting value of OSD adjustment item, and X-ray protect voltage is decided by "XPRO" setting value of OSD adjustment item. For X-ray protect voltage, the calculated value is set inside the microcomputer by executing XPRO CALIBRATE with the input frequency 32kHz or less.

(3) If XRAY-PROTECT activates even in the normal state because XRAY-PROTECT is excessively lowered by mistake, the XRAY-PROTECT and HV-ADJUST adjustment values can be initialized using the following procedure.
(a) Input the image signal to the monitor.
(b) Keeping both + and - buttons pressed, turn ON the power.
(c) Keep both + and - buttons pressed for approx. 30 seconds or more.
(d) Release - button only.
(e) Keep the + button only pressed for 15 seconds or more.
(f) When it is successfully completed, LED gets green in a flash.
(g) Turn OFF the power, and turn it ON again, and the XRAY-PROTECT adjustment value will become 254 and HV-ADJUST adjustment value will become 0.

(4) Vertical position adjustment supplement
The displayed adjustment data corresponding to the vertical position icon in OSD adjustment item differs at Normal and Factory mode.
Normal mode ("VERT-POSITION"):
When this icon is moved, the trapezoid distortion compensation is automatically carried out. This is mainly used for compensating the distortion against the vertical position of the input timing image.
Factory mode ("PF"):
The trapezoid distortion compensation is not carried out automatically even if this icon is moved. This is mainly used for compensating the offset of the circuit and deflection yoke.

1.7.5 Power management

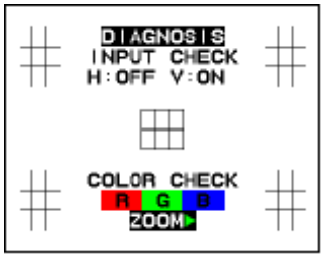
The function reduces the power consumption of the monitor when the connected computer is not used.
The function is turned ON and OFF from the adjustment picture.
The monitor has only one kind of the power management function.

(1) Conditions to enter power management mode
a: "POWER SAVE" of the picture adjustment item is left ON.
b: Neither HSYNC nor VSYNC are input.

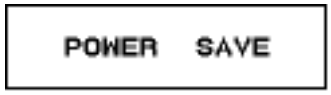
(2) Power management operation
When the power management is activated,
(i) P_SUS signal is turned to LO to stop the power output on the secondary side except CRT heater, P-OFF+5V, +5V line.
(ii) P-OFF signal is turned to LO to stop the power output of P-OFF+5V line.
(iii) The front LED is lit amber.

1.7.6 OSD display at NO SYNC

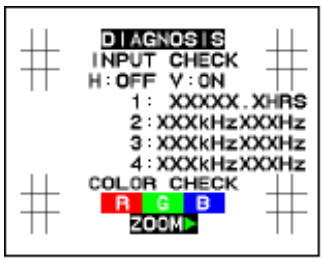
(1) In case there is no input in either HSYNC or VSYNC, the following OSD is displayed.
(a) When OSD item "POWER SAVE" is set to "OFF", this OSD is continuously displayed.
(b) When OSD item "POWER SAVE" is set to "ON", this OSD is displayed for about 6 sec and moves to (2)



(2) After displaying the OSD given below for about 3 seconds, the system enters POWER MANAGEMENT mode.



(3) During POWER MANAGEMENT mode, if one of the buttons is pressed, the OSD in (1) is displayed again.
If no button is further pressed, the display moves to the state in (2) after about 1 minute.
(4) If " → " button is pressed with OSD in (1) under display, cross hatch is displayed in the back of OSD.
If " → " is pressed again, it returns to the initial screen.
(5) If "-" and "+" buttons are simultaneously pressed with OSD in (1) under display, the OSD given below is displayed. If no button is pressed for about 1 minute, the displays from 1: to 4: are deleted.



* Item 1: Operating time (Cumulative time while the power switch is ON)
Item 2: Preceding input frequency, horizontal frequency, and vertical frequency
Item 3: Input frequency, horizontal frequency, and vertical frequency before item 2
Item 4: Input frequency, horizontal frequency, and vertical frequency before item 3

1.7.7 LED display

Normally the LED is lit up green during screen display and amber during power management. However, when circuit operation error is detected, the system gets forcibly set to POWER MANAGEMENT mode, with the LED being lit up in the pattern given below.

	LED indication
High voltage protector action	○○ ⬭ ○
High voltage adjustment data error	○○ ○○ ○○ ⬭ ○
Beam protector action	○○ ○○ ○○ ○○ ○○ ⬭ ○
Secondary side load short-circuit	○○ ○○ ○○ ○○ ○○ ○○ ○○ ⬭ ○

○ :Umbar ON (1sec)
○ :LED OFF (1sec)
⬭ :Umbar ON (4sec)

* EEPROM memory error: Each of the high voltage adjustment “HVADJ” and “XPRO LEVEL” has independent backup data. As the power is turned ON, each adjusted value is read from EEPROM, and in case this value fails to correspond with the backup data, the situation is regarded as EPPROM memory error, setting the system forcibly to POWER MANAGEMENT mode.

1.7.8 Status memory to EEPROM

The following contents are stored in EEPROM in order to supplement the analysis of fault and claim causes.

(1) Operation time/Heater ON time

Operation time: Total time that the power supply switch is ON, Heater ON time: Total time that HEATER voltage is ON, both are by 30 min. unit, and memorized in EEPROM by 2 byte in size. When the memory value becomes FFFFH, count up stops. Item 1 of OSD indication in 1.7.6-(5) shows this memory value.

Table 9

EEPROM address	Content
0 x 0A0	Lower byte of operation time
0 x 0A1	Upper byte of operation time
0 x 0A3	Lower byte of HEATER ON time
0 x 0A4	Upper byte of HEATER ON time

(2) Operating frequency memory

The input frequency for the past 3 times is memorized in EEPROM in 2*3 byte size.
The items 2 to 3 of OSD display in 1.7.6-(5) display these memory values.
In case the input frequency exceeds 3 times, the oldest memory value is discarded.

Table 10

EEPROM address	Content
06C	Preceding input horizontal frequency (unit: kHz)
06D	Preceding input vertical frequency (unit: Hz)
06E	Input horizontal frequency one step before (unit: kHz)
06F	Input vertical frequency one step before (unit: Hz)
070	Input horizontal frequency two steps before (unit: kHz)
071	Input vertical frequency two steps before (unit: Hz)

(3) Protector operation rate memory

The protector operation rate due to error in high voltage, power short-circuit on the secondary side, I2C, BEAM, high voltage fale safe, or EEPROM is memorized in EEPROM in 6 byte size. The data is memorized in EEPROM per FACTORY ADJUSTMENT and USER mode (total 12 byte).

1.8 Deflection processor block

1.8.1 Outline

The deflection processor block mainly composed of deflection processor IC generates and controls a variety of the following compensation waveform that are produced by this IC.
The deflection processor IC is a 64pins IC of uPD61882 of IC601.
The following seven points are generated and controlled by the deflection processor IC.
(Refer to the block diagram of IC601 in the figure 21.)

(1)Vertical deflection waveform generating circuit
(2)Horizontal deflection drive waveform generating circuit
(3)Distortion compensation waveform generating circuit
(4)DBF compensation waveform generating circuit
(5)Convergence compensation waveform generating circuit
(6)Blanking waveform generating circuit
(7)Moire canceling circuit

Moreover, the block is provided with a small both-face board (PWB-DEFL-SUB) of 60mm X 70mm.
The power of the deflection processor block is +3.3V that is converted from P-OFF+5V by the regulator of IC602, and the power and GND are divided into the digital system and analog system in the inner circuit of IC601 in order to prevent noise interference for the waveforms.
OP amplifier of IC603 uses the power of +5V and -15V, and works as the trace filter and voltage amplification of the amplitude of the saw-toothed waveform for vertical deflection.

1.8.2 Vertical deflection waveform generating circuit

The deflection processor IC (IC601) does 10-bit DAC output of the saw-toothed wave for vertical deflection that is synchronized with the vertical frequency input to pin 42, from pin 1 and pin 11 at both polarities (approx. 1.2V.p-p). Moreover, the center voltage IMID (approx. 1.6VDC) of the saw-toothed wave is output from pin 2.
To remove the noise, the OP amplifier (pins 1, 2 and 3) of the front step of IC603 removes the difference between the waveforms of both polarities of the saw-toothed wave for vertical deflection, using the center voltage IMID of the saw-toothed wave as the reference. From the output of the amplifier, the digital gradation component of the saw-toothed wave is removed with the low pass filter that is made of R642 and C628. Moreover, pin 62 and pin 63 of IC601 are the analog switch turning ON the retrace term, prevents the waveform deformation that is produced by the low pass filter, and prevents the degradation of the linearity and the fluctuation of the scanning line.
Moreover, the saw-toothed wave for vertical deflection is controlled to adjust the vertical picture width, vertical phase and linearity.
R645, R646, R647 and R649 connected to pair GND on the filter output composed of R642 and C628 are the resistor to improve the linearity of the saw-toothed wave for input vertical deflection, and switches the resistance into four steps with the transistor switch of Q603 and Q604 according to the vertical frequency. (Refer to Table 12.)
The saw-toothed wave for vertical deflection is output to the low output impedance with the OP amplifier (pins 5, 6 and 7) of the rear step of IC603.

Vertical frequency	Q604	Q603
50～78Hz	OFF	OFF
73～89.9Hz	ON	OFF
90～124.9Hz	OFF	ON
125～160Hz	ON	ON

Table 12 Vertical linearity compensation resistance select transistor ON/OFF

1.8.3 Horizontal deflection drive waveform generating circuit

The rectangular wave for horizontal deflection drive are output at the amplitude 3.3Vp-p and approx. 45% Duty from IC601 pin 25 with the delay of the transistor taken into account in order to make the Duty become 50% at the output of Q501 of the horizontal deflection circuit.
Here, the simulative horizontal sync. signal (5V pulse) from the horizontal flyback pulse (AFC, 5V pulse) input to IC601 pin 27 and IC101 (MPU) input to IC601 pin 44 is passed through the invertor of IC6A1 to produce the edges of these waveforms. This prevents the noises of the jitter , etc. from generating.
Moreover, the circuit composed of Q602, Q605 , etc. connected to IC601 pin 13 prevents the rapid frequency variation of the horizontal output when the horizontal input signal becomes no signal. IC601 pin 13 is a phase comparator filter terminal to phase-lock the horizontal input sync. signal and the oscillation in IC601. When the horizontal input sync. signal becomes no signal, the terminal voltage rapidly varies from approx. 0.8V of the phase lock time to 0V, and the frequency of the horizontal output rapidly varies according to this. The circuit is added to compress the rapid frequency variation width by smoothening the variation of the terminal voltage of pin 13 by C636 when it becomes unlocked. This prevents the horizontal collector pulse from jumping in order to prevent overvoltage against the horizontal output transistor (Q502).
The terminals pin 13 to pin 20 of IC601 become the control filter terminal of horizontal PLL.

1.8.4 Distortion compensation waveform generating circuit

The deflection distortion compensating waveform is output from pin 64 of IC601. The waveform is output from 1-bit DAC, and 3.3V pulse waveform of resolution power of 25MHz is output at pin64 direct. The pulse waveform is smoothened with the low pass filter of R632 and C622 to gain the compensation waveform of the vertical frequency. The amplitude is approximately 1.0 to 1.2Vp-p, and is connected to pin5 of IC5J1.
The horizontal size, trapezoid compensation, side pin compensation, upper/lower compensation of the side pin, S type compensation of the side pin and W compensation of the side pin are applied. (Refer to the compensation image, figure 22.)
The deflection compensation waveform in the horizontal phase system is output from pin 57 of IC601. Pin 57 is the 1-bit DAC output, and outputs the pulse waveform of 3.3V of resolution power of 25MHz. The pulse waveform is smoothened with the low pass filter of R614, R619, C601 and C604, and the waveform of the vertical frequency is current-added to the filter (pin 20 of IC700) of the horizontal system PLL to compensate for the deflection distortion of the horizontal phase system. The parallel rectangular distortion compensation and the side pin balance (upper and lower) compensation are executed. (Refer to the compensation image, figure 22.)

1.8.5 DBF compensation waveform generating circuit

The horizontal system DBF compensation waveform is output in 8-bit DAC mode from pin 10 of IC601. The amplitude is approximately 0.5Vp-p. It is connected to pin 6 of IC6A2.

The vertical system DBF compensation waveform is output from pin58 in the 1-bit DAC mode. Pin 58 direct outputs the pulse waveform of the resolution power of 25MHz. The pulse waveform is smoothened with the low pass filter of R621 and C607 to gain the DBF compensation waveform of the vertical frequency. The amplitude is approximately 0.6Vp-p. It is connected to pin 3 of IC6A2.

1.8.6 Convergence compensation waveform generating circuit

The horizontal dynamic convergence compensation waveform is output from pin 6 of IC601 in the 8-bit DAC mode. The amplitude is approximately 0V to 0.5V. The vertical dynamic convergence compensation waveform is output from pin 8 in the 10-bit DAC mode. The amplitude is approximately 0V to 0.5V. The dynamic convergence compensation waveform center voltage (approx. 1.6V) is output from pin 7.
In the 1-bit DAC mode, the horizontal static convergence compensation waveform is output from pin 61, and the vertical static convergence compensation waveform is output from pin 60. In pins 60 and 61 direct, the pulse waveform of the resolution power of 25MHz is output. The pulse waveform is smoothened through the low pass filter to gain the horizontal static convergence compensation waveform and vertical static convergence compensation waveform of the vertical frequency.

1.8.7 Blanking waveform generating circuit

The horizontal blanking pulse and vertical blanking pulse are generated in IC601, and these two waveforms are mixed and output at 3.3Vp-p from pin 40 of IC601.
The reference of the phase of the vertical blanking pulse is determined at the leading edge of VFLY (vertical flyback pulse, 5V pulse) of pin 39 input of IC601, and the phase can be variably controlled to output the optimal waveform of the blanking pulse.
The horizontal blanking pulse is a pulse that is synchronized with H-IN (horizontal sync. signal, 5V pulse) of pin 44 input of IC601, and can be also variably controlled.
The waveform is connected to pin 6 of the preamplifier (IC211) of the video board.

1.8.8 Moire canceling circuit

The moire canceling circuit outputs the waveform that is reversed every line of the horizontal frequency and every 1 frame of the vertical frequency from pin 22. The vertical frequency waveform is output from pin 23, and these two waveforms are added to the horizontal PLL through the filter of R630 and C618 to achieve the moire canceling function.

Pin 30 of IC601 is a terminal to detect the drop of the power voltage (+3.3V), and the detection voltage is approximately 1.0V. When a power voltage drop is detected, pin 32 of IC601 varies from Hi level (5V) to Lo level (0V) but is not used now.
Pin 46 is a terminal to detect whether the horizontal PLL is locked and HD output from pin 25 is normal or not. It is output at the Hi level (5V) when it is locked, and at the Lo level (0V) when it is unlocked. It is connected to IC103 (MPU).
Pin 49 is the reset terminal of IC601. The reset IC of IC6A4 resets IC601 when P-OFF+5V drops to approx. 2.7V.

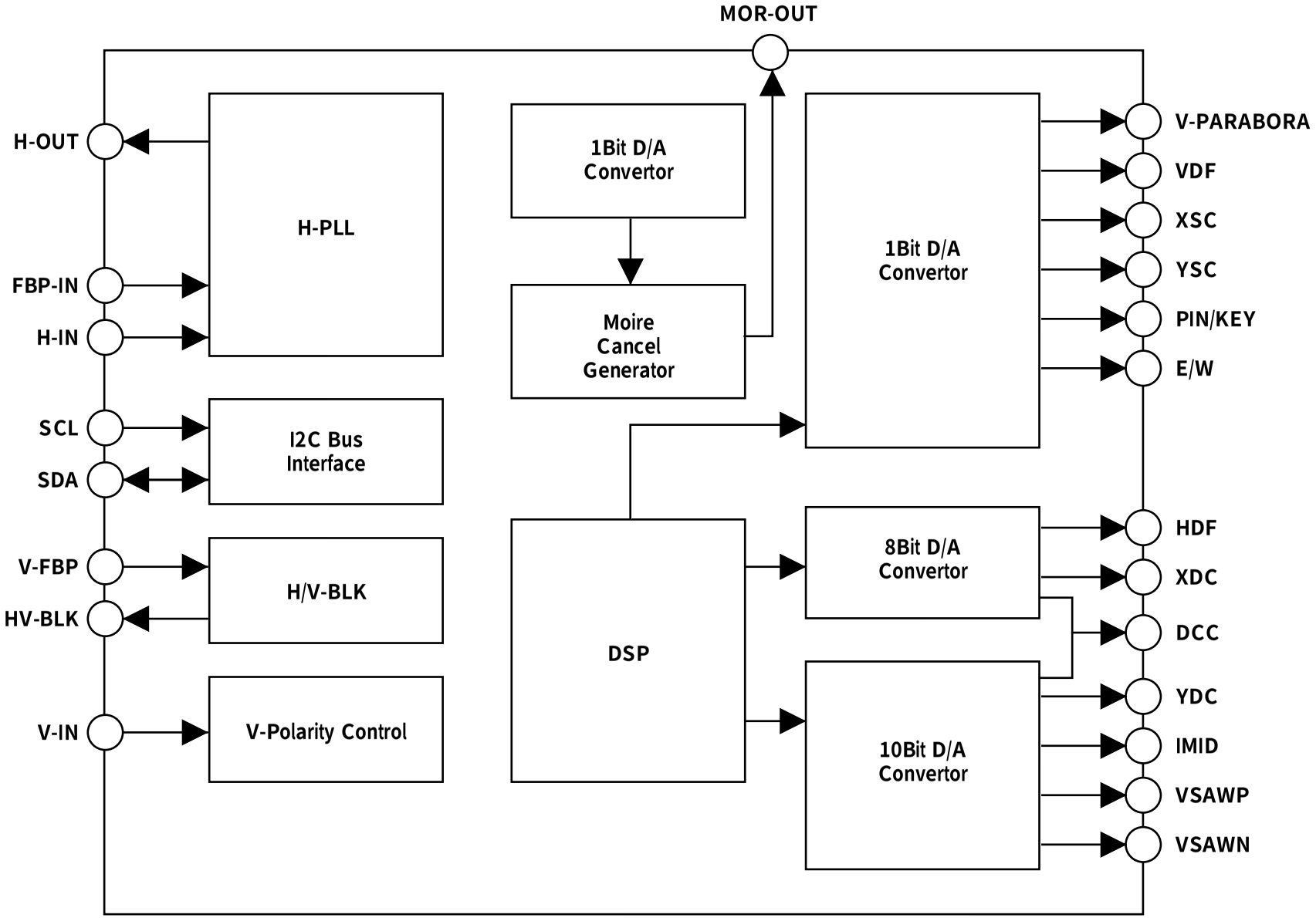


Figure 21 IC601 block diagram (uPD61882BGC)

1.8.9 Distortion compensating operation

The followings are the operation image figures on the picture of the distortion compensstion.

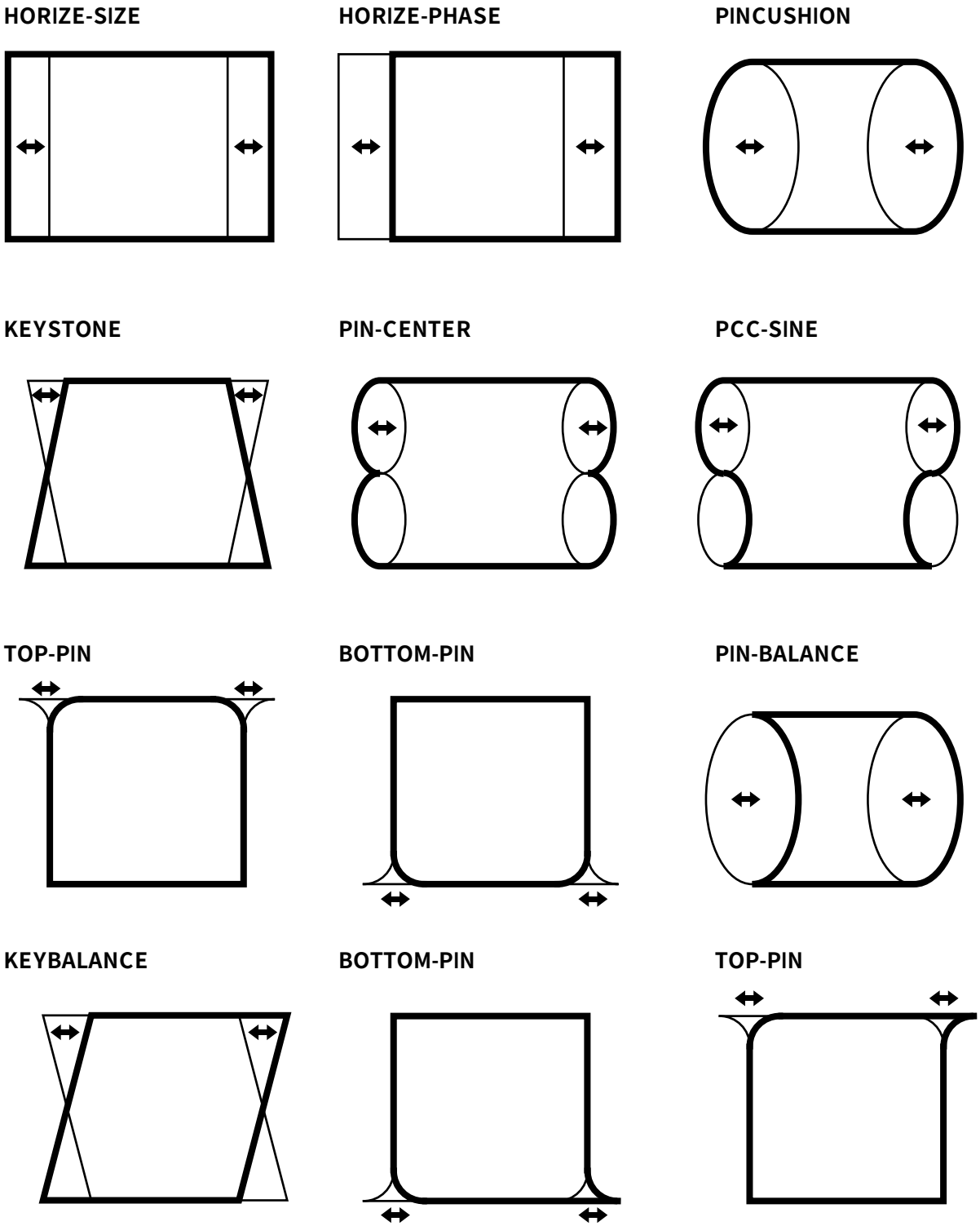


Figure. 22

1.9 Video Block

1.9.1 Picture signal amplifier circuit

As for picture signal (video) amplification circuit, R, G and B is respectively the same circuit in structure. G (green) video circuit is explained in this section.
There are two systems, i.e. SIGNAL-A and SIGNAL-B, in the video input terminal, and both have a D-SUB connector.
SIGNAL-A input means to input from pin 2 of D-SUB connector J215 to pin 12 of analog switch IC216.
SIGNAL-B input means to input from pin 2 of D-SUB connector J216 to pin 4 of analog switch IC216. (Refer to A point.)
Analog switch IC216 selects the signal when SIGNAL-A and SIGNAL-B are simultaneously input.
As for the method of selecting the signal, according to SELECT signal of pin 53 of microcomputer IC101, input signal SIGNAL-A is selected when pin 13 of analog switch IC216 (SELECT SW) is HIGH, and input signal SIGNAL-B is selected (refer to B point) when it is LOW. Either signal is output from pin 28 of analog switch IC216.
Video signal output from pin 28 of analog switch IC216 is input to pin 10 of Pre-AMP IC211. (Refer to C point.)
For video signal, voltage amplification, composite and amplitude control [Explanation 1] is performed in Pre-AMP IC211, and the signal is output from pin 27. (Refer to D point.)
Video signal output from Pre-AMP is input to pin 8 of MAIN-AMP IC210 and is output from pin 5 of MAIN-AMP IC210 after final amplification. (Refer to E point.)
(MAIN-AMP IC210 is an amplifier to amplify the video signal with voltage (GAIN: 12 to 15 times).
The video signal is coupled by AC to cut-off circuit (Refer to the cut-off circuit mentioned below.), and then it is input to CRT socket J200 via connector J202 on CRT substrate through connector J210, and supplied to the cathode of CRT. (Refer to F point.)

[Explanation 1] Duty of Pre-AMP IC211

- •Voltage amplification of video signal (GAIN: 0 to 5 times)
- •Composite of the video signal for adjustment screen (OSD) output from IC212 and the blanking signal output from IC601
- •Amplitude control of output voltage (ABL control) <Note 1>
- •D/A output for bias control

The above is completely controlled by I2C bus (IC211 #3: SDA_I2C, #4:SCL_I2C) comes from micro-computer IC101.

<Note 1>
According to detection of current by the flyback transformer on MAIN substrate, the upper limit value of brightness when the screen is totally white, by controlling CRT anode current.

1.9.2 Cut-off circuit

The video signal amplified with voltage in the picture signal amplification circuit is coupled by AC (super-impose the pulse into DC voltage) to the cut-off (diode clamp) circuit (DC bias control circuit) consists of D250G, D251D, Q250G and Q251G at C210G.
The cut-off (DC bias control) circuit changes back raster brightness and chromaticity (bias) by brightness control signal and bias control signal.
The brightness control signal, which is superimposing SUB-BRT signal (for factory adjustment) output from pins 14 and 13 of OSD-IC IC212 and BRT signal (for user adjustment) output from pin 32 of Pre-AMP IC211 at OP-AMP IC213, is output from pin 1 of OP-AMP IC213. When the superimposed brightness control signal is applied to the emitter of the base ground transistor Q250G, the back raster brightness changes.
The bias control signal is output from pin 30 of Pre-AMP IC211. The bias control signal is, as well as the brightness control signal, applied to the emitter of the base ground transistor Q250G, and changes the back raster chromaticity (BIAS).

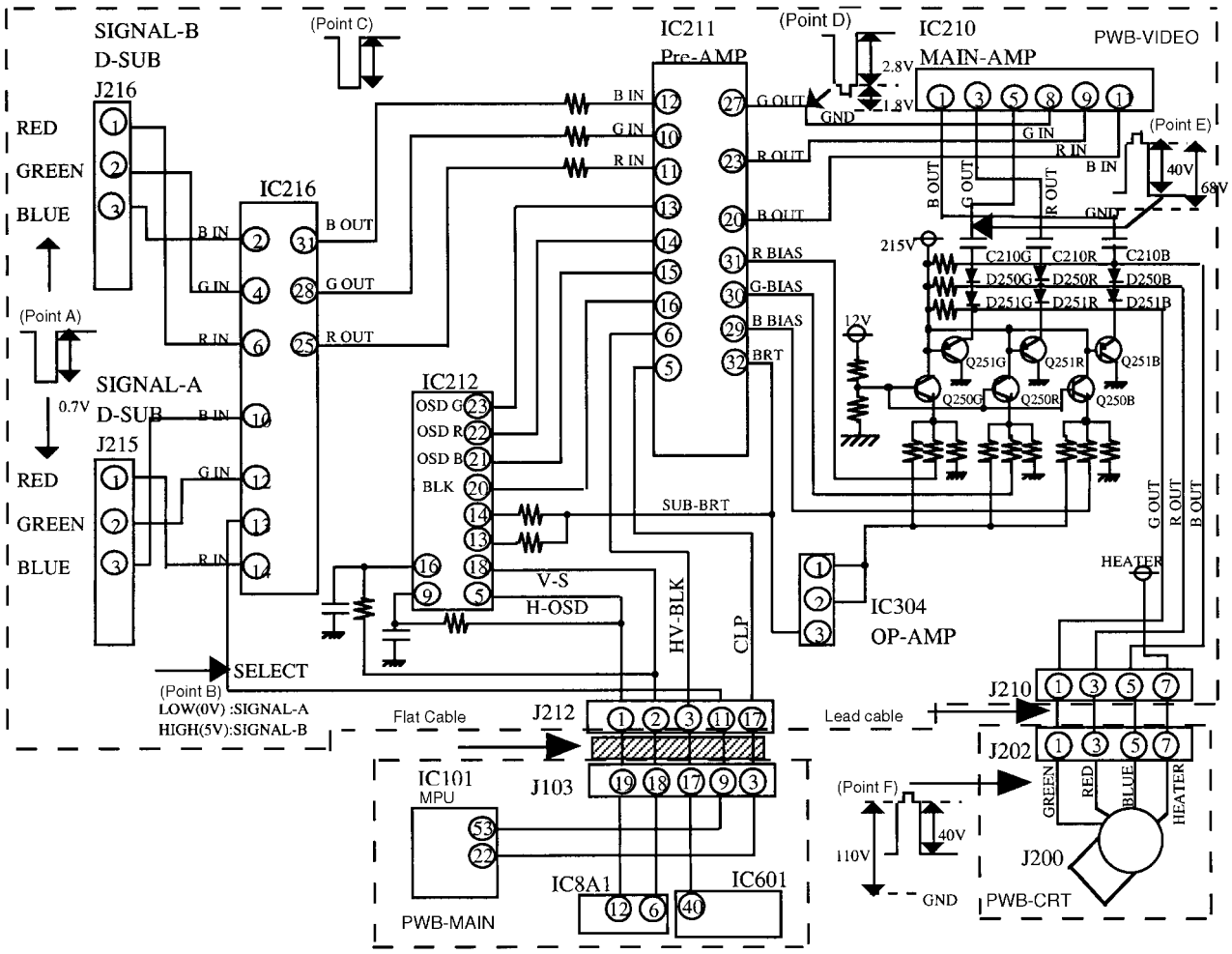
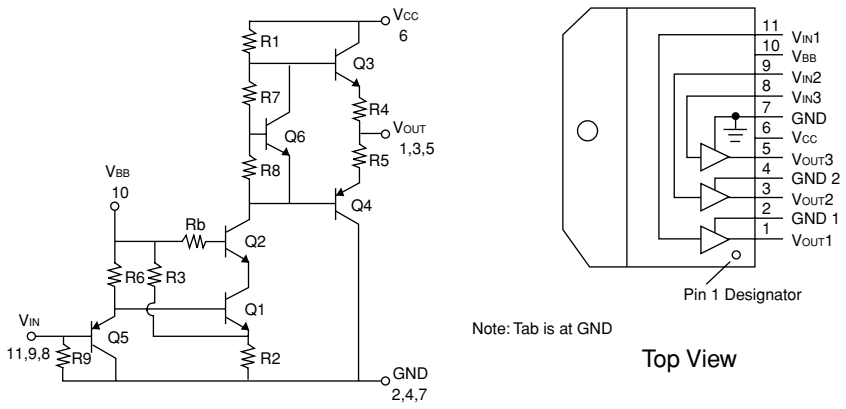


Figure 23 Video signal amplification circuit diagram



Simplified Schematic Diagram
(One Channel)

Figure 24 IC210 (LM2402T) block diagram

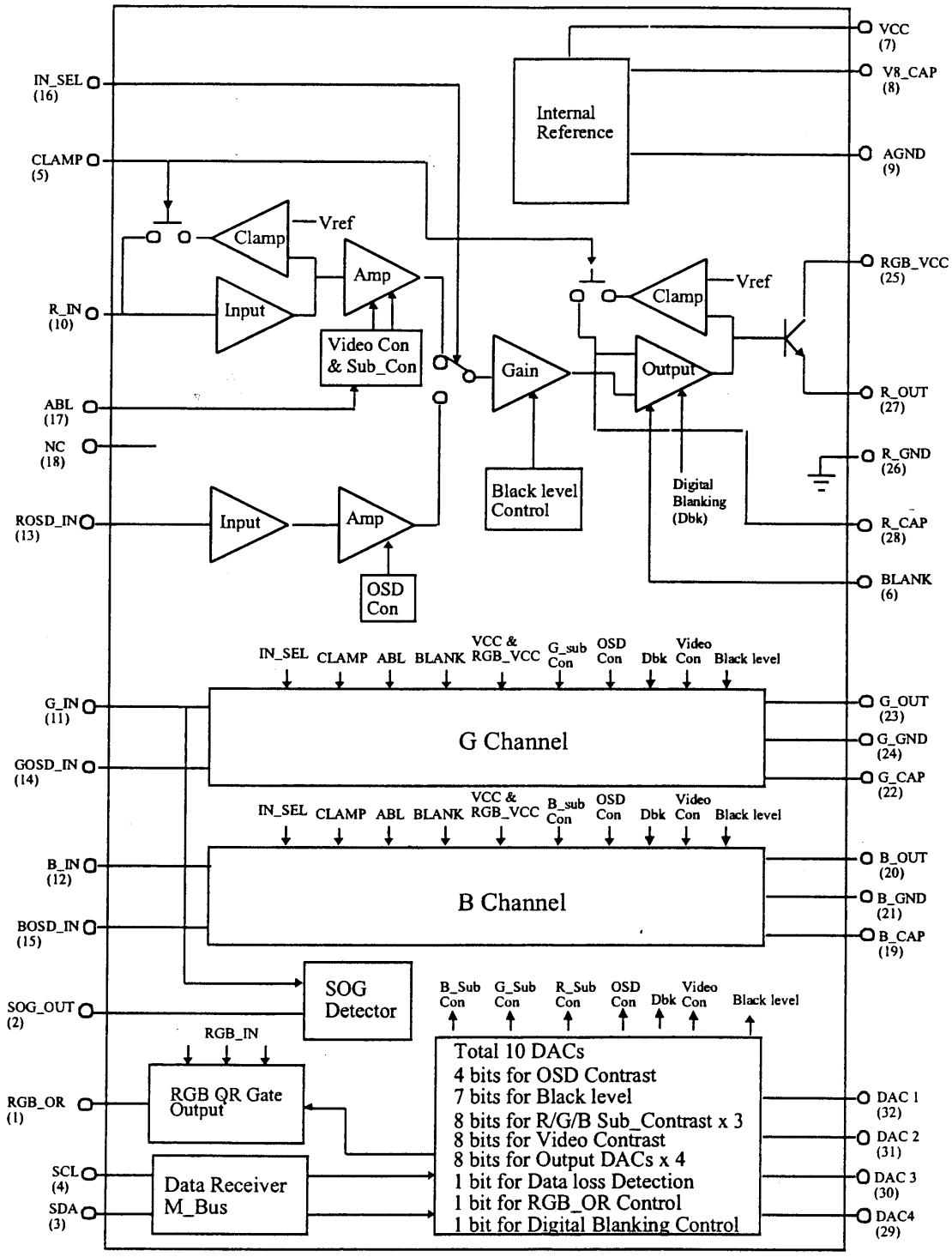


Figure 25 IC211 (MC13289ASP) block diagram

1.9.3 2-input change over circuit and synchronizing signal circuit

There are two systems; SINGAL-A and SIGNAL-B, as well as the video input terminal, in synchronizing signal input terminal, and both has a D-SUB connector. Since input terminals and circuit operation are different in each synchronizing signal (separate, composite, picture composite), each synchronizing signal is explained in this section.

[Separate synchronizing signal] (Separate Sync)

Horizontal synchronizing signal which has been input from SINGAL-A is input from pin 13 of D-SUB connector J215 to pin 15 of analog switch IC216, and the vertical synchronizing signal is input from pin 14 of D-SUB connector J215 to pin 16 of analog switch IC216. Besides, the horizontal synchronizing signal which has been input from SINGAL-B is input from pin 13 of D-SUB connector J216 to pin 7 of analog switch IC216, and the vertical synchronizing signal is input from pin 14 of D-SUB connector J216 to pin 8 of analog switch IC216. (Refer to A point.)
The analog switch IC216 selects a signal (2-input change over) when SIGNAL-A and SIGNAL-B are simultaneously input, as well as the video signal.
As for the method of selecting a signal, like the video signal, according to SELECT signal of pin 53 of microcomputer IC101, input signal of SIGNAL-A is selected when pin 13 of analog switch IC216 (SELECE SW) is HIGH, and input signal SIGNAL-B is selected (refer to B point) when it is LOW. They are output from pin 19 (horizontal synchronizing signal) and from pin 18 (vertical synchronizing signal) of analog switch IC216. (Refer to C point.)
The horizontal synchronizing signal and vertical synchronizing signal, which are output from analog switch IC216, are supplied to pin 30 (H-SYNC) and to pin 20 (V-SYNC) of microcomputer IC101 on PWB-MAIN via the flat cable, respectively.
As for the polarity of the separate synchronizing signal, there are the positive polarity (POS) and the negative polarity (NEG). The following Fig. 26 shows the case that the positive polarity (POS) is input.

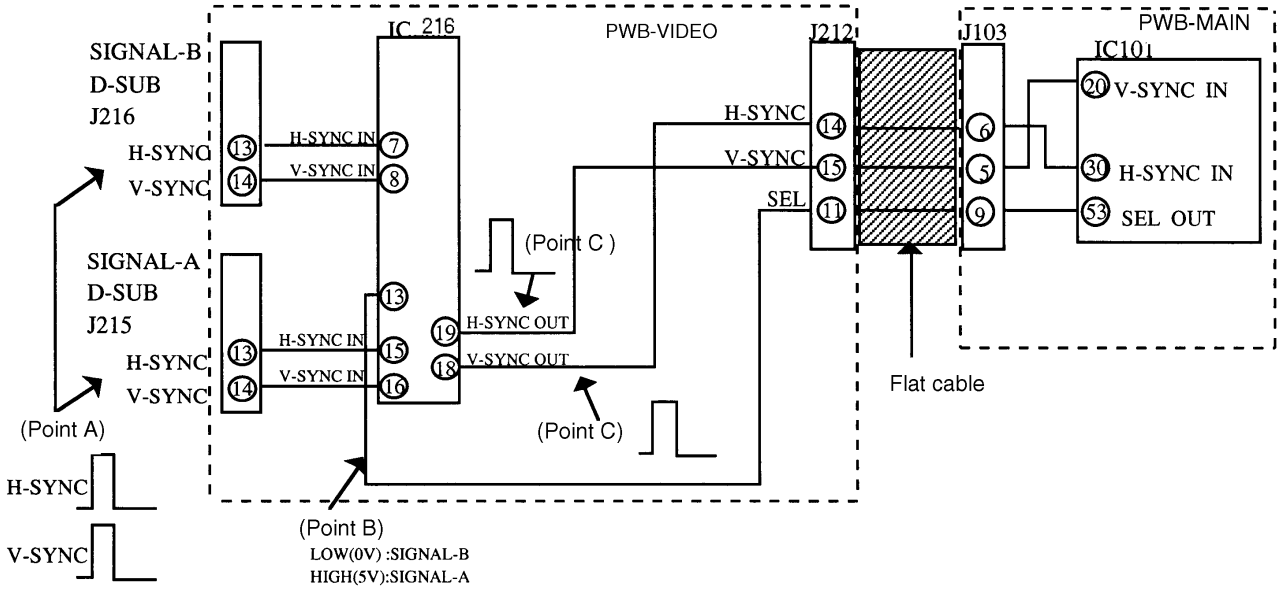


Figure 26 2-input change over circuit and separate synchronizing signal

[Composite synchronizing signal] (Composite Sync)

The composite synchronizing signal which has been input from SINGAL-A is input from pin 13 of D-SUB connector J215 to pin 15 of analog switch IC216. While, the composite synchronizing signal which has been input from SINGAL-B is input from pin 13 of D-SUB connector J216 to pin 7 of analog switch IC216. (Refer to A point.)

Analog switch IC216 selects a signal (2-input change over) when SIGNAL-A and SIGNAL-B are simultaneously input, as well as the separate synchronizing signal.

As for the method of selecting a signal, like the separate synchronizing signal, according to SELECT signal of pin 53 of microcomputer IC101, the input signal of SIGNAL-A is selected when pin 13 (SELECE SW) of analog switch IC216 is HIGH, and the input signal SIGNAL-B is selected (refer to B point) when it is LOW. Either signal is output from pin 19 of analog switch IC200. (Refer to C point.)

The composite synchronizing signal output from analog switch IC216 is supplied to pin 30 of microcomputer IC101 on PWB-MAIN via the flat cable, and its synchronization is separated at microcomputer IC101.

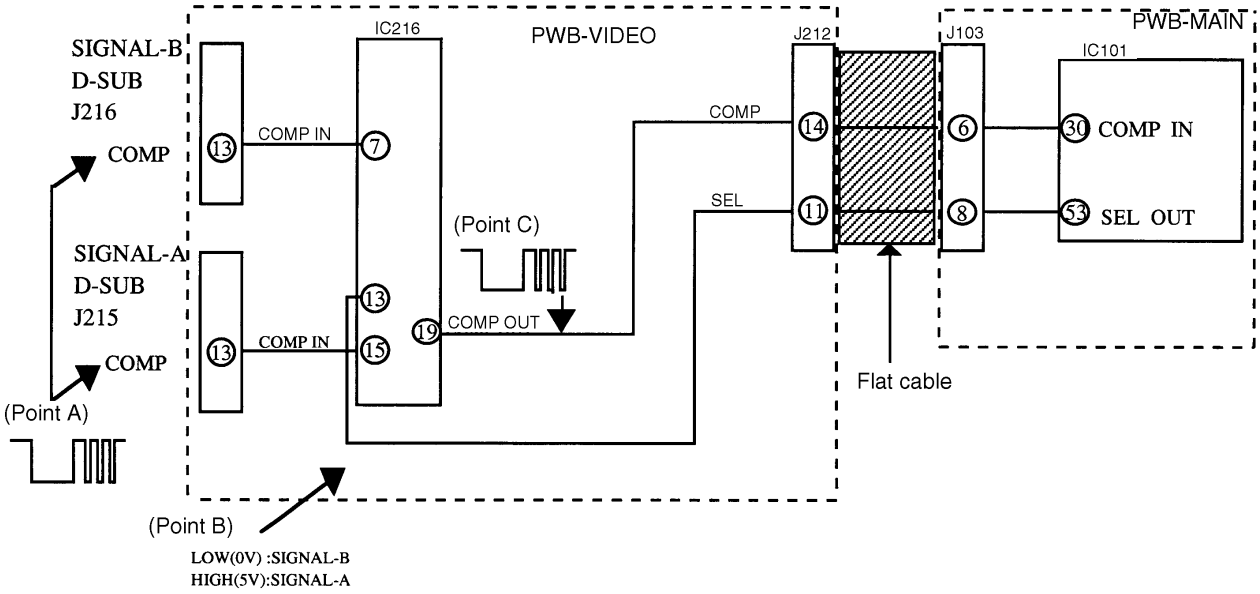


Figure 27 2-input change over circuit and composite synchronizing signal

[Picture composite synchronizing signal] (Sync on Green)

The picture (green video) composite synchronizing signal, which has been input from SINGAL-A, is input from pin 2 of D-SUB connector J215 to pin 12 of analog switch IC216. While, the picture (green video) composite synchronizing signal, which has been input from SIGNAL-B, is input from pin 2 of D-SUB connector J216 to pin 4 of analog switch IC216. (Refer to A point)

Analog switch IC216 selects a signal (2-input change over) when SIGNAL-A and SIGNAL-B are simultaneously input, as well as the separate synchronizing signal and the composite synchronizing signal.

As for the method of selecting a signal, like the separate synchronizing signal and the composite synchronizing signal, according to SELECT signal of pin 53 of microcomputer IC101, the input signal of SIGNAL-A is selected when pin 13 of analog switch IC216 (SELECE SW) is HIGH, and the input signal SIGNAL-B is selected (refer to B point) when it is LOW. The video signal is output from pin 28 (refer to C point), and the composite synchronizing signal (refer to D point) is output from pin 21 of analog switch IC216.

For the picture composite synchronizing signal, it is necessary to separate it to a video signal and a composite synchronizing signal.

The picture composite synchronizing signal is separated to a picture signal and a composite synchronizing signal as follows.

When microcomputer IC101 detects the picture (green video) composite synchronizing signal, S/G-SEL signal of microcomputer IC101 becomes HIGH (5V), transistor Q280 turns OFF, the picture (green video) composite synchronizing signal is output from pin 23 of analog switch IC216. The picture (green video) composite synchronizing signal, which is output from pin 23, is input to pin 22 of analog switch IC216. Then, after it is separated to a picture signal and a composite synchronizing signal in analog switch IC216, the composite synchronizing signal only is output from pin 21.

The composite synchronizing signal which has been output from pin 21 of analog switch IC216 is supplied to pin 28 of microcomputer IC101 on PWB-MAIN via the flat cable, and its synchronization is separated in microcomputer IC101.

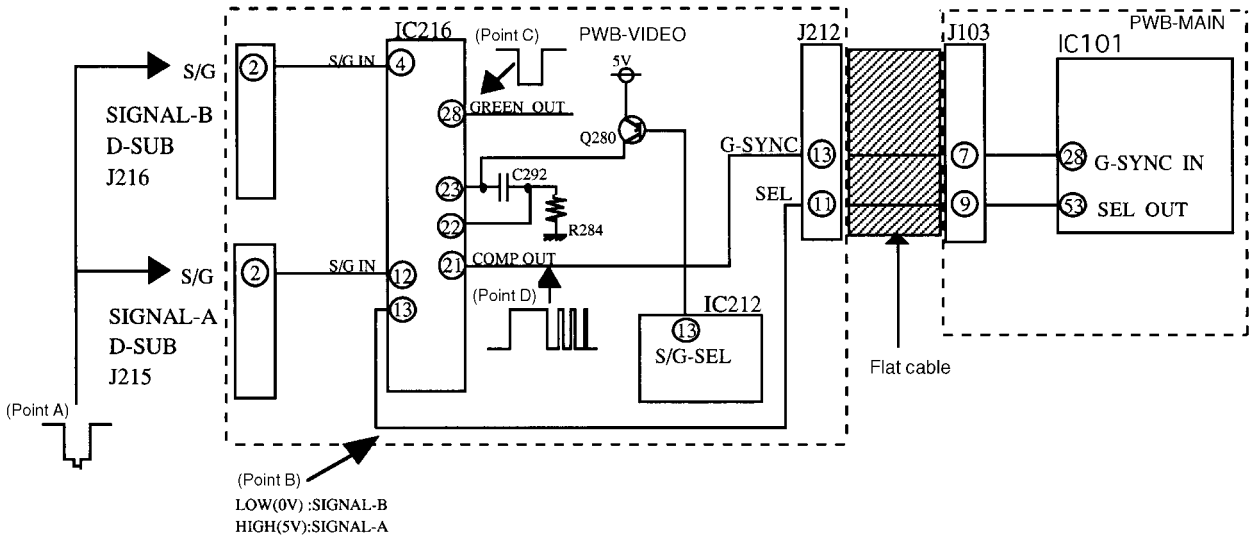


Figure 28 2-input change over circuit and picture composite synchronizing signal

1.9.4 On screen display circuit

The control signal on adjustment screen (OSD) is input to pin 8 (CLK), pin 7 (DATA), pin 5 (H-BLK) and pin 18 (V-BLK) of IC212.

IC212 outputs the signals from pin 20 (BLK), pin 21 (OSD-B), pin 22 (OSD-R) and pin 23 (OSD-G), and they are composed with the video signal at IC211.

1.9.5 AUTO-SIZE function

AUTO-SIZE functions to calculate the required width and position of screen in user mode based on the position of picture signal and the phase of AFC Feed Back and to automatically adjust them. "AUTO SIZE ADJUST" is selected in OSD, and when (+) button is pressed, AUTO SIZE ADJUST process is operated.

<AUTO-SIZE circuit action>

AUTO-SIZE detects the phase data of RGB OR signal, which is output from Pre-AMP IC211 to OSD-IC IC212, based on H-OSD and V-S signals input to OSD-IC IC212. Then, it sends the data to microcomputer IC101 via I2C bus so as to be calculated and processed.

The details are as follows.

RGB OR signal output from pin 1 of Pre-AMP IC211 is input to pin 19 of OSD-IC IC212. (C point)

H-OSD signal output from pin 12 of inverter IC8A1 on PWB-MAIN is input to pin 5 (B point) of OSD-IC IC212 via connector J212 on PWB-VIDEO from connector J103, and the signal (A point) with delay of 700ns by filters of R2D8 and C2D7 is input to pin 9 of OSD-IC IC212.

V-S signal, like the above, is output from pin 6 of inverter IC8A1 on PWB-MAIN, and input to pin 18 of OSD-IC IC212 via connector J212 on PWB-VIDEO from connector J103, and the signal with filters R2D6 and C2D6 is input to pin 16 of OSD-IC IC212. (D point)

OSD-IC IC212 detects the signal with this delay of 700ns (A and D points) and the position data (a to e mentioned below) of RGB OR signal (C point), and sends them to microcomputer IC101. The microcomputer IC101 calculates and processes the data to automatically adjust to ensure the appropriate width and position of screen.

a: Drgbsta (AFC front edge + 700ns to Front edge of Picture)
b: Drgbend (AFC front edge + 700ns to Back edge of Picture)
c: Dvrgbsta (V_BLK front edge + 700ns to Front edge of Picture)
d: Dvrgbend (V_BLK front edge + 700ns to Back edge of Picture)
e: Dvsline (Number of vertical lines)

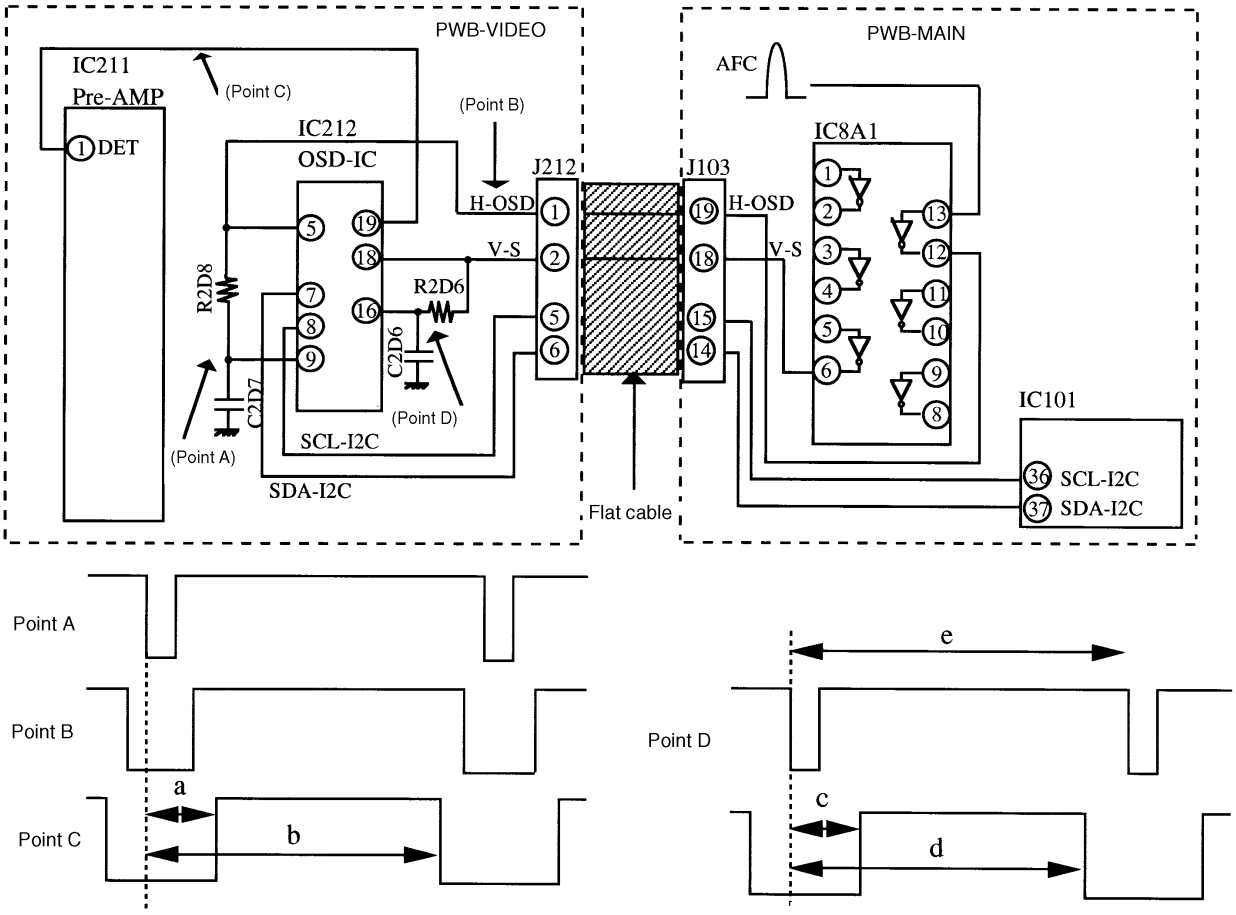


Figure 29 AUTO SIZE circuit

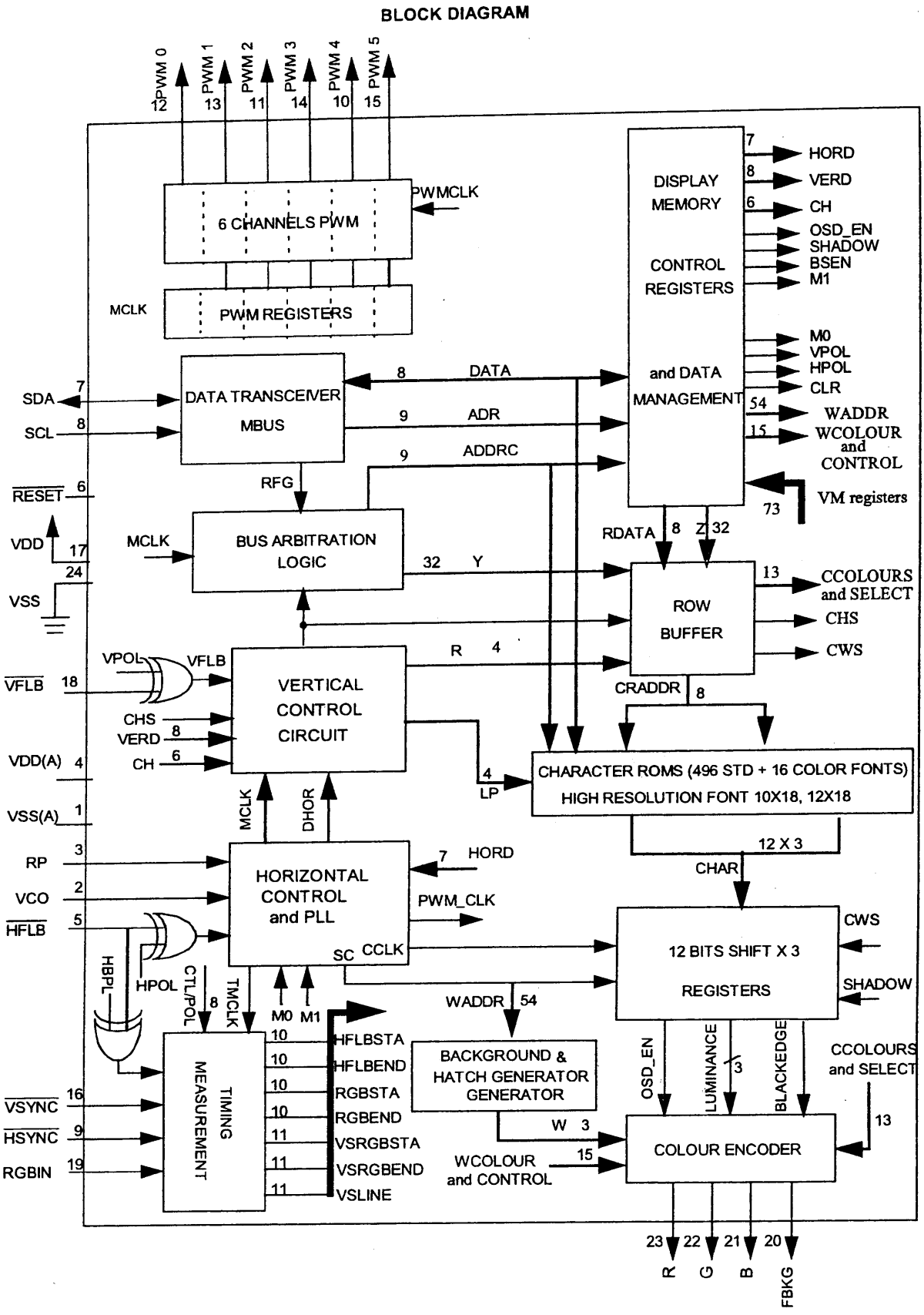


Figure 30 IC212 (XC3825P2) block diagram

1.10 USB circuit

1.10.1 Outline

This monitor loads the standard USB SELF POWERED HUB with 1 upstream and 3 downstreams.

(1) Serial data bus

Data bus is connected from upstream connector J1A0 to upstream port of HUB controller IC1A0, and downstream connector J1A1 and J1A2 are connected from HUB controller. HUB controller relays data communication between the upstream side (PC) and the downstream side (device).

Downstream connection of HUB controller

Port on circuit diagram	Connector	Silk indication
port 1	J1A1	3
port 2	J1A2 (UP)	1
port 3	J1A2 (DOWN)	2

(2) Power supply to downstream

USB HUB of this monitor is SELF POWERED HUB, and it can supply the power of +5V 500mA (max) to each downstream from transformer T902 on PWB-MAIN. Further, HUB controller IC1A0 has the function of detecting overcurrent, and stops supplying the power to each downstream port when overcurrent (500mA or more) is detected at each port.

1.10.2 USB downstream power supply

(1) Supply of Vpp power

When HUB controller IC1A0 is recognized from the direction of upstream, the signal which functions as a switch of power output for a downstream port is output (IC1A0 #2, 16, 32). When IC1A0 #2, 16 and 32 become LOW, FET gates are turned ON, and EFT transistors Q1A1, Q1A2 and Q1A3 supply the power to the downstream ports (J1A1 #1, #5, J1A2 #1) respectively.

(2) Detection of overcurrent

HUB controller IC1A0 has the function of detecting ovecurrent. If the current output at each port exceeds 550mA (min), gates of FET transistors Q1A1, Q1A2 and Q1A3 turn OFF (HIGH), automatically output of current stops only to the port that overcurrent is detected. In order to re-operate the port that overcurrent is detected, either of the followings should be carried out:

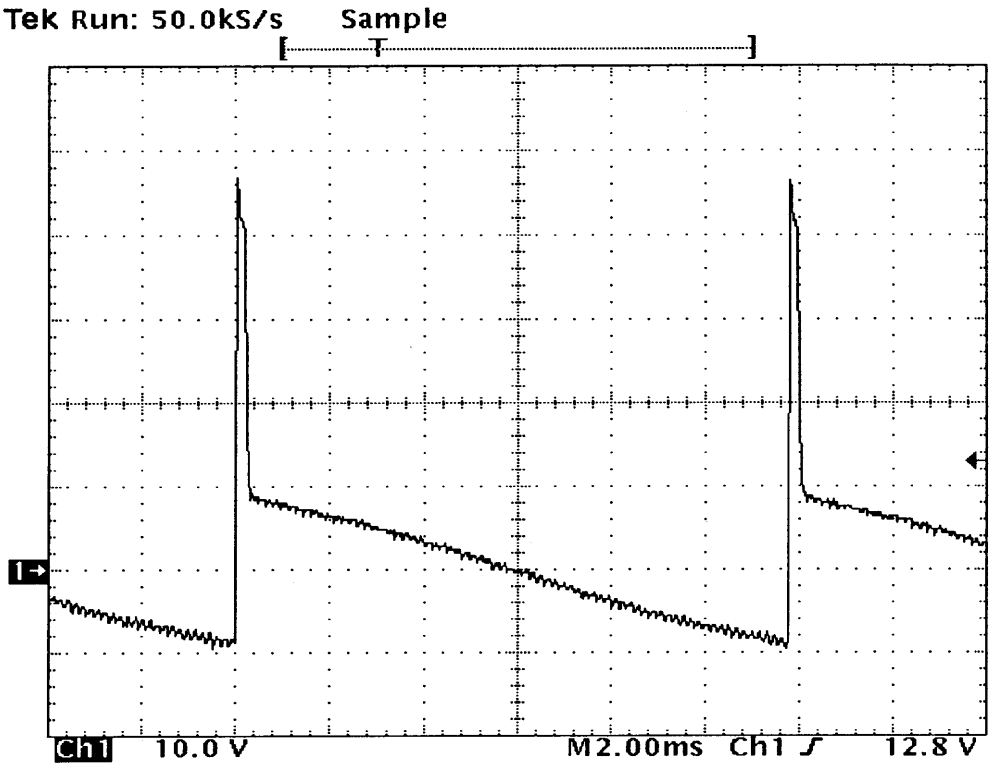
1. OFF/ON of monitor power supply
2. Pulling-out and pulling-in of upstream cable
3. Restart of PC

1.10.3 HUB controller power output

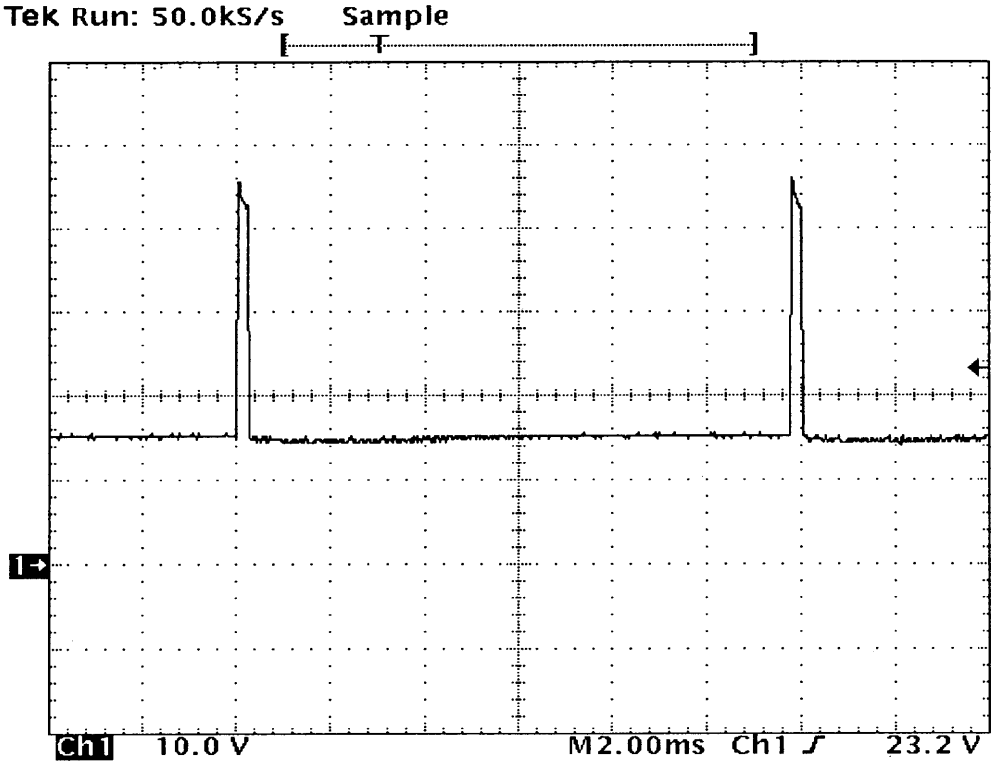
HUB controller IC1A0 has a built-in 3.3V regulator, and outputs from IC1A0 #1.

1.11 Wave form of main circuit voltage

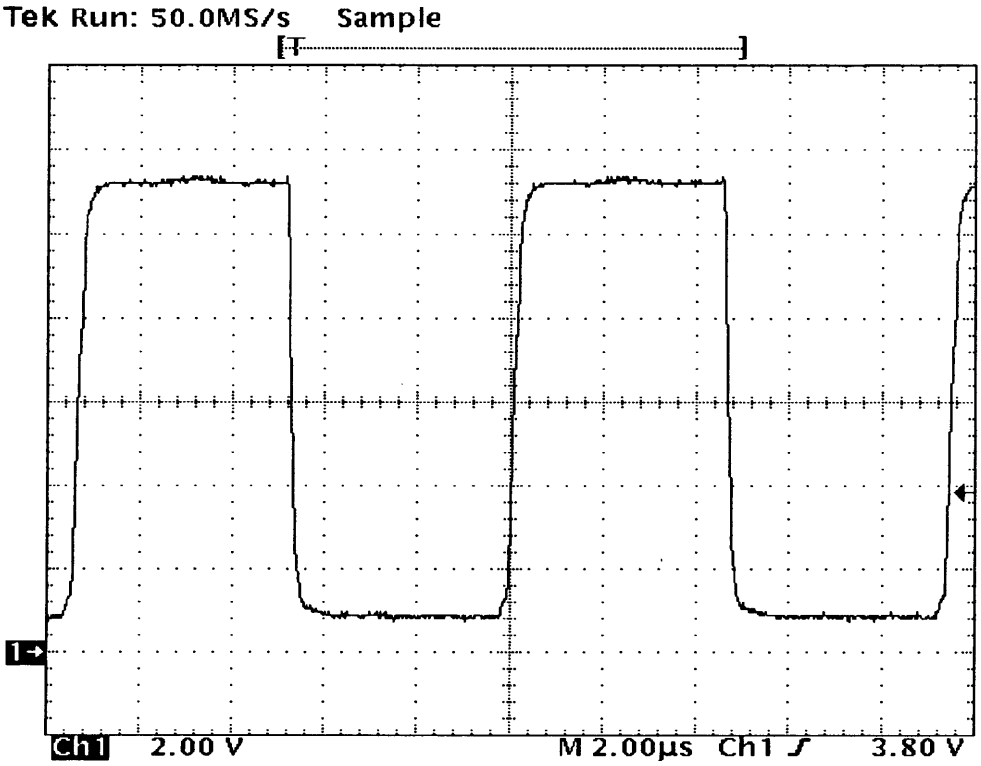
1.IC401 #2



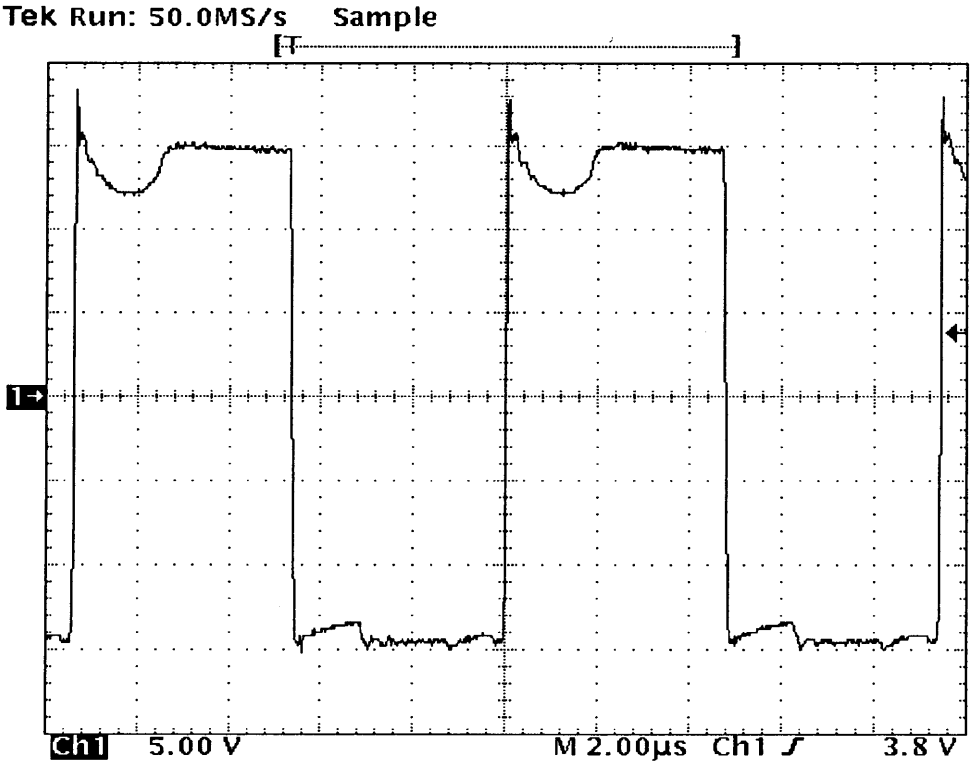
2.IC401 #3



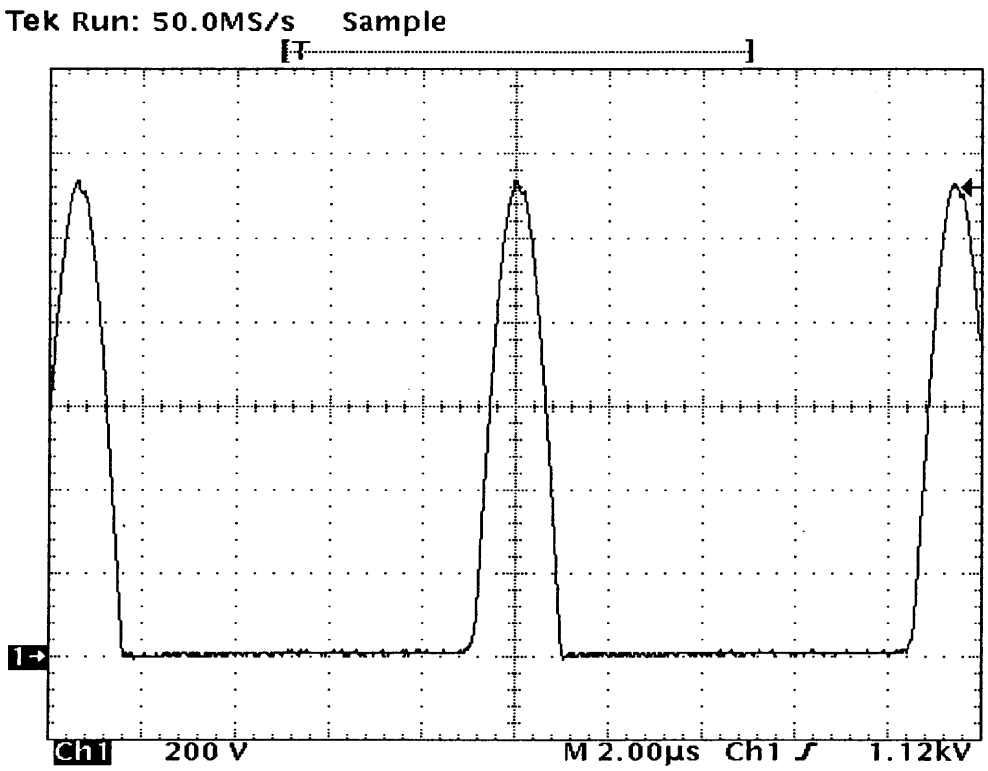
3.Q561 #E



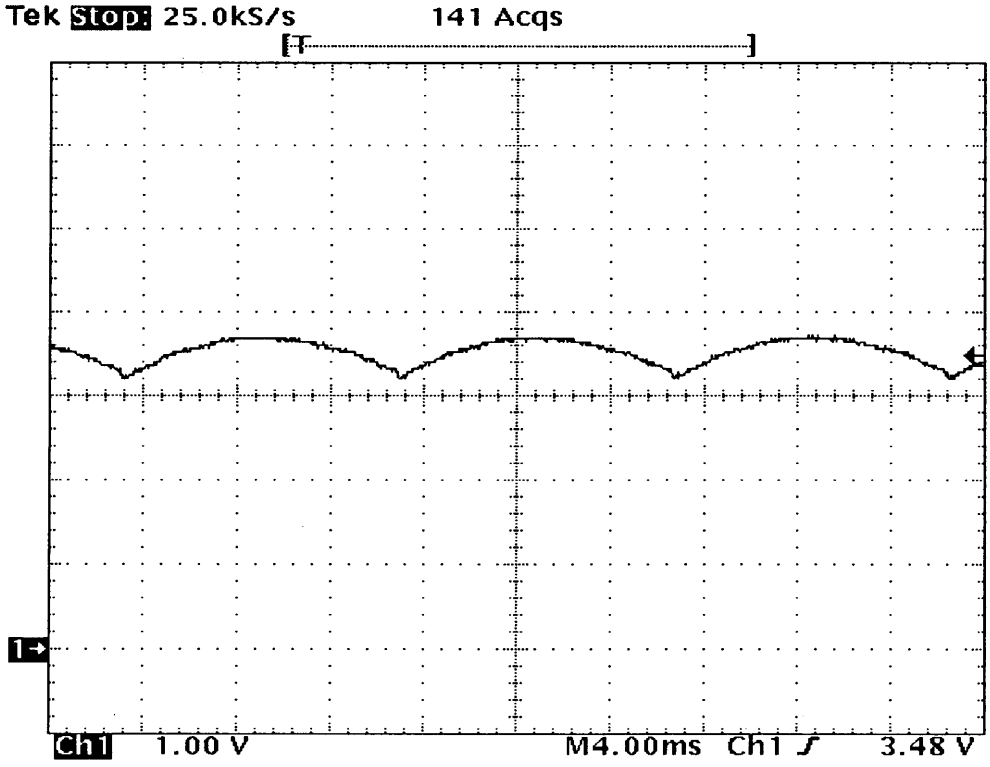
4.T501 #1



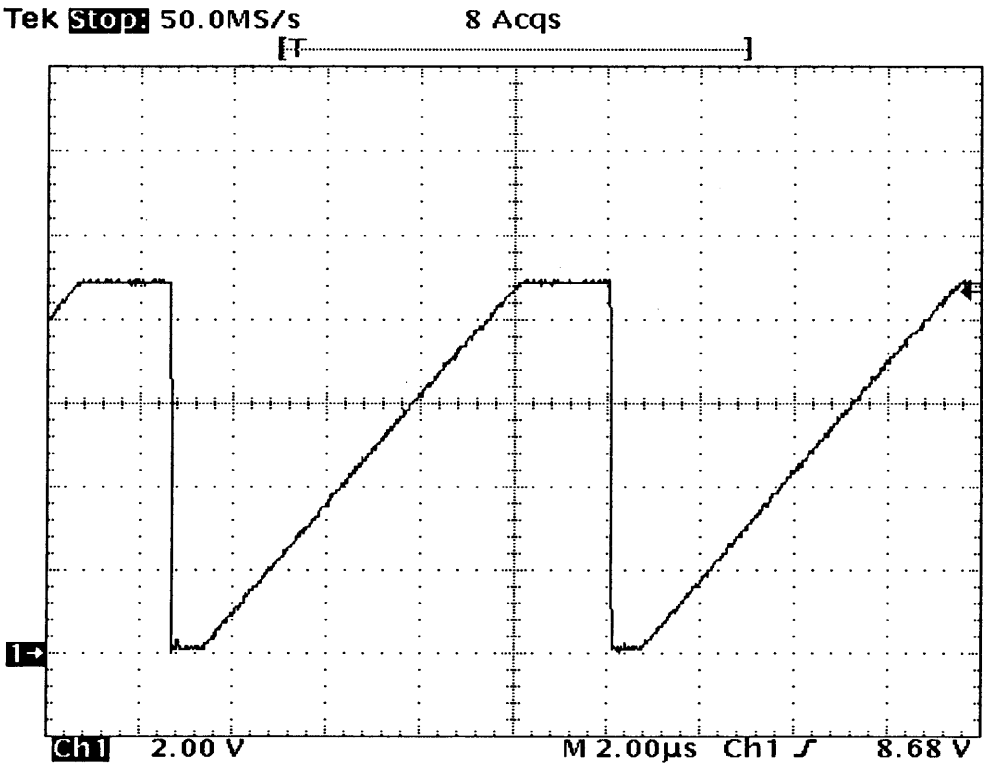
5.Q502 #C



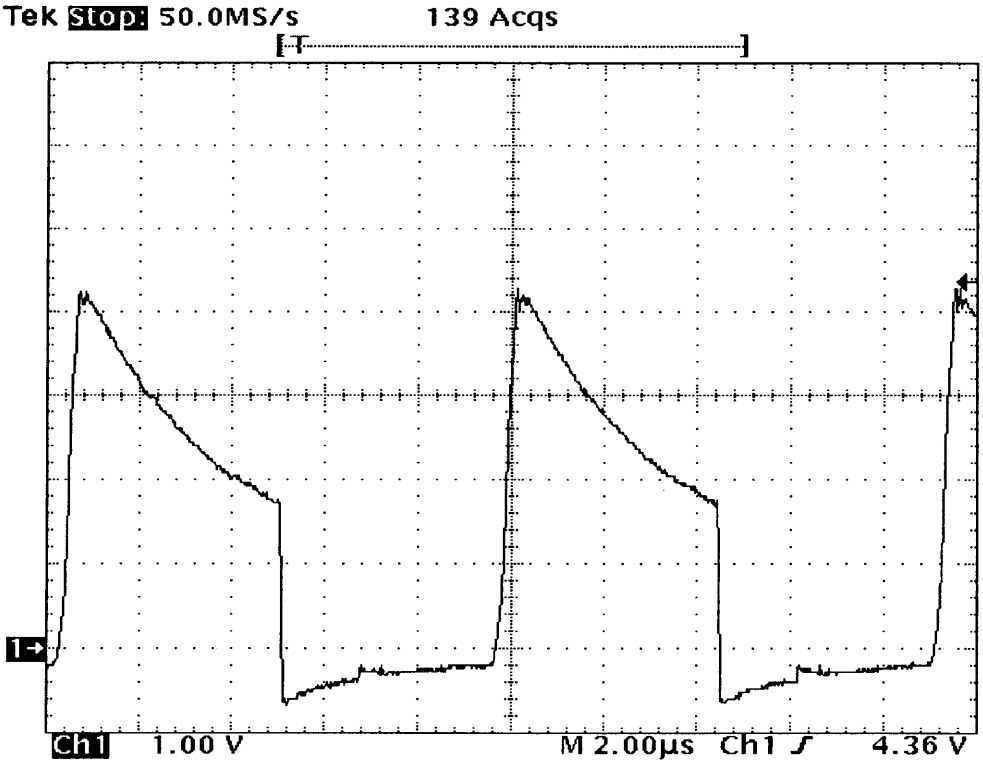
6.IC5J1 #1



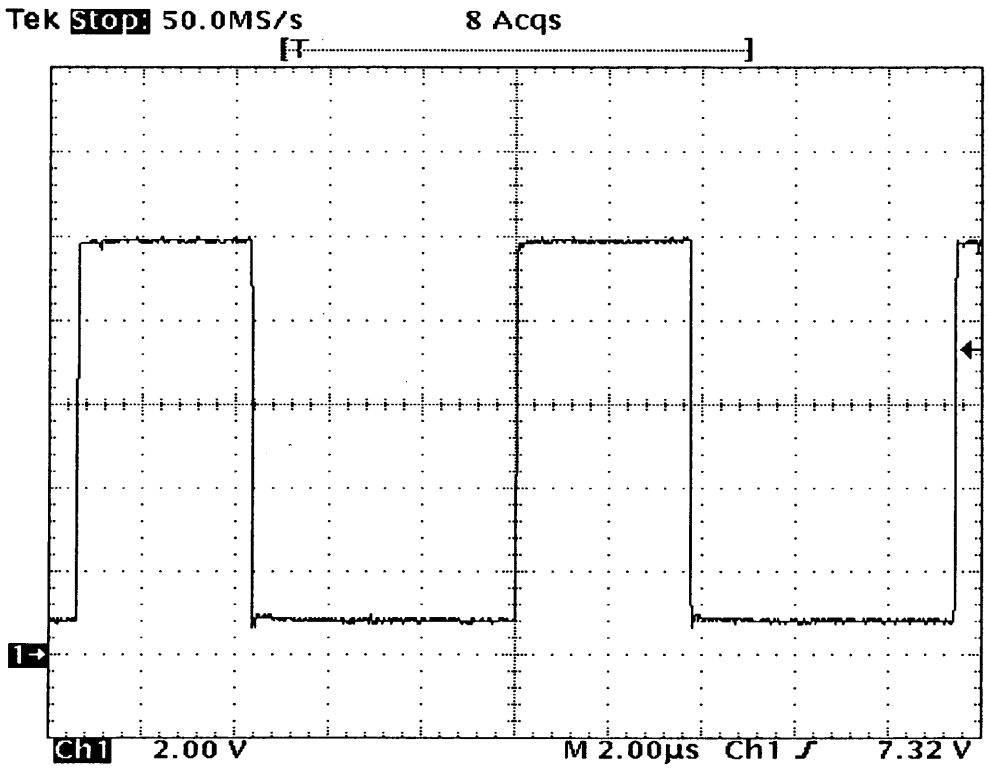
7. IC5J1 #3



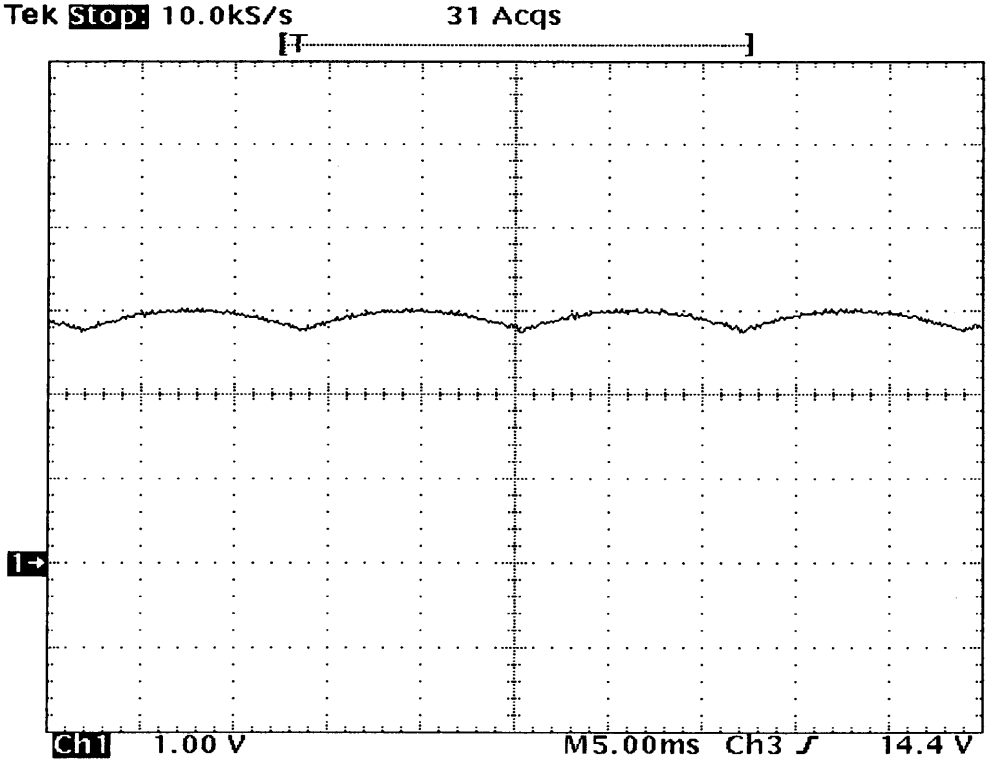
8.IC5J1 #8



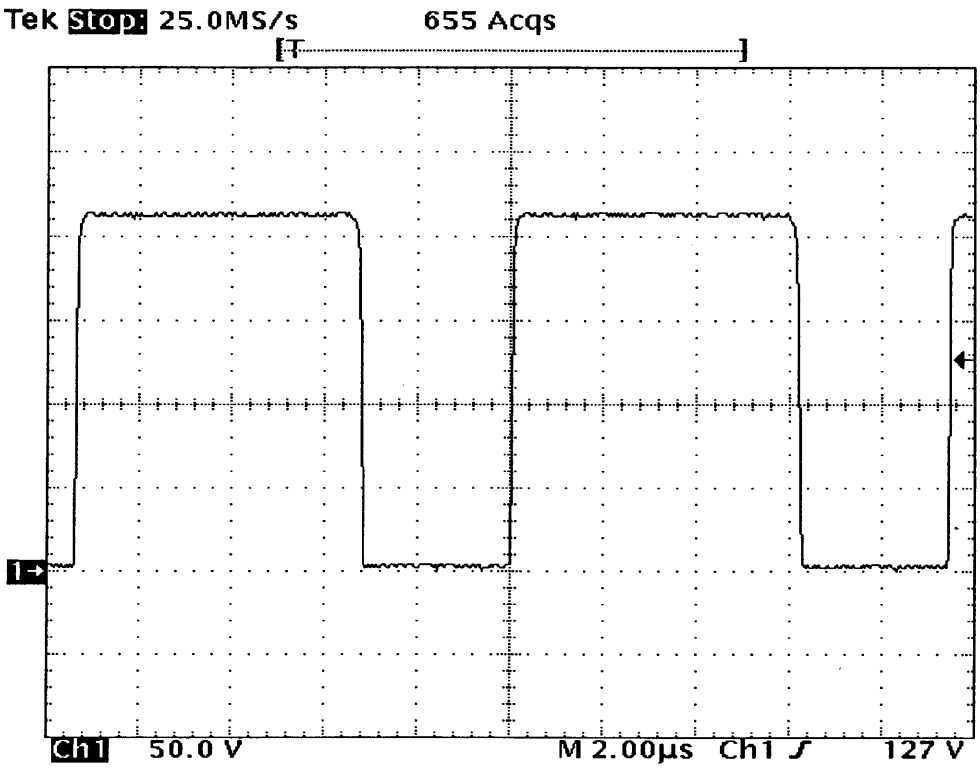
9.IC5J1 #9



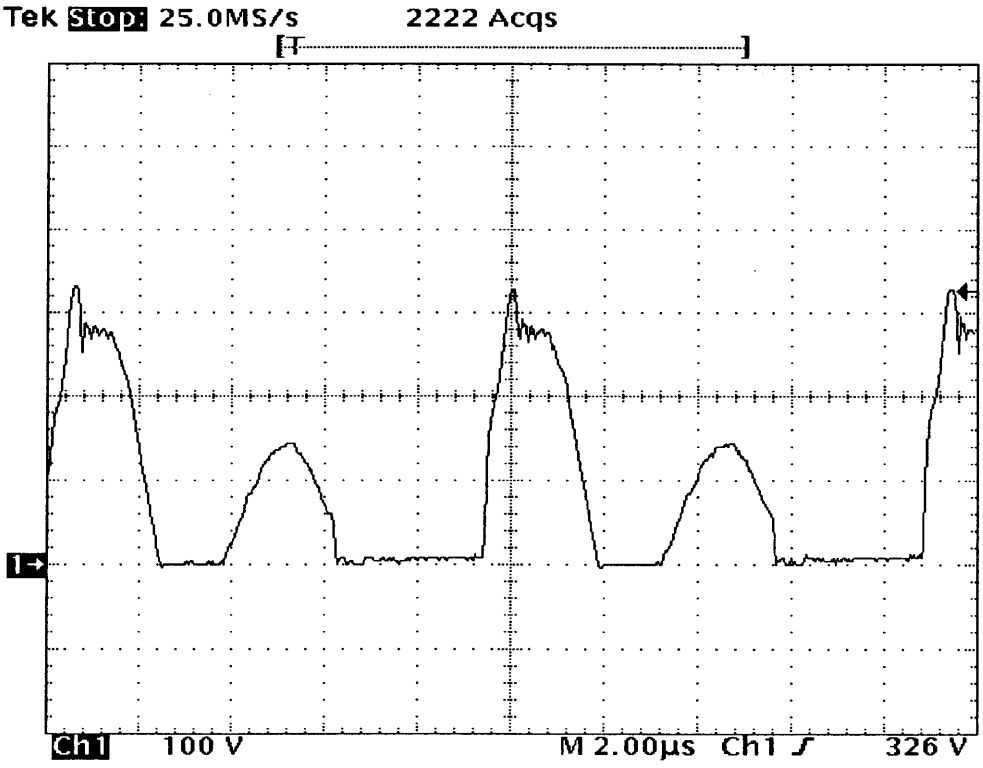
10.R5J1-R5J2



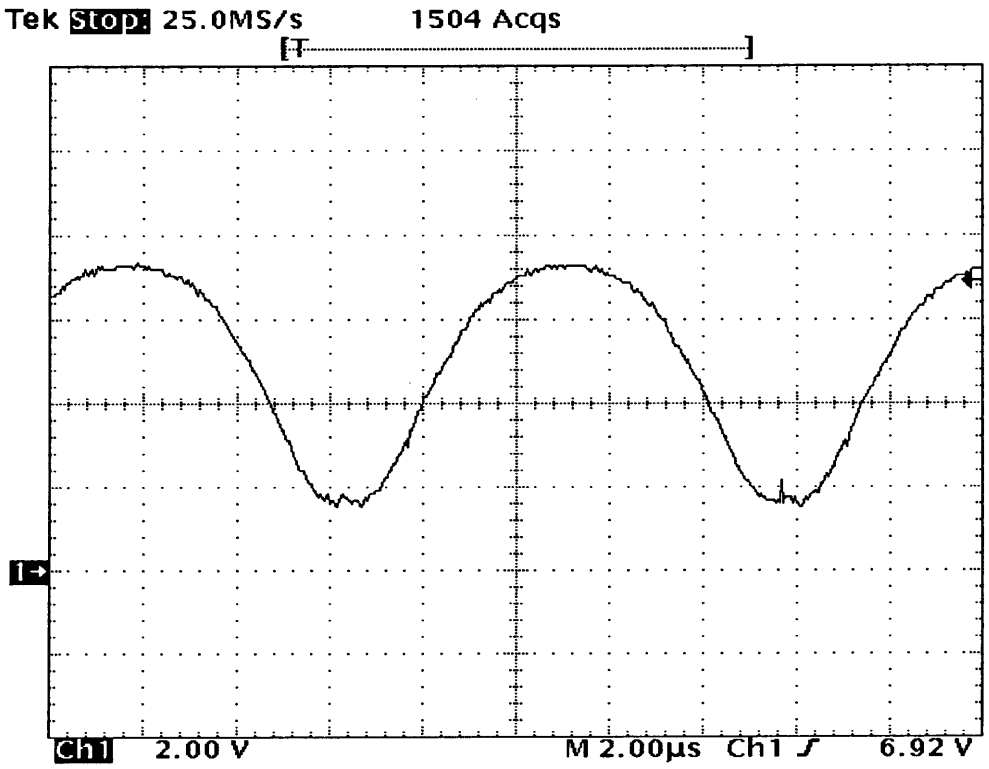
11.Q504 #D



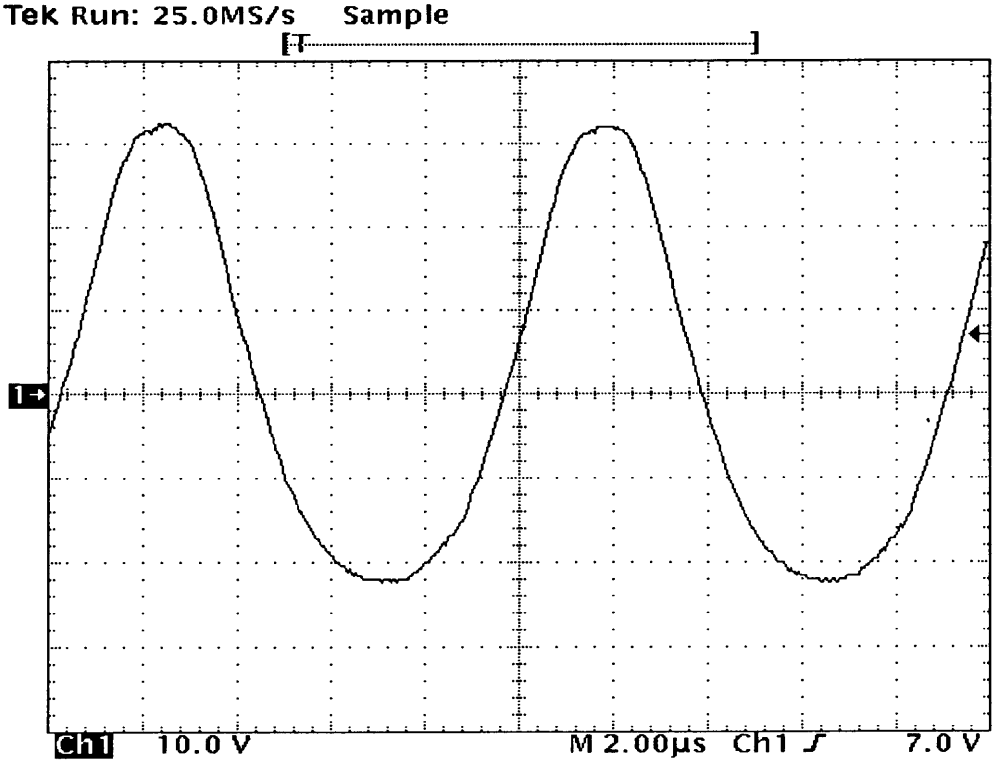
12.T701 #1



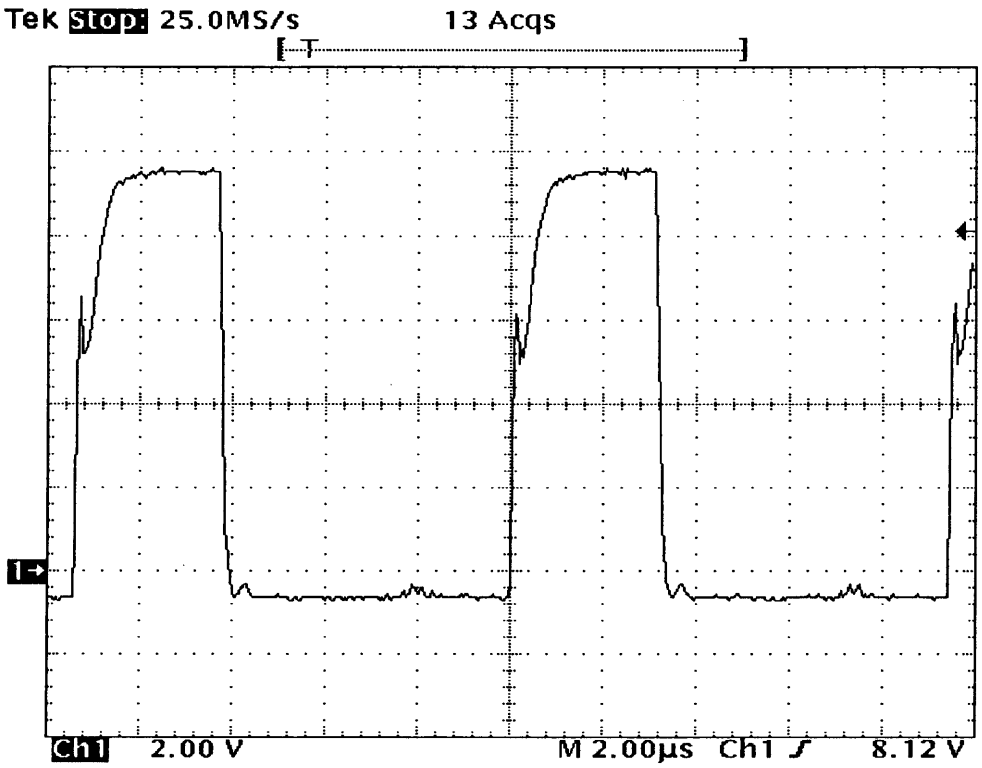
13.Q7B5 #B



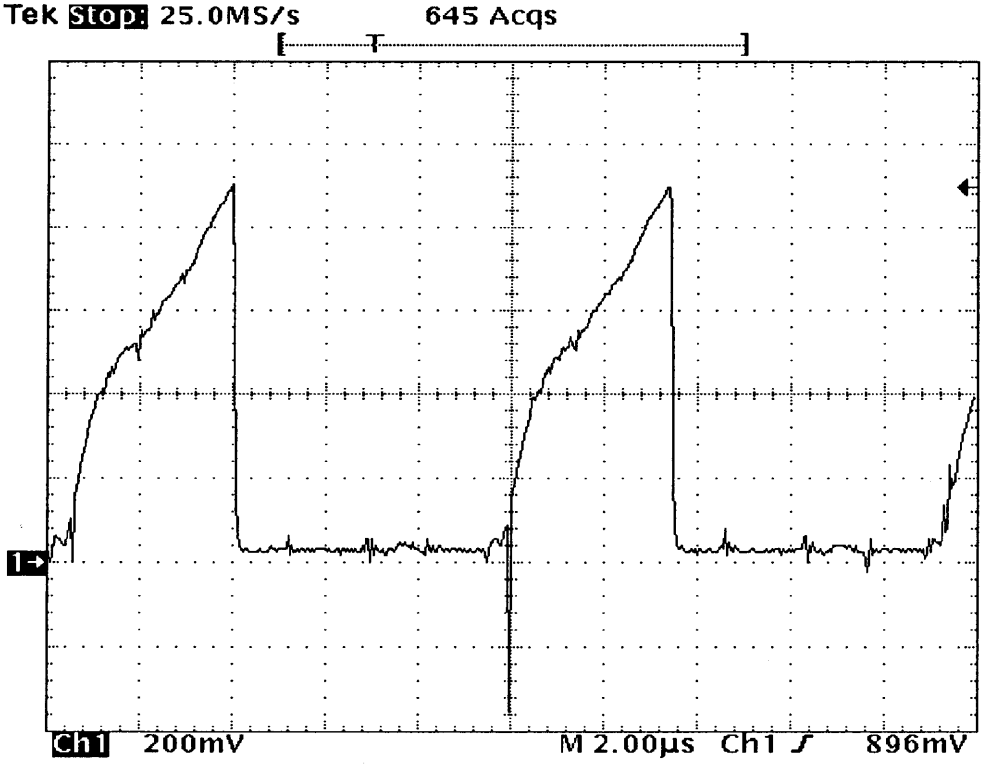
14.T7A1 #3



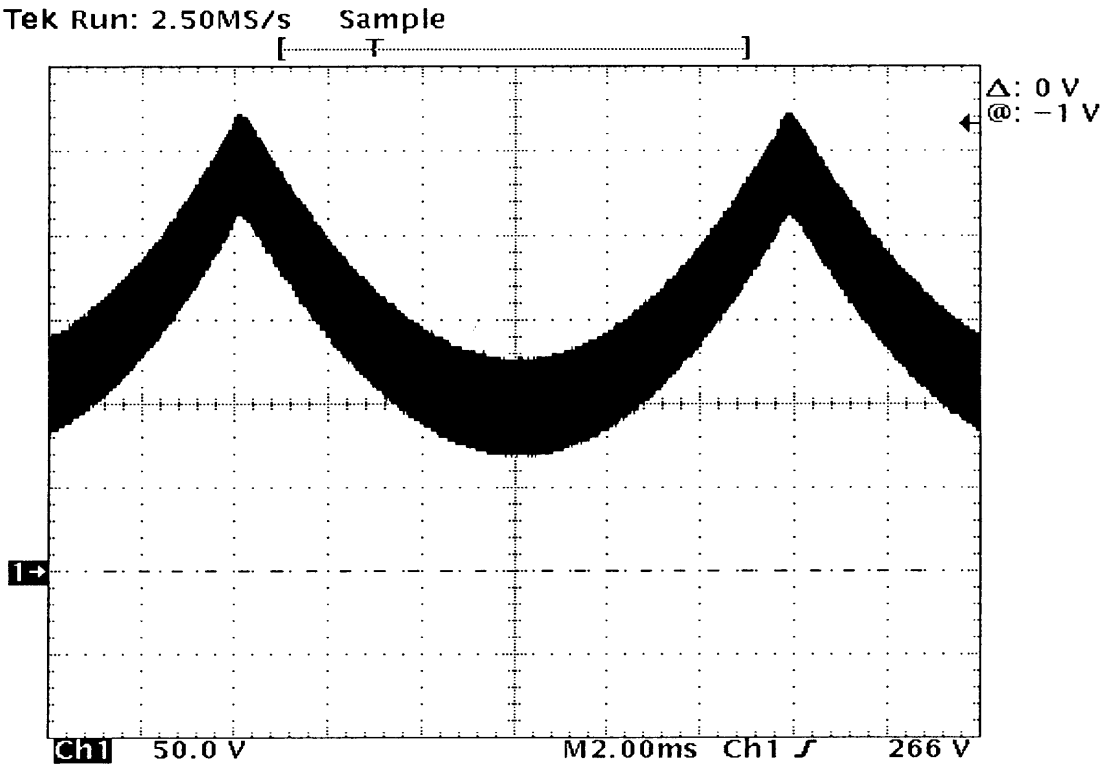
15.Q701 #G



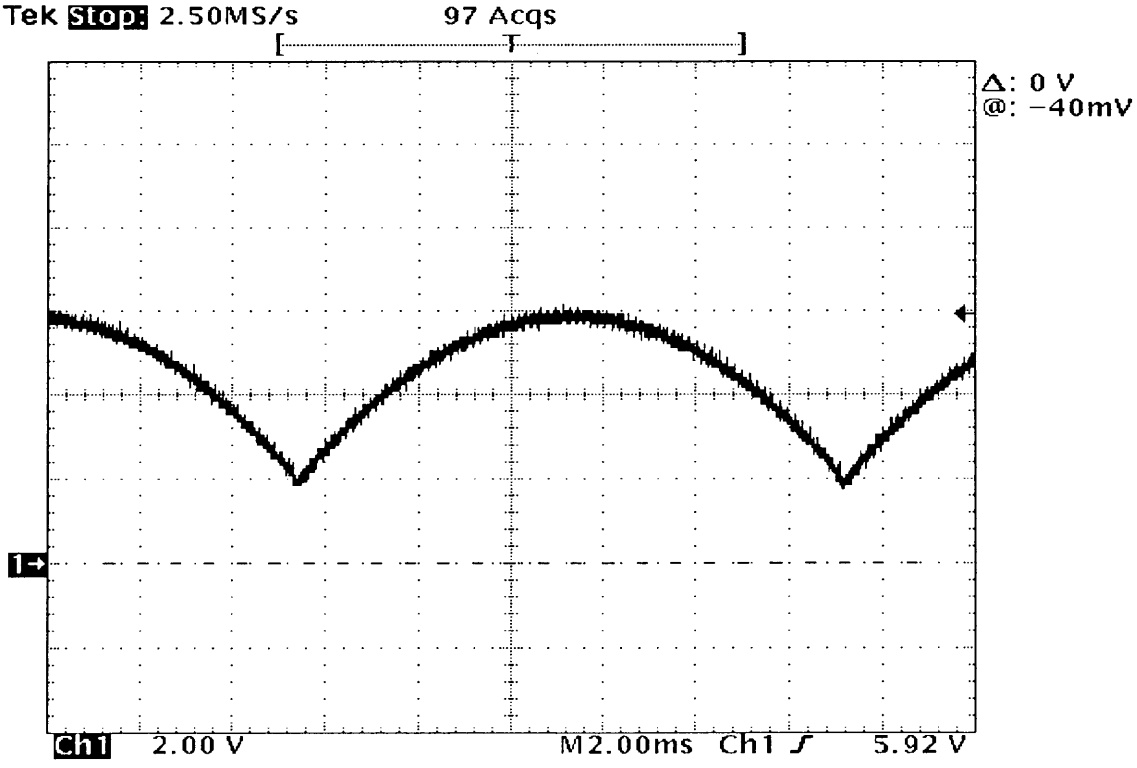
16.IC701 #4



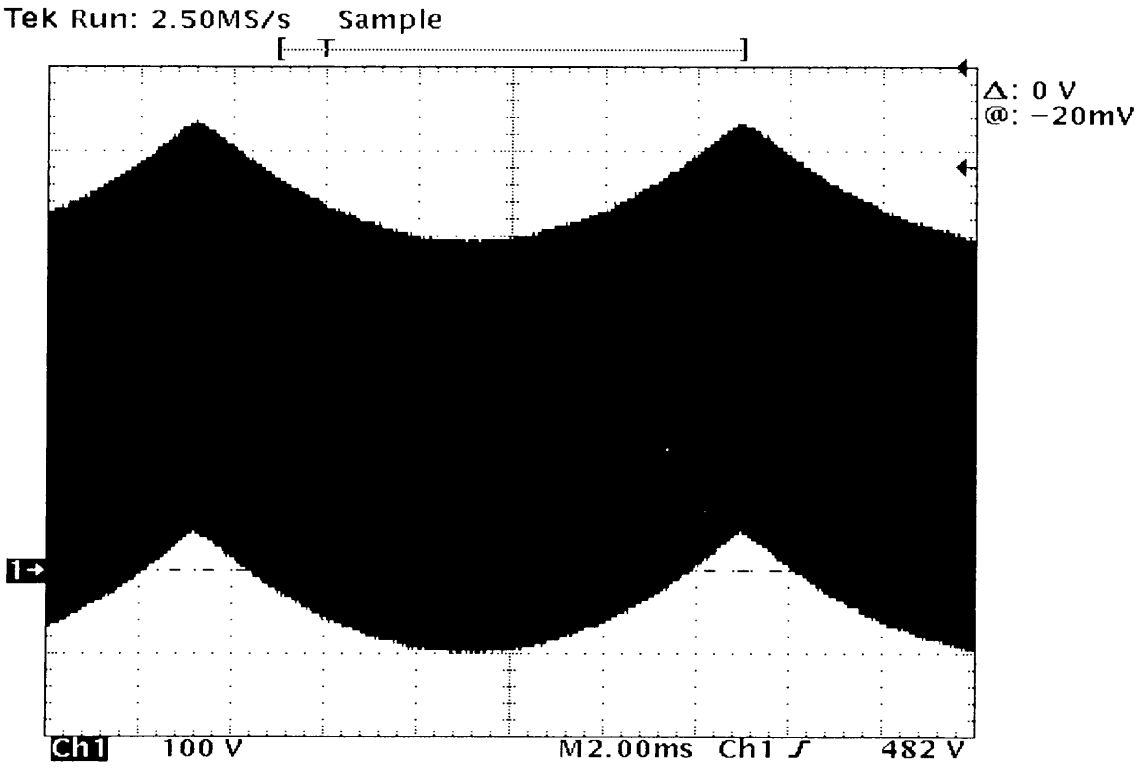
17.T7A1 #8



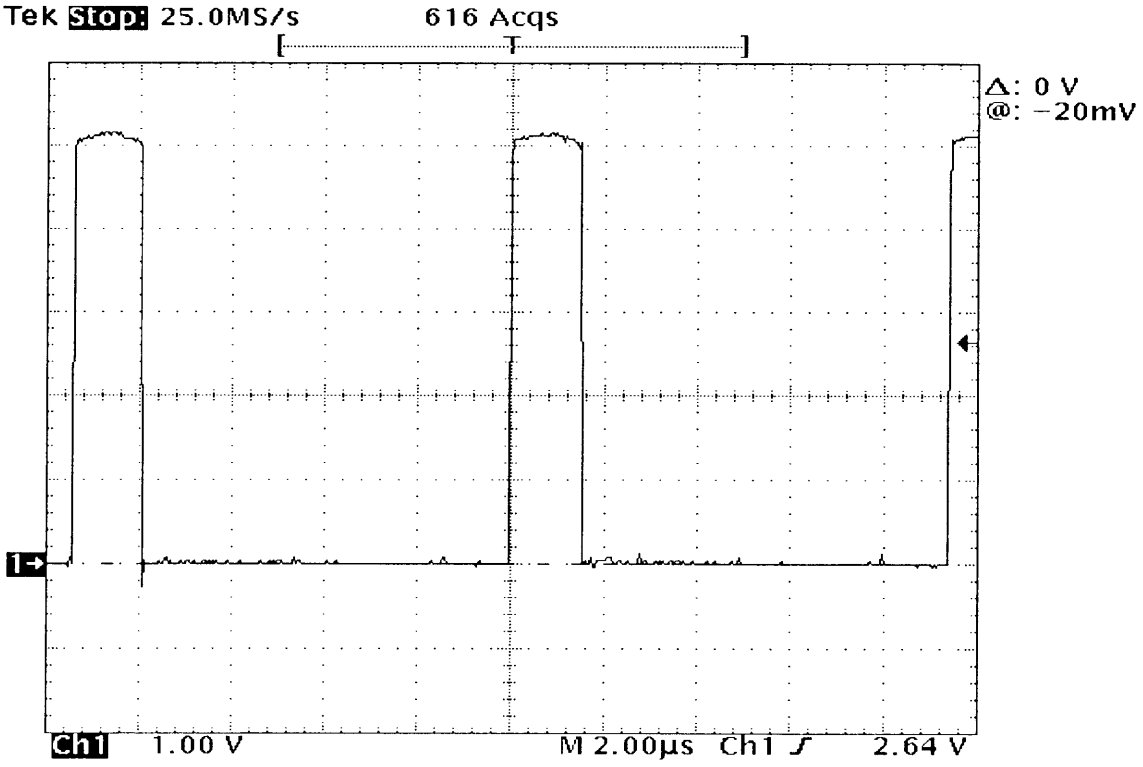
18.Q7A1 #B



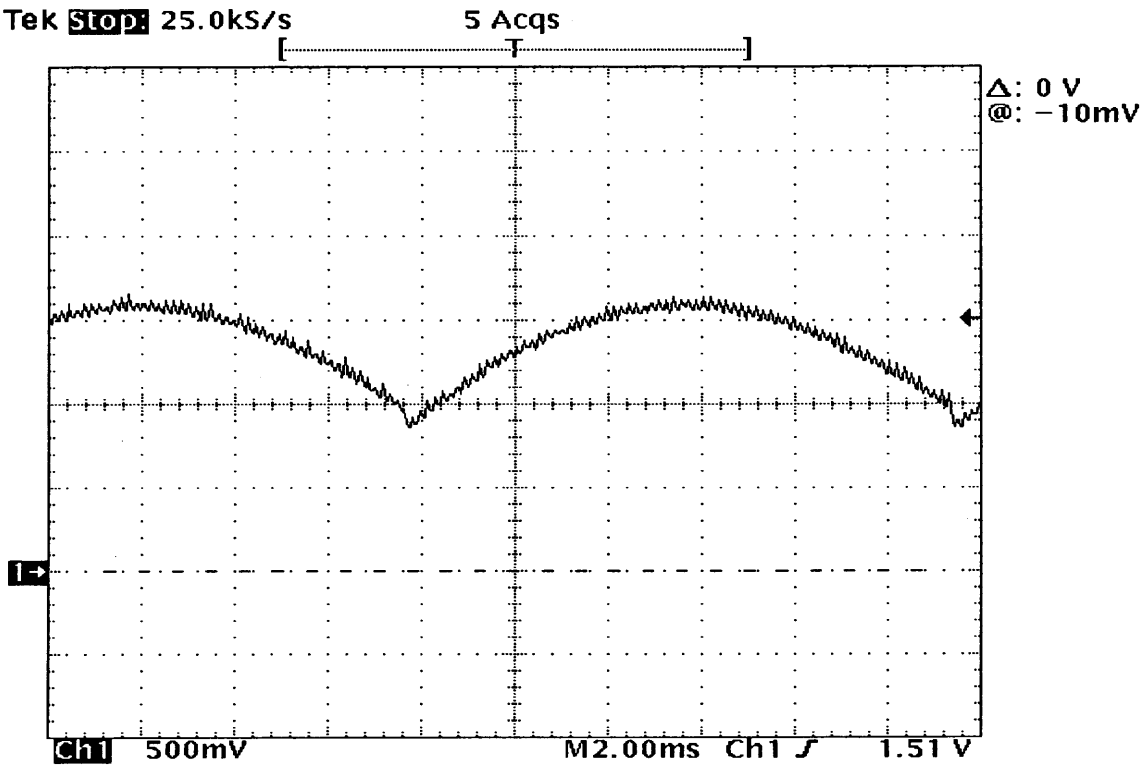
19.T701 #12



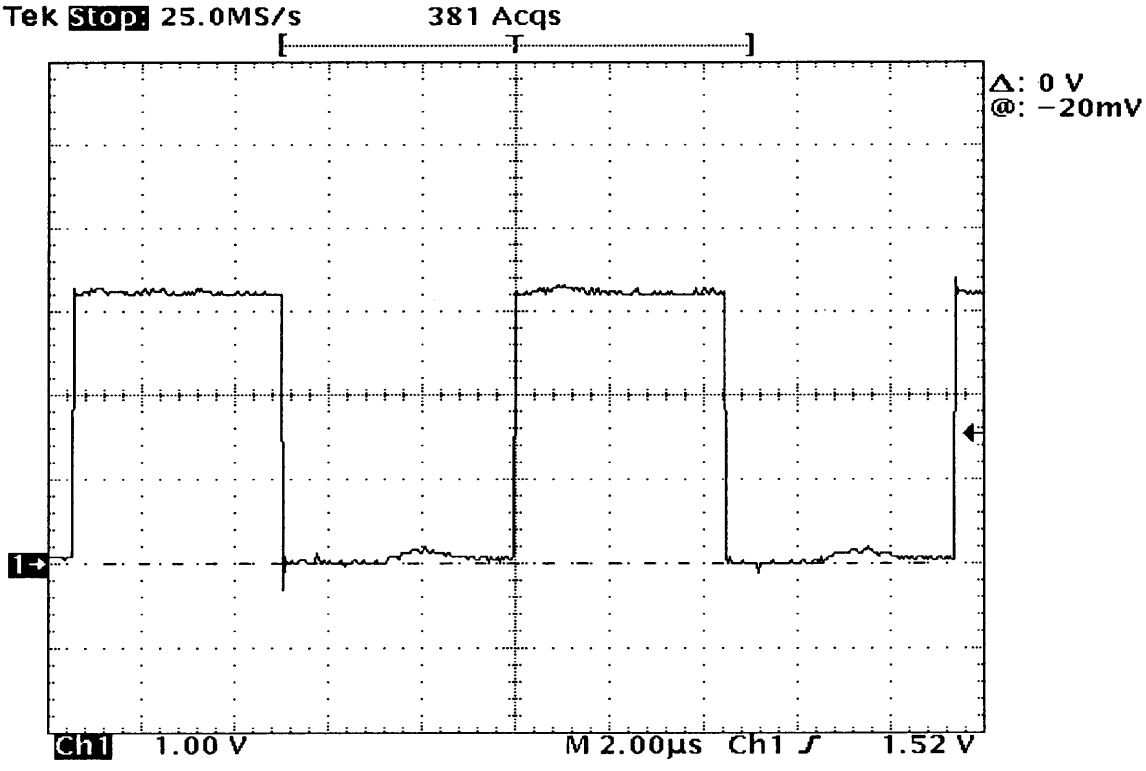
20.J601 #10 AFC



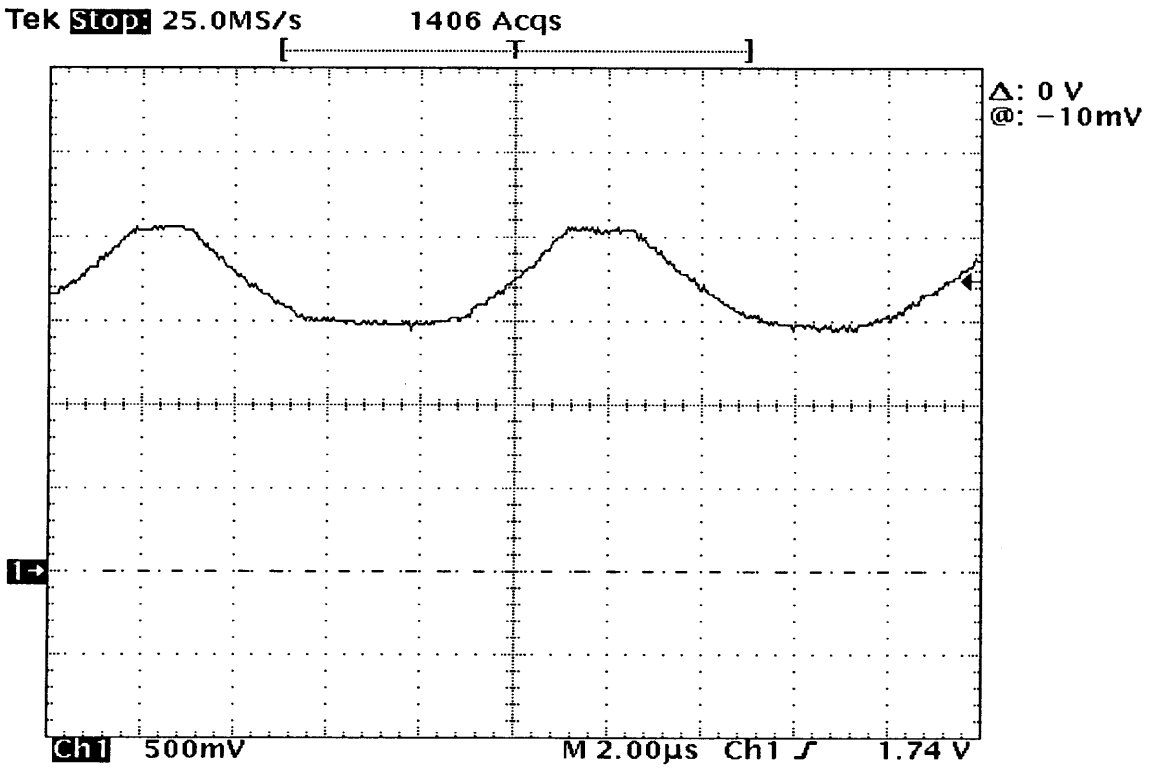
21.J600 #12 EW



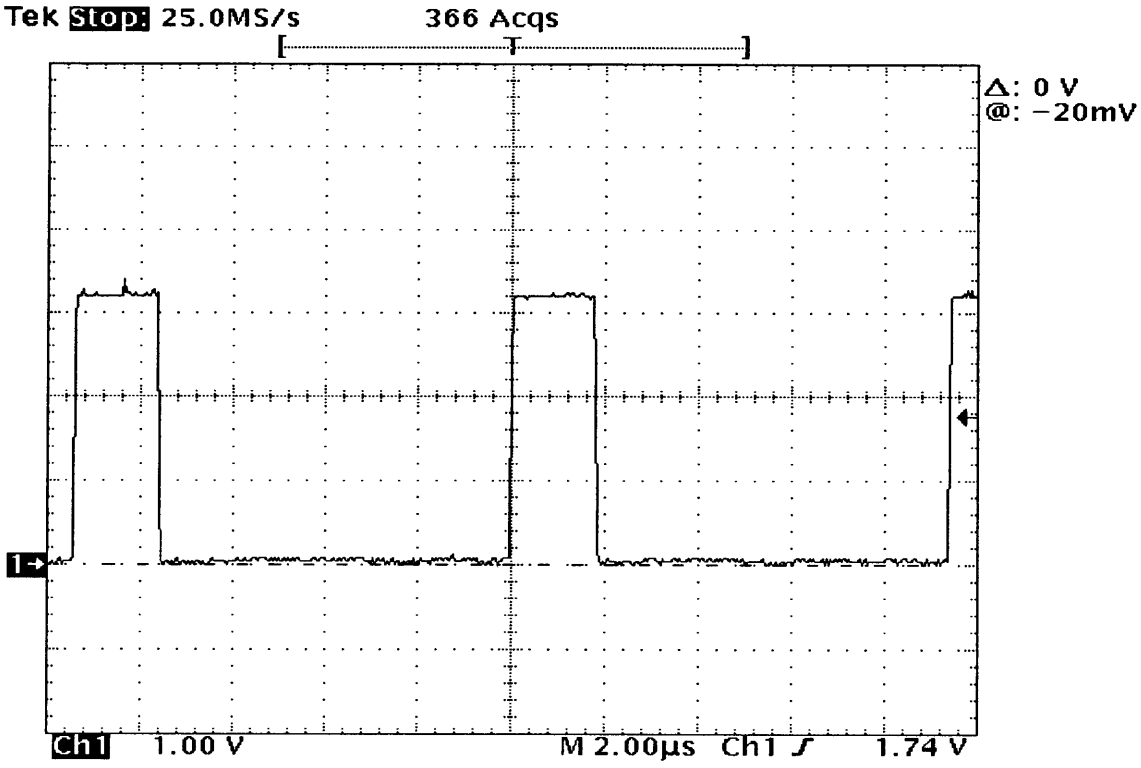
22.J601 #11 HD



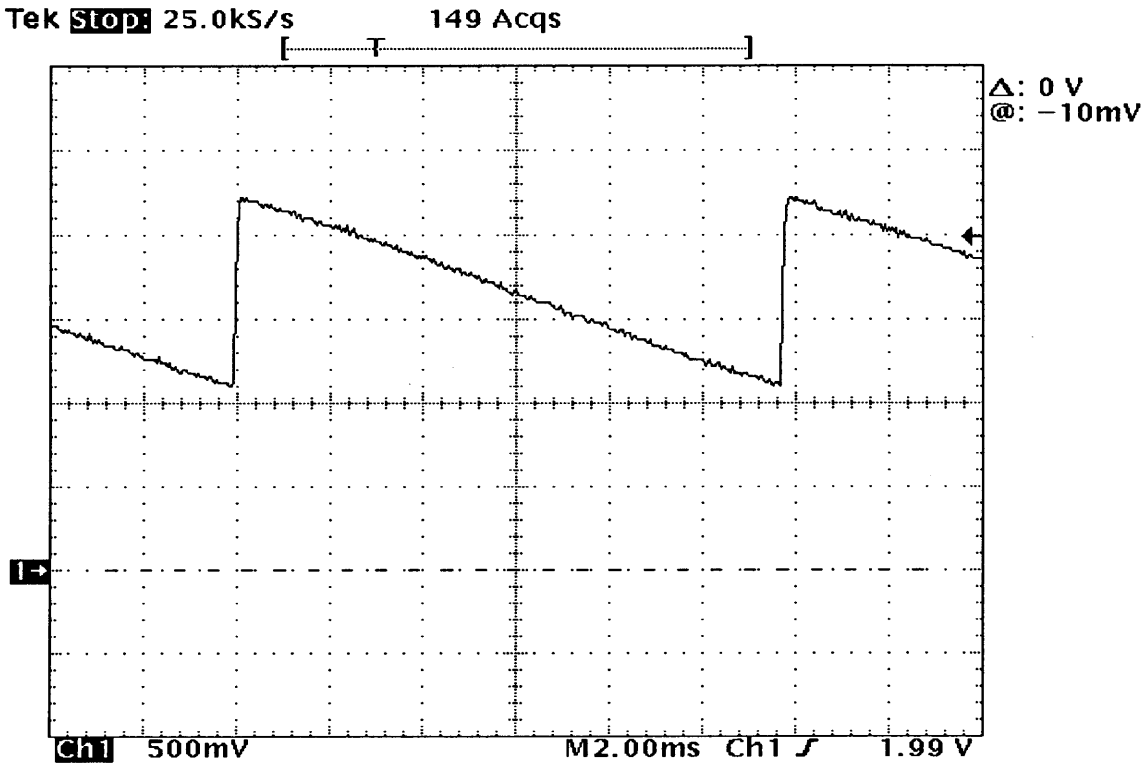
23.J600 #6 HDF



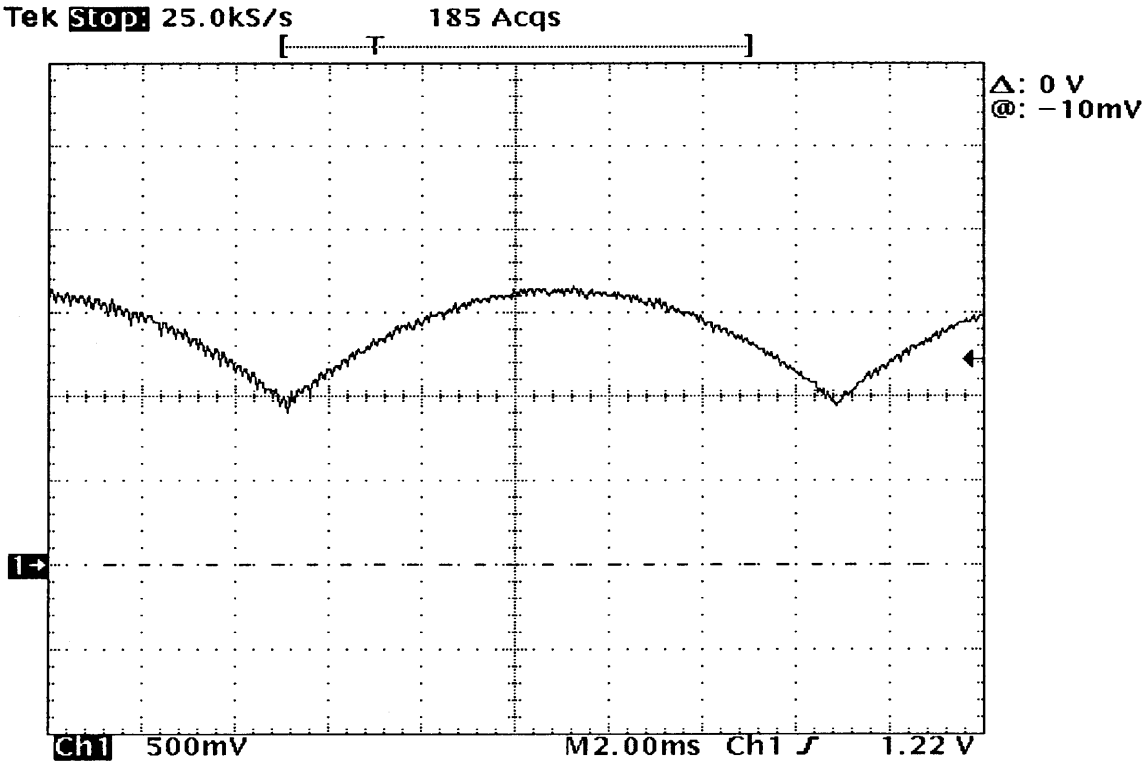
24.J600 #1 HV-BLK



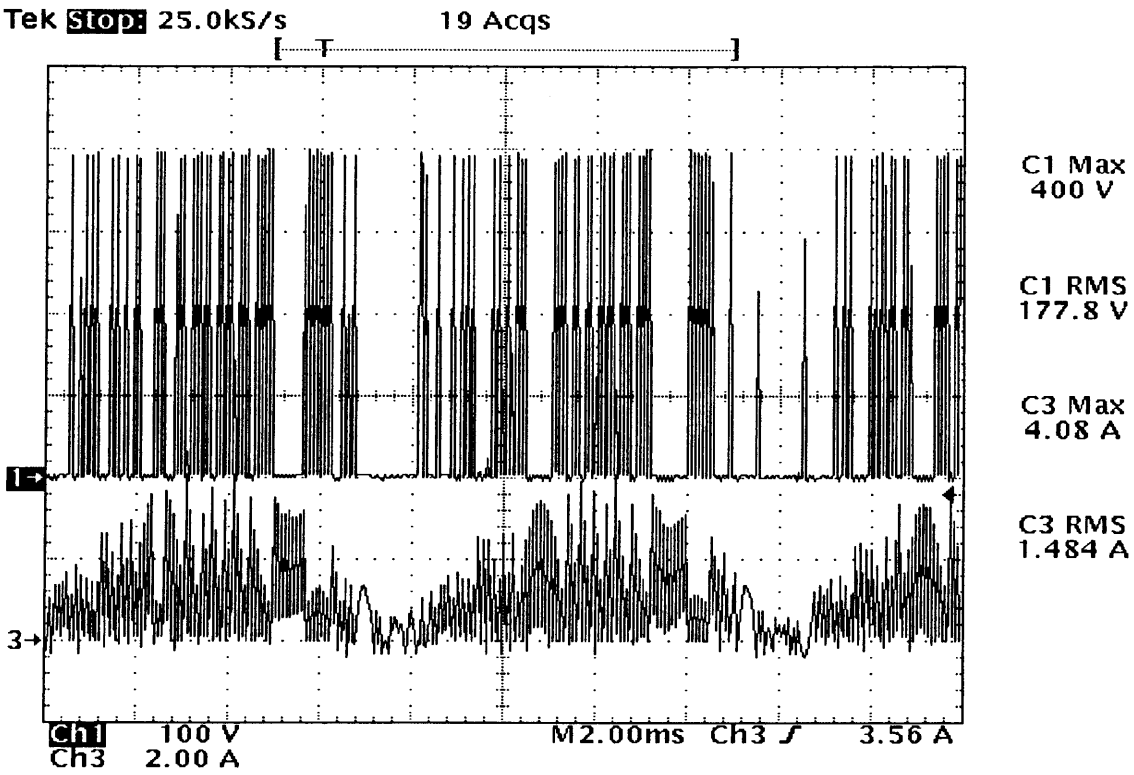
25.J600 #15 V-SAW



26.J600 #4 VDF

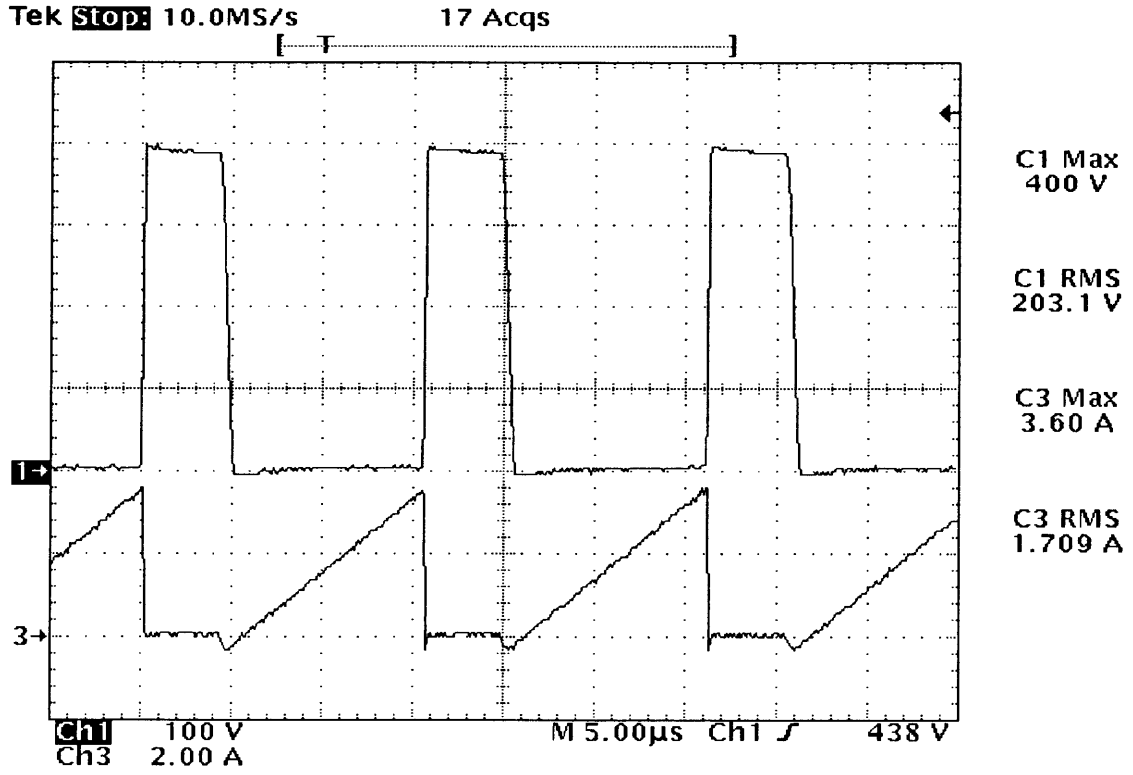


27.Q901 Vds,Id

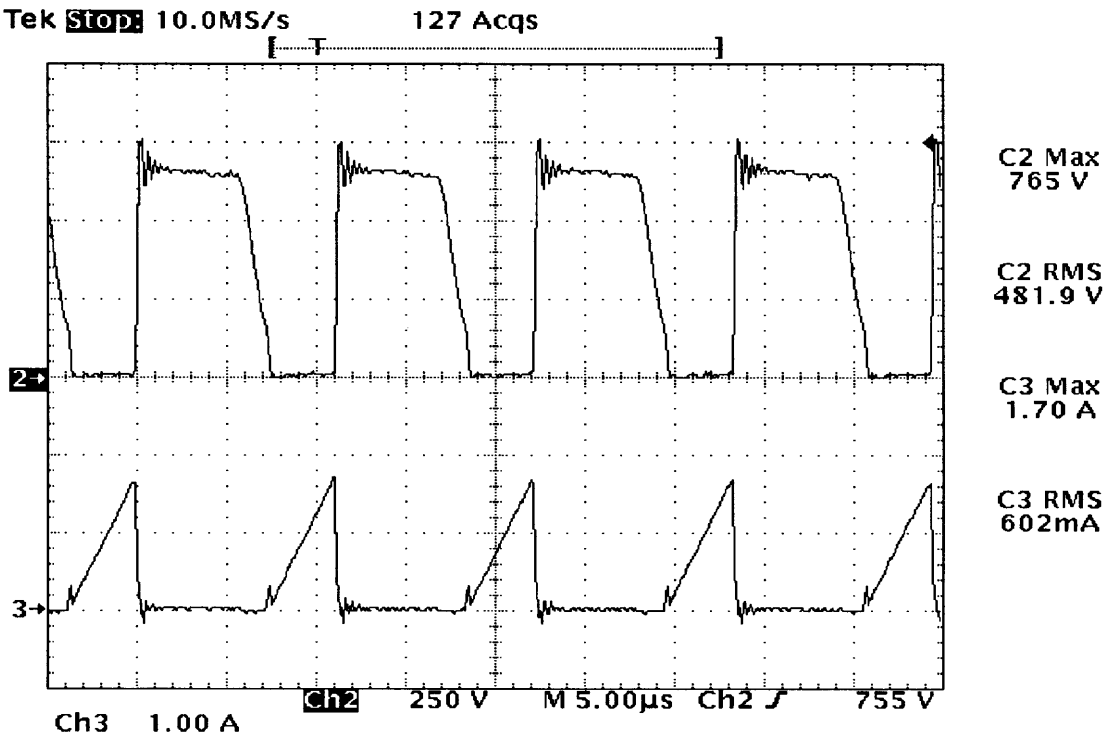


Top: Q901 Vds Bottom: Q901 Id

28.IC902 Vds,Id(enlarged)

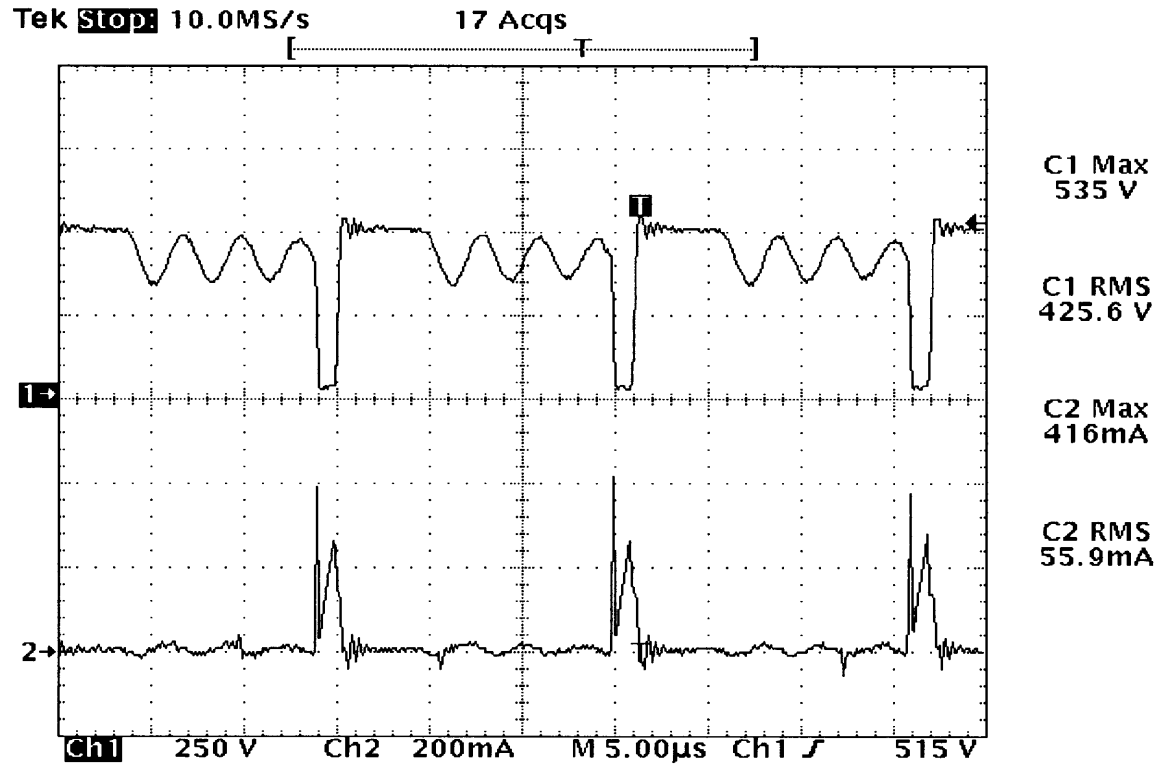


29.IC902 Vds,Id



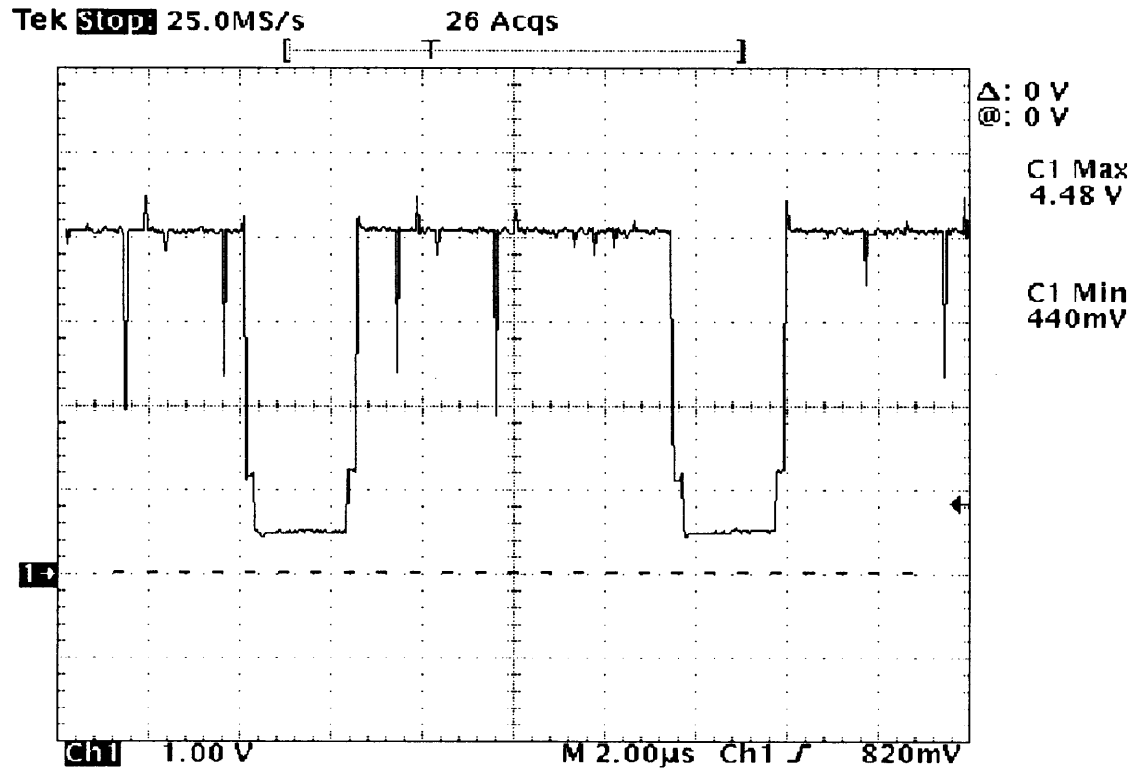
Top:IC902 Vds Bottom:IC902 Id

30.IC903 Vds,Id

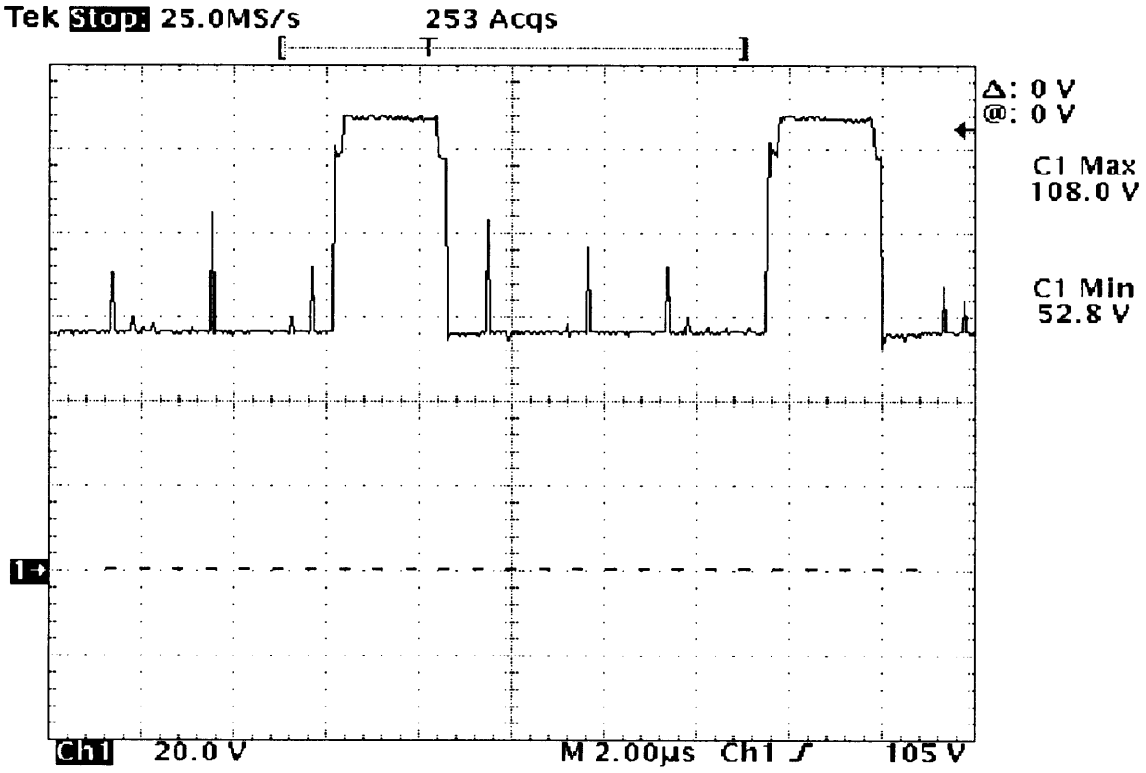


Top:IC903 Vds Bottom:IC903 Id

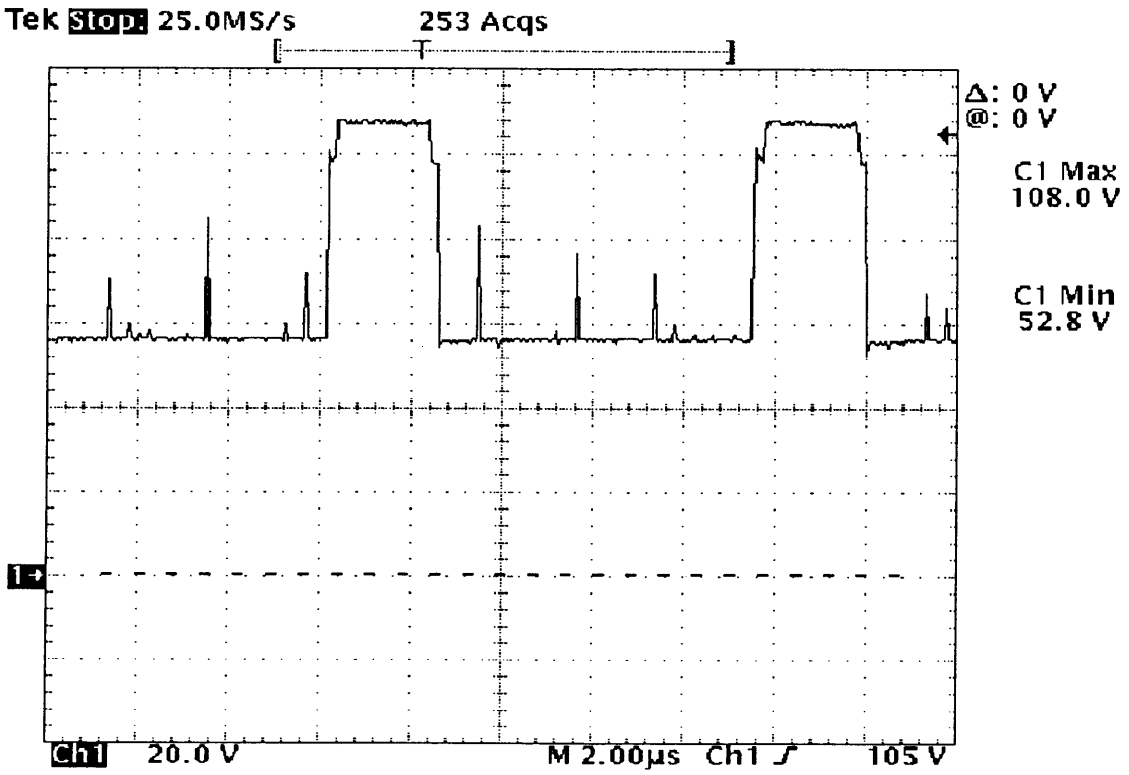
31.VIDEO-IN



32.VIDEO-OUT



33.CRT


Tek Stop: 25.0MS/s
253 Acqs
Δ: 0 V
@: 0 V
C1 Max
108.0 V
C1 Min
52.8 V
Ch1 20.0 V
M 2.00µs Ch1 ƒ 105 V

2. Adjustment procedure

2.1 Measuring instruments

(1) Signal generator A: Astro Design VG-812 or equivalent
(2) Signal generator B: Astro Design VG-829 or equivalent
(3) DC voltmeter: 150V 0.5 Class or digital voltmeter
(4) High voltage meter: 0.5 Class that can measure 30KV
(5) Luminance meter: Minolta color analyzer CA-100 or equivalent
(6) AC voltmeter: 150V/300V 0.5 Class
(7) Oscilloscope: Scope with band of 100MHz or more
(8) Landing measuring device: Felmo product
(9) Double scale: For width and distortion measurement
(10) Withstand voltage meter: Kikusui Model TOS8650 or equivalent
(11) Grounding conductivity measuring instrument: CLARE U.K. product

2.2 Preparatory inspections

(1) There must be no cracks or remarkable contamination on the PWB.
(2) There must be no remarkable lifting or inclination of the parts on the PWB, and the parts must not be touching.
(3) The connectors must be securely inserted without crimping faults.
(4) The CRT socket, anode cap and focus lead must be securely mounted.
(5) The lead wires must not be pressed against the edges of the board.
(6) The lead wires must not touch the high temperature parts such as the R-METAL, R-CEMENT or TR with FIN.
(7) The board must not be bent, remarkably contaminated or scratched.
(8) The CRT has no scratch or chipping.
(9) Each potentiometer must turn smoothly.
(10) Always set each potentiometer to the following positions before turning the power ON.

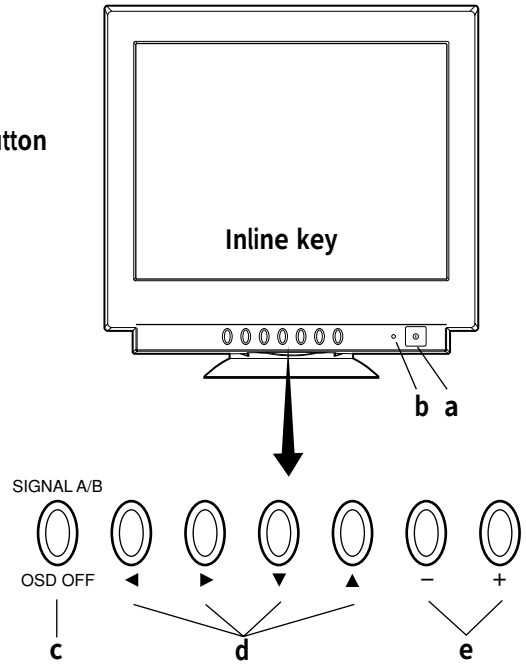
Potentiometer default settings

PWB name	IC sources	Name (symbol)	Default adjustment position	Remarks
PWB-MAIN	VR5A1	H-POSI	Center	
		FOCUS1	Center	FBT
		FOCUS2	Center	FBT
		SCREEN	Completely counterclockwise	FBT

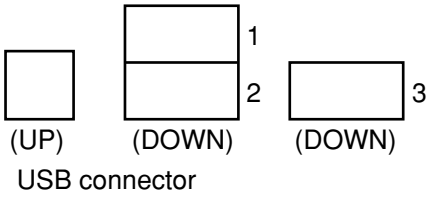
2.3 Names of each monitor part

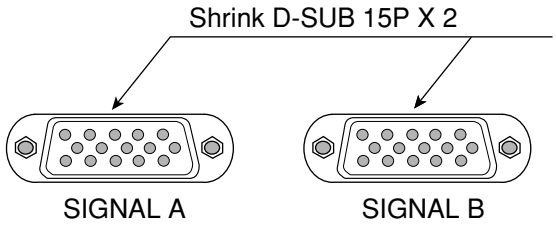
2.3.1 Configuration of front control panel

a：Power Switch
b：Power-ON Indicator
c：Input Connector Select / OSD OFF Button
d：Item Select Button
e：Function Adjustment Button



2.3.2 Configuration of rear input connector





2.3.3 OSD display matrix

2.3.3.1 User mode

Adjustment items	Setting contents	Default setting	Setting classification	
			By timings	Common
OSD group USER 1				
CONTRAST	0～100%	100%		○
BRIGHT	0～100%	50%		○
COLOR	COLOR NO.1,2,3,sRGB	COLOR NO.1	○	
R-GAIN 1,2,3	0～100%			○
G-GAIN 1,2,3	0～100%			○
B-GAIN 1,2,3	0～100%			○
COLOR TEMPERATURE 1,2,3	5000K～9300K	COLOR1:9300K,2:6500K,3:5000K		○
FINE PICTURE MODE	GRAPHIC/TEXT/NORMAL	NORMAL	○	
FACTORY PRESET	PROCEED			
OSD group USER 2				
AUTO ADJUST	PROCEED			
HORIZ-SIZE	0～100%		○	
HORIZ-POSITION	0～100%		○	
VERT-SIZE	0～100%		○	
VERT-POSITION	0～100%	50%	○	
ROTATION	0～100%	CENTER		○
GTF ADJUST	PROCEED			
FACTORY PRESET	PROCEED			
OSD group USER 3				
PINCUSHION	0～100%		○	
PIN-BALANCE	0～100%		○	
KEYSTONE	0～100%		○	
KEY-BALANCE	0～100%		○	
TOP-PIN	0～100%		○	
TOP-BALANCE	0～100%		○	
BOTTOM-PIN	0～100%		○	
BOTTOM-BALANCE	0～100%		○	
VERT-LIN	0～100%		○	
VERT-LIN-BALANCE	0～100%		○	
FACTORY PRESET	PROCEED			
OSD group USER 4				
CORNER PURITY (TL)	0～100%	CENTER		○
CORNER PURITY (TR)	0～100%	CENTER		○
CORNER PURITY (BL)	0～100%	CENTER		○
CORNER PURITY (BR)	0～100%	CENTER		○
MOIRE CANCEL LEVEL	0～100%	0	○	
CLAMP PULSE POSITION	FRONT / BACK	BACK	○	
FACTORY PRESET	PROCEED			
OSD group USER 5				
HORIZ-CONVERGENCE	0～100%	CENTER		○
VERT-CONVERGENCE	0～100%	CENTER		○
FACTORY PRESET	PROCEED			
OSD group USER 6				
DEGAUSS	PROCEED			
INPUT	SIGNAL A/B			○
POWER SAVE	OFF / ON	ON		○
CONTROL LOCK	OFF / ON	OFF		○
OSD POSITION	<- / +>	(OSD is at the center of picture)		○
OSD TURN OFF	5SEC～120SEC	45SEC		○
DIAGNOSIS				
LANGUAGE	ENG/GER/FRA/ESP/ITA/JPN	ENG		○
AUTO SAVE	OFF / ON	ON		○
ALL RESET	PROCEED			
FACTORY PRESET	PROCEED			

*) CENTER : The factory setting value returning by pressing (+) (-) buttons simultaneously.

2.3.3.2 Factory mode

Adjustment items	setting contents	Default setting	setting classification	
			By timings	Common
OSD group USER 1				
CONTRAST	0～254	254		○
BRIGHT	0～254	127		○
COLOR	COLOR NO.1,2,3	COLOR NO.1	○	
R-GAIN 1,2,3	0～254			○
G-GAIN 1,2,3	0～254			○
B-GAIN 1,2,3	0～254			○
COLOR TEMPERATURE 1,2,3	5000K～9300K	COLOR1:9300K,2:6500K,3:5000K		○
FINE PICTURE MODE	GRAPHIC/TEXT/NORMAL	NORMAL	○	
FACTORY PRESET	PROCEED			
OSD group USER 2				
AUTO ADJUST	PROCEED			
HORIZ-SIZE	0～(depend on +B adjustment)		○	
HORIZ-POSITION	0～254		○	
VERT-SIZE	0～254		○	
VERT-POSITION	0～254		○	
ROTATION	0～254			○
GTF ADJUST	PROCEED			
FACTORY PRESET	PROCEED			
OSD group USER 3				
PCC-CENTER	0～254		○	
PCC-SINE	0～254		○	
PINCUSHION	0～254		○	
PIN-BALANCE	0～254		○	
KEYSTONE	0～254		○	
KEY-BALANCE	0～254		○	
TOP-PIN	0～254		○	
TOP-BALANCE	0～254		○	
BOTTOM-PIN	0～254		○	
BOTTOM-BALANCE	0～254		○	
VERT-LIN	0～254		○	
VERT-LIN-BALANCE	0～254		○	
FACTORY PRESET	PROCEED			
OSD group USER 4				
CORNER PURITY (TL)	0～254			○
CORNER PURITY (TR)	0～254			○
CORNER PURITY (BL)	0～254			○
CORNER PURITY (BR)	0～254			○
MOIRE CANCEL LEVEL	0～127	0	○	
CLAMP PULSE POSITION	FRONT / BACK	BACK	○	
FACTORY PRESET	PROCEED			
OSD group USER 5				
HORIZ-CONVERGENCE	0～254			○
VERT-CONVERGENCE	0～254			○
FACTORY PRESET	PROCEED			
OSD group USER 6				
DEGAUSS	PROCEED			
INPUT	SIGNAL A/B			○
POWER SAVE	OFF / ON	ON		○
CONTROL LOCK	OFF / ON	OFF		○
OSD POSITION	<- / +>	(OSD is at the center of picture)		○
OSD TURN OFF	0～23	08		○
DIAGNOSIS				
LANGUAGE	ENG/GER/FRA/ESP/ITA/JPN	ENG		○
AUTO SAVE	OFF / ON	ON		○
ALL RESET	PROCEED			
FACTORY PRESET	PROCEED			

Adjustment items	setting contents	Default setting	setting classification	
			By timings	Common
FACT 1				
PURITY/CPURITYOFF(CP P OFF)	0 (OFF) / 1 (ON)	1 (ON)		○
PURITY OFF(P-OFF)	0 (OFF) / 1 (ON)	1 (ON)		○
YHTT	0～254	127		○
YHTB	0～254	127		○
YHJT	0～254	127		○
YHJB	0～254	127		○
XH-L	0～254	127		○
XH-R	0～254	127		○
PQH-TL	0～254	127		○
PQH-TR	0～254	127		○
PQH-BL	0～254	127		○
PQH-BR	0～254	127		○
S3H-TL	0～254	127		○
S3H-TR	0～254	127		○
S3H-BL	0～254	127		○
S3H-BR	0～254	127		○
YVTT	0～254	127		○
YVTB	0～254	127		○
YVJT	0～254	127		○
YVJB	0～254	127		○
XV-L	0～254	127		○
XV-R	0～254	127		○
PQV-TL	0～254	127		○
PQV-TR	0～254	127		○
PQV-BL	0～254	127		○
PQV-BR	0～254	127		○
S3V-TL	0～254	127		○
S3V-TR	0～254	127		○
S3V-BL	0～254	127		○
S3V-BR	0～254	127		○
DBF-H-AMP	0～254		○	
DBF-H-PHASE(DBF PHS)	0～100		○	
DBF-V-AMP	0～127		○	
R BIAS (COLOR1) RB93	0～254	30		○
G BIAS (COLOR1) GB93	0～254	30		○
B BIAS (COLOR1) BB93	0～254	30		○
R BIAS (COLOR2) RB65	0～254	30		○
G BIAS (COLOR2) GB65	0～254	30		○
B BIAS (COLOR2) BB65	0～254	30		○
R BIAS (COLOR3) RB50	0～254	30		○
G BIAS (COLOR3) GB50	0～254	30		○
B BIAS (COLOR3) BB50	0～254	30		○
SUB-BRIGHT	0～480	380		○
ABL	0～254	200		○
HEATER-OFF (HEATER)	0～254			
B-LOW (BLO)	0～254			○
B-HIGH (B HI)	0～254			○
WP DDC	0 (OFF) / 1 (ON)	0 (OFF)		
FACT 2				
HV-ADJ				○
XPRO-CALIBRATE				○
XPRO-TEST 28, 31				○
XPRO LEVEL				○

2.4 Adjustment

2.4.1 How to select the factory adjustment (FACTORY) mode

2.4.1.1 Selecting with front panel switches

(1) Turn the power ON while holding down the Input Connector Select / OSD OFF button.
(2) After step (1), release the button after one to two seconds.
(3) Confirm that 00 is displayed for the counter on the OSD display, and set to 225 with the (-) ADJUST button.
(4) Set to 05 with the (+) ADJUST button.
(5) When the Input Connector Select / OSD OFF button is pressed, the factory mode will be entered.
This factory adjustment mode is entered with the above steps.

*The factory adjustment mode remains valid even after the power is turned OFF.
Note that steps (3) to (4) must be carried out within ten seconds. If ten seconds are exceeded, the mode will return to the user mode.

<Returning to the user mode from the factory mode>

(1) OSD (for factory, user select) is displayed with the group selection.
(2) Set the counter value to 010 with the (-) (+) ADJUST buttons.
(3) When the Input Connector Select / OSD OFF button (RIGHT side) is pressed, the mode will return to the user mode.

2.4.2 Adjustments before aging

Especially without any designation in each adjustment, full white signal of timing No. 12 (106.25k/85, 1600 x 1200) is input.

2.4.2.1 Adjusting the high voltage and high voltage protector

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	High voltage and high voltage protector		The only the sync. signal of No. 25:85Hz, 1800x1350

(Timing No. 25 (85Hz, 1800 X 1350) SYNC signal is only input)

(1) Turn the monitor power OFF and connect a high voltage indicator to the anode of CRT before turning the monitor power ON.
(2) Select「GO TO FACTORY MODE」on OSD and set to 250 using the (-) button before pushing the Input Connector Select / OSD OFF button.
(3) Select HVADJ on OSD to adjust the high voltage to 27.0kV ± 0.3kV.
(4) Turn XPRO TEST31 ON with OSD, and make sure that the high voltage reaches to 30.8kV ± 0.7kV.

Note) Adjustment (3) and (4) can be made with the screen VR turned all the way down counter-clockwise.

2.4.2.2 SCREEN voltage / FOCUS adjustment

(Input the timing No.12 (106.25kHz / 85Hz, 1600 X 1200) crosshatch signal)

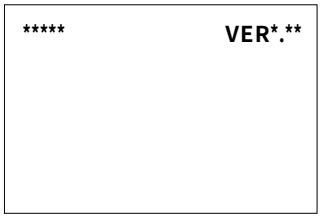
(1) Connect a high voltage meter to the TP-SC terminal on the CRT PWB.
(2) Set to 700V±5V with the FBT picture potentiometer.
(3) Adjust the focus pack "FOCUS 1, 2" so that both edges of the picture are clear.

2.4.2.3 Shock test

(1) Display the "color bar".
(2) Confirm that there is no abnormality in the image when shock is applied on the monitor.

2.4.2.4 Preadjustment before aging

(1) Display a "full white".
(2) Confirm that the R, G and B channel images are output.
(3) Confirm that the HORIZ-PHASE (VR), picture position, picture size, PCC and balance can be controlled, and approximately adjust.
(4) Confirm that the OSD power management is turned OFF.
(5) Enter the factory mode (aging mode) beforehand.
(6) Disconnect the signal and confirm that the following display appears on the OSD. Then, adjust the picture luminance using BRIGHT adjustment, and carry out heat run for 60 minutes or more.



2.4.2.5 Adjusting the landing (ITC/4 corner purity adjustment)

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	landing		No. 12:106.25K / 85Hz, 1600x1200
			Full green

(1) Input the timing No. 12 (106. 25kHz/85Hz, 1600¥1200) full green signal.
(2) Turn OFF the monitor power to carry out hand degaussing.
(3) Select TL on OSD.
(4) Adjust to the best landing condition using the ADJUST button. Here, make sure that the adjusted value is within the range of OSD display = 57 to 197.
(5) Carry out similar adjustment for TR/BL/BR.

Note) When the substitute is replaced at the time of repair, set TL/TR/BL/BR to the values before replacement before carrying out adjustment.

2.4.3 Adjustments after aging

2.4.3.1 +B adjustment

Input the sync. signal of the following timings to adjust the picture width to 396 ± 4mm.

Timing No.	H-frequency	OSD adjustment item
A	30.0kHz	+B-L
12	106.25kHz	+B-H

2.4.4 Adjusting the picture size, position and distortion

The manual adjustment methods are explained below. The adjustments are executed in the factory adjustment (factory) mode.
Adjust the picture size to the value indicated in the list of adjustment values.(Refer to 2.5.1.10 Adjustment value list.)
Adjust the distortion to the value indicated in the picture performance inspection item. (Refer to 2.5.1.8 Picture distortion.)

2.4.4.1 Adjusting the picture inclination

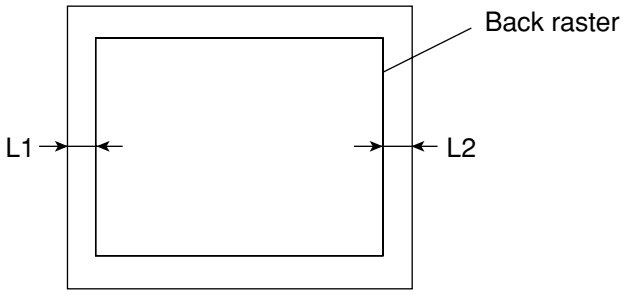
Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Picutre inclination	Factory	No. 12:106.25K / 85Hz, 1600x1200
			Crosshatch with frame

Set the OSD to ROTATION, and using the (-) (+) ADJUST buttons, set the raster inclination to be horizontal to the CRT face surface.

2.4.4.2 Adjusting the back raster position

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Back raster position	Factory	No. 25:85Hz, 1800x1350
			Only the sync. signal input

(1) Set BRT to 100% to show the back raster.
(2) Select HORIZ-PHASE with the OSD and adjust the horizontal back raster position to the center of the bezel using the (-) (+) ADJUST buttons.
At this time, the raster width will be $|L1-L2| \leq 2.0$mm.



2.4.4.3 Adjusting the left/right distortion, picture width, picture position (H-PHASE) and vertical linearity (all preset)

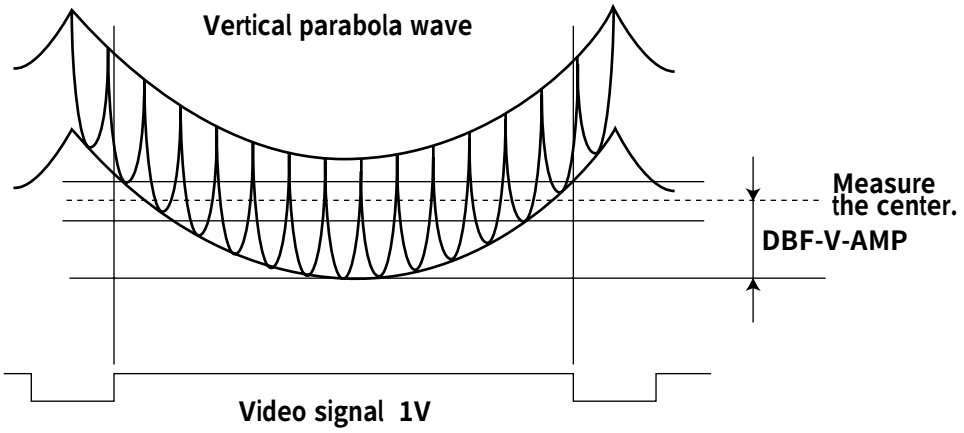
(1) Set V-POSI of the user mode to 50%.

<Setting in the factory mode for the following steps>
(2) Adjust the vertical size to approx. 297mm, and the vertical position to the approximate center.
(3) Select V-LIN and V-LIN-BAL with the OSD, and adjust so that the vertical linearity is equal at the very top of the picture, at the very bottom of the picture, and at the center of the picture.
(4) Select V-SIZE and V-POSI with the OSD, and adjust the vertical width and vertical position to set the specified values using the ADJUST buttons.
(5) Select PINCUSHION, KEYSTONE, PCC-CENTER, TOP-PIN, and BOTTOM-PIN with the OSD, and adjust the vertical line at both side of the picture to the straight line using the ADJUST buttons.

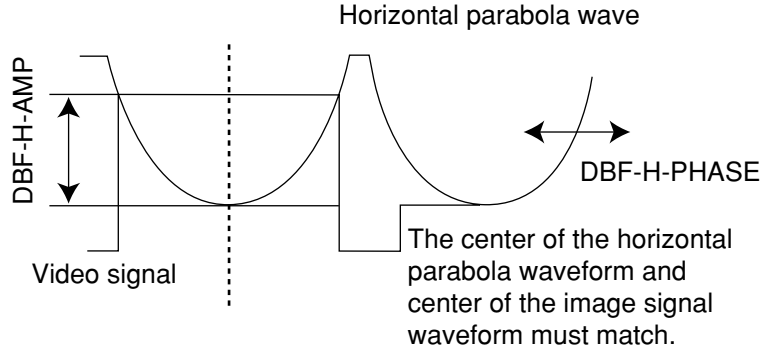
(6) If the left and right distortions differ, select PIN-BALANCE, KEY-BALANCE, TOP-BALANCE and BOTTOM-BALANCE with the OSD, and adjust so that the distortions are visually balanced.
(7) Select H-PHASE with the OSD, and adjust the horizontal raster position to the center of the picture using the ADJUST buttons.
(8) Select H-SIZE with the OSD, and adjust the horizontal raster width to the value given in the adjustment list using the ADJUST buttons. (Refer to 2.5.1.10 Adjustment value list.)
* Note (1) PCC-SINE and PIN-BALANCE are used only for touch up.
* Note (2) The picture position and distortion must be within the ranges given in the picture performance inspection items. (Refer to 2.5.1.8 Picture distortion.)

2.4.4.4 Adjusting the DBF amplitude and phase

(1) Connect the oscilloscope to the lead of R7A2 (AG703 side) on PWB-MAIN and to one of the signal outputs for the signal sources full R, G, B (VIDEO).
(2) Set the OSD to the select picture of DBF-H-AMP, and using the (-) (+) ADJUST buttons adjust the horizontal parabola wave amplitude (Video area) to the value given in the list of adjustment values. (Refer to 2.5.1.10 Adjustment value list.)
(3) Set the OSD to the select picture of DBF-H-PHASE, and using the (-) (+) ADJUST buttons adjust the horizontal parabola wave phase as shown below in respect to the image signal.
(4) Set the OSD to the DBF-V-AMP select picture, and using the (-) (+) ADJUST buttons adjust the vertical parabola wave amplitude (video area) to the value given in the list of adjustment values. (Refer to 2.5.1.10 Adjustment value list.)



DBF-V-AMP adjustment



DBF-H-AMP / PHASE adjustment

2.4.5 Adjusting the cut off

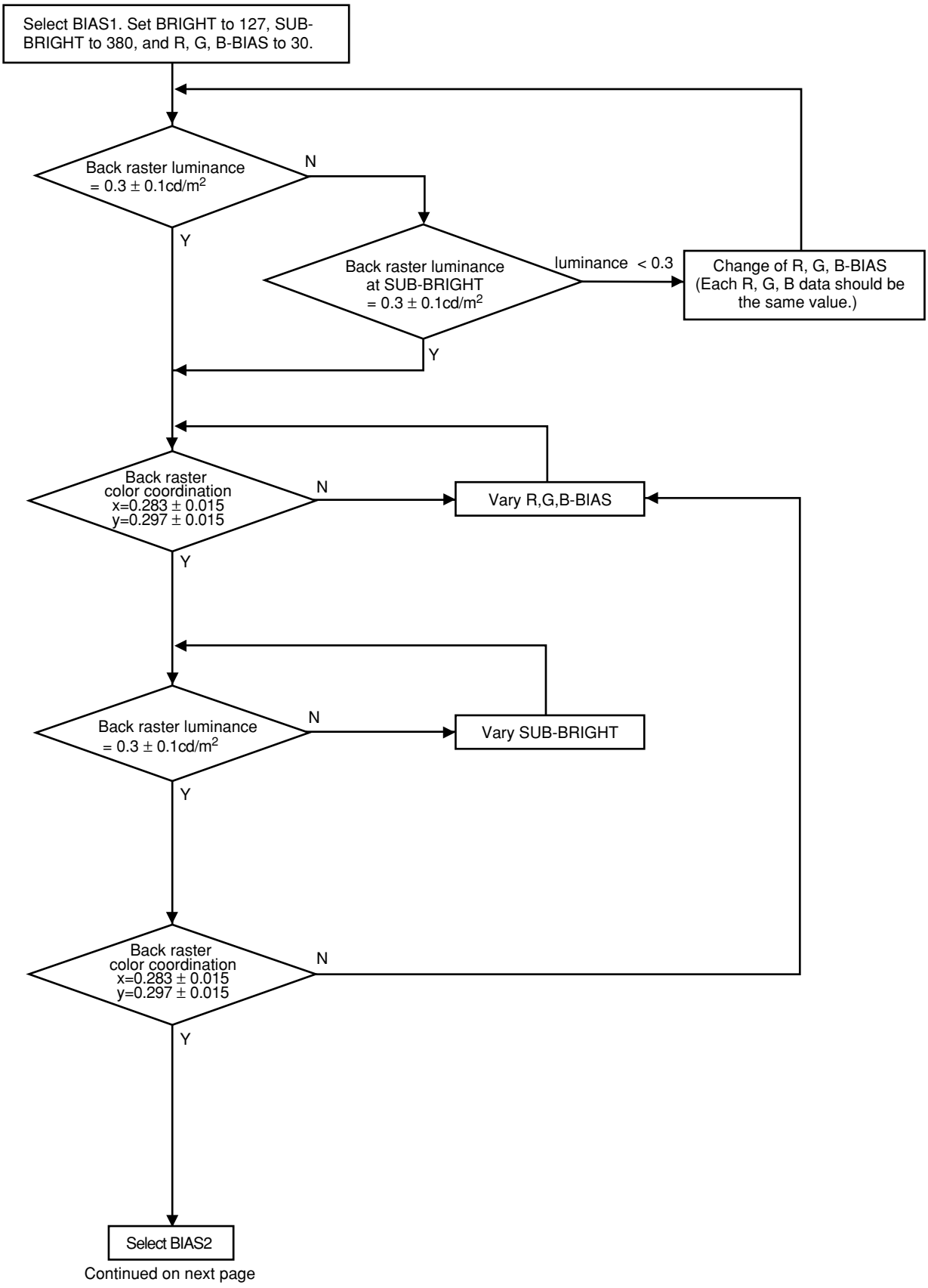
Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Cut off	Factory	No. 12:106.25K / 85Hz, 1600x1200

(1) Input the timing No. 12 (106.25kHz/85Hz, 1600x1200)from the signal generator. (R, G, B OFF)
(2) Select BIAS1, and set BRIGHT to 127, SUB-BRIGHT to 380, and the R, G, B-BIAS to 30.
(3) Adjust the back raster luminance to 0.3±0.1cd/m^2 with SUB-BRIGHT.
When the back raster luminance is less than 0.3cd/m^2 even after SUB-BRIGHT was changed, change R, G, B-BIAS to adjust.
The R, G, B-BIAS data must be the same at this time.
(4) Using two colors except for the basic colors, adjust the color coordination to the following values.
(5) Change SUB-BRIGHT, and adjust the back raster luminance to 0.3±0.1cd/m^2.
(6) If the back raster color coordination is deviated from the following values, repeat steps (4) and (5).
(7) Set the G-BIAS datas of COLOR 2 and 3 to the same value as the one of COLOR1.
(8) Select BIAS 2, and change the BIAS data for the R and B colors (G-BIAS is fixed). Adjust the back raster color coordination to the following table.
(9) Select BIAS 3, and change the BIAS data for the R and B colors (G-BIAS is fixed). Adjust the back raster color coordination to the following table.

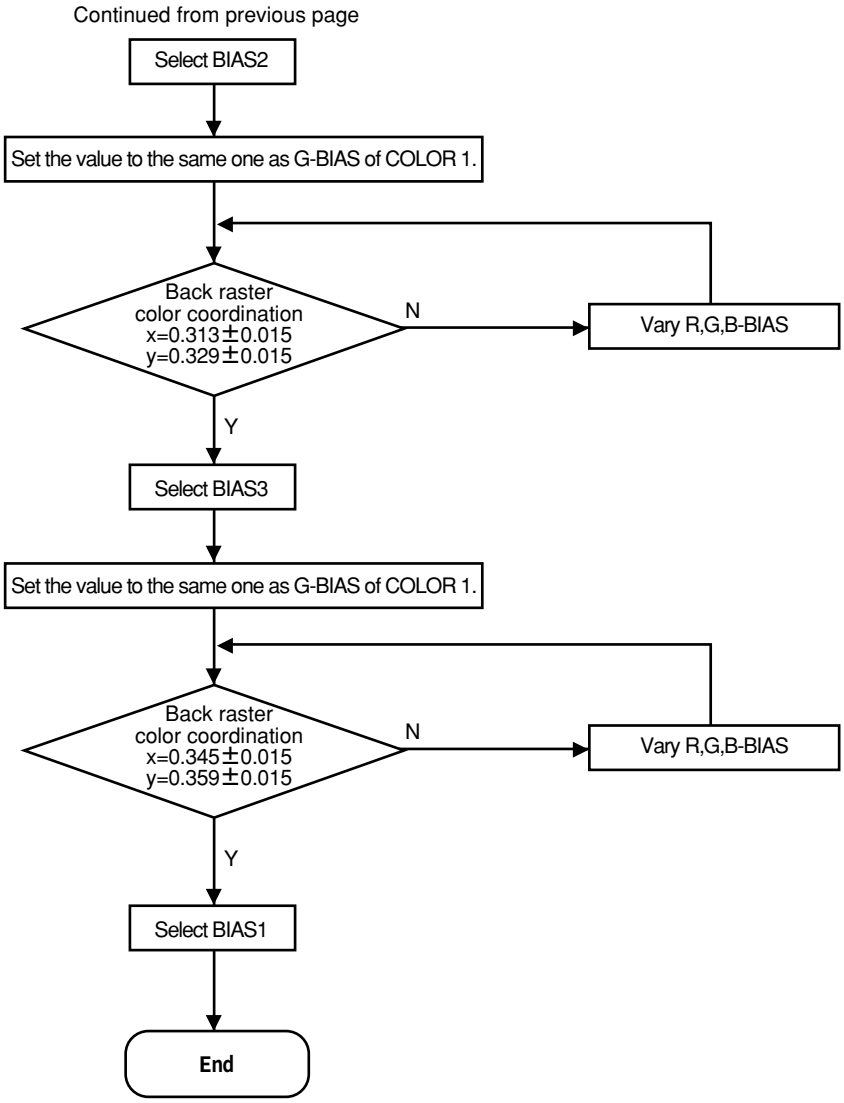
Condirmation item		COLOR 1	COLOR 2	COLOR 3
Color coordination	x	0.283 ±0.015	0.313 ±0.015	0.345 ±0.015
	y	0.297 ±0.015	0.329 ±0.015	0.359 ±0.015

*The flow chart is provided on the next page.

Cutoff adjustment procedure



Continued on next page


Continued from previous page
Select BIAS2
Set the value to the same one as G-BIAS of COLOR 1.
Back raster
color coordination
x=0.313±0.015
y=0.329±0.015
N
Vary R,G,B-BIAS
Y
Select BIAS3
Set the value to the same one as G-BIAS of COLOR 1.
Back raster
color coordination
x=0.345±0.015
y=0.359±0.015
N
Vary R,G,B-BIAS
Y
Select BIAS1
End

2.4.6 Adjusting the RGB drive signal and X-Pro

2.4.6.1 Adjusting the R, G, B drive signal (Adjustment of COLOR 1)

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	R, G, B drive signal	Factory	No. 12:106.25K / 85Hz, 1600x1200
			WINDOW picture

(1) Input the timing No.12.
WINDOW picture (Input amplitude = 0.7Vp-p)
(2) Select CONTRAST with the OSD, and set to MAX with (+) ADJUST button.
(3) Select BRIGHT with the OSD, and set the data to 127 with the (-) (+) ADJUST buttons.
(4) Set the WINDOW pattern (approx. 80mm square at center of CRT picture), and input only "GREEN".
(5) Set the COLOR 1 G with the OSD, and adjust the luminance to the following value with the ADJUST button.
(6) Input BLUE, RED and GREEN, appropriately select the COLOR 1 B and R, and adjust the color coordination to the following value with the ADJUST button.
(7) Set CONTRAST to 25cd/m^2 with the OSD to confirm that the change in color coordination is within ±0.015 for both x and y.
*Adjust COLOR 2 and 3 to the following values with the same method.
If COLOR 2 and 3 are contented with the following value, they can be adjusted with presumptioni respectively.
The values of G-WINDOW luminance are reference.
(Note) After adjusting COLOR, always set to COLOR 1.
(The COLOR preset will be set to the default COLOR 1 with this step.)

COLOR		1	2	3	Remarks
G-WINDOW luminance		(76.0)	(67.0)	(56.0)	(Reference value)
W-WINDOW	x	0.283	0.313	0.345	± 0.005
color coordination	y	0.297	0.329	0.359	± 0.005
Full white luminance (cd/m^2)		105 or more	92 or more	77 or more	

2.4.6.2 Adjusting ABL

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	ABL	Factory	No. 12:106.25K / 85Hz, 1600x1200
			Full white

(1) Set the OSD ABL to 254.
(2) Input the timing No. 12 (106.25kHz/85Hz, 1600x1200).
(Full white picture input amplitude = 0.7Vp-p)
(3) Set contrast to MAX, bright to MAX, and select ABL-ADJUST with OSD. Adjust to 115cd/m^2±5 with COLOR 1.
The picture size must be approximately the H width given in the list of adjustment values at this time. (Refer to 2.5.1.10 Adjustment value list.)

2.4.6.3 Adjustment of X-Pro (Timing No. A 30k/70Hz Full white)

(1) Select XPRO-CALIBRATE by ▼ button and press (+) button.
(When (+) button is pressed, microcomputer automatically sets the protector.)
(2) Confirm that OK is indicated on OSD.

2.4.6.4 Confirmation for operation of X-Pro (Timing No. 25 1800 x 1350 at 85Hz, Full white)

(1) Select XPRO-TEST 28 mode by ▼ button and press (+) button.
(2) Confirm that OK is indicated on OSD without entering power save state.
(3) Change to full white of timing No. A, select XPRO-TEST 31 mode by ▼ button, and press (+) button.
(4) Confirm that X-Pro operates and enters into the self-diagnosis mode (LED flacker: color amber for a second, OFF a second, color amber for 4 seconds, OFF 1 second, and re-frain).

2.4.7 Adjusting the Purity

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Purity	Factory	Check 4 : 85Hz, 1600x1200
			GREEN crosshatch reverse

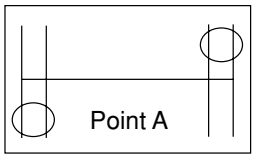
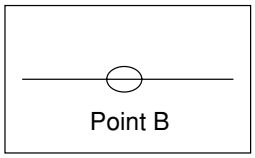
(1) Input the check 4 timing (85Hz, 1600 x 1200) to confirm that the GREEN crosshatch is displayed in reverse.
(2) Set the chamber adjustment magnetic field to the northern hemisphere magnetic field (HORIZ. = 0mT, VERT. = +0.04mT).
(Degauss by handy-demagnetizer with monitor set degauss operation.)
(3) Set the monitor to the factory mode from the front, select CP P OFF, and press Input Connector Select / OSD OFF button once.
With this, the calibration of the horizontal (tube axis) one way geomagnetism sensor will be carried out by the MPU. ("H/V MAG CAL" is displayed.)

2.4.8 Adjusting the focus

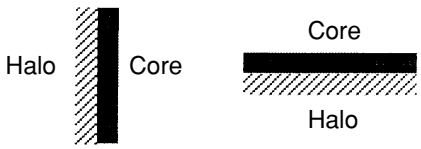
(1) Adjustment of vertical line (F1-VR adjustment)
Focus Just at the point A (circled) with full green color displayed.
If Core : Halo of the both vertical lines with full red color displayed ≧ 1 : 1, adjust to the less than 1 : 1.

(2) Adjustment of horizontal line (F2-VR adjustment)
Focus Just at the point B (circled, at center of screen) with full white.

(3) If the vertical line is not fully focused, repeat operation (1) and (2) to readjust.

	Display	Point to align with
Vertical line	Crosshatch (or H character) Revers Full green	 Adjustment of vertical line (F1-VR adjustment) Focus Just at the point A (circled) with full green color displayed. If Core : Halo of the both vertical lines with full red color displayed ≧ 1 : 1, adjust to the less than 1 : 1.
Horizontal line	Crosshatch Normal Full white	 Focus Just at center of screen. Peripheral halo should be within 1 : 1.5.

*Ratio of Core : Halo



Vertical line : Less than 1 : 1 at both side of picture

Horizontal line : Center = 1 : 0
Less than 1 : 1.5 at top and bottom of the picture.

<Adjusting the static focus>

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Static focus		No. 12:106.25K/85Hz, 1600x1200
			H character, crosshatch

For steps (1) and (2), use the timing No. 12 (106.25kHz/85Hz, 1600 x 1200) H character pattern and crosshatch pattern.
For step (3), use all preset timing H character patterns and crosshatch patterns.

(1) Display a white crosshatch pattern, and adjust the focus according to "2.4.8 Adjusting the focus".

(2) If the DBF voltage is insufficient or excessive, select DBF H AMP and DBF V AMP from the OSD, and readjust with the ADJUST button. Then repeat step (1), and adjust so that the following judgement conditions are satisfied.

(3) For all of the other preset timings, if the DBF voltage is insufficient or excessive, select DBF H AMP and DBF V AMP from the OSD, and readjust with the ADJUST button.

(4) Make sure that there is no abnormality with the timing No.9 (80kHz/75Hz, 1280 X 1024) crosshatch (reverse).

*Adjustment votlage max value:

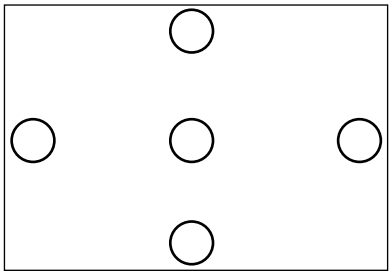
DBF-H-AMP	H width: 396mm:	430V
	H width: 371mm:	400V
DBF-V-AMP	V width: 297mm:	190V

The focus is judged as follows.

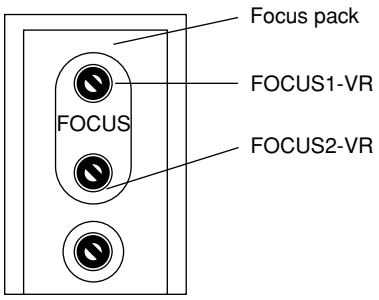
Timing	Judgment pattern (Note 1) (Note 2)
Normal display (All preset)	Crosshatch pattern
Reverse display Resolution: ≤1600x1200 Resolution: ≥1600x1200	 Judge with pattern A Judge with pattern B

(Note 1) Pattern A: Font 7 X 9, Cell 10 X 11, e character
Pattern B: Font 7 X 9, Cell 10 X 11, H character

(Note 2) Focus judgement: Crosshatch pattern should be used for normal display judgement
Core: Judge the ratio of the halo (Center 1:1) and (both side, less than 1:1.5).
To judge the reverse display, do not carry out a relative evaluation with the other point on the screen. Instead, judge whether the e (H) character can be read at that point.



Focus attention point



2.4.9 Adjusting the convergence

2.4.9.1 Adjusting with ITC

Before adjusting the center mis-convergence and axial mis-convergence, carry out sufficient full white aging (100cd/m^2 or more, for one hour or more). Then, adjust with the following timing.

Timing: No. 12 (106.25kHz/85Hz, 1600 x 1200) crosshatch pattern

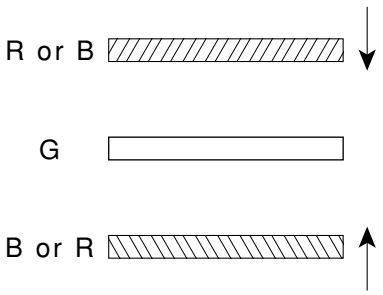
Confirm that the following DDCP default setting is as shown in the table.

Factory mode in section 2.3.3.2 OSD display matrix
H-CONVERGENCE, V-CONVERGENCE,

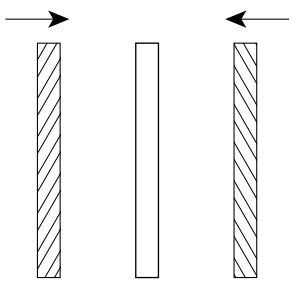
Factory mode in section 2.3.3.2 OSD display matrix
All of FACT1

Adjust the horizontal and vertical convergence to the optimum setting with the CRT CP ring, etc.

(Refer to following drawings.)

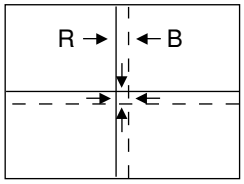
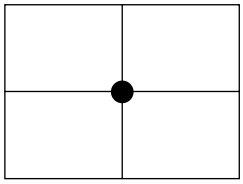
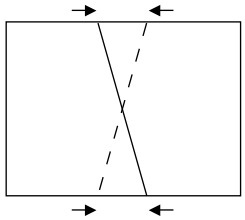
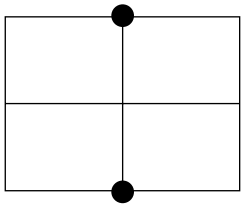
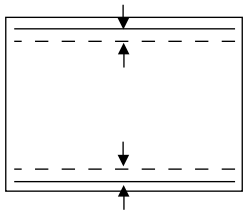
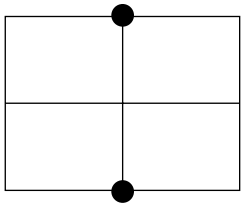
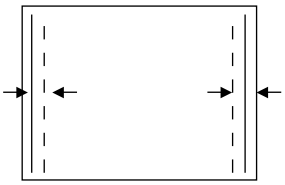
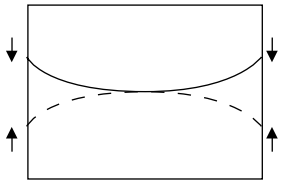
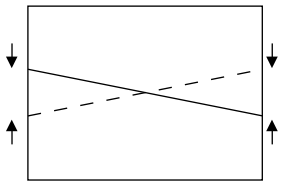


Vertical convergence



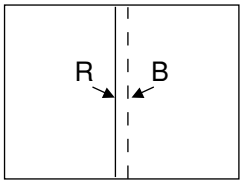
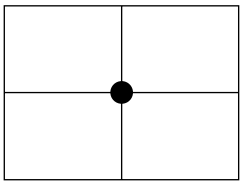
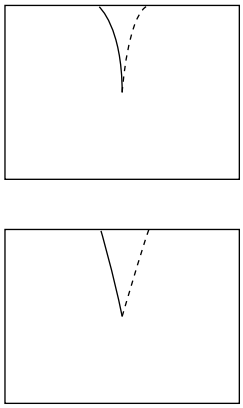
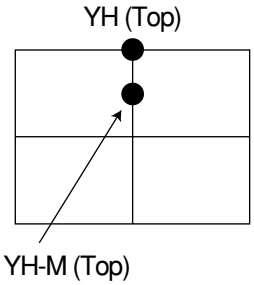
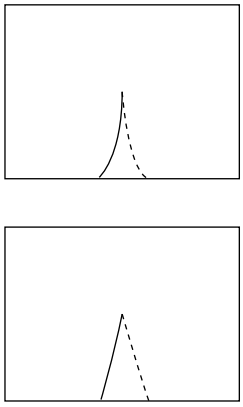
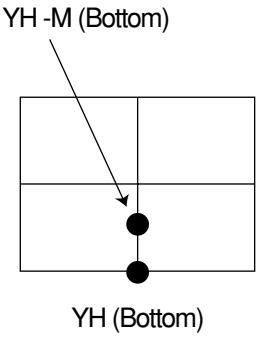
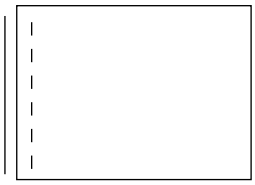
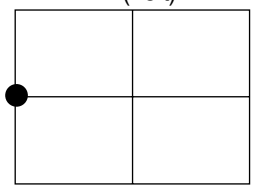
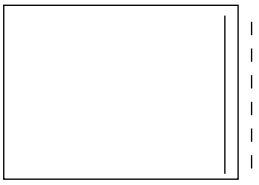
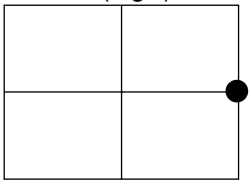
Horizontal convergence

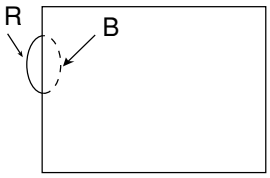
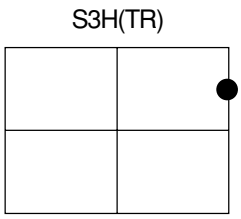
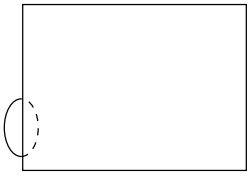
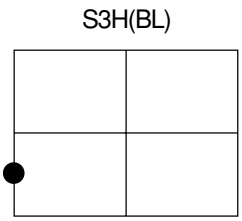
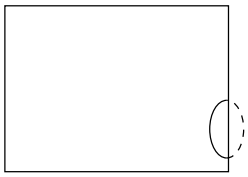
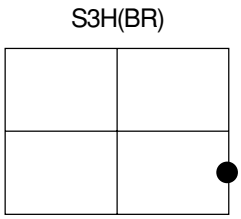
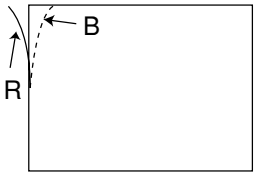
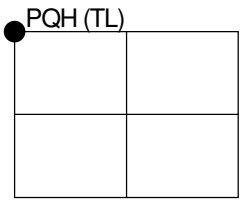
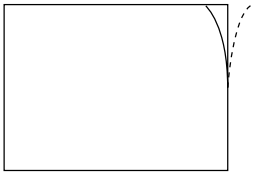
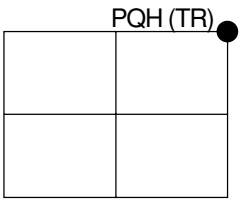
Adjusting the center misconvergence and axial misconvergence

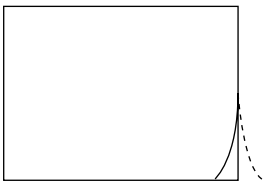
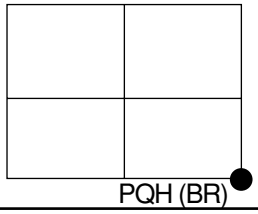
Adjustment item name	Problem	Adjustment point	Adjustment procedure
H-STATIC V-STATIC			Adjust to ±0.1mm or less with CP-ASSY 4P.
YH axial deviation			Adjust so that TOP+BOTTOM are ±0.1mm or less with YH volume.
YV axial deviation			Adjust so that TOP-BOTTOM is ±0.1mm or less with YV volume.
XH axial deviation			Adjust so that LEFT-RIGHT is ±0.1mm or less with XH slider.
XV characteristics XV axial deviation	 		Only when XV (B-Bow) is ±0.15mm or more, adjust so that LEFT-RIGHT is ±0.15mm or less with the interlock of B-Bow 4P and CP-ASSY 4P. Adjust so that LEFT+RIGHT is ±0.15mm or less with XV differential.

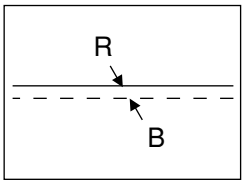
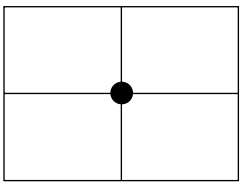
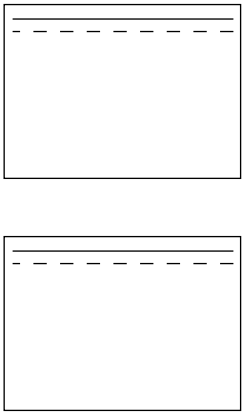
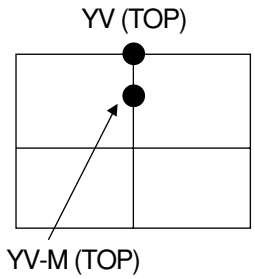
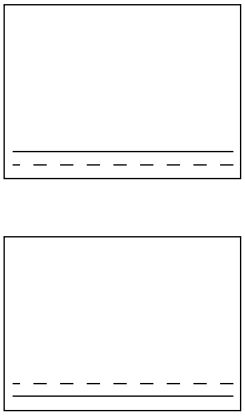
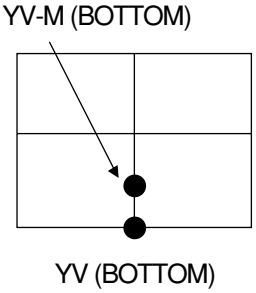
2.4.9.2 Adjusting DDCP

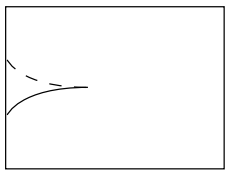
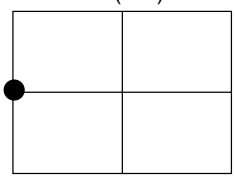
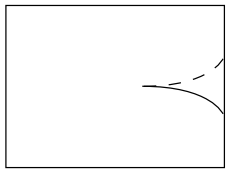
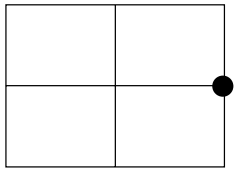
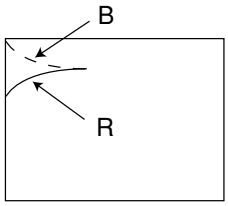
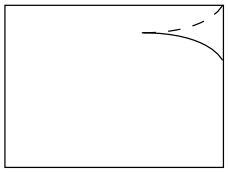
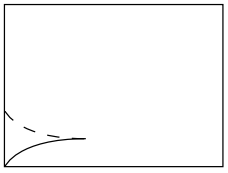
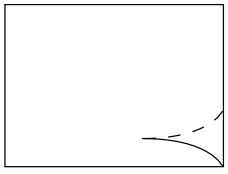
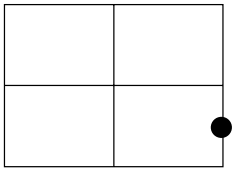
(1) Input the timing No. 12 (106.25kHz/85Hz, 1600 x 1200) crosshatch pattern.
(2) Enter the factory mode.
(3) Adjust in the following order. (It is assumed that the center and axial misconvergence on the previous page have already been adjusted.)

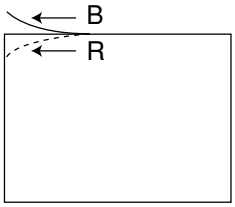
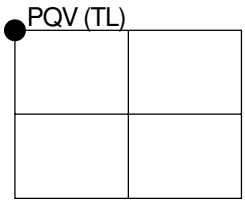
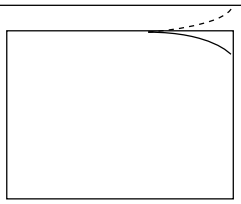
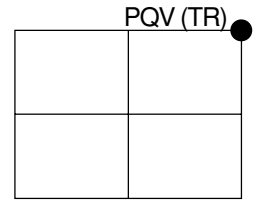
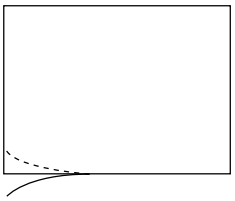
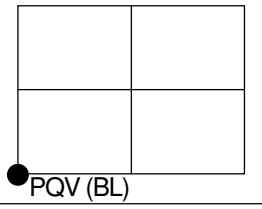
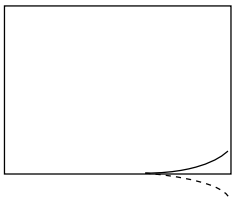
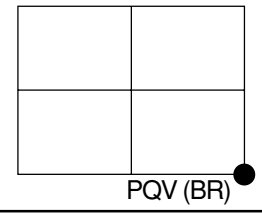
Adjustment order	Adjustment item name	Problem	Adjustment point	Adjustment procedure
4H-COIL				
1	HORIZ-CONVERGENCE			Adjust to 0.05mm or less. (Adjustment target is 0mm.)
2	YH-TT YH-JT			Adjust to 0.05mm or less. (Adjustment target is 0mm.) (NOTE) The operating amount at YH-M(TOP) when moving YH-TT and YH-JT : YH-TT < YH-JT
3	YH-TB YY-JB			Adjust to 0.05mm or less. (Adjustment target is 0mm.) (NOTE) The operating amount at YH (BOTTOM) when moving YH-TB and YH-JB : YH-TB < YH-JB
4	XH-L			Adjust to 0.1mm or less.
5	XH-R			Adjust to 0.1mm or less.

Adjustment order	Adjustment item name	Problem	Adjustment point	Adjustment procedure
4H-COIL				
6	S3H-TL			Adjust to 0.3mm or less.
7	S3H-TR			Adjust to 0.3mm or less.
8	S3H-BL			Adjust to 0.3mm or less.
9	S3H-BR			Adjust to 0.3mm or less.
10	PQH-TL			Adjust to 0.3mm or less.
11	PQH-TR			Adjust to 0.3mm or less.

Adjustment order	Adjustment item name	Problem	Adjustment point	Adjustment procedure
4H-COIL				
12	PQH-BL			Adjust to 0.3mm or less.
13	PQH-BR			Adjust to 0.3mm or less.

Adjustment order	Adjustment item name	Problem	Adjustment point	Adjustment procedure
4V-COIL				
1	VERT-CONVERGENCE (Basic Convergence vertical)			Adjust to 0.05mm or less. (Adjustment target is 0mm.)
2	YV-TT YV-JT			Adjust YV (TOP) to 0.05mm or less with balance adjustment of YV-TT and YV-JT. (Adjustment target is 0mm.) (Note) The operating amount at YV-M (TOP) when moving YV-TT and YV-JT. YV-TT<YV-JT
3	YV-TB YV-JB			Adjust YV (BOTTOM) to 0.05mm or less with balance adjustment of YV-TB and YV-JB. (Adjustment target is 0mm.) (Note) The operating amount at YV-M (BOTTOM) when moving YV-TB and YV-JB. YV-TB<YV-JB

Adjustment order	Adjustment item name	Problem	Adjustment point	Adjustment procedure
4V-COIL				
4	XV-L		XV(Left) 	Adjust to 0.1mm or less.
5	XV-R		XV(Right) 	Adjust to 0.1mm or less.
6	S3V-TL		S3V(TL) 	Adjust to 0.3mm or less.
7	S3V-TR		S3V(TR) 	Adjust to 0.3mm or less.
8	S3V-BL		S3V(BL) 	Adjust to 0.3mm or less.
9	S3V-BR		S3V(BR) 	Adjust to 0.3mm or less.

Adjustment order	Adjustment item name	Problem	Adjustment point	Adjustment procedure
4V-COIL				
10	PQV-TL			Adjust to 0.3mm or less.
11	PQV-TR			Adjust to 0.3mm or less.
12	PQV-BL			Adjust to 0.3mm or less.
13	PQV-BR			Adjust to 0.3mm or less.

* Specify the adjustment value range of the following adjustment items in general DDCP adjustment.

Adjustment items	Adjustment value range (Factory mode))
H-CONVERGENCE	73~181 (OSD display value=DAC output value)
V-CONVERGENCE	73~181 (OSD display value=DAC output value)

2.4.10 Default settings (With factory mode)

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Default settings	Factory mode	Each adjustment timing
			Crosshatch

(1) Set the default values as shown in the table (user mode) given in the OSD display (Refer to 2.3.3.1 User mode).
If the setting class is an item for each timing, carry out for each adjustment timing except the item of default setting "CENTER".
(2) Return to the user mode with the front panel.
(3) Execute ALL RESET to confirm that each OSD setting is as shown in the table (user mode) given in the OSD display (Refer to 2.3.3.1 User mode).
The default setting CENTER is the factory adjustment value called when the (-) (+) ADJUST buttons are pressed simultaneously in the normal mode.
Only CONTRAST will be set to 100% when the (-) (+) ADJUST buttons are pressed simultaneously in the normal mode.
(4) After setting the default values, turn the power switch OFF.

2.5 Inspections (In normal mode)

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Inspections	Normal mode	

2.5.1 Electrical performance

Inspect the electrical performance by setting contrast to MAX and bright to center (press the (-) (+) ADJUST buttons simultaneously).

2.5.1.1 Withstand voltage

There must be no abnormality when 1500VAC is applied for two seconds between both ends of the AC input terminal and chassis, and between the DG coil terminal and chassis.

2.5.1.2 Grounding conductivity check

Check that the resistance value is 100mΩ or less when 25A is passed between the AC input terminal grounding GND and chassis GND.

2.5.1.3 Degaussing coil operation

Confirm that when OSD DEGAUSS is executed, the picture vibrates and then stops.

2.5.1.4 POWER SAVE function operation (Set the AC power input to 230V)

Confirmation timing
Timing No. 12 (106.25kHz / 85Hz, 1600x1200)

Use the full white pattern without R, G, B signals.
Select POWER-SAVE from the OSD, and set the POWER-SAVE function ON.

(1) POWER SAVE ON

(a) Confirm that when SYNC (H&V) is removed, the system waits for approx. 5 seconds, displays POWER SAVE for approx. three seconds, and then the picture dark ens. Also confirm that the power LED changes to orange and the power consumption is as follows.

Power consumption	3W or less

(b) Confirm that when SYNC is input again, the high voltage is recovered, and the picture appears in approx. five seconds.

2.5.1.5 Confirming the CORNER-PURITY function

Confirmation timing
Timing No. 12 (106.25kHz / 85Hz, 1600x1200)

Input a (full white display), and press the (-)(+) ADJUST buttons to change the CORNER PURITY (TR/TL/BR/BL). Confirm that the color coordination around the picture changes.

2.5.1.6 Focus, picture performance (Timing No. 12 106.25kHz / 85Hz, 1600 x 1200)

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Focus, picture performance		No.12 : 106.25kHz/85Hz, 1600x1200

The picture must be evenly bright with the "e" character normal and reverse displays.

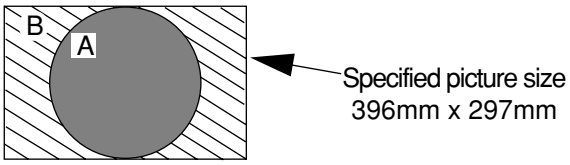
2.5.1.7 Misconvergence

After heat running for 20 minutes or more, the mis-convergence amount in the horizontal and vertical directions must be below the following values.

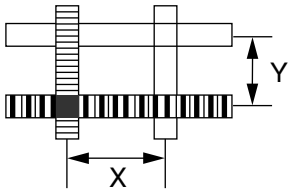
The mis-convergence amount is the value between the two colors of R, G and B separated the most in the horizontal (X) and vertical (Y) directions when a 9 vertical line x 9 horizontal line crosshatch is displayed.

Zone	Mis-convergence amount				
A	0.25mm or less				
B	0.35mm or less				
Measurement timing (Timing No.)	12				

<Zone>



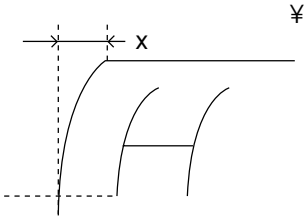
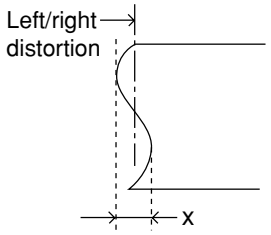
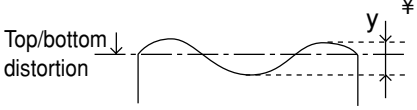
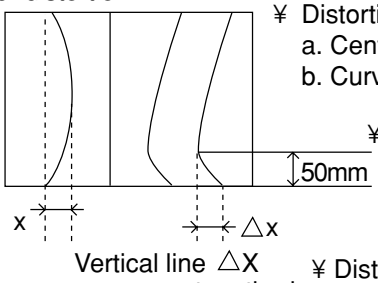
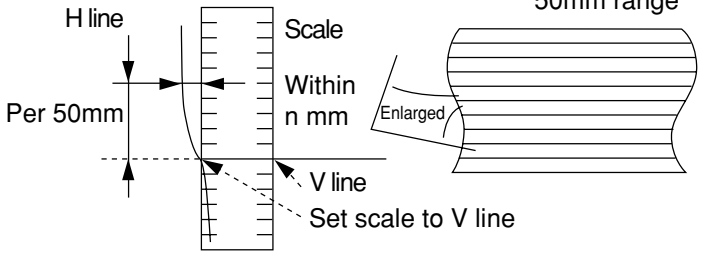
<Mis-convergence amount>

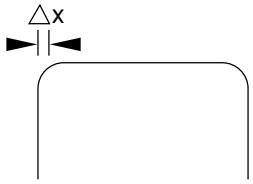
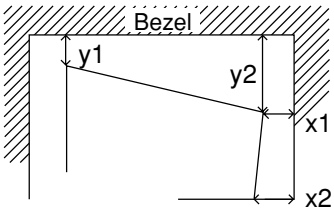
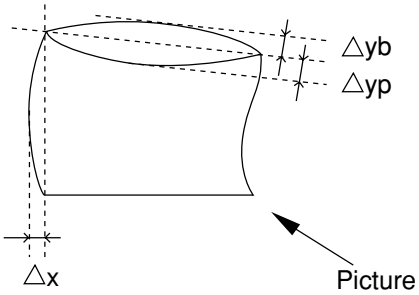
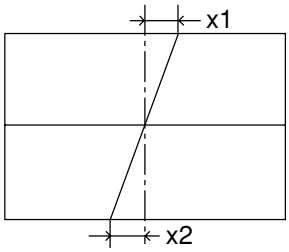
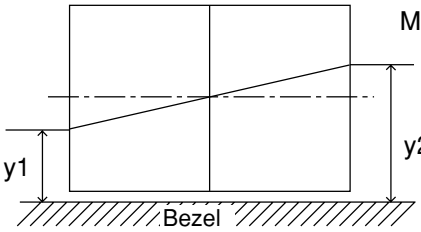


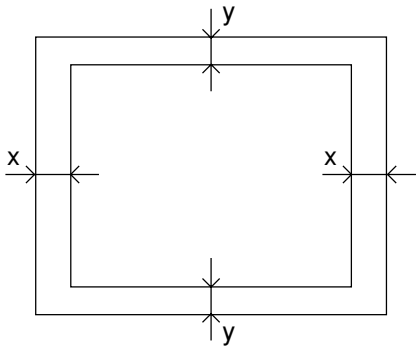
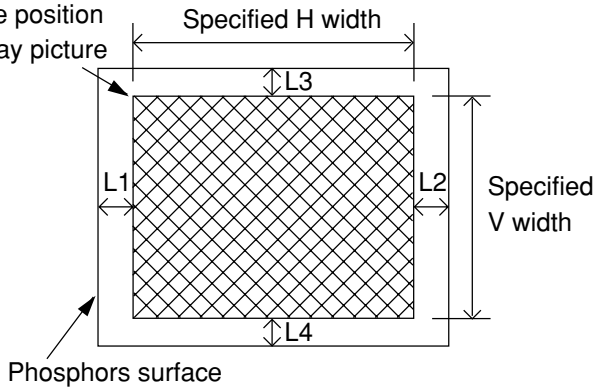
2.5.1.8 Picture distortion

When the picture distortion is measured, each distortion of the preset timing must be less than the following values.

<Picture performance inspection items> Inspect the following items for the picture distortion.

No.	Item	Judgement reference value	Input signal
1.	4-corner section distortion Inspect the distortion at the four corners. ¥ Signal, H character with frame (both normal/reverse)  ¥ Distortion x: Distortion in the range of one H character height. Judge with the white display G. (Judge the distortion amount with a fluorescent material stripe.)	x ≦ 1pitch (=0.3mm)	H character with frame (both normal/ reverse)
2.	4-edge distortion When S-character or seagull type high frequency distortion is visible, check with the following method.  ¥ Distortion x of S-character distortion, etc.: Distortion excluding normal pin, barrel or trapezoid. Note:There must be no sea-gull distortion.  ¥ Distortion y: High frequency distortion excluding trapezoid.	x ≦ 0.6mm * Note y ≦ 1.0mm	Crosshatch pattern
3.	Inner distortion  ¥ Distortion x: a. Center line b. Curve of other vertical line ¥ Distortion x: a. Center line b. Curve of other vertical line Vertical line △X measurement method  ¥ Distortion △x: Curve within 50mm range	a. x ≦ 1.0mm b. x ≦ 1.5mm (*) (*) Present No. 1 (31.5kHz, 60Hz) is: a. x ≦ 1.5mm b. x ≦ 2.0mm △x When Fh < 61kHz, total area : less than 0.9mm. When Fh ≧ 61kHz, center : less than 0.6mm, peripheral : less than 0.9mm.	

No.	Item	Judgement reference value	Input signal
4.	Line curve (crosshatch pattern outer contour)  △x: Curve within 50mm range (horizontal) △y: Curve within 50mm range (vertical)	△x ≦1.0mm △y ≦1.0mm	Crosshatch pattern
5.	Horizontal trapezoid (top/bottom), vertical trapezoid (left/right)  • △y=|y1-y2| △x=|x1-x2| • Control with the above right value for each the top, bottom, left and right.	△y ≦2.0mm △x ≦1.8mm	
6.	Top/bottom pin and barrel, left/right pin and barrel 	△yb ≦1.3mm △yp ≦1.5mm △x ≦1.0mm	
7.	Parallelogram distortion  Measure the larger of x1 and x2.	x ≦0.8mm	
8.	Inclination  Measure △y = |y1-y2|.	△y ≦2.0mm	

No.	Item	Judgement reference value	Input signal
9.	Distortion Must be within the following frame. (Note, excluding ROTATION) 	y ≦ 2.0mm x ≦ 2.0mm	Crosshatch pattern
10.	Picture position Display picture 	|L1-L2| ≦ 5.0mm |L3-L4| ≦ 3.0mm	Full white

2.5.1.9 Linearity

Measure the linearity with a 17 horizontal line x 13 vertical line crosshatch.

Horizontal linearity :	fH=30-40kHz	whole : 15% or less,	adjacent : 7% or less
	fH=40-60kHz	whole : 12% or less,	adjacent : 7% or less
	fH=60-130kHz	whole : 10% or less,	adjacent : 7% or less
Vertical linearity :		whole : 10% or less,	adjacent : 7% or less

Calculation expression : $\frac{(Xmax - Xmin)}{(Xmax + Xmin)/2} \times 100(\%)$

* If any doubts arise about the judgment, judge with the horizontal/vertical width tolerance of ±3mm, picture position: |L1-L2|≤3.0mm and |L3-L4|≤3.0mm.

2.5.1.10 Adjustment value list

The horizontal width, vertical width and DBF-H amplitude must be within the following ranges.

Timing	Horizontal width (mm)	Vertical width (mm)	DBF-H amplitude (H)		DBF-V amplitude (V)	
No.	Adj. value	Adj. value	Standard Adj. value	Max. Adj. value	Standard Adj. value	Max. Adj. value
1						
2	**396±5**	**297±4**	**370±10**	**430**	**150±5**	**190**
3						
4						
5	**396±5**	**297±4**	**370±10**	**430**	**150±5**	**190**
6						
7	**396±5**	**297±4**	**370±10**	**430**	**150±5**	**190**
8	**396±5**	**297±4**	**370±10**	**430**	**150±5**	**190**
9	**371±5**	**297±4**	**340±10**	**400**	**150±5**	**190**
10	**371±5**	**297±4**	**340±10**	**400**	**150±5**	**190**
11	**396±5**	**297±4**	**370±10**	**430**	**150±5**	**190**
12	**396±5**	**297±4**	**370±10**	**430**	**150±5**	**190**
13						
14						
15	**396±5**	**297±4**	**370±10**	**430**	**150±5**	**190**
16						
17						
18						
19						
20						
21						
22						
23						
24						
25	**396±5**	**297±4**	**370±10**	**430**	**150±5**	**190**
26						
27						
28						

Standard adjustment value: in case of determining DBF voltage
Maximum adjustment value: the value impossible to set the maximum of DBF voltage

2.5.1.11 Confirming CLAMP PULSE POSITION, SYNC ON GREEN

When an optional timing is input, confirm that the screen should meet with the judgement criteria below.

Timing : Check 4 (35kHz / 66Hz), full white.

Judgement criteria : Back raster color coodination should vary.

2.5.1.12 Checking the functions during Composite Sync input

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Checking the functions during Sync. on Green and Composite Sync input		Check 2 : 35kHz / 66Hz
			Full white

[Composite Sync]

Timing: Check 2 (35kHz/66Hz), full white

In the normal mode, input the above timing to confirm that the operation is normal.

2.5.1.13 Confirming the full white luminance

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Confirming the full white luminance		No.12: 106.25kHz / 85Hz 1600x1200
			Full white

Timing No. 12 (106.25kHz/85Hz, 1600 x 1200), input amplitude = 0.7Vp-p

Confirm that the full white luminance is the following value.

COLOR 1	COLOR 2	COLOR 3
105 or more	92 or more	77or more

2.5.1.14 Confirming CONVERGENCE compensation function

Confirm that CONVERGENCE changes by varying H-CONVERGENCE and V-CONVERGENCE.

2.5.1.15 Confirming ROTATION compensation function

Confirm that the picture rorates by changing ROTATION.

2.5.1.16 Luminance/color coordination uniformity

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Lluminance/color coordination uniformity		No.12: 106.25kHz / 85Hz 1600x1200

The luminance ratio between the center and periphery must be 80% or more with timing No. 12 (106.25kHz/85Hz, 1600 x 1200) COLOR 1.

The color coordination difference between the center and periphery must be $\Delta x, y < \pm 0.012$ at COLOR 1/2/3.

2.5.1.17 Confirming the full white color coordination

Confirm that the color coordination at the center of the full white is within the following range at timing No.12 (106.25kHz/85Hz, 1600 x 1200).

Condirmation item		COLOR 1	COLOR 2	COLOR 3
Color coordination	x	0.283 ±0.007	0.313 ±0.007	0.345 ±0.007
	y	0.297 ±0.007	0.329 ±0.007	0.359 ±0.007

* Confirmation of OSD coodination

X=0.283±0.04, Y=0.297±0.05 (Confirm at white colored area in OSD)

2.5.1.18 Confirming the color tracking

Status indicator	Adjustment item	Adjustment mode/set	Imput signal/pattern
	Confirming color tracking		No.12 : 106.25kHz/85Hz
			Full White

Confirm with the timing No. 12 (106.25kHz/85Hz, 1600 x 1200).
Measure the color coordination at the center of the picture using a full white pattern (input amplitude = 0.7Vp-p).

Confirm that the color coordination change is within the ±0.015 range when the CONTRAST is set to 25cd/m^2 with the OSD.

2.5.1.19 CRT installation position

CRT installation position tolerance Within ±3mm in vertical direction Within ±2.5mm in horizontal direction
Inclination: Within ±2.5mm at bezel reference

2.5.1.20 Confirming FPM operation

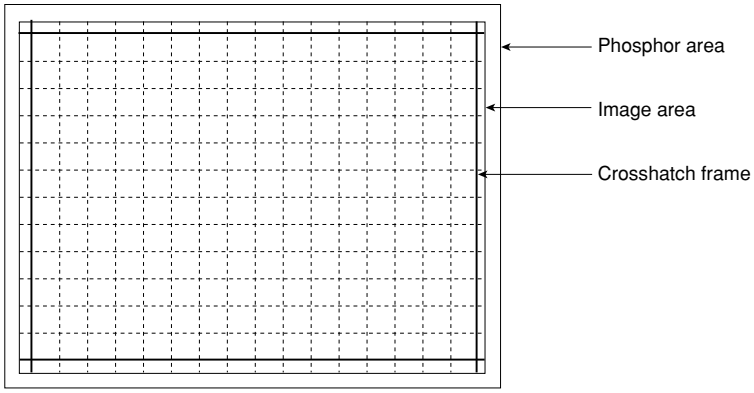
Confirm with the timing No. 12 (106.25kHz/85Hz, 1600 x 1200) and COLOR 1.
Confirm that the relation of the window luminance with the back raster luminance in each mode is as follows.

	Normal	Text	Graphic
Window luminance	Standard	Low	Standard
Back raster luminance	Standard	Low	Low

* Confirm that the color is not saturated when Graphic mode.

2.5.1.21 Confirming Auto size operation

(Timing No.6 (VESA 800 X 600))
(1) Select Auto size fuction with OSD in user mode, and press (+) function adjust button.
(2) Confirm that Auto size function operates and the crosshatch frame should be within phosphor area.



2.5.1.22 Others

(1) When the PUSH button is pressed, the changes must be smooth, and there must be no abnormalities such as noise.
(2) Synchronization must not flow when the power switch is turned ON and OFF.
(3) Confirm that the POWER LED is lit.

2.5.1.23 Confirming USB

Confirming USB hub
(1) Connect upstream connector to PC with USB cable.
(2) Connect USB device to downstream connector 1, and confirm the operation.
(3) Connect USB device to downstream connector 2, and confirm the operation.
(4) Connect USB device to downstream connector 3, and confirm the operation.
(5) Disconnect USB cable.

2.6 DDC write data contents

The contents of DDC write data must be as follows.

EDID DATA for DDC (NSZ2107)

ADR (H)	DATA															
E80-E8F	00	ff	ff	ff	ff	ff	ff	00	34	ac	11	45	**	**	**	**
E90-E9F	WW	YY	01	02	0e	28	1e	78	e9	9c	68	a0	57	4a	9b	26
EA0-EAF	12	48	4c	ff	ff	80	31	59	d	4f	a9	59	a9	4f	81	99
EB0-EBF	e1	4f	61	59	45	59	0f	75	08	b0	72	46	43	50	90	c8
EC0-ECF	13	00	8c	29	11	00	00	18	00	00	00	fd	00	32	a0	1e
ED0-EDF	79	24	00	0a	20	20	20	20	20	20	00	00	00	fc	00	4e
EE0-EEF	53	5a	32	31	30	37	55	0a	20	20	20	20	00	00	00	ff
EF0-EFF	00	##	##	##	##	##	##	##	##	##	0a	20	20	20	00	ss

WW : Week of Manuf. ** : Serial Number (HEX) SS : Check SUM
YY : Year of Manuf. ## : Serial Number (ASCII)

Manuf Code: MEL
Product Code LSB (HEX): 11
Product Code MSB (HEX): 45
Product Code (DEC): 17681
(Microsoft INF ID: MEL4511)
Serial Number (DEC): **
Serial Number (HEX): **
Week of Manuf: WW
Year of Manuf: YY

EDID Version: 1
EDID Revision: 2
Extension Flag: 0

Video:
Input Singal: ANALOG
Setup: NO
Sync on Green: YES
Composite Sync: YES
Separate Sync: YES
V Sync Serration: NO
V Signal Level: 0.700V/0.300V (1V p-p)

Max Image Size H: 40cm
Max Image Size V: 30cm
DPMS Stand By: YES
DPMS Suspend: YES
DPMS Active Off: YES
GTF Support: YES
Standard Default Color Space: NO
Preferred Timing Mode: NO
Display Type: RGB Color

Color:
Gamma: 2.20
Red x: 0.627
Red y: 0.341
Green x: 0.292
Green y: 0.605
Blue x: 0.149
Blue y: 0.072
White x: 0.283
White y: 0.297

Established Timings:
720x400 @70 Hz
720x400 @88 Hz
640x480 @60 Hz
640x480 @67 Hz
640x480 @72 Hz
640x480 @75 Hz
800x600 @56 Hz
800x600 @60 Hz
800x600 @72 Hz
800x600 @75 Hz
832x624 @75 Hz
1024x768 @87 Hz (I)
1024x768 @60 Hz
1024x768 @70 Hz
1024x768 @75 Hz
1152x870 @75 Hz
1280x1024 @75 Hz

Standard Timing #1:
Horizontal Active Pixels: 640
Aspect Ratio: 4:3
(480 active lines)
Refresh Rate: 85Hz

Standard Timing #2:
Horizontal Active Pixels: 1920
Aspect Ratio: 4:3
(1440 active lines)
Refresh Rate: 75Hz

Standard Timing #3:
Horizontal Active Pixels: 1600
Aspect Ratio: 4:3
(1200 active lines)
Refresh Rate: 85Hz

Standard Timing #4:
Horizontal Active Pixels: 1600
Aspect Ratio: 4:3
(1200 active lines)
Refresh Rate: 75Hz

Standard Timing #5:
Horizontal Active Pixels: 1280
Aspect Ratio: 5:4
(1024 active lines)
Refresh Rate: 85Hz

Standard Timing #6:
Horizontal Active Pixels: 2048
Aspect Ratio: 4:3
(1536 active lines)
Refresh Rate: 75Hz

Standard Timing #7:
Horizontal Active Pixels: 1024
Aspect Ratio: 4:3
(768 active lines)
Refresh Rate: 85Hz

Standard Timing #8:
Horizontal Active Pixels: 800
Aspect Ratio: 4:3
(600 active lines)
Refresh Rate: 85Hz

Detailed Timing (block #1):
Pixel Clock: 229.67 MHz
Horizontal Active: 1800 pixels
Horizontal Blanking: 688 pixels
Vertical Active: 1350 lines
Vertical Blanking: 67 lines
(Horizontal Frequency: 120.45 kHz)
(Vertical Frequency: 85.0 Hz)
Horizontal Sync Offset: 144 pixels
Horizontal Sync Width: 200 pixels
Vertical Sync Offset: 1 lines
Vertical Sync Width: 3 lines
Horizontal Border: 0 pixels
Vertical Border: 0 pixels
Horizontal Image Size: 396 mm
Vertical Image Size: 297 mm
Interlaced: NO
Image: Normal Display
Sync: Digital Separate
Bit 1: OFF
Bit 2: OFF

Monitor Range Limits (block #2):
Minimum Vertical Rate: 50 Hz
Maximum Vertical Rate: 160 Hz
Minimum Horizontal Rate: 30 kHz
Maximum Horizontal Rate: 121 kHz
Maximum Pixel Clock: 360 MHz
GTF Data: 00 0a 20 20 20 20 20 20

Monitor Name (block #3): NSZ2107U

Monitor Serial Number (block #4): ########

EDID EDITOR V1.40 (000621)
(C) Mitsubishi Electric 1995-2000

2.7 Self-diagnosis shipment setting

The shipment settings for self-diagnosis data area (region) are given below.

ADR	Default Setting (H)	Function
6A	———	
6B	———	
6C	———	Operation horizontal frequency 1 (frequency indicated in the latest period)
6D	———	Operation vertical frequency 1 (frequency indicated in the latest period)
6E	———	Operation horizontal frequency 2 (frequency indicated in the secondary latest period)
6F	———	Operation vertical frequency 2 (frequency indicated in the secondary latest period)
70	———	Operation horizontal frequency 3 (frequency indicated in the third latest period)
71	———	Operation vertical frequency 3 (frequency indicated in the third latest period)
72	00	Short-circuit rate at User mode
73	00	X-PRO rate at User mode
74	00	Beam Pro rate at User mode
75	00	I2C error rate at User mode
76	00	High voltage fail safe operation rate at User mode
77	00	High voltage, X-PRO data EEPROM reading error rate at User mode
78	———	Short-circuit rate at Factory mode
79	———	X-PRO rate at Factory mode
7A	———	Beam Pro rate at Factory mode
7B	———	I2C error rate at Factory mode
7C	———	High voltage fail safe operation rate at Factory mode
7D	———	High voltage, X-PRO data EEPROM reading error rate at Factory mode
A0	00	Lower byte of operating time (including POWER SAVE)
A1	00	Upper byte of operating time (including POWER SAVE)
A2	———	———
A3	00	Lower byte of Heater ON time (excluding POWER SAVE)
A4	00	Upper byte of Heater ON time (excluding POWER SAVE)

2.8 Default inspection

2.8.1 Default setting of switches

Confirm that the following switch is set as follows.

(1) Power switch: OFF

2.8.2 Default setting of OSD

Confirm that each OSD setting is as shown in the OSD display (section 2.3.3) table (user mode/factory mode).

If the setting class is an item for each timing, carry out for each adjustment timing.

* CENTER is the factory adjustment value called when the (-) (+) ADJUST buttons are pressed simultaneously in the normal mode.
Only CONTRAST will be set to MAX 100% when the (-) (+) ADJUST buttons are pressed simultaneously in the normal mode.

2.8.3 Checking the labels

Confirm that the "SERVICEMAN WARNING", "rating label", "manufacturing date stamp", "SERIAL NO. label", and "set sub-No.", etc., are attached to the specified position, and have been checked.

2.8.4 Packaging

(1) There must be no remarkable contamination, tearing or scratches, etc.

(2) The model name must be accurately displayed.

(3) The SERIAL NO. must be attached. (Must be the same No. as the set.)

(4) The package must be accurately sealed.

2.9 Degaussing with handy-demagnetizer

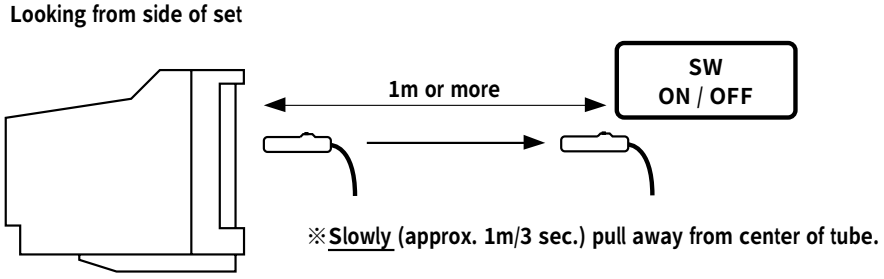
2.9.1 General precautions

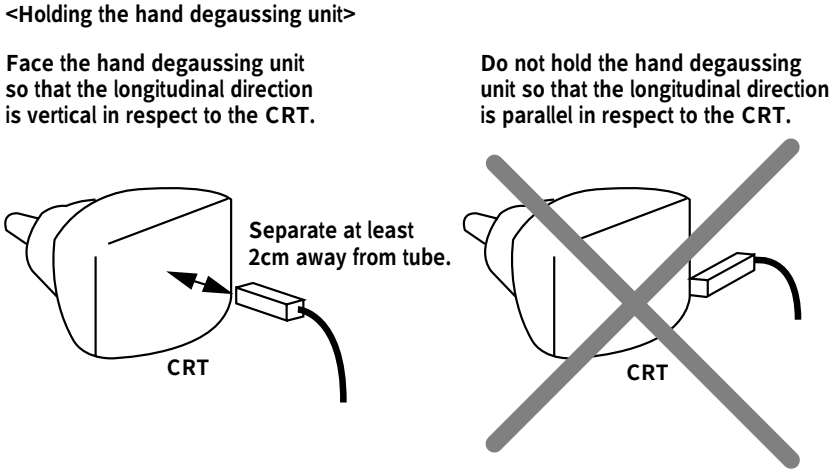
(1) Carry this procedure out with the monitor power ON.
(2) When degaussing with handy-demagnetizer, the demagnetizer power must be turned ON and OFF at a position at least 1m away from CRT tube.
(3) Use a bar type demagnetizer instead of a ring type.
Carefully and slowly (1m/3 sec.) demagnetize the CRT tube and bezel side surface.
When separating the degaussing coil at the end, separate as slow as possible with the following procedure.
If separated quickly, stripes could remain at the picture corners.

2.9.2 How to hold and use the handy-demagnetizer

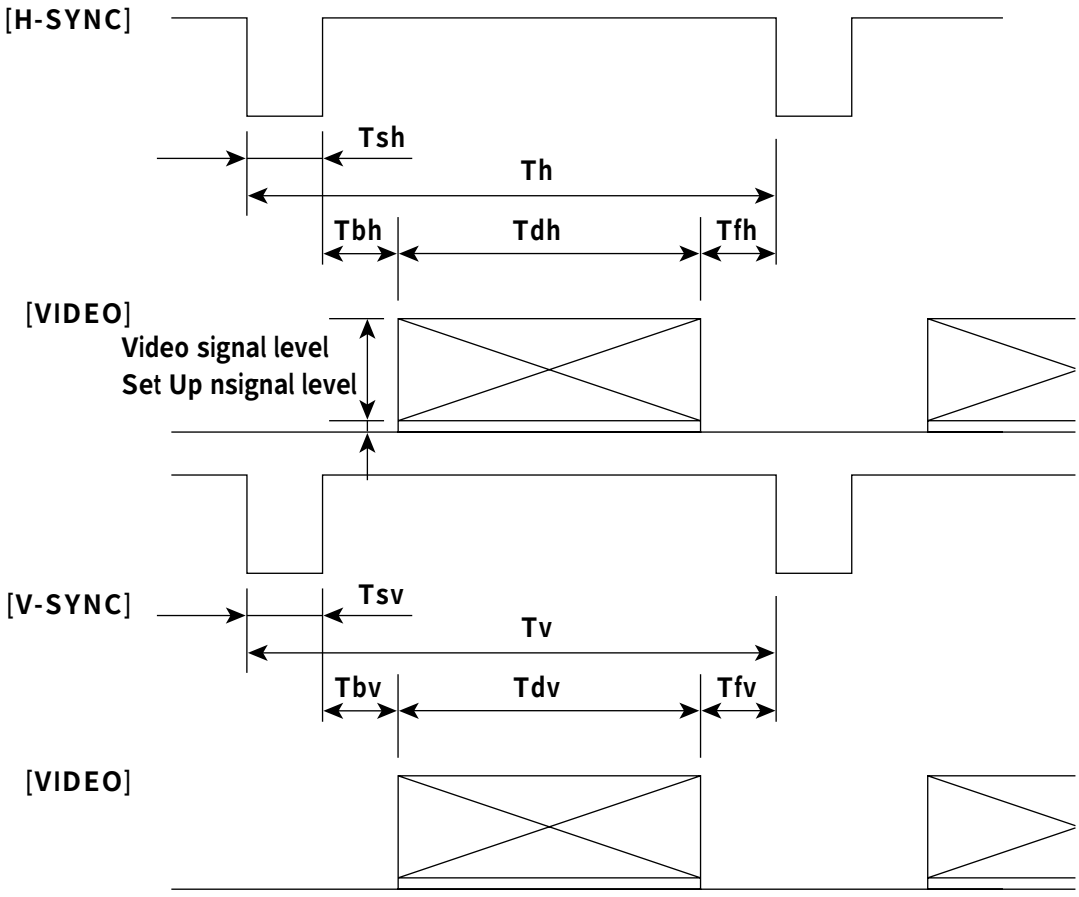
(1) Approach the demagnetizer as carefully and slowly (approx. 1m/3 sec.) as possible, and move around the bezel side periphery two to three times.
(2) Next, gradually (approx. 1m/3 sec.) move to the CRT tube side, and move around the CRT tube four to five times with the following procedure.
(3) Finally, leave the CRT tube as slowly (approx. 1m/3 sec.) as possible, and turn the handy-demagnetizer unit switch OFF at a position 1 to 1.5m away.

(NOTE): The monitor should be degaussed as whichever following conditions.
(1) Degauss by handy demagnetizer in off condition.
(2) Degauss by handy demagnetizer in power management condition.
(3) Degauss by handy demagnetizer with monitor set degauss operation.





2.10 Timing chart



※Refer to after the next page for the preset timing details.

2.11 Adjustment timing

NO	Fh (kHz)	Clock (MHz)	Th (µSEC) (dot)	Tsh (µSEC) (dot)	Tfh (µSEC) (dot)	Tbh (µSEC) (dot)	Tdh (µSEC) (dot)	Fv (Hz)	Tv (mSEC) (line)	Tsv (mSEC) (line)	Tfv (mSEC) (line)	Tbv (mSEC) (line)	Tdv (mSEC) (line)	Hs	Vs	VIDEO level (V)	set up level (V)	Serra-tion			Remarks
Check 1	35		28.571	3.500	1.891	4.000	19.180	66.70	15.000	0.086	1.485	2.000	11.428	S/G		0.7	-	-			Check 1
Check 2	35		28.571	3.500	1.891	4.000	19.180	66.70	15.000	0.086	1.485	2.000	11.428	Com posite		0.7	-	1H			Check 2
Check 3	130	368.116	7.692	0.608	0.456	1.065	5.563	80.795	12.377	0.023	0.008	0.530	11.815	+	-	0.7	-	-			Check 3 GTF(2084*1536)81kHz
Check 4	106.250	229.500	9.412	0.837	0.279	1.325	6.972	85.000	11.765	0.028	0.009	0.433	11.294	+	-	0.7	-	-			Check 4 (1600*1200)85Hz
A	30		33.333	4.000	0.833	2.500	26.000	70.10	14.268	0.064	1.176	1.906	11.122	+	-	0.7	-	-			+B-L adjustment

NO	Fh (kHz)	Clock (MHz)	Th (μSEC) (dot)	Tsh (μSEC) (dot)	Tfh (μSEC) (dot)	Tbh (μSEC) (dot)	Tdh (μSEC) (dot)	Utili-zation	H re-trace s+f+b	Fv (Hz)	Tv (mSEC) (line)	Tsv (mSEC) (line)	Tfv (mSEC) (line)	Tbv (mSEC) (line)	Tdv (mSEC) (line)	V re-trace	Hs	Vs	VIDEO level (V)	set up level (V)	Serra-tion (V)	Group				Remarks
1	31.469	25.175	31.778 (800)	3.813 (96)	0.636 (16)	1.907 (48)	25.422 (640)	80.00	6.356	70.090	14.268 (449)	0.064 (2)	0.382 (12)	1.111 (35)	12.711 (400)	1.175	-	+	0.7	-	-					(640*400)70Hz
2	31.469	25.175	31.778 (800)	3.813 (96)	0.636 (16)	1.907 (48)	25.422 (640)	80.00	6.356	59.940	16.683 (525)	0.064 (2)	0.318 (10)	1.048 (33)	15.253 (480)	1.112	-	-	0.7	-	-	○1				VGA(640*480)60Hz
3	37.500	31.500	26.667 (840)	2.032 (64)	0.508 (16)	3.810 (120)	20.317 (640)	76.19	6.350	75.000	13.333 (500)	0.080 (3)	0.027 (1)	0.427 (16)	12.800 (480)	0.506	-	-	0.7	-	-					VESA(640*480)75Hz
4	43.269	36.000	23.111 (832)	1.556 (56)	1.556 (56)	2.222 (80)	17.778 (640)	76.92	5.334	85.008	11.764 (509)	0.069 (3)	0.023 (1)	0.578 (25)	11.093 (480)	0.647	-	-	0.7	-	-					VESA(640*480)85Hz
5	46.875	49.500	21.333 (1056)	1.616 (80)	0.323 (16)	3.232 (160)	16.162 (800)	75.76	5.171	75.000	13.333 (625)	0.064 (3)	0.021 (1)	0.448 (21)	12.800 (600)	0.512	+	+	0.7	-	-	○2				VESA(800*600)75Hz
6	53.674	56.250	18.631 (1048)	1.138 (64)	0.569 (32)	2.702 (152)	14.222 (800)	76.34	4.409	85.061	11.756 (631)	0.056 (3)	0.019 (1)	0.503 (27)	11.179 (600)	0.559	+	+	0.7	-	-					VESA(800*600)85Hz
7	60.023	78.750	16.660 (1312)	1.219 (96)	0.203 (16)	2.235 (176)	13.003 (1024)	78.05	3.657	75.029	13.328 (800)	0.050 (3)	0.017 (1)	0.466 (28)	12.795 (768)	0.516	+	+	0.7	-	-	○3				VESA(1024*768)75Hz
8	68.677	94.500	14.561 (1376)	1.016 (96)	0.508 (48)	2.201 (208)	10.836 (1024)	74.42	3.725	84.997	11.765 (808)	0.044 (3)	0.015 (1)	0.524 (36)	11.183 (768)	0.568	+	+	0.7	-	-	○4				VESA(1024*768)85Hz
9	79.976	135.000	12.504 (1688)	1.067 (144)	0.119 (16)	1.837 (248)	9.481 (1280)	75.82	3.023	75.025	13.329 (1066)	0.038 (3)	0.013 (1)	0.475 (38)	12.804 (1024)	0.513	+	+	0.7	-	-	○5				VESA(1280*1024)75Hz
10	91.146	157.500	10.971 (1728)	1.016 (160)	0.406 (64)	1.422 (224)	8.127 (1280)	74.08	2.844	85.027	11.761 (1072)	0.033 (3)	0.011 (1)	0.483 (44)	11.235 (1024)	0.516	+	+	0.7	-	-	○6				VESA(1280*1024)85Hz
11	93.750	202.500	10.667 (2160)	0.948 (192)	0.316 (64)	1.501 (304)	7.901 (1600)	74.07	2.765	75.000	13.333 (1250)	0.032 (3)	0.011 (1)	0.491 (46)	12.800 (1200)	0.523	+	+	0.7	-	-	○7				VESA(1600*1200)75Hz
12	106.250	229.500	9.412 (2160)	0.837 (192)	0.279 (64)	1.325 (304)	6.972 (1600)	74.08	2.441	85.000	11.765 (1250)	0.028 (3)	0.009 (1)	0.433 (46)	11.294 (1200)	0.461	+	+	0.7	-	-	○8				VESA(1600*1200)85Hz
13	106.270	261.000	9.41 (2456)	0.828 (216)	0.368 (96)	1.349 (352)	6.866 (1792)	72.96	2.545	74.997	13.334 (1417)	0.028 (3)	0.009 (1)	0.649 (69)	12.647 (1344)	0.677	-	+	0.7	-	-					VESA(1792*1344)75Hz
14	112.500	288.000	8.889 (2560)	0.778 (224)	0.444 (128)	1.222 (352)	6.444 (1856)	72.49	2.444	75.000	13.333 (1500)	0.027 (3)	0.009 (1)	0.924 (104)	12.373 (1392)	0.951	-	+	0.7	-	-					VESA(1856*1392)75Hz
15	112.500	297.000	8.889 (2640)	0.754 (224)	0.485 (144)	1.185 (352)	6.465 (1920)	72.73	2.424	75.000	13.333 (1500)	0.027 (3)	0.009 (1)	0.498 (56)	12.800 (1440)	0.525	-	+	0.7	-	-	○9				VESA(1920*1440)75Hz
16	35.00	30.240	28.571 (864)	2.116 (64)	2.116 (64)	3.175 (96)	21.164 (640)	74.08	7.407	66.67	15.000 (525)	0.086 (3)	0.086 (3)	1.114 (39)	13.714 (480)	1.2	-		0.7	-	-					APPLE13(640*480)
17	49.710	57.270	20.115 (1152)	1.118 (64)	0.559 (32)	3.910 (224)	14.528 (832)	72.22	5.587	74.530	13.417 (667)	0.060 (3)	0.020 (1)	0.785 (39)	12.552 (624)	0.845	-	-	0.7	-	-					APPLE16(832*624)
18	60.240	80.000	16.600 (1328)	1.200 (96)	0.400 (32)	2.200 (176)	12.800 (1024)	77.11	3.800	74.930	13.346 (804)	0.050 (3)	0.049 (3)	0.498 (30)	12.749 (768)	0.548	-	-	0.7	-	-					APPLE19(1024*768)
19	68.680	100.000	14.560 (1456)	1.280 (128)	0.320 (32)	1.440 (144)	11.520 (1152)	79.12	3.040	75.060	13.322 (915)	0.044 (3)	0.043 (3)	0.568 (39)	12.667 (870)	0.612	-	-	0.7	-	-					APPLE21(1152*870)
20	100.200	219.638	9.980 (2192)	0.801 (176)	0.546 (120)	1.348 (296)	7.285 (1600)	73.00	2.695	75.000	13.333 (1336)	0.03 (3)	0.01 (1)	0.519 (52)	12.774 (1280)	0.549	-	-	0.7	-	-					GTF(1600*1280)75Hz
21	107.200	234.982	9.328 (2192)	0.749 (176)	0.511 (120)	1.260 (296)	6.809 (1600)	73.00	2.520	80.000	12.5 (1340)	0.028 (3)	0.009 (1)	0.522 (56)	11.94 (1280)	0.55	-	-	0.7	-	-					GTF(1600*1280)80Hz
22	114.240	252.242	8.754 (2208)	0.698 (176)	0.507 (128)	1.205 (304)	6.343 (1600)	72.46	2.410	85.000	11.765 (1344)	0.026 (3)	0.009 (1)	0.525 (60)	11.204 (1280)	0.551	-	-	0.7	-	-					GTF(1600*1280)85Hz
23	105.675	261.229	9.463 (2472)	0.766 (200)	0.521 (136)	1.286 (336)	6.891 (1800)	72.82	2.573	75.000	13.333 (1409)	0.028 (3)	0.009 (1)	0.52 (55)	12.775 (1350)	0.548	-	-	0.7	-	-					GTF(1800*1350)75Hz
24	113.040	279.435	8.846 (2472)	0.716 (200)	0.487 (136)	1.202 (336)	6.442 (1800)	72.82	2.405	80.000	12.5 (1413)	0.027 (3)	0.009 (1)	0.522 (59)	11.943 (1350)	0.549	-	-	0.7	-	-					GTF(1800*1350)80Hz
25	120.445	299.667	8.303 (2488)	0.667 (200)	0.481 (144)	1.148 (344)	6.007 (1800)	72.35	2.296	85.000	11.765 (1417)	0.025 (3)	0.008 (1)	0.523 (63)	11.208 (1350)	0.548	-	-	0.7	-	-	○10				GTF(1800*1350)85Hz
26	112.725	278.656	8.871 (2472)	0.718 (200)	0.488 (136)	1.206 (336)	6.460 (1800)	72.82	2.412	75.000	13.333 (1503)	0.027 (3)	0.009 (1)	0.523 (59)	12.774 (1440)	0.55	-	-	0.7	-	-					GTF(1800*1440)75Hz
27	120.560	299.953	8.295 (2488)	0.667 (200)	0.480 (144)	1.147 (344)	6.001 (1800)	72.34	2.294	80.000	12.5 (1507)	0.025 (3)	0.008 (1)	0.523 (63)	11.944 (1440)	0.548	-	-	0.7	-	-					GTF(1800*1440)80Hz
28	80.530	105.656	12.418 (1312)	1.060 (112)	0.303 (32)	1.363 (144)	9.692 (1024)4	78.05	2.726	100.000	10.0 (805)	0.037 (3)	0.012 (1)	0.410 (33)	9.537 (768)	0.463	-	-	0.7	-	-					ELSA(1024*768)100Hz
29	128.64	364.308	7.774	0.615	0.461	1.076	5.622	72.3	2.152	80.000	12.5	0.023	0.008	0.528	11.940	0.551	-	-	0.7	-	-					GTF(2048*1536)80Hz

Mark ○: Factory adjustment
Mark □: Factory adjustment [Though they are presets, it does not apply to the specification of the picture distortion. The sync. signals are reference to the above. (It is possible to reset with the above timings.))
Mark ▲: Initial data [So long as initial data, the sync. signals are reference to Hs: + and Vs: -. However, it is necessary to adjust only the H-SIZE, H-PHASE, DBF-H-AMP, DBF-H-PHASE in factory mode.
The numbers after the marks are the number of preset.

NEC/MITSUBISHI
NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS

TECHNICAL SPECIFICATION

FOR

55cm/51cmV (22"/20"V) HIGH RESOLUTION DIGITAL CONTROL AUTO-TRACKING COLOR DISPLAY MONITOR

MODEL NAME: NSZ2107STTUW

DATE : Jan 18, 2001

NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION

DOCUMENT No.	VSP-C0459

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• **Design and specifications are subject to change without any notice**

MODEL: NSZ2107STTUW

NO.	TYPE			NM VISUAL STANDARD	REMARKS
1	CRT	Size		55cm / 51cmV (22" / 20"V)	Diamondtron NF
		Grill Spacing(Phosphor Spacing)		0.24mm (0.25mm)	Aperture Grille
		Phosphor Type		B22 (EBU)	
		Face-plate		G-WARAS Coating	
		Electron Gun Type		S-NX-DBF	
		Face-plate Transmission		approx.38.4 %(Including face-plate coating)	
2	SCANNING	Horizontal Freq.		30k - 121kHz	
		Vertical Freq.		50 - 160Hz	
3	SIGNAL INPUT	Video Sync.		Analog	0.7Vp-p
				Composite Sync. with G-video	0.3Vp-p
				Composite Sync.	TTL Nega
				Separate Sync.	TTL Posi / Nega
		Termination (Impedance)	Video	75 Ω to Ground	
			Sync.	2.2k Ω to Ground	
4	VIDEO	clock frequency		240MHz	
5	SCREEN CHARACTERISTICS	Display Resolution(Maximum)		2048 x 1536 (addressable) 1600 x 1200 (recommend)	
		Display size	Horizontal	396mm (4:3) 371mm (5:4)	
			Vertical	297mm (4:3),(5:4)	
		Misconvergence		Center : 0.25 mm , Corner : 0.35 mm	
		Brightness (Full White)		100cd/m^2 at 9300K	
6	CONTROL (User Controls)	Front		Power SW, Signal A/B / OSD off Button, Select Button(up/down/left/right) , Adjust Button (+/-)	
			OSD	Contrast, Bright, Color,RGB-Gain,Color Temperature 1/2/3/sRGB,Fine Picture mode,Factory Preset, Auto size adjust, Horiz-size, Horiz-position, Vert-size,Vert-position, Rotation,GTF-Auto Adjust, Factory Preset, Pincushion, Pin Balance, Keystone, Key-balance, Top-Pin,Top-balance,Bottom-Pin, Bottom-balance, Vert-Lin,Vert-Lin-Balance, Factory Preset,Corner Purity(TL/TR/BL/BR),Moire Cancel Level,Clamp pulse position,Factory Preset,Horiz-Convergence, Vert-Convergence,Degauss, Factory Preset, Input, Power Save,Control Lock,OSD Position,OSD turn off,Diagnosis,Language, Auto Save,All-reset, Factory preset	Micro-processor control. Color adjustment. (3 color preset)
7	CONNECTOR	Power Input		3P IEC Plug	
		Signal Input		DB9 - 15P x2 Auto-select	
8	POWER SUPPLY	Operating range		AC100 - 120V / 220 - 240V , 50 / 60 Hz	
		Power consumption (typ.)		140 W 1.4 A@100-120VAC 0.7 A@220-240VAC(without USB load) 155 W 1.55A@100-120VAC 0.75 A@220-240VAC(with USB load) Power save < 3W	
9	ENVIRONMENTAL CONDITION	Operating temperature		5 - 35˚C	
		Relative humidity		10 - 90% (without condensation)	
10	WEIGHT			29.7kg	
11	CABINET	with Tilt / Swivel stand		NM Visual standard (W:495mm,H:493.5,D:473)	
12	REGULATION	Safety		UL / C-UL TÜV (GS)	
		EMC		FCC-B CE-Marking EN60950 EN55022 - B DOC-B EN55024 EN61000 - 3 - 2, - 3 - 3	
		X - Ray		DHHS RöV HWC	
		VLF / ELF		MPR - II , TCO91	
		Power Management		International Energy Star Program , Energy 2000	
		Ergonomics		TCO99 , TÜV (GS) , TÜV -Ergo	
13	OTHERS	Plug & Play		DDC2B(Signal A) , 2BI(Signal B)	
		Digital Dynamic Convergence			
		Communication		Universal Serial Bus (Self Powered Hub 500mA per 1 port) 3 x Downstream Port , 1 x Upstream Port	

1. Regulations

1.1 Geographical Region and Regulations

GEOGRAPHICAL REGION	REGULATIONS						
	SAFETY	EMC	X-RAY	ELF/VLF	Power Management	Ergonomics	Miscellaneous
NSZ2107STTUW	UL C-UL TÜV-GS	FCC-B DOC-B EN55022-B EN55024 EN61000-3-2 EN61000-3-3 VCCI - B JPHG	DHHS HWC RöV	MPR-II TCO'91	Energy Star Energy2000	TÜV-GS TÜV-Ergo	TCO'99 CE Marking

UL : UL1950 3rd Edition

C-UL : CAN/CSA-C22.2 NO.950:1995

TÜV-GS : EN60950 : 1992 & AD1/AD2/AD3/AD4/AD11 & ISO9241-3,-7and-8

FCC : 47 CFR Part15 Subpart B, Class B

DOC : Interference-Causing Equipment Standard ICES-003 Issue 3, Class B

DHHS : 21CFR Chapter I Subchapter J

HWC : Radiation Emitting Devices Regulations Chapter 1370

RÖV : RÖV Vom 8.1. 1987

MPR-II : MPR 1990:8

TCO'99 : Requirements for environmental labeling of personal computers (First Edition)

CE-Marking : EN60950:1992 & AD1/AD2/AD3/AD4/AD11
EN55022:1998 Class B
EN55024:1998
EN61000-3-2 : 1995 & AD1/AD2
EN61000-3-3 : 1995

Energy Star : International Energy Star office Equipment Program

VCCI : Guide to membership of Voluntary Control Council for Interference by data Processing Equipment and Electronic Office Machines , Class B .

JPHG (Japan Power Harmonics Guidelines) : Guidelines for the suppression of Harmonics in Appliances and General - Use Equipment

Energy2000 : Award Criteria for the Energy label 1999

TÜV-Ergo EN50279
2PfG1041/11.99
ISO 9241-3:1992
ISO 9241-7:1998
ISO 9241-8:1997

2. CRT Specifications

CRT model no.	M51LRY32X61
Type	Diamondtron NF (Aperture Grille)
Size	55cm / 51cm Diagonal View able Image (22" /20" Diagonal View able Image)
Grille Spacing	0.24mm
Phosphor Spacing	0.25mm
Deflection Angle	90 degree
Phosphor Type	B22 (Medium short persistence)
Electron Gun Type	S-NX-DBF
Face-plate Transmission	Approx. 38.4% (Include Face-plate coating)
Face-plate	G-WARAS Coating (Anti-reflection,Anti-glare and Anti-static)
Screen Phosphor Area	406.1 x 304.6 mm
Face-plate Curvature	H: R= 50000 mm , V: R= 80000 mm
Phosphor Color Coordinate	R: X=0.627 , Y=0.341 G: X=0.292 , Y=0.605 (Typical) B: X=0.149 , Y=0.072

3.Electric Specifications

3.1 Deflections

Horizontal	Scanning Frequency	30 - 121kHz
	Back Porch	≥1.0 μsec
	Blanking	≥ 2.0 μsec
	H-sync Width	≥ 0.6 μsec
Vertical	Scanning frequency	50 - 160Hz
	V-sync + V-back Porch	≥ 400 μsec
	V-sync Width	3H ≤ Vs ≤ 10H---over 50kHz (fh) 2H ≤ Vs ≤ 10H---up to 50kHz (fh)
	V-Total Line	≥ 256H + V-sync Width

(*) Full screen adjustment may not be available for the timing which
Tdh / Th < 72% - Over 100kHz (fh)
Tdh / Th < 74% - Up to 100kHz (fh)
Tdh : Horizontal Display Time
Th : Horizontal Scanning Time

3.2 Signal Input

Video Input Signal	R.G.B analog
Sync. Input Signal	Composite sync with Green video (Sync on Green) External composite sync. , Negative TTL External HD/VD separate sync. TTL (N or P)
Video Input Impedance	75Ω to ground
Sync. Input Impedance	2.2kΩ to ground
Signal Level	Video signal : 0.7V p-p +10% -5% Separate H/V-sync. : TTL level (>2.5V) Sync on Green : 0.3V p-p ± 10%

3.3 Video Performance

Video Clock Frequency	240MHz
Pulse Rise and Fall time	4.0nsec(typ.) 10 to 90% at 35Vp-p

•The rise and fall time of the input video signal is 2.0nsec or less.
•The pulse rise or fall time is determined using the formula :

$$Ta = \sqrt{Tm^2 - (Ts^2 + Tp^2 + Tsc^2)}$$

Where : Ta = Amplifier rise / fall time
Tm = Measured rise / fall time
Ts = Input signal rise / fall time
Tp = Probe effect on rise / fall time = 2.2 x Rl x Cp
Rl = Amplifier output resistance (ohm)
Cp = Total probe capacitance (F)
Tsc = Scope rise / fall time = 0.35 / Scope bandwidth (MHz)

3.4 Power Supply

Input Voltage	100 - 120 / 220 - 240 VAC ± 10%
Frequency	50/60Hz ± 3Hz
Power Consumption (typ.)	140W 1.40A@100-120VAC 0.70A@220-240VAC (without USB load) 155W 1.55A@100-120VAC 0.75A@220-240VAC (with USB load)
AC leakage current	≤ 3.5mA
Inrush current	≤ 70A 0-peak at 240VAC on cold starting

3.5 Power Saving

	H-sync	V-sync	Video	Power Consumption	Recovery Time	LED Indicator
OFF	On	On	Active	140W	-	Green
ON	Off	On	Blank	≤ 3W	5 sec	Orange
	On	Off	Blank			
	Off	Off	Blank			

3.6 Degaussing

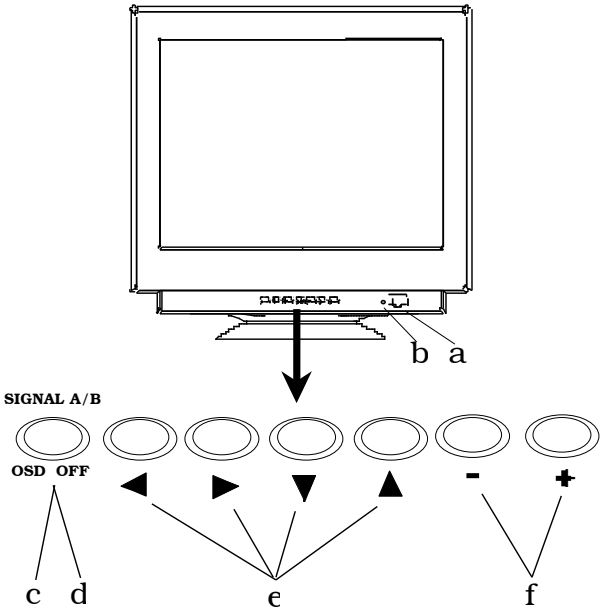
Auto Degaussing	The monitor have an automatic degaussing function which activates when the unit is turned on.
Manual Degaussing	This activates degaussing at the user's discretion after the unit is operating.

•The Monitor requires minimum 15 minutes after last degauss operation for full degauss capability.

4.Functions

4.1 Front Controls

a : POWER SWITCH
b : POWER-ON INDICATOR
c : OSD OFF BUTTON
d : SIGNAL A/B SELECT BUTTON
e : ITEM SELECT BUTTONS
f : FUNCTION ADJUST BUTTONS



4.2 OSD(On Screen Display) Function

OSD1 Group		default
CONTRAST	0 - 100%	100%
BRIGHT	0 - 100%	50%
COLOR	1 (9300K)	1 (9300K)
	2 (6500K)	
	3 (5000K)	
	sRGB	
R-GAIN	0 - 100%	adjusted
G-GAIN	0 - 100%	adjusted
B-GAIN	0 - 100%	adjusted
COLOR TEMPERATURE	5000 - 9300K	9300K
FINE PICTURE MODE	Normal/Text/Graphic	Normal
FACTORY PRESET	PROCEED	-

OSD2 Group		default
AUTOSIZE ADJUST	PROCEED	-
HORIZ-SIZE	0 - 100%	adjusted
HORIZ-POSITION	0 - 100%	adjusted
VERT-SIZE	0 - 100%	adjusted
VERT-POSITION	0 - 100%	50%
ROTATION	0 - 100%	adjusted
GTF AUTO ADJUST	PROCEED	-
FACTORY PRESET	PROCEED	-

OSD3 Group		default
PINCUSHION	0 - 100%	adjusted
PIN-BALANCE	0 - 100%	adjusted
KEYSTONE	0 - 100%	adjusted
KEY-BALANCE	0 - 100%	adjusted
TOP-PIN	0 - 100%	adjusted
TOP-BALANCE	0 - 100%	adjusted
BOTTOM-PIN	0 - 100%	adjusted
BOTTOM-BALANCE	0 - 100%	adjusted
VERT-LIN	0 - 100%	adjusted
VERT-LIN-BALANCE	0 - 100%	adjusted
FACTORY PRESET	PROCEED	-

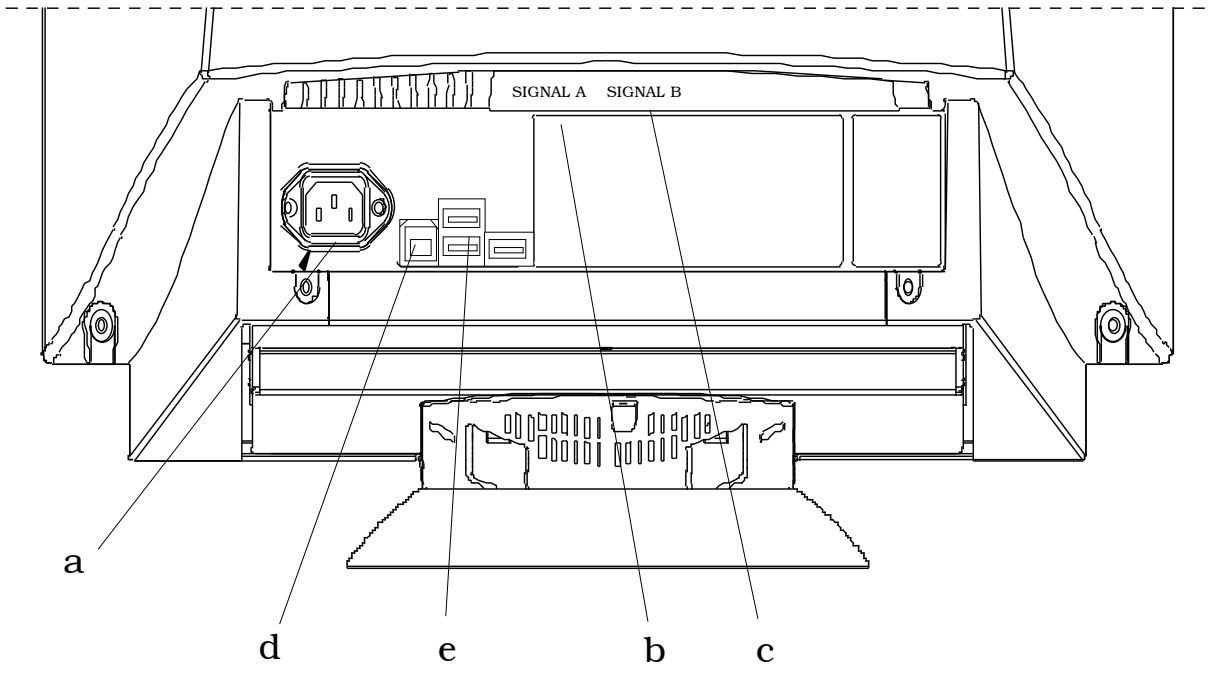
OSD4 Group		default
CORNER PURITY(TL)	0 - 100%	adjusted
CORNER PURITY(TR)	0 - 100%	adjusted
CORNER PURITY(BL)	0 - 100%	adjusted
CORNER PURITY(BR)	0 - 100%	adjusted
MOIRE CANCEL LEVEL	0 - 100%	0%
CLAMP PULSE POSITION	Front / Back	Back
FACTORY PRESET	PROCEED	-

OSD5 Group		default
HORIZ-CONVERGENCE	0 - 100%	adjusted
VERT-CONVERGENCE	0 - 100%	adjusted
FACTORY PRESET	PROCEED	-

OSD6 Group		default
INPUT	SIGNAL A/B	-
DEGAUSS	PROCEED	-
POWER-SAVE	OFF/ON	ON
CONTROL LOCK	OFF/ON	Off
OSD POSITION	<-- -->	Center
OSD TURN OFF	5SEC - 120SEC	45SEC
DIAGNOSIS	Preset Information	
	Horizontal Frequency	
	Vertical Frequency	
	Video Information	
LANGUAGE	ENG/GER ESP/FRA ITA/JPN	ENG
AUTO SAVE	Off / On	ON
ALL RESET	PROCEED	-
FACTORY PRESET	PROCEED	-

4.3 Back Panel

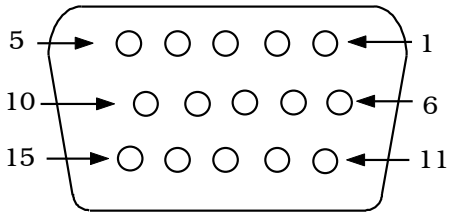
a : AC POWER CONNECTOR (3P IEC Plug)
b : SIGNAL A INPUT CONNECTOR (DB9 -15P)
c : SIGNAL B INPUT CONNECTOR (DB9 -15P)
d : USB UPSTREAM PORT
e : USB DOWNSTREAM PORTX3



4.4 Connector Pin Assignment

1) Signal Input Connector (DB9-15P)

Pin	Signal
1	Red-video
2	Green-video
3	Blue-video
4	Gnd
5	DDC Gnd
6	Red Gnd
7	Green Gnd
8	Blue Gnd
9	-
10	Sync Gnd
11	Gnd
12	Serial data
13	H-sync or Composite sync
14	V-sync (V-clock)
15	Serial clock



Rear Panel

4.5 DDC (Display Data Channel) Functions
VESA DDC2B(EDID data only) Compliance (for Signal A).
VESA DDC2Bi Compliance (for Signal B).
See Appendix 2 for EDID data.

4.6 Preset Timing
Factory-preset :10(max22) see Appendix 1 for detail timing parameters.
User-preset :15

Preset Timing Discrimination

Horizontal Frequency	≥1kHz
Vertical Frequency	≥1Hz
Sync Signal Polarity	H or V-sync signal polarity is different.

•The monitor is able to discriminate input signals by at least one of above parameters.

4.7 USB (Universal Serial Bus)
Comply with Universal Serial Bus Specification Revision 1.1
Self Powered HUB(500mA max per 1 Downstream port)
3xDownstream Port.
1xUpstream

5. Display Quality

5.1 Test Conditions

AC Voltage	120VAC 60Hz or 230VAC 50Hz
Video Signal	1600 x 1200 (106kHz at 85Hz Hz) 0.7Vp-p
Warm Up	More than 30 min. with full white picture
Temperature	20 - 25 ˚C
Relative Humidity	40 - 80%
Magnetic Field	BH=0, BV=0.040mT
Contrast & Brightness	Contrast maximum and Brightness detent position
Display Size	396 x 297mm for 4:3 aspect ratio
Ambient light	200 ± 50 lx
Luminance Meter	Minolta CA100 or Equivalent

•Unless specified, the monitor is set at the factory default setting.

5.2 Display size

4:3 aspect ratio	Width: 396mm , Height: 297mm
5:4 aspect ratio	Width: 371mm , Height: 297mm

5.3 Luminance

Luminance at CRT center	Full White: ≥100cd/m^2 (at Color No.1) ≥ 85 cd/m^2(TBD) (at Color No.2) ≥ 70 cd/m^2 (at Color No.3)
Luminance Variation	ΔLuminance / Center Luminance: ≤25%
Back Raster Luminance	Approx. 0.3 cd/m^2 at Brightness detent position
	Raster must not visible at minimum Brightness control

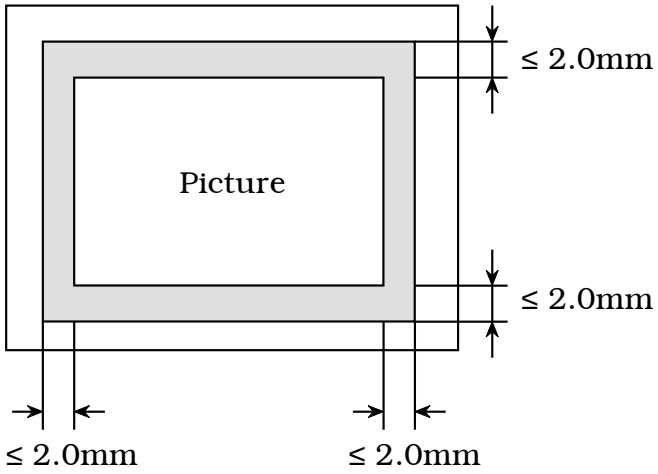
5.4 Color

Color Temperature	Color-1: 9300K + 8 M.P.C.D. X=0.283 ± 0.015 Y=0.297 ± 0.015
	Color-2: 6500K X=0.313 ± 0.015 Y=0.329 ± 0.015
	Color-3: 5000K + 8 M.P.C.D. X=0.345 ± 0.015 Y=0.359 ± 0.015
White Uniformity	≤ 0.015: in either the X or Y shift between the center and peripheral area
Color Tracking	Contrast Control: ±0.020 from 25cd/m^2 to Maximum at detent Brightness position

5.5 Overall Distortion

Distortion Except rotation and centering	H: ≤ 2.0mm , V: ≤ 2.0mm

•With Green-Crosshatch applied.
•The other distortion is defined as the total of all image distortion excluding rotation and display centering.

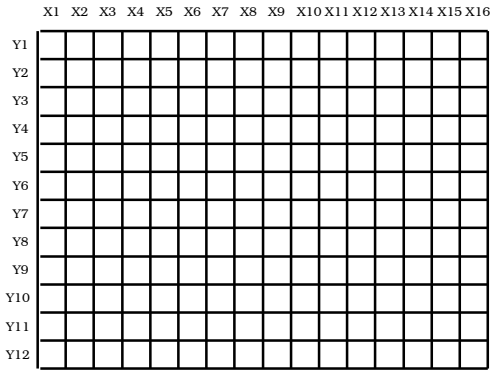


5.6 Linearity

Linearity	H: ≤15%(30-40k) , ≤12%(40-60k) ,≤10%(60-121k) adjacent: ≤ 7%
	V: ≤10% adjacent: ≤ 7%

•at preset timings
•With Green-Crosshatch (17 lines horizontally by 13 lines vertically) applied.
•The formula used to calculate linearity is:

$$\frac{Xmax - Xmin}{(Xmax + Xmin)/2} \times 100\% \qquad \frac{Ymax - Ymin}{(Ymax + Ymin)/2} \times 100\%$$

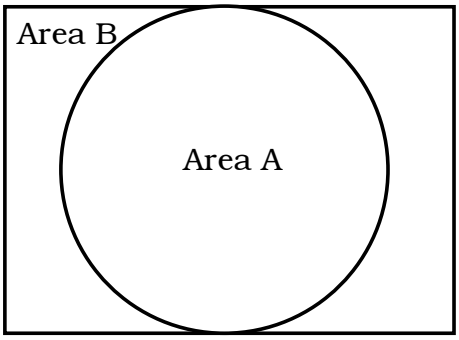


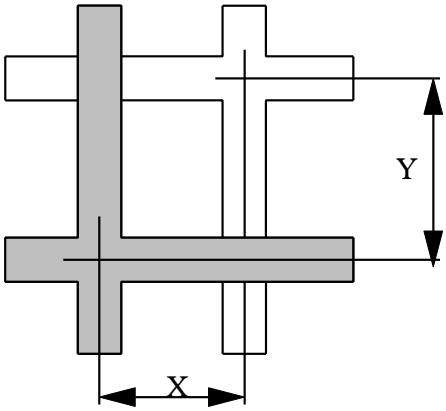
X1=X2=X3= ••• =X16
Y1=Y2=Y3= ••• =Y12

5.7 Misconvergence

Misconvergence	Area A: ≤ 0.25 mm within the 297mm diameter circle
	Area B: ≤ 0.35 mm within 396mm x 297mm

- With White-Crosshatch applied.
- Zone A is a circular area with 297mm diameter at the center.
- Zone B is a rectangular area (396mm x 297mm) outside of the zone A.
- Use worst case horizontal/vertical misconvergence between any two primary colors.





5.8 Focus

Focus	Displaying 7 x 9 pixel "e" with white single pixel strokes, the entire screen shall be readable with clearly discernible characters at normal viewing distance.

5.9 Raster Regulation

Rater Size Regulation	≤ 0.5% of the horizontal or vertical picture size

•The picture size change is less than adjusted value in either the horizontal or vertical direction over 30% to 100% luminance range and 90 - 132VAC or 198 - 264VAC Input respectively.

6. Mechanical Specifications

6.1 Cabinet , Tilt / Swivel Base

Molded material	Cabinet : ABS (Flame Class HB) Tilt /Swivel Base : ABS (Flame Class HB)
Cabinet color	Grayish White (Mitsubishi Control Color No. : B-N-C039)
Bezel Logo	See Fig.2
Tilt & Swivel	Right & Left : -90°to +90° Up & Down : 10° to -5°
Dimension	495mm (W) x 493.5mm (H) x 473mm(D) 19.5" (W) x 19.4" (H) x 18.6" (D) (include Tilt /Swivel Base, see Fig.1)

6.2 Rating Label

see Fig. 3

6.3 Carton Box

Paper Material	Kraftliner and trifaced corrugated board (Double wall)	
Carton Box Print	North America	See Fig.5 -1
	Europe	See Fig.5-2
Dimension	See Fig.4	
Packing Contents	See Fig.6	

6.4 Weight

Net	approx. 29.7 kg (65.5 lbs)
Gross	approx. 35 kg (77 lbs)

6.5 Accessories

AC Power Cord	North America		see Fig.7-1
	Europe	except UK	see Fig.7-2
		U.K.	see Fig.7-3
Signal Cable			SC-B110 : see Fig.8
User's Guide	North America		English,French
	Europe		5 Languages (English, German , French, Italian, Spanish)
USB Cable			see Fig.9

7. Environmental Conditions

7.1 Temperature, Relative Humidity & Altitude

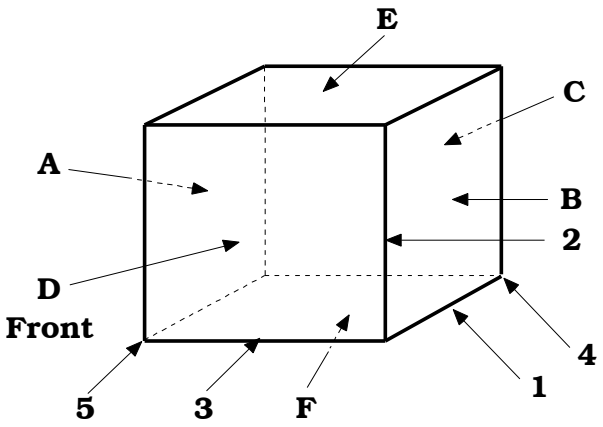
	Operating	Storage and shipment
Temperature	5 - 35˚C	-20 - 60˚C
Relative Humidity	10 - 90% without condensation	10 - 90% without condensation
Altitude	3000m (10000ft)	15000m (50000ft)

7.2 Vibration Test (with carton box)

1) Random Vibration

Test Axis	3 axis
Search Frequency	5 - 200Hz
Acceleration	0 - 14.42m/s^2rms
Dwelling Time	30 minutes x 3 axis
Mounting	fixed firmly on the vibration table

7.2 Drop Test (with carton box)

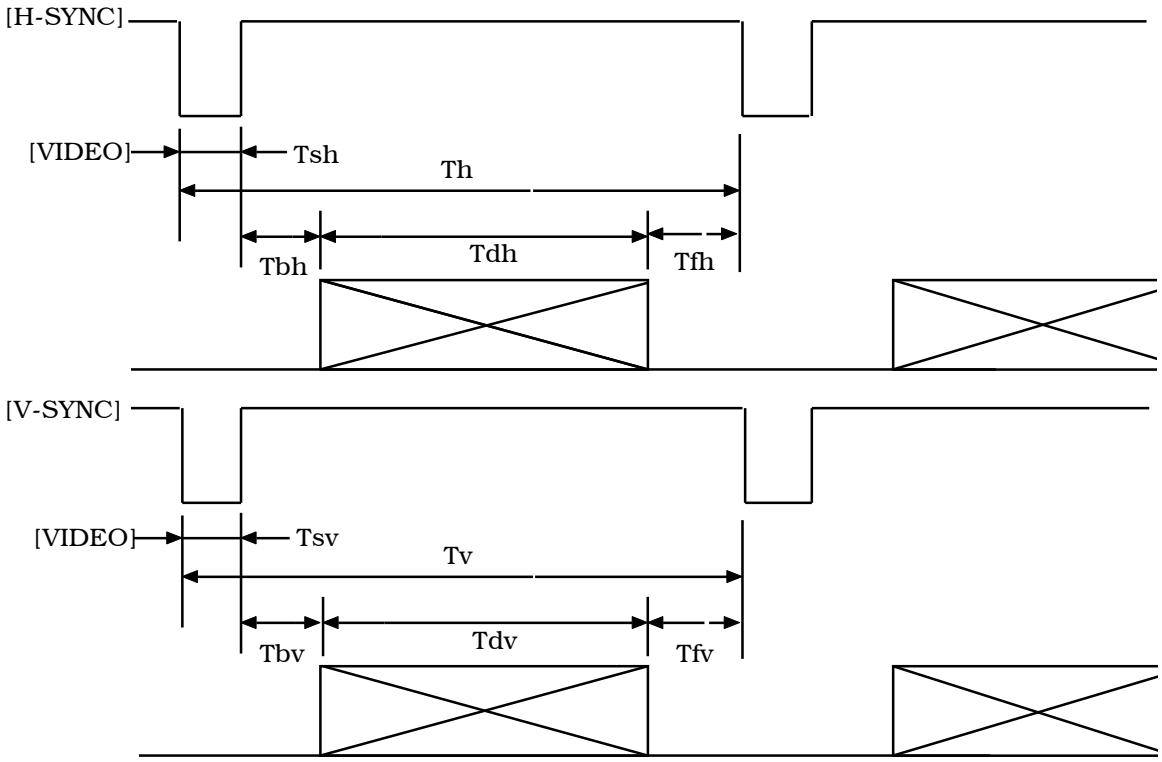


The inside unit shall be withstand without any damage by following procedure.
Drop to the hard wooden board from the position of the following heights.

After finish the drop test of edges (3 position) and also corners(2 position), tester has to change to new cushion. However for the carton box, tester must not change to the new box and use the damaged box continuously.

	Position	Height
Edge	1,2,3	40.5cm(16inch)
Corner	4,5	40.5cm(16inch)
Other Surfaces	A,B,C,D	40.5cm(16inch)
Top Surface	E	34.5cm(14inch)
Bottom Surface	F	46cm(18inch)

Appendix 1 Preset Timing Chart



NO.	Clock (MHz)	Th (μ SEC) (dot)	Tsh (μ SEC) (dot)	Tfh (μ SEC) (dot)	Tbh (μ SEC) (dot)	Tdh (μ SEC) (dot)	Tv (mSEC) (line)	Tsv (mSEC) (line)	Tfv (mSEC) (line)	Tbv (mSEC) (line)	Tdv (mSEC) (line)	Hs	Vs	Fh (kHz)	Fv (Hz)	REMARKS
1	25.175	31.778 (800)	3.813 (96)	0.636 (16)	1.907 (48)	25.422 (640)	16.683 (525)	0.064 (2)	0.318 (10)	1.048 (33)	15.253 (480)	-	-	31.469	59.940	VESA 640*480 / 60Hz
2	49.500	21.333 (1056)	1.616 (80)	0.323 (16)	3.232 (160)	16.162 (800)	13.333 (625)	0.064 (3)	0.021 (1)	0.448 (21)	12.800 (600)	+	+	46.875	75.000	VESA 800*600 / 75Hz
3	78.750	16.660 (1312)	1.219 (96)	0.203 (16)	2.235 (176)	13.003 (1024)	13.328 (800)	0.050 (3)	0.017 (1)	0.466 (28)	12.795 (768)	+	+	60.023	75.029	VESA 1024*768 / 75Hz
4	94.500	14.561 (1376)	1.016 (96)	0.508 (48)	2.201 (208)	10.836 (1024)	11.765 (808)	0.044 (3)	0.015 (1)	0.524 (36)	11.183 (768)	+	+	68.677	84.997	VESA 1024*768 / 85Hz
5	135.000	12.504 (1688)	1.067 (144)	0.119 (16)	1.837 (248)	9.481 (1280)	13.329 (1066)	0.038 (3)	0.013 (1)	0.475 (38)	12.804 (1024)	+	+	79.976	75.025	VESA 1280*1024 / 75Hz
6	157.500	10.971 (1728)	1.016 (160)	0.406 (64)	1.422 (224)	8.127 (1280)	11.761 (1072)	0.033 (3)	0.011 (1)	0.483 (44)	11.235 (1024)	+	+	91.146	85.027	VESA 1280*1024 / 85Hz
7	202.500	10.667 (2160)	0.948 (192)	0.316 (64)	1.501 (304)	7.901 (1600)	13.333 (1250)	0.032 (3)	0.011 (1)	0.491 (46)	12.800 (1200)	+	+	93.750	75.000	VESA 1600*1200 / 75Hz
8	229.500	9.412 (2160)	0.837 (192)	0.279 (64)	1.325 (304)	6.972 (1600)	11.765 (1250)	0.028 (3)	0.009 (1)	0.433 (46)	11.294 (1200)	+	+	106.250	85.000	VESA 1600*1200 / 85Hz
9	297.000	8.889 (2640)	0.754 (224)	0.485 (144)	1.185 (352)	6.465 (1920)	13.333 (1500)	0.027 (3)	0.009 (1)	0.498 (56)	12.800 (1440)	-	+	112.500	75.000	GTF 1920*1440 / 75Hz
10	299.667	8.303 (2488)	0.667 (200)	0.481 (144)	1.148 (344)	6.007 (1800)	11.765 (1417)	0.025 (3)	0.008 (1)	0.523 (63)	11.208 (1350)	-	-	120.445	85.000	GTF 1800*1350 / 85Hz

Appendix 2 EDID data for VESA DDC

Manuf Code: MEL
Product Code LSB (HEX): 11
Product Code MSB (HEX): 45
Product Code (DEC): 17681
(Microsoft INF ID: MEL4511)
Serial Number (DEC): **
Serial Number (HEX): **
Week of Manuf: WW
Year of Manuf: YY

EDID Version: 1
EDID Revision: 2
Extension Flag: 0

Video:
  Input Singal: ANALOG
  Setup: NO
  Sync on Green: YES
  Composite Sync: YES
  Separate Sync: YES
  V Sync Serration: NO
  V Signal Level: 0.700V/0.300V (1V p-p)

Max Image Size H: 40 cm
Max Image Size V: 30 cm
DPMS Stand By: YES
DPMS Suspend: YES
DPMS Active Off: YES
GTF Support: YES
Standard Default Color Space: NO
Preferred Timing Mode: NO
Display Type: RGB Color

Color:
  Gamma: 2.20
  Red x: 0.627
  Red y: 0.341
  Green x: 0.292
  Green y: 0.605
  Blue x: 0.149
  Blue y: 0.072
  White x: 0.283
  White y: 0.297

Established Timings:
  720x400 @ 70 Hz
  720x400 @ 88 Hz
  640x480 @ 60 Hz
  640x480 @ 67 Hz
  640x480 @ 72 Hz
  640x480 @ 75 Hz
  800x600 @ 56 Hz
  800x600 @ 60 Hz
  800x600 @ 72 Hz
  800x600 @ 75 Hz
  832x624 @ 75 Hz
  1024x768 @ 87 Hz (I)
  1024x768 @ 60 Hz
  1024x768 @ 70 Hz
  1024x768 @ 75 Hz
  1152x870 @ 75 Hz
  1280x1024 @ 75 Hz

Standard Timing #1:
  Horizontal Active Pixels: 640
  Aspect Ratio: 4:3
  (480 active lines)
  Refresh Rate: 85 Hz

Standard Timing #2:
  Horizontal Active Pixels: 1920
  Aspect Ratio: 4:3
  (1440 active lines)
  Refresh Rate: 75 Hz

Standard Timing #3:
  Horizontal Active Pixels: 1600
  Aspect Ratio: 4:3
  (1200 active lines)
  Refresh Rate: 85 Hz

Standard Timing #4:
  Horizontal Active Pixels: 1600
  Aspect Ratio: 4:3
  (1200 active lines)
  Refresh Rate: 75 Hz

Standard Timing #5:
  Horizontal Active Pixels: 1280
  Aspect Ratio: 5:4
  (1024 active lines)
  Refresh Rate: 85 Hz

Standard Timing #6:
  Horizontal Active Pixels: 2048
  Aspect Ratio: 4:3
  (1536 active lines)
  Refresh Rate: 75 Hz

Standard Timing #7:
  Horizontal Active Pixels: 1024
  Aspect Ratio: 4:3
  (768 active lines)
  Refresh Rate: 85 Hz

Standard Timing #8:
  Horizontal Active Pixels: 800
  Aspect Ratio: 4:3
  (600 active lines)
  Refresh Rate: 85 Hz

Detailed Timing (block #1):
  Pixel Clock: 299.67 MHz
  Horizontal Active: 1800 pixels
  Horizontal Blanking: 688 pixels
  Vertical Active: 1350 lines
  Vertical Blanking: 67 lines
  (Horizontal Frequency: 120.45 kHz)
  (Vertical Frequency: 85.0 Hz)
  Horizontal Sync Offset: 144 pixels
  Horizontal Sync Width: 200 pixels
  Vertical Sync Offset: 1 lines
  Vertical Sync Width: 3 lines
  Horizontal Border: 0 pixels
  Vertical Border: 0 lines
  Horizontal Image Size: 396 mm
  Vertical Image Size: 297 mm
  Interlaced: NO
  Image: Normal Display
  Sync: Digital Separate
  Bit 1: OFF
  Bit 2: OFF

Monitor Range Limits (block #2):
  Minimum Vertical Rate: 50 Hz
  Maximum Vertical Rate: 160 Hz
  Minimum Horizontal Rate: 30 kHz
  Maximum Horizontal Rate: 121 kHz
  Maximum Pixel Clock: 360 MHz
  GTF Data: 00 0a 20 20 20 20 20 20

Monitor Name (block #3): NSZ2107U

Monitor Serial Number (block #4): ########

EDID EDITOR V1.40 (000621)
(C) Mitsubishi Electric 1995-2000

•CABINET COLOR : Graysh white

•TILT / SWIVEL BASE
Swivel Angle : +90° ~ -90°
Tilt Angle : +10° ~ -5°

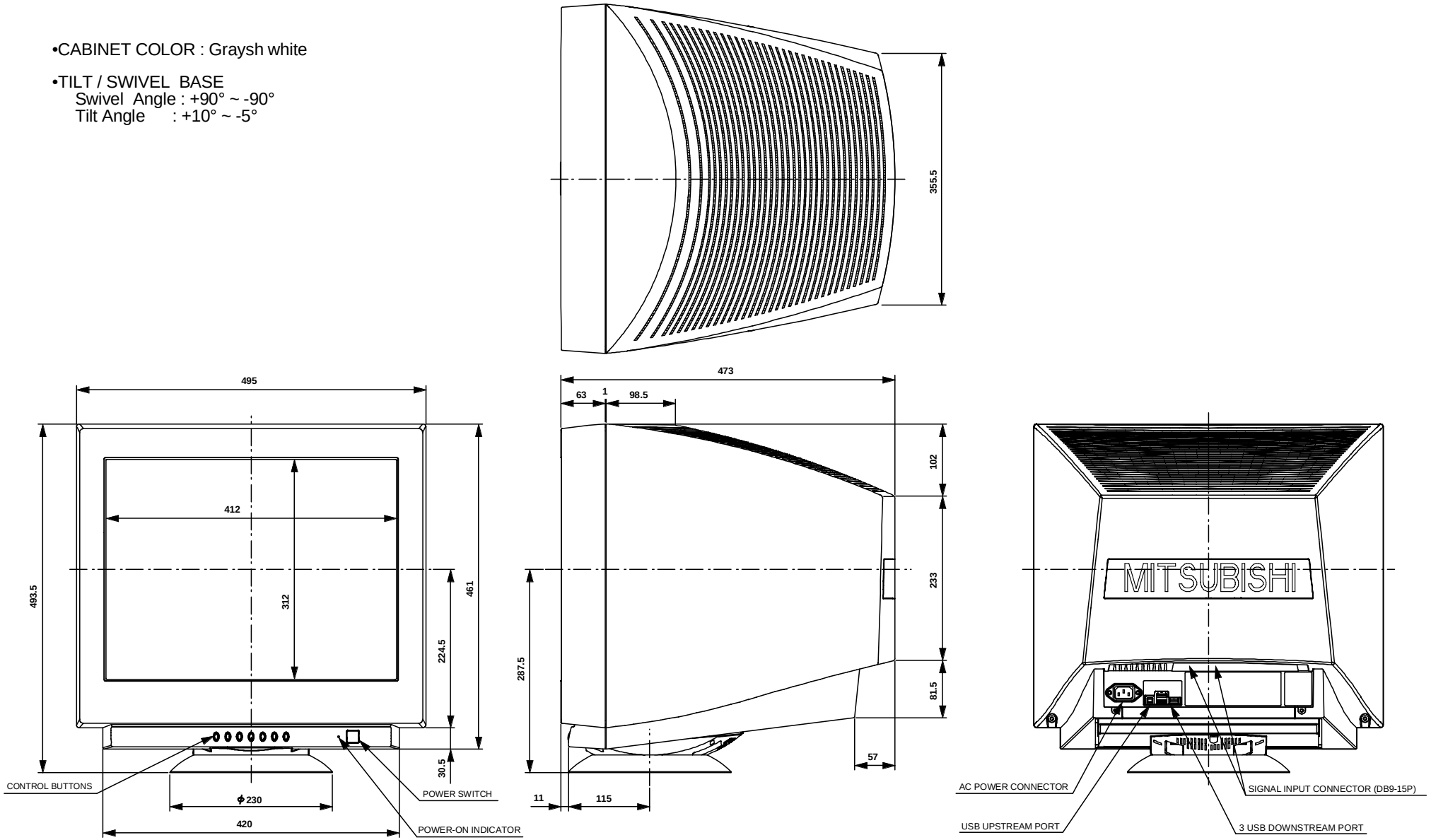
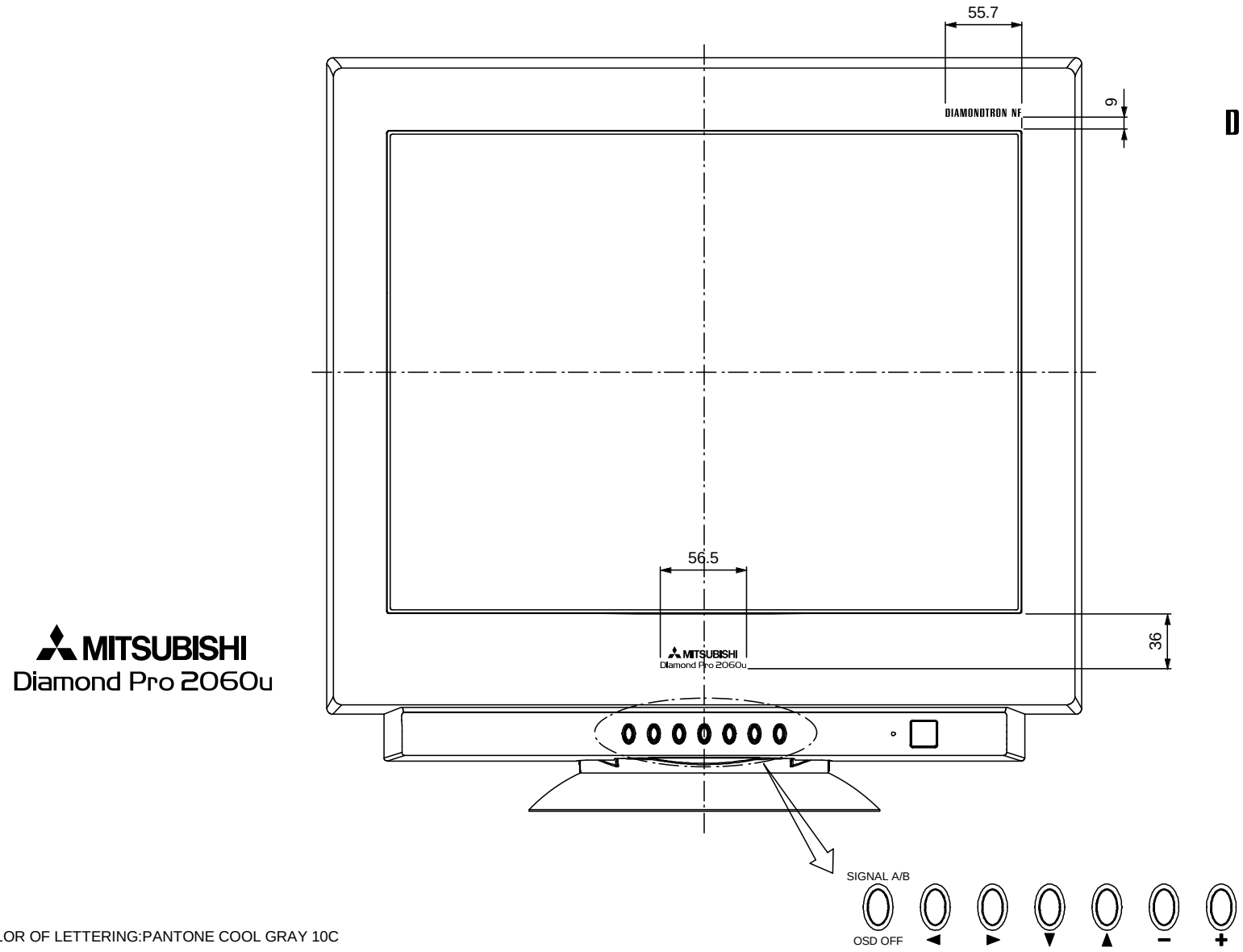


Fig. 1 OUTLINE

VSP-C0459



COLOR OF LETTERING:PANTONE COOL GRAY 10C

Fig. 2 BEZEL LOGO

VSP-C0459

COLOR OF BACKGROUND •••• Graysh white(Cabinet color)
COLOR OF LETTERING ••••• Pantone cool gray 10C

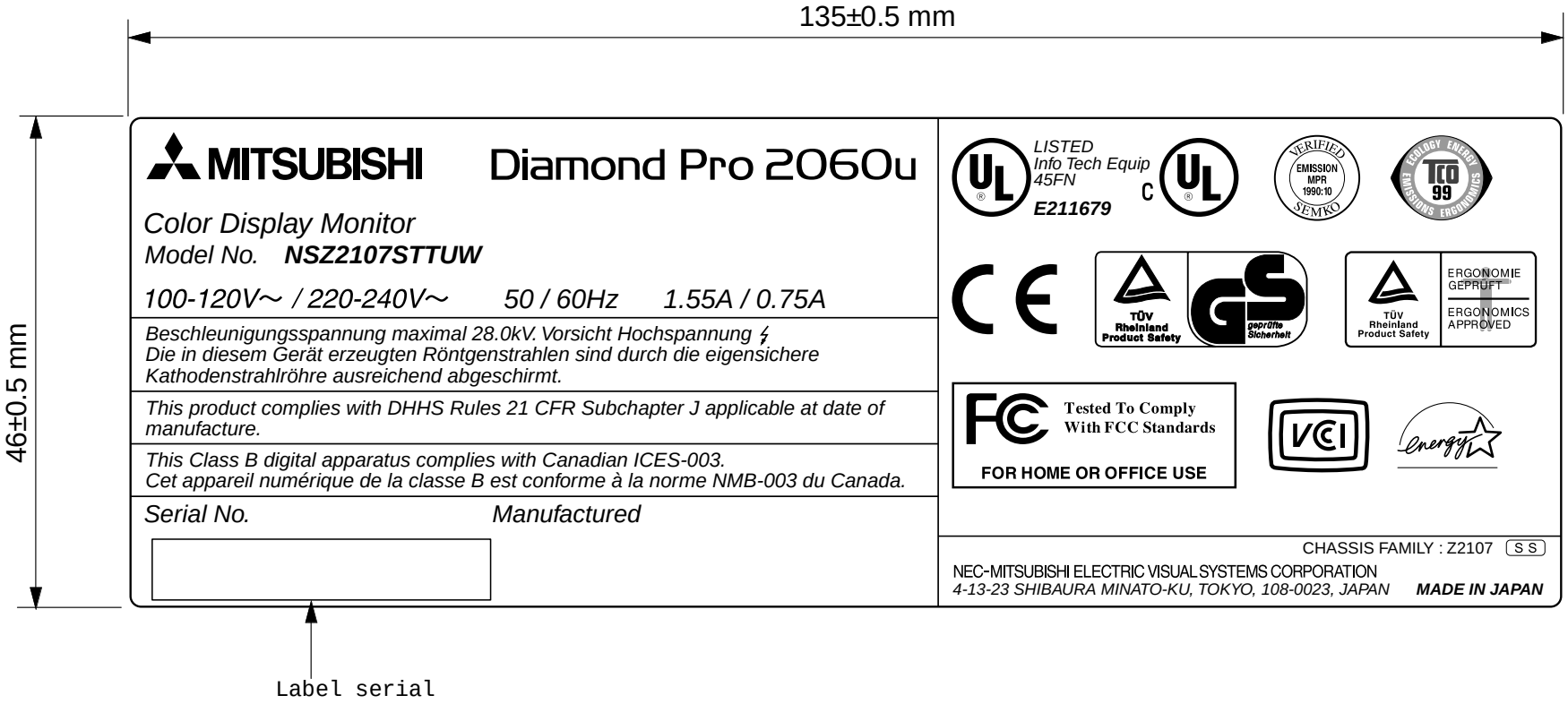
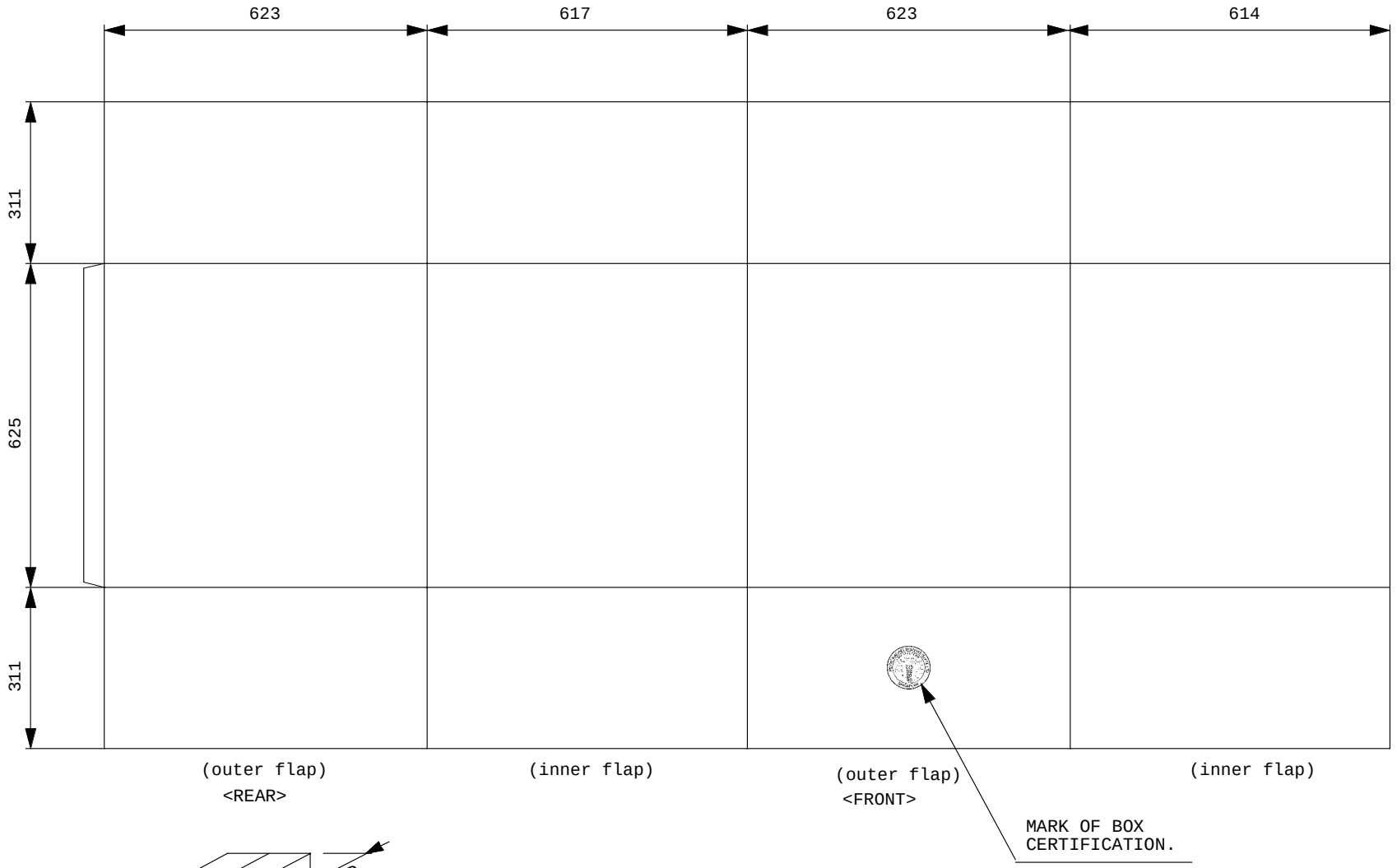
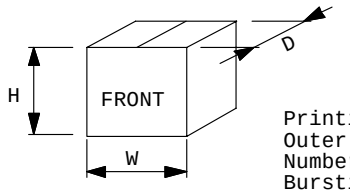


Fig.3 RATING LABEL

VSP-C0459





Printing process.	:	FLEXO-PRINTING
Outer dimension.	:	W:632 x H:643 x D:626 (mm)
Number of piles.	:	Max. 5 piles.
Bursting strength.	:	275LBS / inch^2
Material.	:	Kraft color linerboard and trifaced corrugated board. (Double wall)
Printing color	:	Black

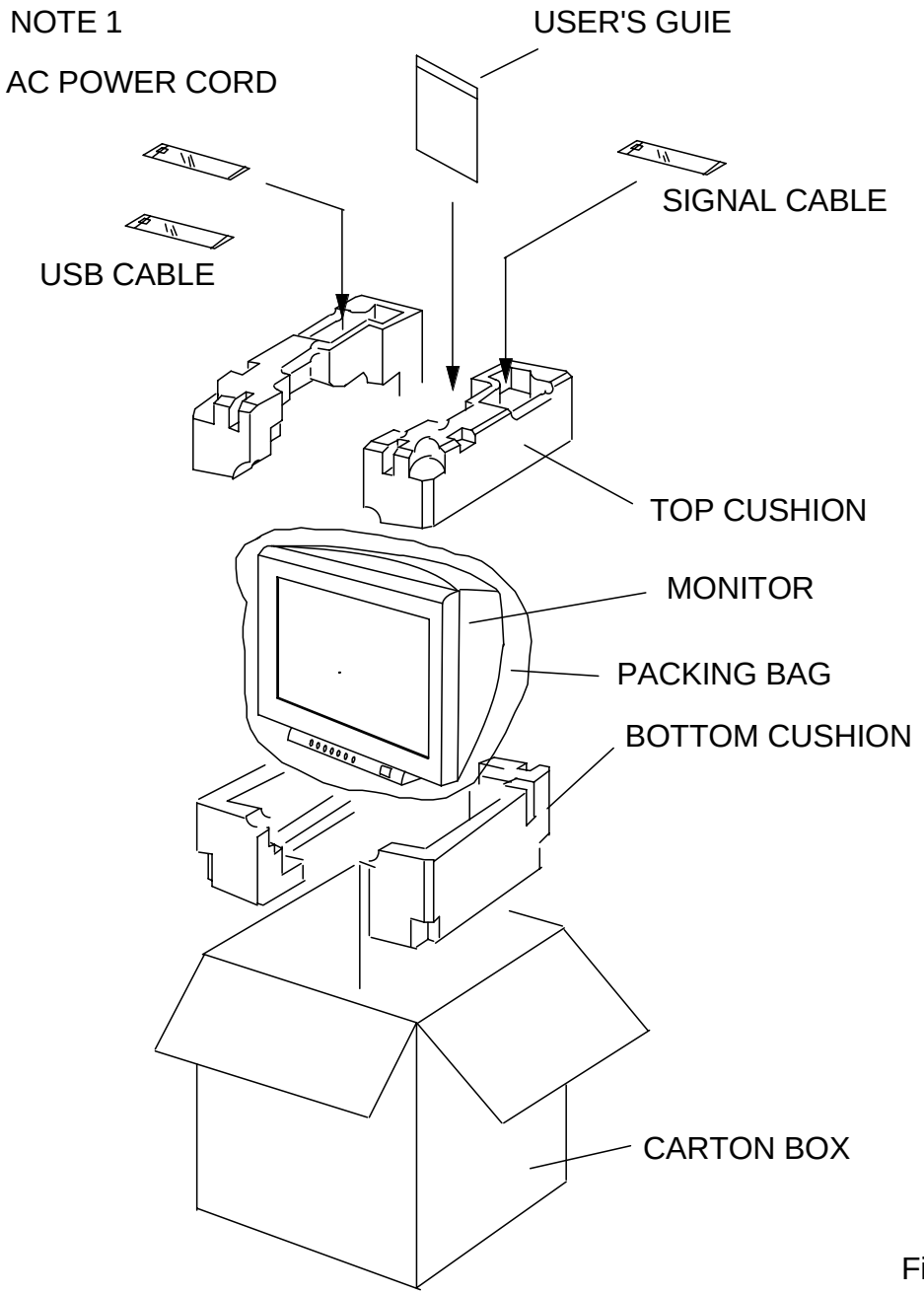
Fig.4 CARTON BOX

VSP-C0459

Fig.5-1 PRINTING SPECIFICATION OF CARTON BOX (North America)

Fig.5-2 PRINTING SPECIFICATION OF CARTON BOX (Europe)

VSP-C0459



NOTE 1: AC POWER CORD
(1) North America : see Fig.7-1
(2) Eurpe : see Fig.7-2 & Fig.7-3

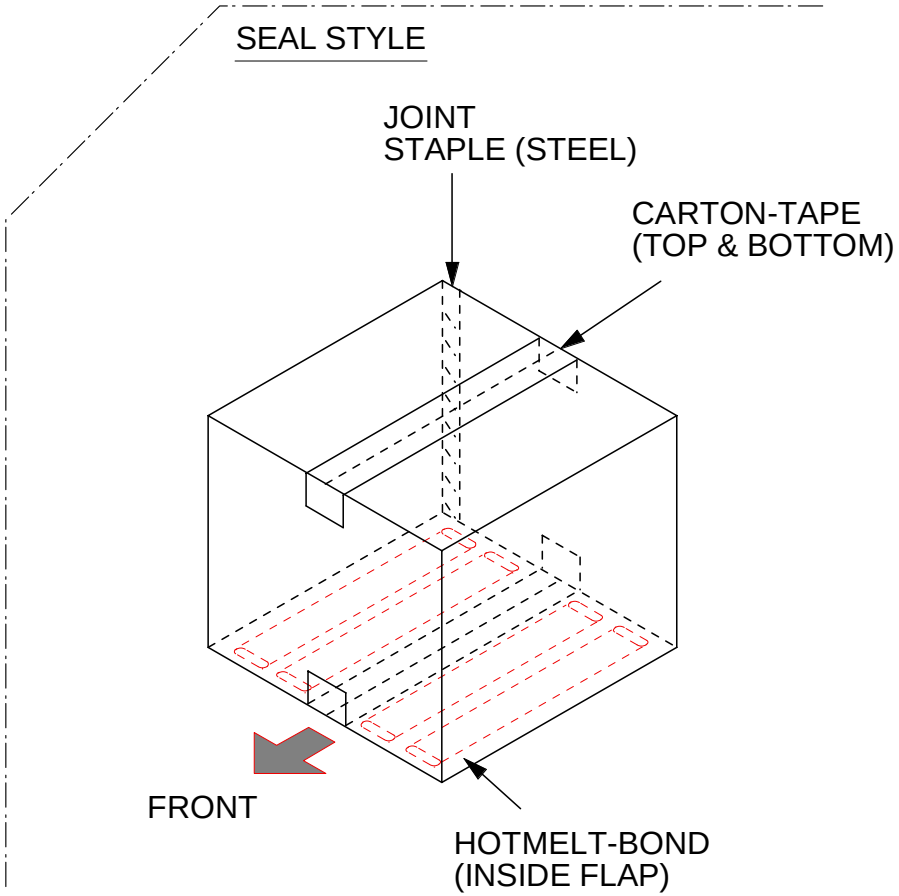


Fig.6 PACKING STYLE

VSP-C0459

<SPECIFICATION>

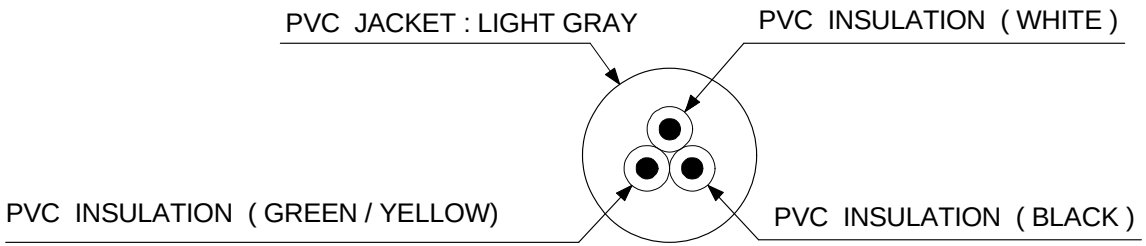
1.CABLE:Cross - section Area-----AWG18X3C

2.JACKET:PVC

3.ABILITY

(1) VOLTAGE : AC 125V
(2) AMPERAGE : AC 10A
(3) TEMPERATURE : 60°C

4.REGULATORY APPROVALS:UL, CSA



CONSTRUCTION

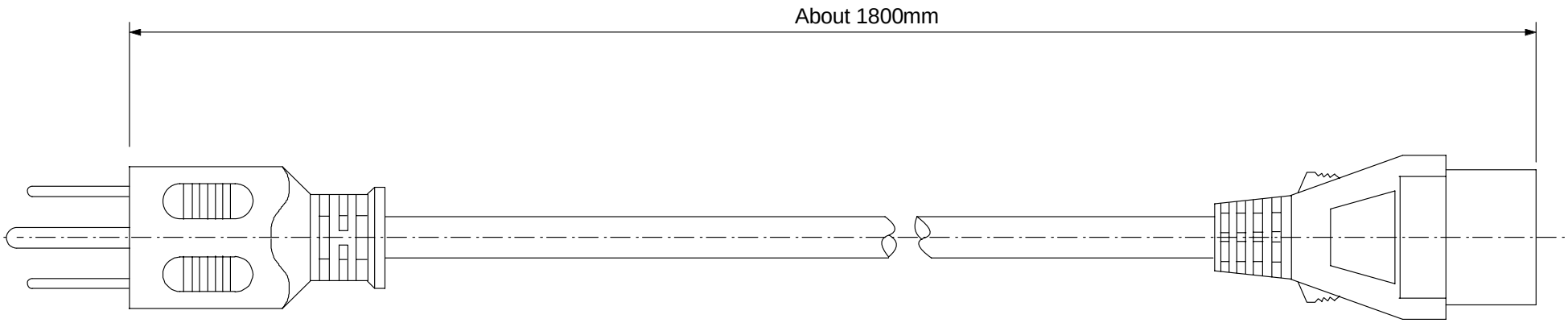


Fig. 7 - 1 AC POWER CORD (For North America)

VSP-C0459

<SPECIFICATION>

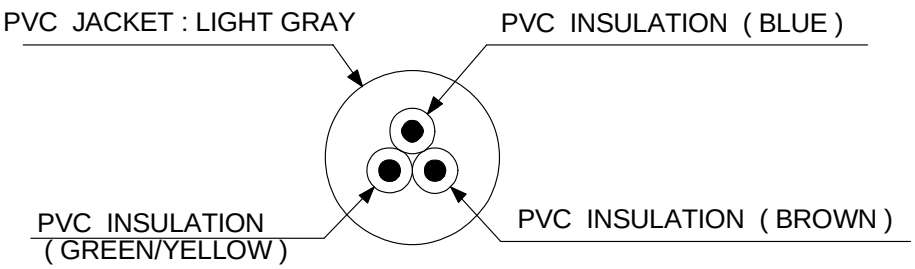
1.CABLE : Cross - section Area----1.0mm^2 X3C

2.JACKET : PVC

3.ABILITY

(1) VOLTAGE : AC 250V
(2) AMPERAGE :AC 10A
(3) TEMPERATURE :70°C

4.REGULATORY APPROVALS:VDE,KEMA-MEUK,SEMKO,NEMKO,DEMKO, FIMKO,SEV,ÖVE,IEMMEQU,CEBEC,IEC227



CONSTRUCTION

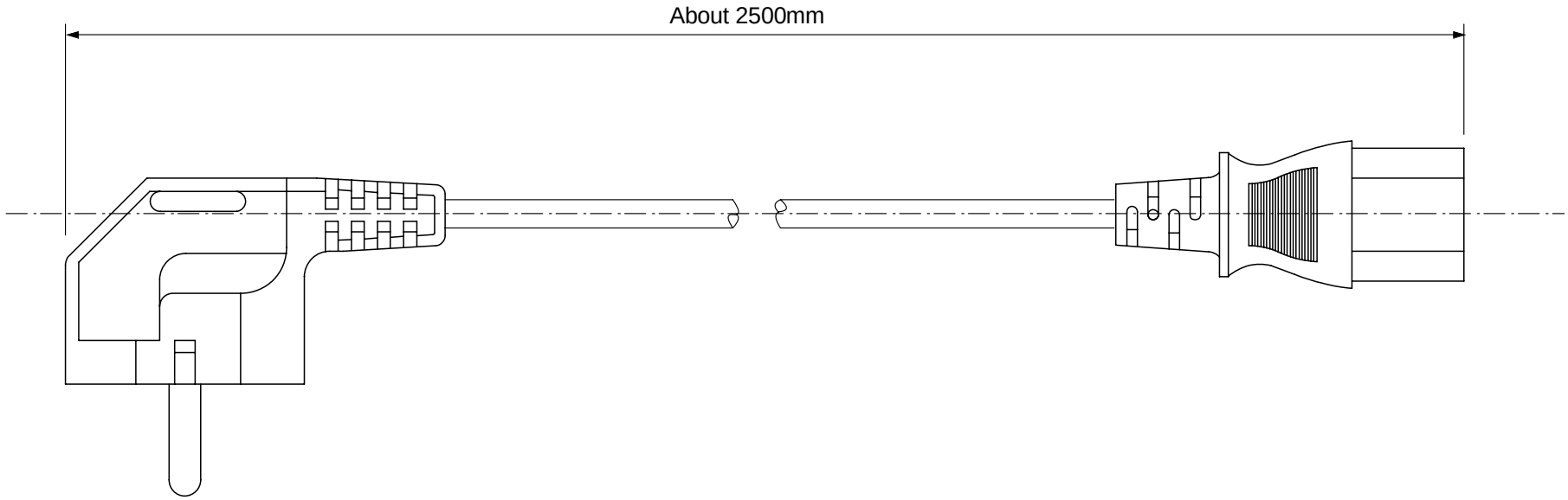


Fig. 7 - 2 AC POWER CORD (For except U.K.)

VSP-C0459

<SPECIFICATION>

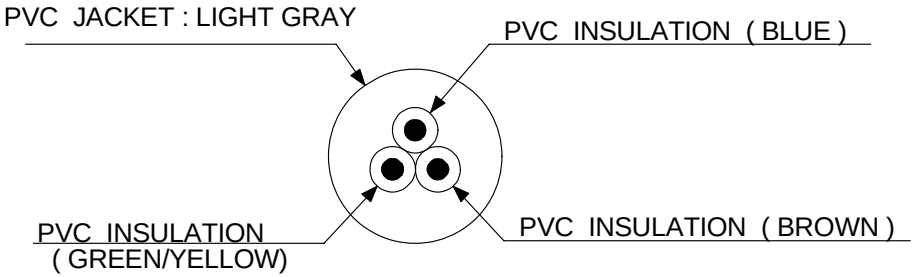
1.CABLE : Cross - section Area---1.0mm^2 X3C

2.JACKET : PVC

3.ABILITY

(1) VOLTAGE : AC 250V
(2) AMPERAGE : AC 10A
(3) TEMPERATURE : 60°C

4.REGULATORY APPROVALS : BS



CONSTRUCTION

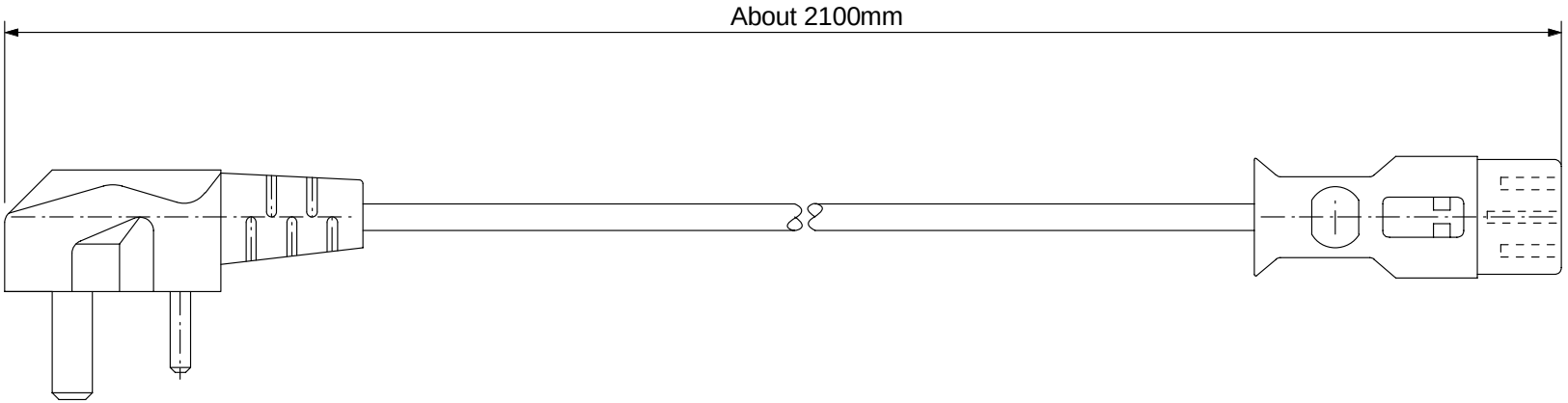


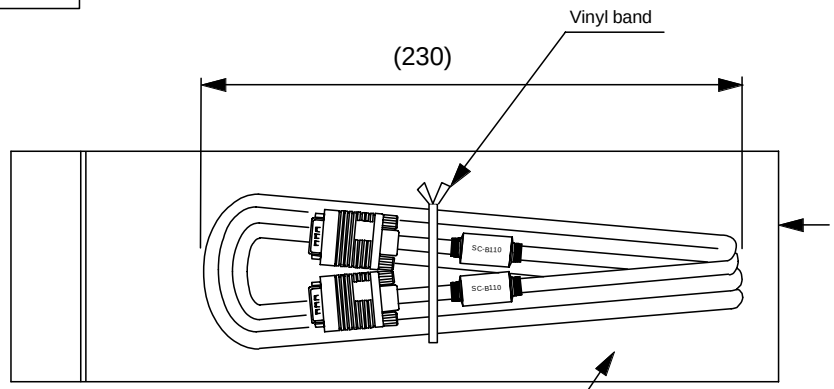
Fig. 7 - 3 AC POWER CORD (For U. K.)

SIGNAL CABLE

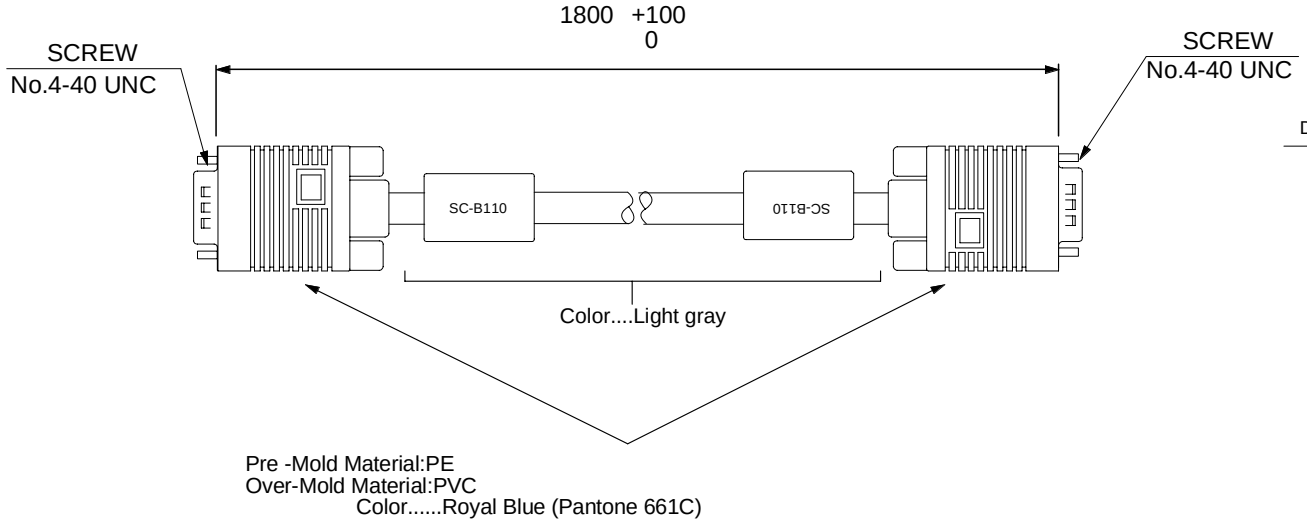
<SPECIFICATION>

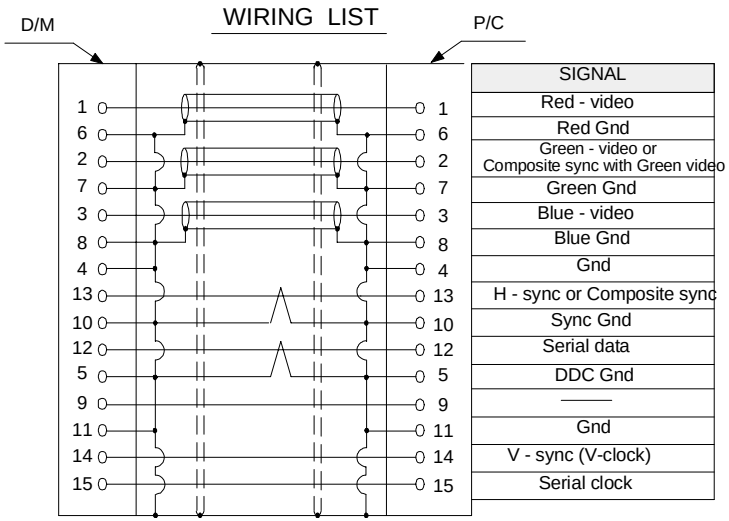
1. JACKET:PVC (Color.....Light gray)
2. ABILITY
   (1)VOLTAGE:30V
   (2)TEMPERATURE:80 C°

Packing



NEC-MITSUBISHI ELECTRIC VISUAL SYSTEMS CORPORATION S C - B 1 1 0





SIGNAL
Red - video
Red Gnd
Green - video or Composite sync with Green video
Green Gnd
Blue - video
Blue Gnd
Gnd
H - sync or Composite sync
Sync Gnd
Serial data
DDC Gnd
———
Gnd
V - sync (V-clock)
Serial clock

Fig. 8 SIGNAL CABLE

VSP-C0459

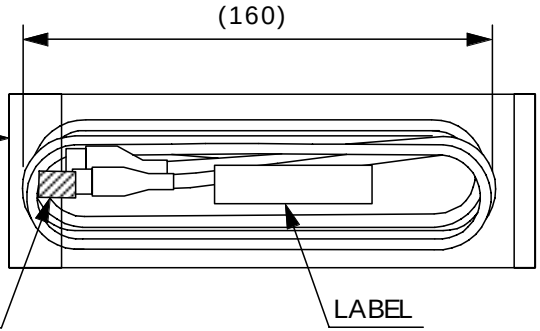
USB Cable (RC - X301)

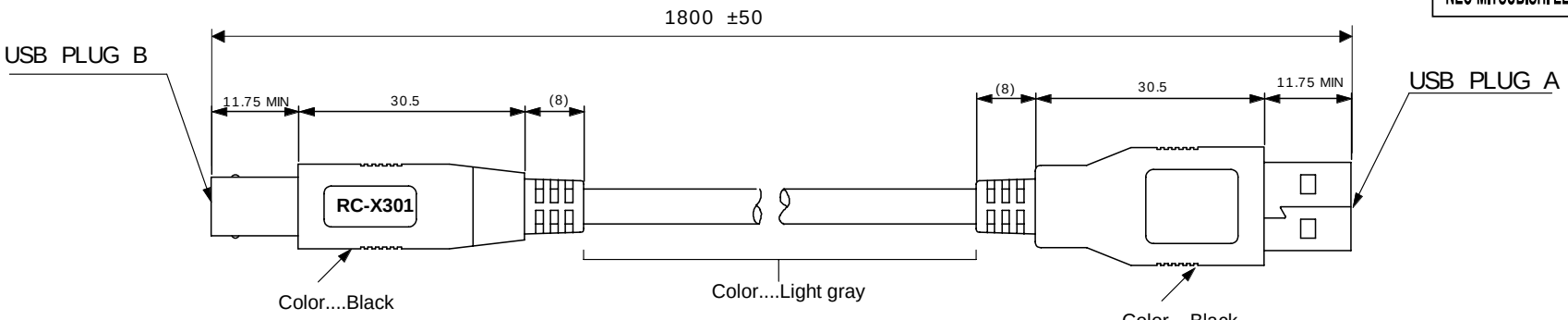
<SPECIFICATION>
1. JACKET:PVC
2. ABILITY
   (1) VOLTAGE :30V
   (2) TEMPERATURE :80ºC

Packing

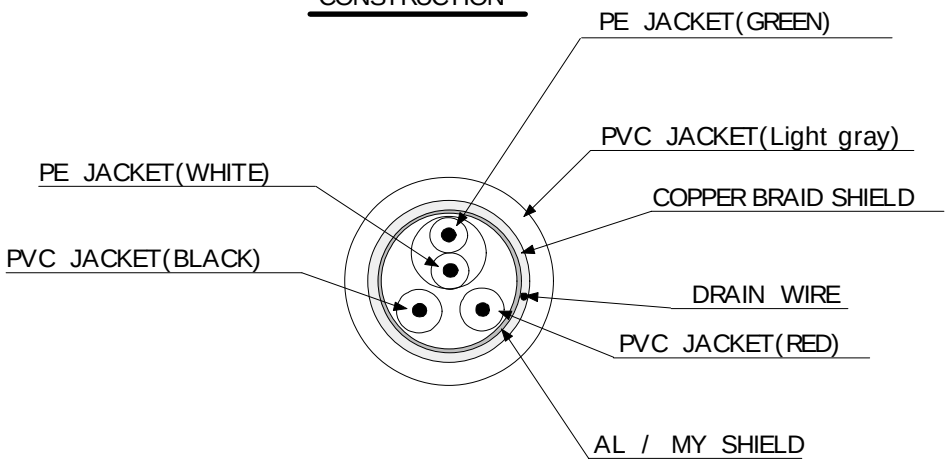
Vinyl bag specifications

- Material:Polyethylene (PE)
- Thickness:0.05mm





CONSTRUCTION



WIRING LIST

PLUG A	CABLE		PLUG B
CONTACT NO.	SIGNAL NAME	CABLE COLOR	CONTACT NO.
1	VCC	RED	1
2	- DATA	WHITE	2
3	+ DATA	GREEN	3
4	Ground	BLACK	4
SHIELD COVER A,B	SHIELD		SHIELD COVER A,B

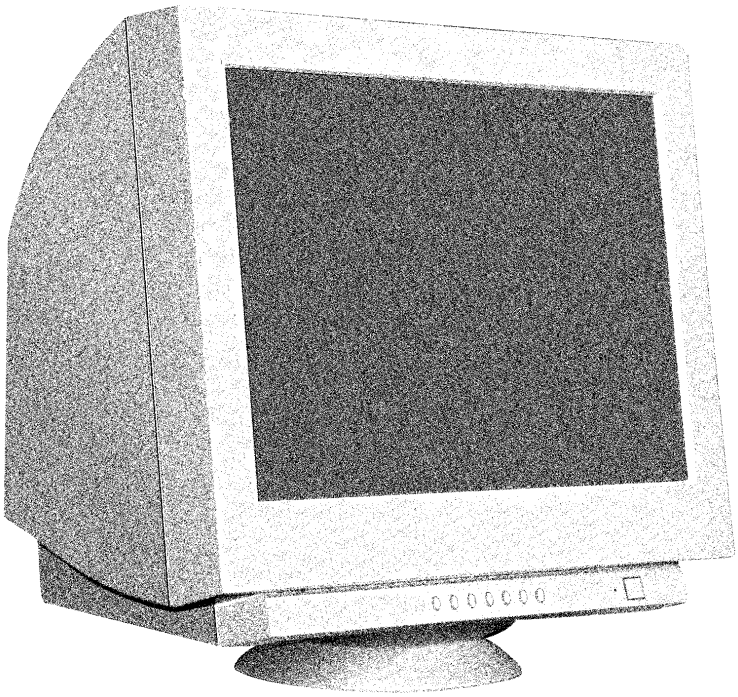
Fig. 9 USB CABLE

MITSUBISHI

AUTO-SCANNING WITH DIGITAL CONTROL
COLOR DISPLAY MONITOR

Diamond Pro 2060u

USER S GUIDE



For future reference, record the serial number of your display monitor in the space below:
SERIAL No. [ ]
The serial number is located on the rear cover of the monitor.

Internet Home Page: **http://www.necmitsubishi.com/**

Supplying Windows® 95/98/2000 INF File download service, new product information, etc.

RADIO INTERFERENCE REGULATIONS STATEMENT FOR U.S.A.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

THIS PRODUCT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS WITH SIGNAL CABLE SC-B110. USE IT TO REDUCE THE POSSIBILITY OF CAUSING INTERFERENCE TO RADIO, TELEVISION, AND OTHER ELECTRIC DEVICES. NO USER SERVICEABLE PARTS INSIDE. DO NOT ATTEMPT TO MODIFY THIS EQUIPMENT. IF MODIFIED, YOUR AUTHORITY TO OPERATE THIS EQUIPMENT MIGHT BE VOIDED BY FCC.

Declaration of Conformity - United States only

Product Name:	22 in. Color Display Monitor
Type:	NSZ2107STTUW
Brand Name:	MITSUBISHI

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding this declaration, contact:

NEC-Mitsubishi Electronics Display of America, Inc.
1250 North Arlington Heights Road, Itasca, Illinois 60143-1248, U.S.A.

or, call

(630) 467-5000

To identify this product, refer to the model number found on the product.

As an ENERGY STAR Partner, NEC-Mitsubishi Electronics Display of America,Inc. has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

高調波ガイドライン適合品

この装置は、情報処理装置等電波障害自主規制協議会(VCCI)の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをしてください。

Energy 2000 Labeling Award

Congratulations!

You have just purchased a TCO'99 approved and labelled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also to the further development of environmentally adapted electronics products.

Why do we have environmentally labelled computers?

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during their manufacture. Since it is not so far possible to satisfactorily recycle the majority of electronics equipment, most of these potentially damaging substances sooner or later enter nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (internal) and natural (external) environments. Since all methods of electricity generation have a negative effect on the environment (e.g. acidic and climate-influencing emissions, radioactive waste), it is vital to save energy. Electronics equipment in offices is often left running continuously and thereby consumes a lot of energy.

What does labelling involve?

This product meets the requirements for the TCO'99 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation) and Statens Energimyndighet (The Swedish National Energy Administration).

Approval requirements cover a wide range of issues: environment, ergonomics, usability, emission of electric and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands impose restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental policy which must be adhered to in each country where the company implements its operational policy.

The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.
Labelled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

Below you will find a brief summary of the environmental requirements met by this product. The complete environmental criteria document may be ordered from:

TCO Development
SE-114 94 Stockholm, Sweden
Fax: +46 8 782 92 07
Email (Internet): development@tco.se
Current information regarding TCO'99 approved and labelled products may also be
obtained via the Internet, using the address:
http://www.tco-info.com/

Environmental requirements

Flame retardants
Flame retardants are present in printed circuit boards, cables, wires, casings and housings. Their purpose is to prevent, or at least to delay the spread of fire. Up to 30% of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride, and those flame retardants are chemically related to another group of environmental toxins, PCBs. Both the flame retardants containing bromine or chloride and the PCBs are suspected of giving rise to severe health effects, including reproductive damage in fish-eating birds and mammals, due to the bio-accumulative* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.
The relevant TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound bromine or chlorine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

Cadmium**
Cadmium is present in rechargeable batteries and in the colour-generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries, the colour-generating layers of display screens and the electrical or electronics components must not contain any cadmium.

Mercury**
Mercury is sometimes found in batteries, relays and switches. It damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries may not contain any mercury. It also demands that mercury is not present in any of the electrical or electronics components associated with the labelled unit.

CFCs (freons)
The relevant TCO'99 requirement states that neither CFCs nor HCFCs may be used during the manufacture and assembly of the product. CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on earth of ultraviolet light with e.g. increased risks of skin cancer (malignant melanoma) as a consequence.

Lead**
Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning. The relevant TCO´99 requirement permits the inclusion of lead since no replacement has yet been developed.

* Bio-accumulative is defined as substances which accumulate within living organisms
** Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.

CONTENTS

ENGLISH

CAUTION

The power cord provided with this monitor is designed for safety and must be used with a properly grounded outlet to avoid possible electrical shock.

Do not remove the monitor cabinet as this can expose you to very high voltages and other hazards.

MANUFACTURER DECLARATION FOR CE-MARKING:

We, NEC-Mitsubishi Electric Visual Systems Corporation, declare under our sole responsibility, that this product is in conformity with the following standards:

EN60950
EN55022 Class B
EN61000-3-2
EN61000-3-3
EN55024

following the provisions of:

73/23/EEC Low Voltage Directive
89/336/EEC EMC Directive

WARNING!

This product is not designed for use in life support devices and NEC-Mitsubishi Electronics Display makes no representations to the contrary. Life support devices are those devices which are used to measure, diagnose, or evaluate the tissue, systems or functions of the human body; or other devices employed to support or sustain life or good health.

Trademark

IBM, PC, PS/2, PS/V, Personal System/2 are registered trademarks of International Business Machines Corp.
Apple Macintosh is a registered trademark of Apple Computer, Inc.
Quadra is a trademark of Apple Computer, Inc.
UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company Limited.
ENERGY STAR is a U.S. registered mark.

1 INTRODUCTION

Congratulations on your purchase of the high resolution color monitor. We designed this monitor to provide you with years of reliable trouble-free operation.

This guide tells you how to connect, adjust and care for your monitor. This guide also provides technical specifications and instructions for troubleshooting any basic problems you may experience with your monitor.

1.1 Features

This monitor is a 55cm/22" (508mm/20" Viewable Image Size) intelligent, microprocessor-based monitor compatible with most analog RGB (Red, Green, Blue) display standards.

It provides crisp text and vivid color graphics with both PC and Macintosh platforms.

- The monitor's wide auto-scanning compatibility range makes it possible to upgrade video cards or software without purchasing a new monitor.
- Digitally controlled auto-scanning is done using an internal microprocessor, for horizontal scan frequencies between 30kHz and 121kHz, and vertical scan frequencies between 50Hz and 160Hz. The microprocessor-based intelligence allows the monitor to operate in each frequency mode with the precision of a fixed frequency monitor.
- The monitor contains resident memory for pre-programmed screen display standards and is also capable of storing additional user adjustment parameters.
- The monitor has "AUTO SIZE ADJUST" function to optimize the size and distortion for Non-Preset timings.
- The monitor is capable of producing a non-interlaced maximum addressable resolution format of 2048 dots x 1536 lines. This display is well suited for windowing environments.
- Because of the analog signal inputs, the monitor can display an unlimited palette of colors that can be manually adjusted to suit your specific needs.
- The monitor has a power management function accorded to VESA™-DPMS™-standard. To save energy, the monitor must be connected to a system compliant with the VESA™ -DPMS™-standard. (Refer to your computer and/or video card instructions for proper operation.)
- To ensure ease of installation and ongoing use, the monitor features On Screen Display (OSD) of all monitor set-up and adjustment functions.
- For use in a variety of applications, the monitor complies with UL 1950, CSA C22.2 No.950 and EN60950 for safety, FCC Class-B, VCCI Class-B and EN55022 Class-B for EMI, MPR-II, ISO 9241-3, ISO9241-7 and ISO9241-8 for ergonomics. The monitor also complies with TCO'99 guideline for environmental safe use.
- The world's standard DIAMONDTRON NF CRT upgraded and pure picture images.
- The monitor complies with Video Electronics Standards Association (VESA™) DDC™2B and 2Bi (EDID) specification. If your computer is Plug & Play compliant setup will be done automatically.
- Fine 0.24mm aparture grille pitch/Maximum addressable resolution of 2048 x 1536.
- USB self-powered hub with 1 upstream port and 3downstream ports.

1.2 Internal Preset Memory Capability

To minimize adjustment needs, the factory has preset popular display standards into the monitor, as shown in Table 1. If any of these display standards are detected, the picture size and position are automatically adjusted. All of the factory presets may be overwritten by adjusting the user controls. This monitor is capable of automatically storing up to 15 additional display standards. The new display information must differ from any of the existing display standards by at least 1kHz for the horizontal scan frequency or 1Hz for the vertical scan frequency or the sync signal polarities must be different.

Table 1. Memory Buffer Factory Presets

PRESET TIMING	Fh(kHz)	Fv (Hz)	Polarity H	Polarity V
640 x 480 N.I.	31.5	60.0	–	–
800 x 600 N.I.	46.8	75.0	+	+
1024 x 768 N.I.	60.0	75.0	+	+
1024 x 768 N.I.	68.7	85.0	+	+
1280 x 1024 N.I.	80.0	75.0	+	+
1280 x 1024 N.I.	91.1	85.0	+	+
1600 x 1200 N.I.	93.8	75.0	+	+
1600 x 1200 N.I.	106.3	85.0	+	+
1920 x 1440 N.I.	112.5	75.0	–	+
1800 x 1350 N.I.	120.4	85.0	–	–

1.3 Power Management Function

The monitor has a power management function which reduces the power consumption of the monitor when not in use.
Power saving mode is invoked by a VESA DPMS-compliant computer. Check your computer's manual for setting this function.

Mode	Power	Power-On Indicator
Normal	140 W	Green
Power Saving Mode	≦3 W	Orange

NOTE without USB operation

1.4 DDC

The monitor includes the VESA DDC™2B and DDC™2Bi feature. DDC (Display Data Channel) is a communication channel over which the monitor automatically informs the computer system about its capabilities (e.g. each supported resolution with its corresponding timing).
DDC is routed through previously unused pins of the 15-pin VGA connector.
The system will “Plug and Play” if both monitor and computer implement the DDC protocol.

NOTE
DDC™2Bi is available only with connector SIGNAL-B.

1.5 Location Considerations

When setting up and using the monitor, keep the following in mind:

- For optimum viewing, avoid placing the monitor against a bright background or where sunlight or other light sources may reflect on the display area of the monitor. Place the monitor just below eye level.
- Place the monitor away from strong magnetic or electromagnetic fields, such as high capacity transformers, electric motors, large current power lines, steel pillars, etc....

  Magnetism can cause distortion in the picture and/or color purity.
- Avoid covering the slots or openings of the monitor. Allow adequate ventilation around the monitor so the heat from the monitor can properly dissipate. Avoid putting the monitor into any enclosure that does not have adequate ventilation.
- Avoid exposing the monitor to rain, excessive moisture, or dust, as this can cause a fire or shock hazard.
- Avoid placing the monitor, or any other heavy object, on the power cord. Damage to the power cord can cause a fire or electrical shock.
- When transporting the monitor, handle it with care.

1.6 Cleaning Your Monitor

When cleaning the monitor, please follow these guidelines:

- Always unplug the monitor before cleaning.
- Wipe the screen and cabinet front and sides with a soft unspoil cloth to prevent causing imperfections.
- If the screen requires more than dusting, apply water or neutral detergent to a soft cloth to clean the monitor screen.

CAUTION

- *Do not use benzene, thinner or any volatile substances to clean the unit as the finish may be permanently marked.*
- *Never leave the monitor in contact with rubber or vinyl for an extended time period.*
- *Do not spray directly on the screen as cleaner may drip into the monitor and damage the circuitry.*
- *Never use an abrasive cleaner on the screen surface as this will damage the anti-reflection coating.*

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1.7 Unpacking

After you unpack the box you should have all of the items indicated in Figure 1. Save the box and packing materials in case you transport the monitor.

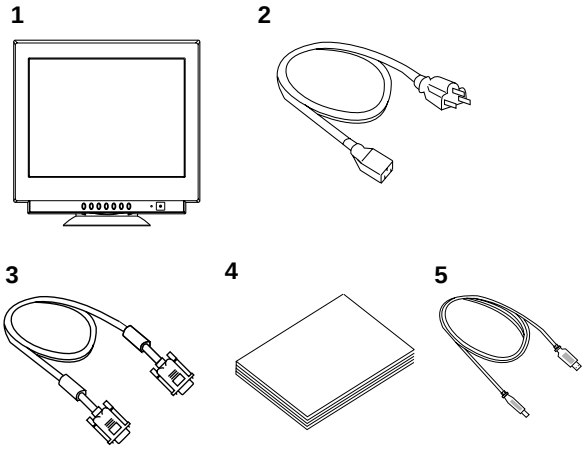


Figure 1

1. Color Monitor
2. AC Power Cord
3. Signal Cable SC-B110
4. User's Guide (this document)
5. USB Upstream Cable

1.8 Tilt/Swivel Base

The monitor comes with a tilt/swivel base. This enables you to position the monitor at the best angle and tilt for maximum viewing comfort.

Screen Position Adjustment

Adjust the tilt and rotation of the monitor by placing your hands at opposite sides of the case. You can adjust the monitor 90 degrees right or left, 10 degrees up or 5 degrees down, as shown below.

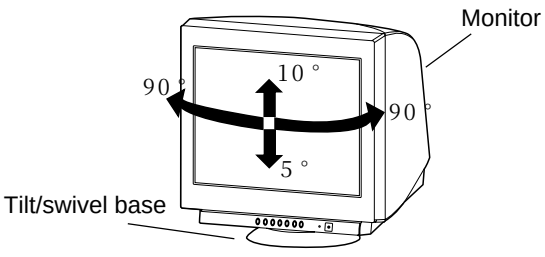


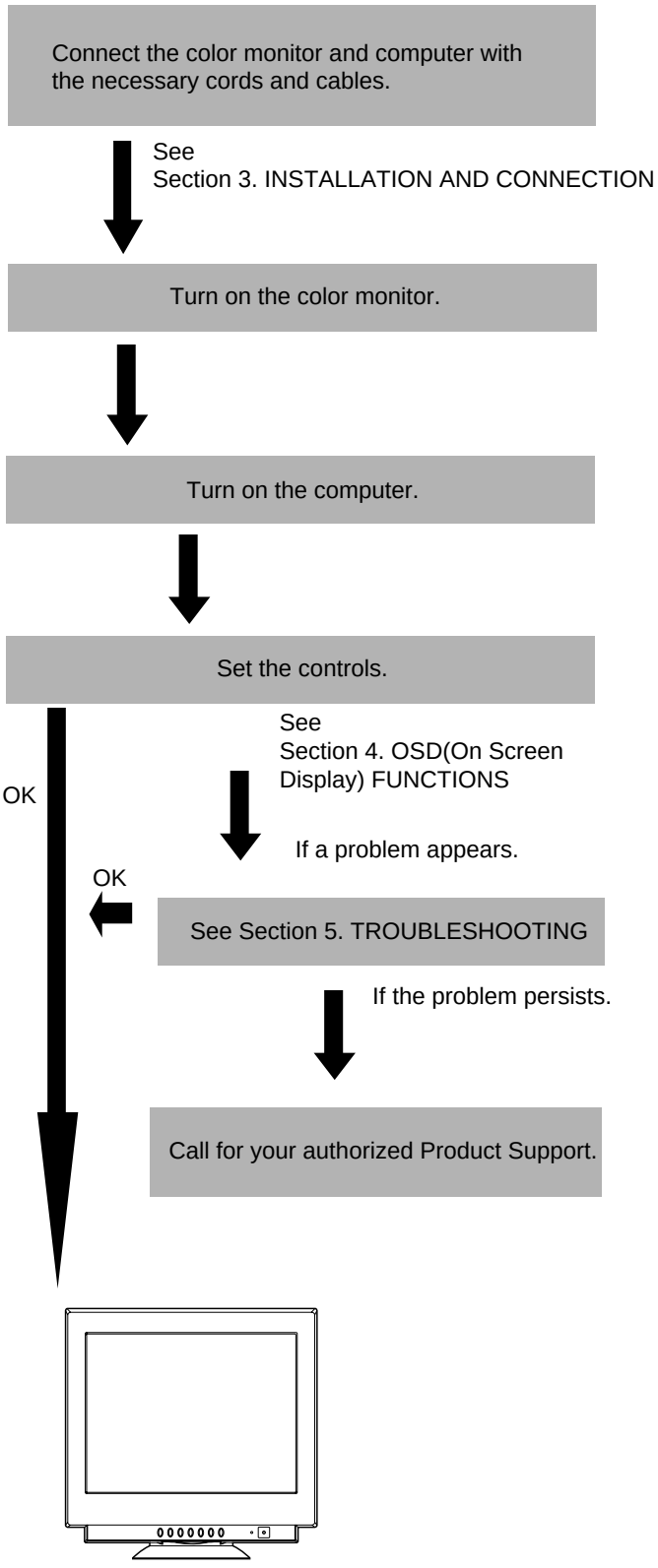
Figure 2

CAUTION

Keep your fingers away from the pivot area of the tilt/swivel base.

1.9 Quick Operation Chart

To summarize the steps in connecting your computer with the color monitor and setting the necessary controls and switches, refer to the chart below.



2 PART NAME

2.1 Control Names

See Figures 3 and 4 for the location of the user controls, indicator and connectors.
Each part is identified by number and is described individually.

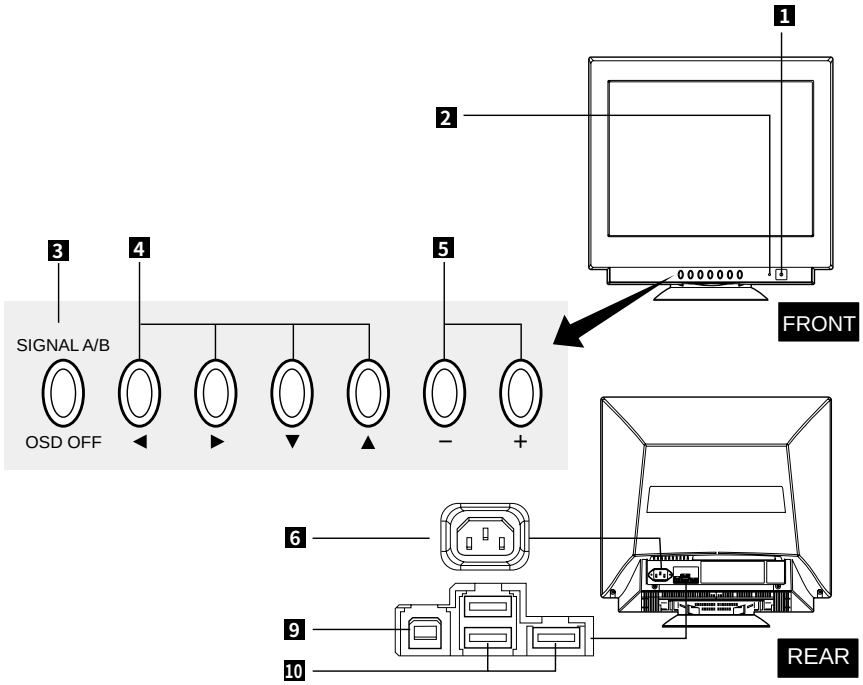


Figure 3

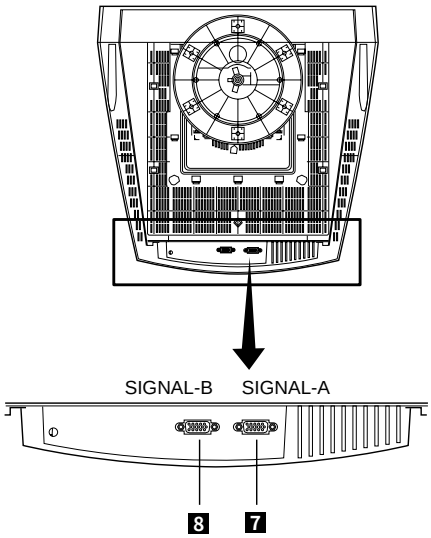


Figure 4

2.2 Function

1. **POWER SWITCH:** A push-on / push-off switch for AC power.
2. **POWER-ON INDICATOR:** This indicator illuminates green when AC power is on, and illuminates orange when the monitor is in the power management modes.
3. **INPUT CONNECTOR SELECT/OSD OFF BUTTON:**
   - Without OSD screen, push to select the signal input connector, SIGNAL A or B.
   - With OSD screen, push to turn the OSD screen off.

NOTE

If only one input is used, the monitor will select it automatically.

4. **ITEM SELECT BUTTONS:** Push to select the item icon.
5. **FUNCTION ADJUST BUTTONS:** Push the adjust buttons to adjust the image on the screen.
6. **AC POWER CONNECTOR**
7. **SIGNAL INPUT CONNECTOR (SIGNAL-A):DB9-15P**
8. **SIGNAL INPUT CONNECTOR (SIGNAL-B):DB9-15P**
9. **USB UPSTREAM PORT:** To connect to USB equipped computer.
10. **USB DOWNSTREAM PORTS:** To connect to USB equipped peripherals, e.g, USB cameras, keyboards, printers, etc.

3 INSTALLATION AND CONNECTION

On the back of the monitor three kinds of plug-in connections are provided: AC power connector for the AC input, two DB9-15P connectors for video signal input, and USB ports for USB communication.

3.1 AC Power Connection

One end of the AC power cord is connected to the AC power connector on the back of the monitor. The other end is plugged into a properly grounded three-prong AC outlet. The monitor's auto-sensing power supply can automatically detect 100-120V AC or 220-240V AC and 50 or 60Hz.

3.2 Signal Cable Connection

The DB9-15P(VGA) connector is provided for compatible analog RGB outputs from your computer. Apple Macintosh computers can also be interfaced with using the optional Mitsubishi Macintosh adapter AD-A205.

3.2.1 Connecting to Any IBM VGA Compatible System

Figure 5 shows the SC-B110 cable connection to the Video Graphics Array (VGA) port in an IBM Personal System/2® series, or any VGA compatible system.

1. Power off, both the monitor and the computer.
2. Connect the one end of the SC-B110 cable to the DB9-15P connector on the VGA controller card.
3. Connect the other end of the SC-B110 cable to the DB9-15P receptacle on the back of the monitor.
4. Power on the monitor, then the computer.
5. After using the system, power off the monitor, then the computer.

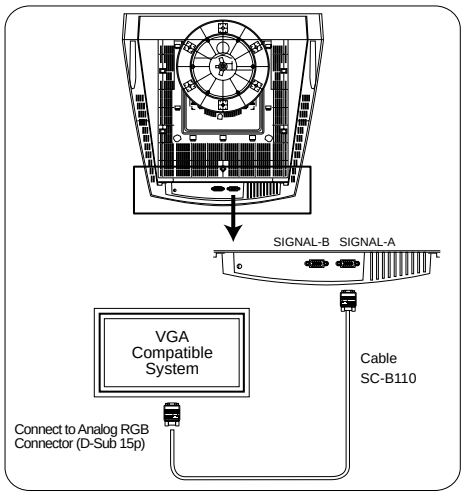


Figure 5

CAUTION

The socket-outlet shall be installed near the equipment and shall be easily accessible. During servicing, disconnect the plug from the socket-outlet.

3.2.2 Connecting to An Apple Macintosh Computer

Figure 6 shows the SC-B110 cable and AD-A205 Adapter(option) to the video port in an Apple Macintosh.

For Macintosh Adapter AD-A205, contact your dealer.

1. Power off, both the monitor and the computer.
2. Set the DIP switches of Macintosh Adapter according to the setting chart.
   (See Section 7.3 Optional Macintosh Adapter AD-A205 Settings)
3. Connect the 15-pin (DB-15P) end of the AD-A205 Adapter to the straight 15-pin connector on the Macintosh video port on the computer or on the video board.
4. Connect the sub-miniature 15-pin (DB9-15P) end of the AD-A205 Adapter to the SC-B110 cable.
5. Connect the other end of the SC-B110 cable to the DB9-15P receptacle on the back of the monitor.
6. Power on the monitor, then the Macintosh.
7. After using the system, power off the monitor, then the Macintosh.

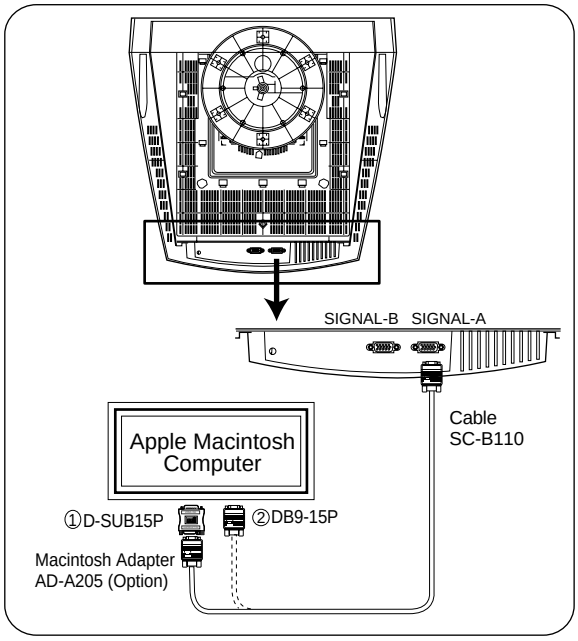


Figure 6

NOTE

- For the Apple Macintosh Computers having a VGA compatible port, steps 2 through 4 are not necessary. Connect the end of the signal cable to the port directly.
- In case of Apple Macintosh G3 series, use "Control Panel" of "Apple Menu" when selecting a resolution. If select the resolution from "Control Bar", no screen may be displayed and the computer may freeze.

3.2.3 Connecting to two computers

Figure 7 shows the connection to two computers.

Refer to clause 3.2.1 or 3.2.2 for the connection procedure.

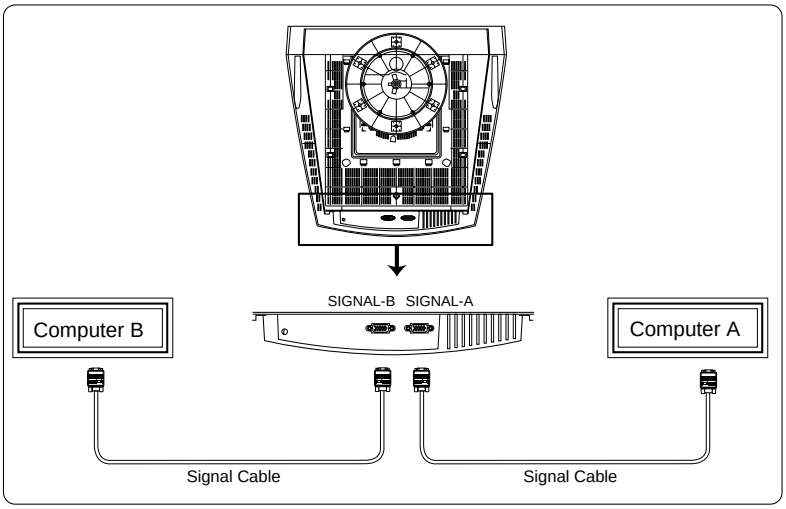
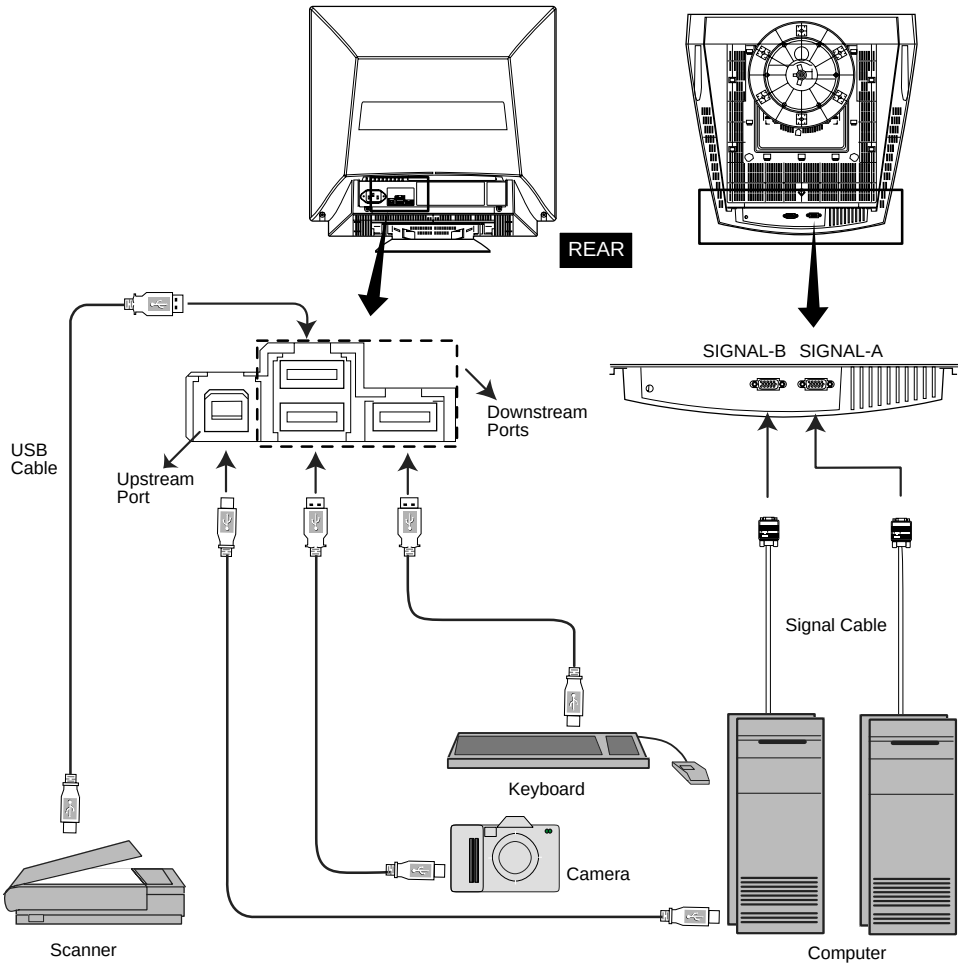


Figure 7

3.3 USB System Basic Application



NOTE

The Computer is required to have Windows® 98 or later installed and USB functions.

3.4 Installation of USB Function

The following procedure permits your computer to recognize or "enumerate"(A USB term) the USB HUB.

1. Power on the display monitor and then the computer.
2. Start "Enumeration" from the Windows® Desktop.

NOTE

- During the enumeration of USB Hub, connect the keyboard and mouse, to the computer and not to the downstream ports on the display monitor. After the enumeration, the keyboard and mouse can be used by connecting to the downstream ports, if they are USB-compliant.
- Do not unplug the USB cable during the enumerations.

(1) Connect the computer and the display monitor with the included USB cable. Figure 8 will appear.
(2) Click “Next” on Figure 8 to get Figure 9.
(3) Click “Finish” on Figure 9 to complete the enumeration of USB HUB.

Figure 8

Figure 9

You can confirm that the USB HUB is successfully enumerated with the following method.

- Open “Device Manager” tab in “System” property under “Control Panel”. Confirm that “Generic USB HUB” is listed in “Universal Serial Bus Controller”. If you can’t confirm it, re-enumerate the USB HUB again by following (a) or (b).

(a) Disconnect and connect the USB cable to the upstream port of the display monitor.
(b) Cycle power of the display monitor off then on.

NOTE

If the mark ⓘ appears with “Generic USB HUB”, then enumeration was unsuccessful. Select “Generic USB HUB” marked with ⓘ mark and click “Remove” and “Refresh”. After that, the enumeration is automatically started.

NOTE

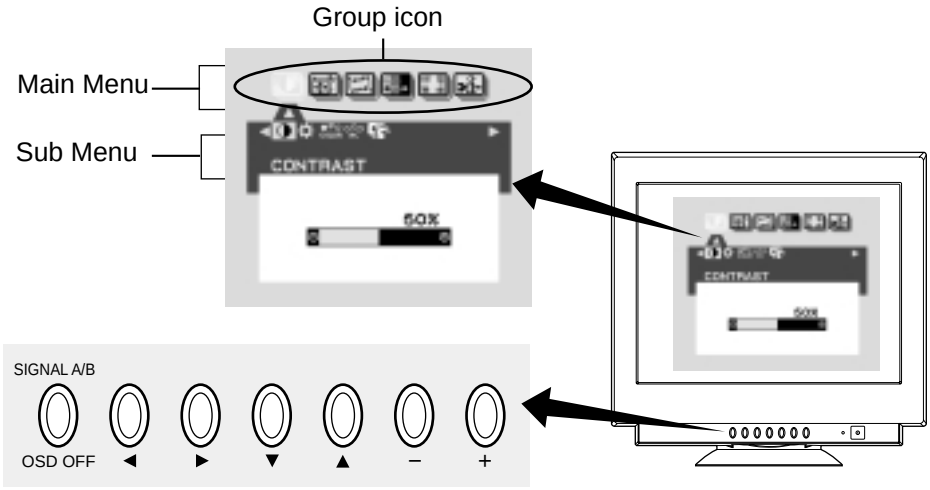
The enumeration of USB HUB may be necessary for each USB port on the computer.

Figure 10

4 OSD (On Screen Display) FUNCTIONS

4.1 How to adjust the screen

The monitor has an OSD(On Screen Display) function.
The following procedure shows how to adjust the screen using the OSD function.



(1) Turn on the monitor by pressing ⏻

(2) Display the OSD screen by pressing ◄ ► ▼ ▲ – +

(3) Select the group icon on Main Menu by pressing ◄ ►

(4) Display the Sub Menu by pressing ▼

(5) Select the item icon on Sub Menu by pressing ◄ ►

(6) Adjust by pressing – +

(7) To turn the OSD screen off, press button SIGNAL A/B / OSD OFF

If you don't press any button for the time set at "OSD TURN OFF", the OSD will turn off automatically.

4.2 Adjustment Items

X: Available

Group Icon	Item Icon	Item	Press the Minus Button (−)	Press the Plus Button (+)	A	B	C
(COLOR)		CONTRAST	To decrease the contrast.	To increase the contrast.	X	X	X
		BRIGHT	To decrease the brightness.	To increase the brightness.	X	X	X
	COLOR	COLOR	To select preferable display color mode. And, to adjust the color balance at the selected color mode.		X	X	X
		NOTE When selecting mode "sRGB", "COLOR TEMPERATURE", "CONTRAST" and "BRIGHT" are unavailable.					
		COLOR TEMPERATURE	To decrease the color temperature of the color mode selected by "COLOR"	To indecrease the color temperature of the color mode selected by "COLOR"	X	X	X
		FINE PICTURE MODE	Selects the status which provides the most pleasing image. NORMAL MODE – – – for normal use TEXT MEDE – – – – for image using many letters or characters GRAPHIC MODE – – for graphic and photographic images.				
		FACTORY PRESET	————	To restore to factory preset level.	-	-	-
(GEOMETRY)	AUTO	AUTO SIZE ADJUST	————	To adjust the screen size automatically based on input timming.	-	-	-
		NOTE "AUTO SIZE ADJUST" is unavailable when no image signal or narrow size of the image signal are inputted.					
		HORIZ-SIZE	To narrow the width of the image on the screen.	To expand the width of the image on the screen.	X	X	
		HORIZ-POSITION	To move the image on the screen to the left.	To move the image on the screen to the right.	X	X	
		VERT-SIZE	To narrow the height of the image on the screen.	To expand the height of the image on the screen.	X	X	
		VERT-POSITION	To move the image down.	To move the image up.	X	X	
		ROTATION	To rotate the image counterclockwise.	To rotate the image clockwise.	X	X	X
	GTF AUTO	GTF AUTO ADJUST	————	To adjust the screen size automatically based on GTF timming.	-	-	-
		NOTE "GTF AUTO ADJUST" is available when using with the computer which VESA GTF™ function is installed.					
		FACTORY PRESET	————	To restore to factory preset level.	-	-	-
		NOTE If a non-Factory Preset timing is used, "FACTORY PRESET" is unavailable.					
(DISTORTION)		PINCUSHION	To collapse the center of the image.	To expand the center of the image.	X	X	
		PIN-BALANCE	To move the top and bottom of the screen image to the right.	To move the top and bottom of the screen image to the left.	X	X	
		KEYSTONE	To decrease the width at the top of the screen image and to increase the width at the bottom.	To increase the width at the top of the screen image and to decrease the width at the bottom.	X	X	
		KEY-BALANCE	To make the screen slant to the left.	To make the screen slant to the right.	X	X	
		TOP-PIN	To expand the width of the screen image near the corners of top.	To narrow the width of the screen image near the corners of top.	X	X	
		TOP-BALANCE	To make the screen slant to the left at the top.	To make the screen slant to the right at the top.	X	X	
		BOTTOM-PIN	To expand the width of the screen image near the corners of bottom.	To narrow the width of the screen image near the corners of bottom.	X	X	
		BOTTOM-BALANCE	To make the screen slant to the left at the bottom.	To make the screen slant to the right at the bottom.	X	X	
		VERT-LIN	To vertically compress the center of the screen and expand the top and bottom.	To vertically expand the center of the screen and compress the top and bottom.	X	X	
		VERT-LIN-BALANCE	To vertically expand the bottom of the screen and compress the top.	To vertically compress the bottom of the screen and expand the top.	X	X	
		FACTORY PRESET	————	To restore to factory preset level.	-	-	-
		NOTE If a non-Factory Preset timing is used, "FACTORY PRESET" is unavailable.					

A. Press "FACTORY PRESET" to restore to the factory preset level.
B. Press (−) and (+) buttons together, to restore to the factory preset level.
C. Set data does not change by the change of the signal timing.

NOTE
If a non-Factory Preset timing is used, "FACTORY PRESET" does not work.

X: Available

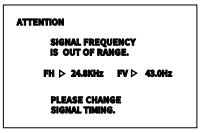
Group Icon	Item Icon	Item	Press the Minus Button	Press the Plus Button	A	B	C
(PURITY)		CORNER PURITY(TL)	To adjust the purity condition on the top-left corner.		X	X	X
		CORNER PURITY(TR)	To adjust the purity condition on the top-right corner.		X	X	X
		CORNER PURITY(BL)	To adjust the purity condition on the bottom-left corner.		X	X	X
		CORNER PURITY(BR)	To adjust the purity condition on the bottom-right corner.		X	X	X
		MOIRE CANCEL LEVEL	To decrease the level of the moire-clear wave.		X	X	
	CLAMP	CLAMP PULSE POSITION	To eliminate an excessive green or white-back ground that may occur when both Sync-On green and external sync signals are applied to the monitor.		X		
			To clamp the video signal at the front of the H-Sync pulse.	To clamp the video signal at the back of the H-Sync pulse. If you connect to an older Macintosh, you may need to press plus button.			
		FACTORY PRESET	————	To restore to factory preset level.	-	-	-
(CONVER.)		HORIZ-CONVERGENCE	To adjust the horizontal beam alignment on the full screen area.		X	X	X
		VERT-CONVERGENCE	To adjust the vertical beam alignment on the full screen area.		X	X	X
		FACTORY PRESET	————	To restore to factory preset level.	-	-	-
(MISC.)		DEGAUSS	————	To eliminate possible color shading or impurity due to magnetic effects.	-	-	-
		INPUT	To select the signal input connector, SIGNAL A or B.				
		POWER SAVE	To select the constant power consumption mode.	To select the power-save mode. (Your computer must be set for power management.)	X		X
		CONTROL LOCK	To unlock the OSD adjustments.	To lock the OSD function except for "BRIGHT" and "CONTRAST".			X
			NOTE "BRIGHT" and "CONTRAST" are available at the locked condition.				
		OSD POSITION	To move the OSD screen position in a counter clockwise direction.	To move the OSD screen position in a clockwise direction.	X		X
	OFF	OSD TURN OFF	To adjust the time that the OSD screen disappear when no access.		X	X	X
	INFO	DIAGNOSIS	Indicates the current scanning frequency, factory or user preset timing number, and signal iput connector.		-	-	-
		LANGUAGE	To choose the language used on OSD. ENG.....English, GER.....German, FRA.....French, ESP.....Spanish, ITA ..... Italian, 日本語.....Japanese				X
	AUTO SAVE	AUTO SAVE	To save the new setting automatically.	To save the new setting with a comfirmation message.			X
			NOTE When selecting "OFF", if "SAVE" is not done before the OSD screen disappeared, the new setting is invalid.				
	ALL RESET	ALL RESET	————	Restores all items to the factory preset level.	-	-	-
		FACTORY PRESET	————	To restore to factory preset level.	-	-	-

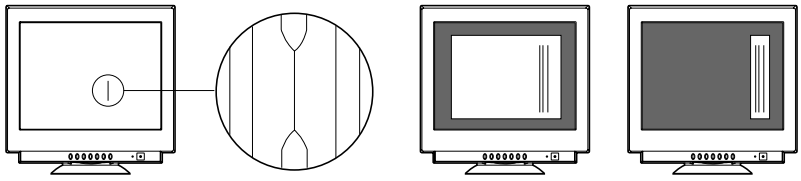
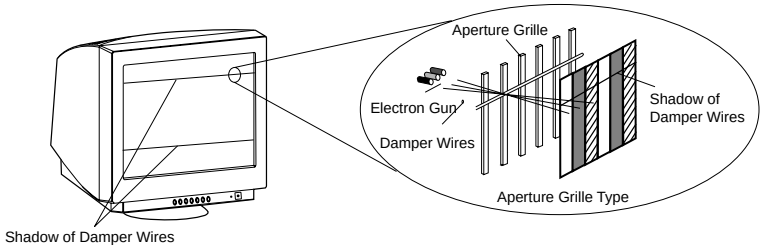
A. Press "FACTORY PRESET" to restore to the factory preset level.
B. Press − and + buttons together, to restore to the factory preset level.
C. Set data does not change by the change of the signal timing.

NOTE
If a non-Factory Preset timing is used, "FACTORY PRESET" does not work.

5 TROUBLESHOOTING

Before calling your Authorized Product Support, please check that the items below are properly connected or set. In case of using a non-standard signal, please check the pin assignments and the signal timing of your computer with the specification outlined in Section 6. SPECIFICATIONS and Section 7. APPENDIX.

PROBLEM		ITEMS TO CHECK	LOCATION
No picture	LED On (Green)	• Contrast and brightness controls.	• Front
	LED Off	• Power switch. • AC power cord disconnected.	• Front • Rear
	LED On (Orange)	• Signal cable disconnected. • Computer power switch. • Power management function is active.	• Rear • Computer • Press any key on the keyboard or move the mouse.
The following message appeared. 		• Signal cable disconnected. • Computer power switch. • Power management function is active.	• Rear • Computer • Press any key on the keyboard or move the mouse.
The following message appeared. 		• Input signal frequency range is too high or too low for the monitor to synchronize with.	• Check the specification of graphics adapter
Abnormal picture	Display is missing, center shifts, or too small or too large of a display size	• Do "FACTORY PRESET" or "ALL RESET" for a standard signal. • Adjust HORIZ-SIZE, VERT-SIZE, HORIZ-POSITION, and VERT-POSITION with non-standard signals. • Monitor may not be able to get full-screen image depend on signal. In this case, please select other resolution, or other vertical refresh timing. • Make sure you wait a few seconds after adjusting the size of the image before changing or disconnecting the signal.	• Front (OSD) • Front (OSD)
	No operation of the USB devices	• [Universal serial bus controller] is not listed in [Device Manager].	• Confirm that Windows98 is installed into the computer.
		• [Generic USB HUB] is not listed in [Device Manager].	• Make sure of the cable connections. • Restart the computer. • Turn off the monitor and turn on then. • Disconnect all the cables connected to the Upstream ports and re-connect then.

	PROBLEM	ITEMS TO CHECK	LOCATION
Abnormal Picture	Black vertical lines are visible on the screen.	• Thin vertical black lines on one or both sides of the • screen. This minor condition is caused by grille element • overlap which can occur during shipping. • Position an open white window over the affected area of the screen and maximize the brightness and contrast controls. This will cause localized heating of the overlap which will clear in a few minutes. Be sure to readjust the brightness and contrast controls back to the normal viewing levels after this procedure. 	
	Two fine horizontal lines are visible on the screen.	• The 2 very faint thin lines across the screen are normal. They are caused by the aperture grille stabilization filaments(Damper Wires) which are required for all aperture grille CRTs'. 	
	A buzzing sound when power on.	• A brief vibration or hum sound that is heard just after power up is normal. This is caused by the automatic degaussing function. This sound will be heard each time the monitor is powered up from a cold start and each time the manual degauss button is used.	
SELF DIAGNOSIS FUNCTION	This monitor has "SELF DIAGNOSIS" to check the operating conditions of the monitor. If the signal cable is disconnected or abnormal signal is received, the following message will appear. 	• Check the color bar. (e.g RED, GREEN, BLUE) • CHECK the H, V signal input. • Push the ▷ button, the picture size is expanded to a large size. • Check power-on indicator on the bezel. If this indicator is blinking (Orange--> Black--> Orange), there is a possibility of failer. Please call your Authorized Product Support.	

6 SPECIFICATIONS

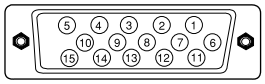
CRT	Size	55cm/22" (508mm/20" Viewable Image Size)
	Mask type	Aperture grille
	Gun	In-line
	Deflection angle	90°
	Phosphors	Red, Green, Blue EBU (medium short persistence)
	Aperture grille pitch	0.24mm
	Phosphor pitch	0.25mm
	Face Plate	G-WARAS
	Focusing method	Dynamic Beam Forming (DBF)
INPUT SIGNAL	Video	0.7Vp-p analog RGB
	Sync	Separate H, V sync., Composite sync., or Sync on Green
SIGNAL INTERFACE	Input Connectors	DB9-15P X 2
	Input Impedance	75Ω (video), 2.2kΩ (sync.)
USB	Function	•Self-powered HUB complying with Universal Serial Bus Specification Rev.1.1
	Interface	•Upstream port/12Mbps •3 Downstream ports/12Mbps, 1.5 Mbps (500mA max. per each Downstream port)
SCANNING FREQUENCY	Horizontal	30 - 121kHz
	Vertical	50 - 160Hz
RESOLUTION (HxV)	2048 dots x 1536 lines Non-Interlaced maximum addressable resolution format at 75Hz	
WARM-UP TIME	30 minutes to reach optimum performance level	
BRIGHTNESS	100cd/m^2, standard full white video signal at 9300K (+ 8MPCD)	
BLANKING TIME	Horizontal	≧ 2.0 μsec (typ.)
	Vertical	≧ 400 μsec (typ.)
DISPLAY SIZE	396mm x 297mm(typ.) ratio 4:3 (371mm x 297mm(typ.) ratio 5:4)	
COLOR	5000K~9300K	
POWER SOURCE	AC100-120/220-240V±10% 50/60Hz 140W (typ.) (155W (typ.) with USB operation)	
OPERATING ENVIRONMENT	Temperature	5 - 35°C
	Humidity	10 - 90%RH (without condensation)
DIMENSIONS	(W)19.5inch x (H)19.4inch x (D)18.6inch / (W) 495mm x (H) 493.5mm x (D) 473mm	
WEIGHT	Approx. 29.7kg (65.5 lbs.)	
TILT/SWIVEL BASE	Tilt Angle	-5° - +10°
	Swivel Angle	±90°
REGULATIONS	Safety	UL1950 (UL), CSA C22.2 No.950 (C-UL) EN60950 (TÜV-GS)
	EMC	FCC Class-B, DOC Class-B EN55022 Class-B, VCCI Class-B EN61000-3-2, EN61000-3-3, EN55024
	X-Ray	DHHS, HWC, Röv vom 8.1, 1987
	Other	CE-Marking, MPR-II/TCO'91 ISO9241-3, ISO9241-7, ISO9241-8 (TÜV-GS) TCO '99 International ENERGY STAR Program Energy 2000 Labeling Award Guidelines for the Suppression of Harmonics in Appliances and General-Use Equipment

* This monitor is registered / certified with Model No. NSZ2107STTUW.

7 APPENDIX

7.1 Monitor Signal Input Connector (DB9-15P)

(Female)

DB9-15P 

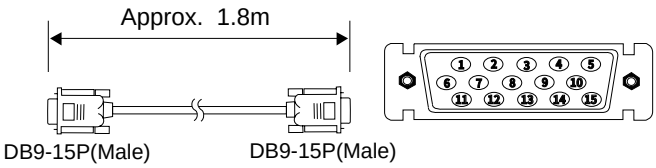
MOUNTED ON THE REAR PANEL

PIN ASSIGNMENTS

Pin No.	Signal
1	RED VIDEO
2	GREEN VIDEO
3	BLUE VIDEO
4	GROUND
5	DDC GROUND
6	RED GROUND
7	GREEN GROUND
8	BLUE GROUND
9	NC
10	SYNC GROUND
11	GROUND
12	SDA
13	HORIZONTAL SYNC or COMPOSITE SYNC
14	VERTICAL SYNC(VCLK)
15	SCL

DDC ..... DISPLAY DATA CHANNEL
SDA ..... SERIAL DATA
SCL ..... SERIAL CLOCK
NC ..... NO-CONNECTION

7.2 SC-B110 Signal Cable



PIN ASSIGNMENTS

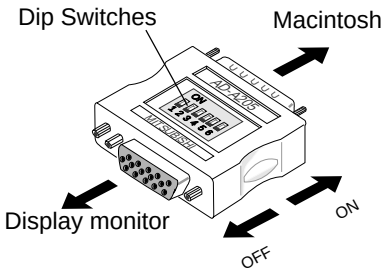
Pin No.	Signal
1	RED
2	GREEN
3	BLUE
4	GROUND
5	DDC GROUND
6	RED GROUND
7	GREEN GROUND
8	BLUE GROUND
9	NC
10	SYNC GROUND
11	GROUND
12	SDA
13	HORIZONTAL SYNC
14	VERTICAL SYNC(VCLK)
15	SCL

DDC ..... DISPLAY DATA CHANNEL
SDA ..... SERIAL DATA
SCL ..... SERIAL CLOCK
NC ..... NO-CONNECTION

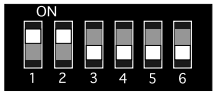
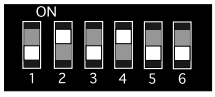
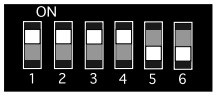
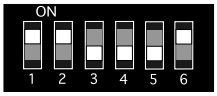
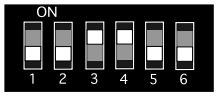
7.3 Optional Macintosh Adapter AD-A205 Settings

The AD-A205 Macintosh Adapter(option) allows you to take an advantage of the built in video capabilities of your Macintosh computer with the monitor.

(1) Set the dip switches of the adapter, before connect to the computer.



(2) Set the dip switches according to the following chart. By using the following chart, you can choose a main resolution, quickly.
If you wish to operate by other resolution, refer to next page; “AD-A205 Mac Adapter Setting Chart”

Apple Macintosh	Switch ON	Switch Setting
Macintosh IIsi, IIci, IIvi, IIvx, LC, LC II	1,2	
Macintosh LC III, LC475, LC630	2,4	
Macintosh Quadra 610, 650, 700, 800, 840AV, 900, 950 Macintosh Centris 610, 650, 660AV	1,2,3,4	
Performa 6260, 6310, 6410, 6420 Power Macintosh 6100, 6100AV, 6200, 6300 Power Macintosh 7100AV, 7200, 7300, 7500, 7600 Power Macintosh 8100, 8100AV, 8500, 8600 Power Macintosh 9500, 9600 Workgroup Server 7350, 8150, 9150, 9650	1,2,6	
Power Macintosh 4400, G3	3,4	

(3) "AD-A205 Mac Adapter Setting Chart" shows all available modes for Macintosh systems and all possible combinations with the monitor.
We recommend that you use the monitor with a preset timing. (See Section 1.2 Internal Preset Memory Capability)

(4) Please refer to the instruction book of your computer about the resolution setting.
Resolution may not be changed on some computers.

<Optional Macintosh AD-A205 Adapter Setting Chart>

● Set the dip switch "ON" as shown below. (Example; "1,2")

RESOLUTION	Macintosh								Performa		Power Macintosh									
	IIsi IIci	IIvi IIvx	LC LCII	LCIII LC475	LC630	Quadra 700 900	Quadra 610 650 800 950 Centris 610 650	Quadra 840AV Centris 660AV	6260 6310	6410 6420	Workgroup Server 8150 9150 6100 8100 6100AV 7100AV 8100AV DRAM Video Port (HDI-45)	8100 VRAM Video Card (DB-15) 6100AV 7100AV 8100AV AV Video Card (DB-15)	6200 6300	7200	4400	7300 7500 7600 8500 8600 Workgroup Server 7350	9500	9600/233 Workgroup Server 9650	9600/300 9600/350	G3
640 x480@60Hz		3,4	3,4	3,4	3,4	3,4	3,4	3,4	1,2,6	1,2,6	3,4	3,4	1,2,6	3,4	3,4	3,4	3,4	3,4	3,4	3,4
640 x480@67Hz	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
640 x480@72Hz															3,4					3,4
640 x480@75Hz															3,4					3,4
640 x480@85Hz																				3,4
800 x600@60Hz					3,4				1,2,6	1,2,6			1,2,6	3,4	3,4	3,4	3,4	3,4	3,4	3,4
800 x600@72Hz					3,4			3,4	1,2,6	1,2,6		3,4	1,2,6	3,4	3,4	3,4	3,4	3,4	3,4	3,4
800 x600@75Hz														3,4	3,4	3,4	3,4	3,4	3,4	3,4
800 x600@85Hz																			3,4	3,4
832 x624@75Hz				2,4	2,4	2,4	2,4	2,4	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
1024 x768@60Hz								3,4		1,2,6		3,4		3,4	3,4	3,4	3,4	3,4	3,4	3,4
1024 x768@70Hz								3,4				3,4			3,4		3,4		3,4	3,4
1024 x768@72Hz										1,2,6				3,4		3,4		3,4		
1024 x768@75Hz							2,3	2,3				1,2,6		1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
1024 x768@85Hz																			3,4	3,4
1152 x870@75Hz						1,2,3,4	1,2,3,4	1,2,3,4				1,2,6		1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
1280 x960@60Hz																			3,4	
1280 x960@75Hz															3,4	1,2,6	3,4	1,2,6	1,2,6	3,4
1280 x960@85Hz																			3,4	
1280 x1024@60Hz															3,4		3,4		3,4	3,4
1280 x1024@75Hz															3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
1280 x1024@85Hz																			3,4	3,4
1600 x1200@60Hz																		1,2,6	1,2,6	3,4
1600 x1200@65Hz																			1,2,6	3,4
1600 x1200@67Hz																		1,2,6		
1600 x1200@70Hz																				3,4
1600 x1200@75Hz																		1,2,6	1,2,6	3,4

1. The resolution does not change with the computer powered on when you set the dip switches.
   Be sure to power off the computer when you set the dip switches.
2. Set the dip switches by a pointed article like a pencil or ball point pen to touch end of the switch groove.

TABLE DES MATIERES

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ATTENTION !

Le moniteur est livré avec un cordon d'alimentation de sécurité qui doit s'utiliser sur une prise correctement mise à la terre afin d'éviter d'éventuels chocs électriques.
Ne pas retirer le boîtier du moniteur : vous pouvez être exposé à des tensions élevées et à d'autres risques.

DÉCLARATION DE CONFORMITÉ POUR MARQUAGE CE:

Nous, Mitsubishi Elctric Corp., déclarons sous nolre seule responsabililé que le produit auquel se rétére celte déclaration est conforme a la aux normes ou autres documents normatifs:

EN60950
EN55022 Classe B
EN61000-3-2
EN61000-3-3
EN55024

conformément aux dispositions de Directives:

73/23/EEC Lage-netspanningsrichtlijn
89/336/EEC EMC-richtlijn

ATTENTION!

Ce produit n'a pas été désigné pour fonctionner dans des systèmes qui permettent de mesurer, d'évaluer ou d'assurer le bon fonctionnement des fonctions du corps humain. Mitsubishi Electronics Display ne peut en aucun cas être tenu responsable en cas d'utilisation de ce produit sur de tels systèmes.

1 INTRODUCTION

Nous vous adressons nos félicitations pour votre achat d'un moniteur couleur haute résolution. Novs avons conçu ce moniteur de façon à ce qu'il vous assure des années de fonctionnement fiable et sans problème.

Ce guide vous permet de connecter et d'utiliser votre moniteur en toute sécurité. Vous y trouverez également les spécifications techniques et les instructions nécessaires pour résoudre certains problèmes que vous pourriez rencontrer lors de l'utilisation de votre moniteur.

1.1 Caractéristiques

Le moniteur intelligent 55cm/22" (508mm/20" Aire d'affichage), à microprocesseur, compatible avec la plupart des standards d'affichage analogique RVB (Rouge, Vert, Bleu).

Cette fonction procure des caractères nets et des couleurs éclatantes avec une utilisation PC ou Macintosh.

- Le haut degré de compatibilité du balayage automatique permet de faire évoluer les cartes vidéo ou le logiciel sans changer de moniteur.
- La détection automatique des fréquences de balayage numérique et effectuée par un microprocesseur interne, permet de travailler avec des fréquences de balayage horizontal situées entre 30 kHz et 121 kHz, et avec des fréquences de balayage vertical situées entre 50 Hz et 160 Hz. Le processus intelligent mis en oeuvre par le microprocesseur permet au moniteur de travailler dans chaque mode de balayage avec la précision d'un moniteur à fréquence fixe.
- Le moniteur comporte une mémoire résidente pour les standards préprogrammés d'affichage sur écran et peut également mémoriser d'autres paramètres définis par l'utilisateur.
- Le moniteur posséde une fonction "REGLAGE TAILLE AUTO " d'optimisation de la taille et de la distorsion pour les calages non préréglés.
- La résolution horizontale maximum de ce moniteur est de 2048 points par ligne, et sa résolution verticale maximum est de 1536 lignes (valeurs typiques). Ce moniteur est donc bien adapté aux environnements à fenêtres.
- Comme les signaux d'entrée sont analogiques, ce moniteur peut afficher une palette de couleur illimitée, que l'on peut ajuster manuellement en cas de besoins spécifiques.
- Pour des raisons d'économies d'énergie, le moniteur est intégralement conforme aux méthodes de gestion d'énergie DPMS, NUTEK et Energy Star. Pour obtenir son arrêt automatique, il est nécessaire que le moniteur soit connecté à un système compatible avec l'un ou l'autre de ces standards (Reportez-vous aux instructions accompagnant votre ordinateur et/ou votre carte vidéo pour assurer un fonctionnement correct).
- Afin de faciliter l'installation et l'utilisation, les informations concernant les fonctions de réglages sont indiquées sur le menu à l'écran (OSD).
- Pour une utilisation optimale sous diffèrentes applications, le moniteur est compatible avec les normes de sècurité UL 1950, CSA C22.2 No.950, EN60950, les normes d'interférence électromagnétique FCC, VCCI, EN55022 (Classe B), la norme EMI,MPR-II, ISO 9241-3, ISO 9241-7 et ISO 9241-8 la norme d'ergonomie. Ce moniteur respecte en outre les recommandations TCO '99 en matière de respect de l'environnement.
- Le standard mondial DIAMONDTRON NF CRT amélioré et des images d'une grande pureté.
- Ce moniteur répond aux normes Video Electronics Standards Association (VESA) DDC2B/2Bi(EDID). Si votre PC est compatible avec la fonction "Plug & Play", alors le réglage d'initialisation se fera automatiquement.
- Grille à fils tendus au pas de 0.24mm / Résolution adressage maximum de 2048 x 1536.
- Fonction USB pourvue de 2 entrées hautes et de 3 entreés basses.

1.2 Valeurs préréglées stockées en mémoire

Pour limiter autant que possible la nécessité d'effectuer des réglages, les standards d'affichage les plus courants ont été chargés en usine dans la mémoire du moniteur, comme le montre le Tableau 1. Dès que l'un de ces standards se trouve détecté, le centrage et la dimension de l'image sont réglés automatiquement. Toutes les valeurs préréglées en usine peuvent être modifiées au moyen des commandes accessibles à l'utilisateur. Ce moniteur peut stocker jusqu'à 15 standards d'affichage supplémentaires. Les nouvelles informations ainsi stockées doivent être différentes de celles chargées en usine d'au moins 1 kHz pour ce qui concerne les fréquences de balayage horizontal, et de 1 Hz pour les fréquences de balayage vertical, ou alors les polarités des signaux de synchro devront être différentes.

Tableau 1. Standards de balayages chargés en usine

STANDARD DE BALAYAGE	Fh(kHz)	Fv (Hz)	Polarité H	Polarité V
640 x 480 N.I.	31.5	60.0	–	–
800 x 600 N.I.	53.7	85.1	+	+
1024 x 768 N.I.	60.0	75.0	+	+
1024 x 768 N.I.	68.7	85.0	+	+
1280 x 1024 N.I.	80.0	75.0	+	+
1280 x 1024 N.I.	91.1	85.0	+	+
1600 x 1200 N.I.	93.8	75.0	+	+
1600 x 1200 N.I.	106.3	85.0	+	+
1920 x 1440 N.I.	112.5	75.0	-	+
1800 x 1350 N.I.	120.4	85.0	-	-

1.3 Fonction Economiseur d'énergie

L'économiseur d'énergie permet de réduire la consommation du moniteur lorsqu'il n'est pas utilisé. Les modes d'économie d'énergie sont évoqués par un ordinateur compatible avec les normes VESA DPMS. Vérifier votre manuel d'utilisation, pour utiliser cette fonction.

Mode	Alimentation	Indicateur d'alimentation
Normal	140 W	Vert
Mode économiseur d'énerg	≦ 3 W	Orange

NOTE Sans fonctionnement USB.

1.4 DDC

Ce moniteur est muni de la fonction DDC2B et DDC2Bi feature. DDC (Display Data Channel) est un mode de communication par lequel le moniteur informe automatiquement ses performances techniques à l'unité centrale (par exemple chaque mode offert par le moniteur et les temps correspondants).
DDC utilise un contact du connecteur VGA 15 pin auparavant non utilisé.
Le système sera "Plug n' Play" seulement si l' ordinateur et le moniteur sont munis l'un et l'autre de la fonction DDC.

NOTE
DDC™2Bi n'est disponible qu'avec le connecteur SIGNAL-B.

1.5 Considérations relatives à l'emplacement du moniteur

Lors de la mise en place et lorsque vous utilisez votre moniteur, gardez en mémoire ces quelques règles:

- Pour garantir une vision optimale, éviter d'installer votre moniteur face à un arrière-plan lumineux ou à un endroit où la lumière solaire ou d'autres sources lumineuses peuvent être réfléchies sur la zone d'affichage. Installez le moniteur juste sous la hauteur des yeux.
- Installer le moniteur à l'écart des sources de champs magnétiques ou électro-magnétiques intenses, telles que transformateurs de puissance, moteurs électriques, câbles d'alimentation véhiculant de fortes intensités, colonnes en acier, etc... Les champs magnétiques peuvent provoquer des distorsions d'image et/ou altérer la pureté des couleurs.
- Eviter d'obstruer les fentes ou ouvertures du moniteur. Laissez une ventilation adéquate autour du moniteur, de telle sorte que la chaleur produite par celui-ci puisse se dissiper librement. Eviter de placer le moniteur dans un compartiment insuffisamment ventilé.
- Ne pas exposer le moniteur à la pluie, à une humidité excessive ou à la poussière, ceci pouvant entraîner des dangers d'électrocution.
- Eviter de poser le moniteur ou tout autre objet lourd sur le cordon secteur. Un cordon secteur endommagé est une cause possible d'incendie ou d'électrocution.
- Lorsqu'on déplace le moniteur, le manipuler avec précaution.

1.6 Nettoyage de votre moniteur

Lorsque vous nettoyez votre moniteur, appliquez ces quelques règles de base:

- Toujours débrancher le moniteur avant de le nettoyer.
- Nettoyer l'écran et les parties avant et latérales du boîtier au moyen d'un chiffon doux.
- S'il est nécessaire de nettoyer l'écran au delà d'un simple dépoussiérage, utiliser pour ce faire un chiffon doux humecté d'un nettoyant ménager pour vitres.

ATENTION !

- *Ne jamais utiliser de benzène, de solvant ou autre substance volatile pour nettoyer l'appareil, car son revêtement risque d'être irréversiblement détérioré.*
- *Ne jamais laisser le moniteur en contact avec du caoutchouc ou du vinyle pendant une longue période.*
- *Ne pas pulvériser directement sur l'écran car le liquide peut tomber dans le moniteur et endommager le circuit.*
- *N'utiliser jamais un liquide abrasif sur la surface de l'écran car cela pourrait endommager la pellicule anti-reflet.*

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1.7 Déballage

Une fois votre moniteur couleur déballé, vous devez vous trouver en possession des éléments représentés Figure 1, et dont la liste se trouve ci-dessous. Conserver l'emballage d'origine dans le cas ou vous seriez obliger de transporter le moniteur.

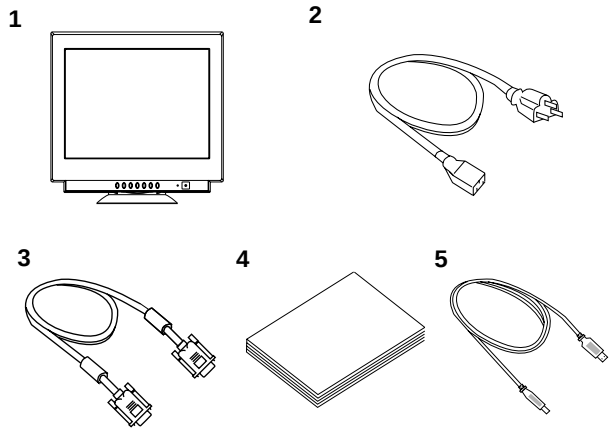


Figure 1

1. Moniteur couleur haute résolution
2. Cordon secteur
3. Câble SC-B110
4. Manuel d'utilisation (Ce document)
5. USB Upstream Cable

1.8 Pied orientable

Le moniteur est équipé d'un socle pivotant et inclinable. Ceci vous permet de positionner le moniteur sous le meilleur angle tant en inclinaison qu'en rotation, augmentant d'autant le confort visuel.

Réglages de la position de l'image

Régler l'angle et l'inclinaison du moniteur en plaçant les mains en diagonale. L'écran peut pivoter de 90° à droite ou à gauche, de 10° vers le haut et de 5° vers le bas, comme représenté ci-dessous.

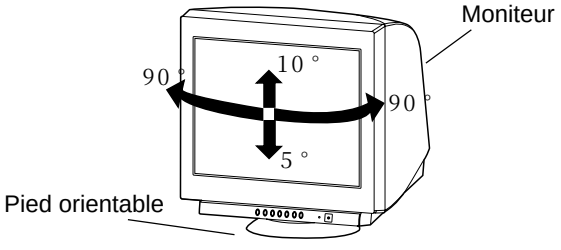


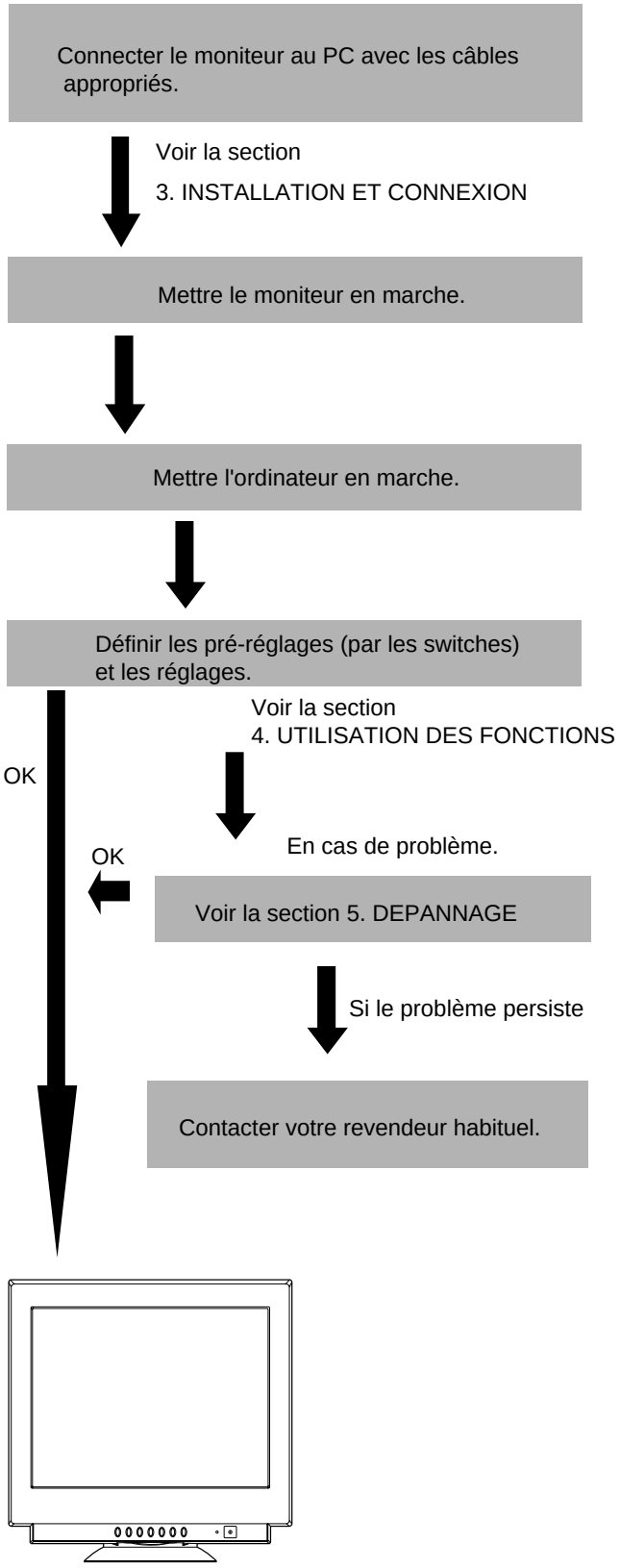
Figure 2

ATTENTION !

Tenir vos doigts à l'écart de la base pivotante du moniteur.

1.9 Processus de mise en route

Pour assurer la connexion, les pré-réglages (par les switches) et les réglages du moniteur à votre ordinateur, veuillez suivre le processus suivant:



2 GLOSSAIRE

2.1 Dénomination

Voir Figures 3 et 4 pour l'emplacement des commandes et voyants desitinés à l'utillisateur.Chaque commande est repérée par son numéro, et elle est décrite individuellement.

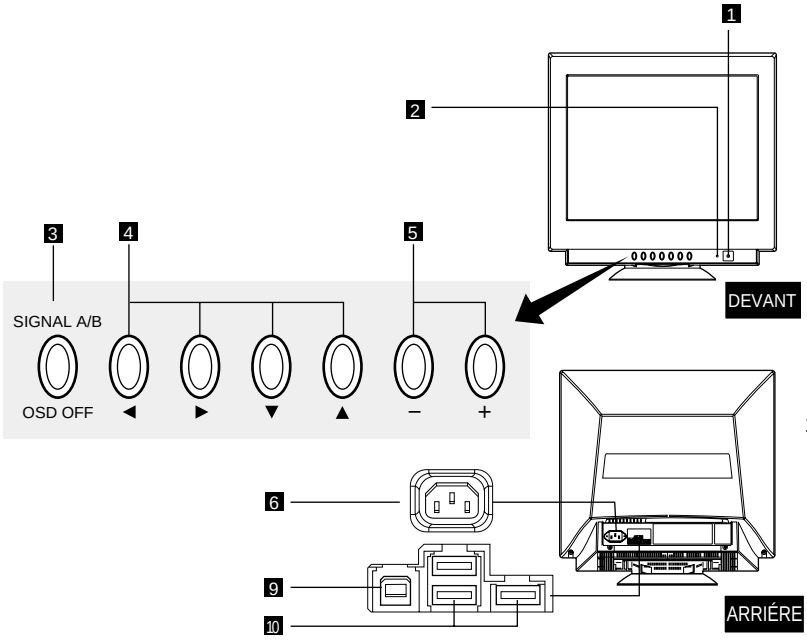


Figure 3

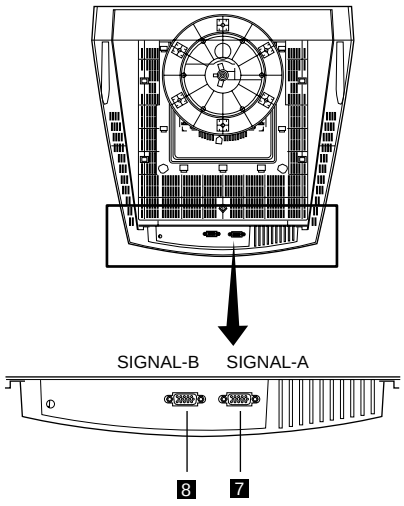


Figure 4

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2.2 Fonction des commandes

1. **INTERRUPTEUR MARCHE / ARRÊT:** poussoir permettant de mettre sous tension ou hors tension le moniteur; enfoncé: marche; sorti: arrêt.
2. **VOYANT SECTEUR:** Ce voyant est de couleur verte lorsque le moniteur est sous tension, et de couleur orange lorsque le moniteur est en mode économiseur d'énergie.
3. **BOUTON SELECTION DE CONNECTEUR D'ENTREE/ARRET OSD :**
   - Appuyez pour sélectionner le connecteur d'entrée de signal, SIGNAL A ou B, lorsque l'écran OSD est absent.
   - Appuyez sur ce bouton pour éteindre l'écran OSD s'il est affiché.

NOTE

Le moniteur sélectionnera automatiquement l'entrée si elle est la seule utilisée.

4. **BOUTON DE SELECTION:** Presser pour sélectionner l'icône correspondant au réglage désiré.
5. **TOUCHES DE RÉGLAGE:** Utiliser les boutons de commande pour régler l'image sur l'écran.
6. **CONNECTEUR D'ALIMENTATION**
7. **CONNECTEUR DU SIGNAL D'ENTRÉE: DB9-15P(SIGNAL-A)**
8. **CONNECTEUR DU SIGNAL D'ENTRÉE: DB9-15P(SIGNAL-B)**
9. **ENTRÉE HAUTE:** Pour connecter une unité centrale équipée de la fonction USB.
10. **ENTRÉE BASSE:** Pour connecter des équipements périphériques USB, caméra, clavier, imprimante, etc.

3 INSTALLATION ET CONNECXION

3 connecteurs sont disponibles en face arrière du moniteur: Le connecteur AC pour l'alimentation électrique et deux connecteurs DB9 -15P pour les entrées vidéo.

3.1 Branchement au secteur

Une extrémité du cordon d'alimentation doit être raccordé au connecteur de face arrière du moniteur. L'autre extrémité sera branchée dans une prise secteur murale à trois broches, avec une mise à la terre correcte. L'alimentation à détection automatique de tension du moniteur s'adaptera automatiquement aux tensions 100 à 120 VCA ou 220 à 240 VCA, 50 ou 60 Hz.

3.2 Branchement des câbles véhiculant les signaux

Le connecteur DB9-15P(VGA) accepte des signaux d'entrées RVB analogiques en provenance de votre ordinateur. Les unités centrales Apple Macintosh sont compatibles grâce à l'adaptateur Mitsubishi Macintosh AD-A205.

3.2.1 Branchement à tout système compatible IBM VGA

La Figure 5 montre la connexion à l'aide d'un câble SC-B110 à la sortie VIDEO VGA (Video Graphic Array) d'une unité centrale IBM ou à toute autre source VIDEO compatible VGA.

1. Mettre hors tension le moniteur et le PC.
2. Brancher l'extrémité ordinateur (PC) du câble SC-B110 au connecteur 15 broches de la carte contrôleur VGA.
3. Brancher l'extrémité Moniteur (D/M) du câble SC-B110 au connecteur 15 broches situé en face arrière du moniteur.
4. Allumer le moniteur, puis seulement ensuite, le PC.
5. En fin d'utilisation du système, arrêter le PC en premier, puis seulement ensuite le moniteur.

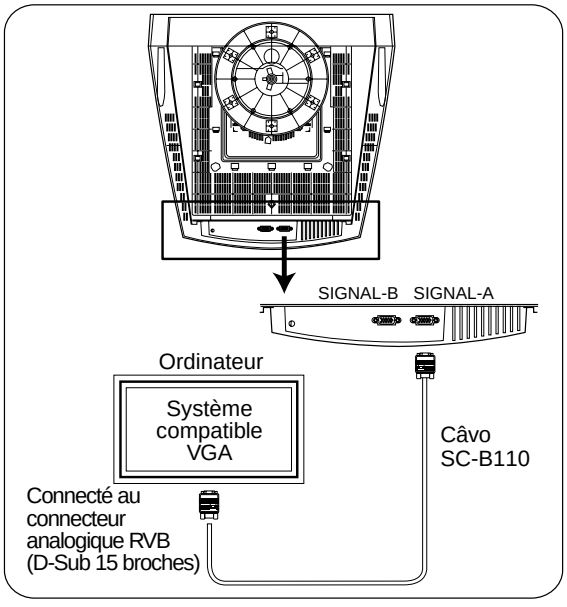


Figure 5

3.2.2 Raccordement à un système de la famille Apple Macintosh Ordinateur

La Figure 6 montre le câble SC-B110 et l'adaptateur AD-A205 (option) au port vidéo d'un Apple Macintosh.

1. Arrêter le moniteur et l'ordinateur.
2. Configurer les micro-interrupteurs de l'adaptateur Macintosh suivant le tableau joint (voir la section 7.3 Configuration de l'adaptateur optionnel Macintosh AD-A205).
3. Brancher l'extrémité 15 broches (DB-15P) de l'adaptateur AD-A205 au connecteur 15 broches de la sortie vidéo du Macintosh, située soit sur la carte-mère, soit sur la carte vidéo.
4. Brancher l'extrémité munie d'un connecteur subminiature 15 broches (DB9-15P) de l'adaptateur AD-A205 au câble SC-B110 (PC).
5. Brancher l'extrémité moniteur (D/M) du câble SC-B110 au connecteur 15 broches situé en face arrière du moniteur.
6. Mettre en marche le moniteur en premier, puis le Macintosh.
7. En fin d'utilisation du système, éteindre l'ordinateur, puis ensuite le moniteur.

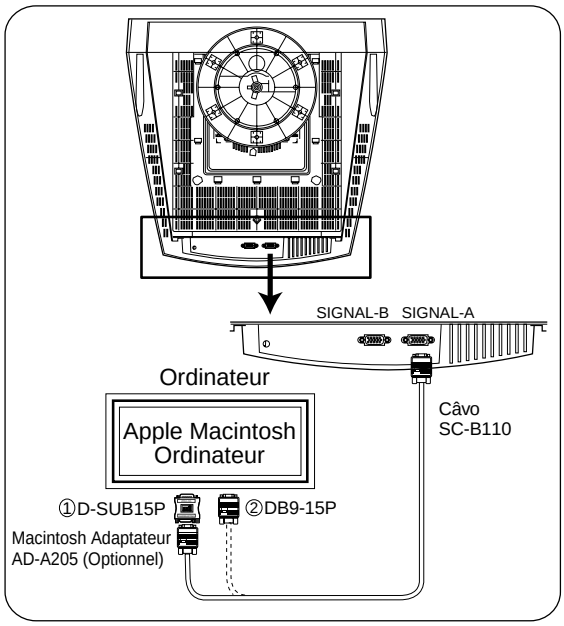


Figure 6

NOTE

- Pour un Apple Macintosh muni d'un port compatible VGA, l'étape 2 à 4 ne sont pas nécessaires. Connectez le câble du signal directement sur le port.
- Dans le cas d'une utilisation avec un Apple Macintosh de type G3, utiliser "Poste de travail" ou le "Menu Apple" afin de sélectionner la résolution. Dans le cas d'un sélection de la résolution depuis la barres des tâches, il se peut qu'il n'y ait pas d'image et que l'unité centrale se bloque.

ATTENTION !

L'alimentation secteur de ce moniteur reste sous tension même lorsque le commutateur Marche/Arrêt est en position "Arrêt"(OFF). De ce fait, il est nécessaire que la prise secteur soit facilement accessible, en cas d'urgence. Méme si le moniteur est mis hors tension il reste toujours alimenté. La prise secteur devrait ainsi être facilement accessible en cas d'urgence.

3.2.3 Connexion à deux ordinateurs

La figure 7 illustre la connexion à deux ordinateurs.
Voir les paragraphes 3.2.1 ou 3.2.2 pour la procédure de connexion.

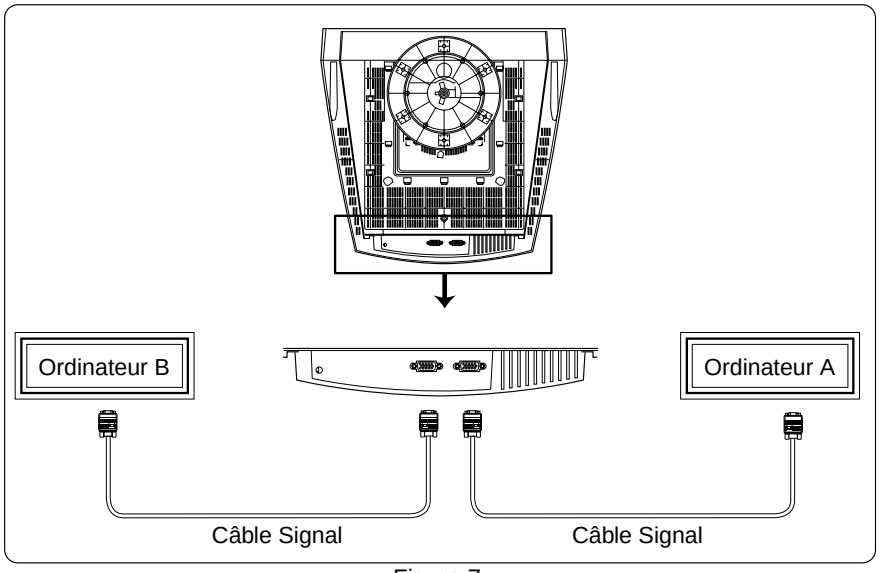
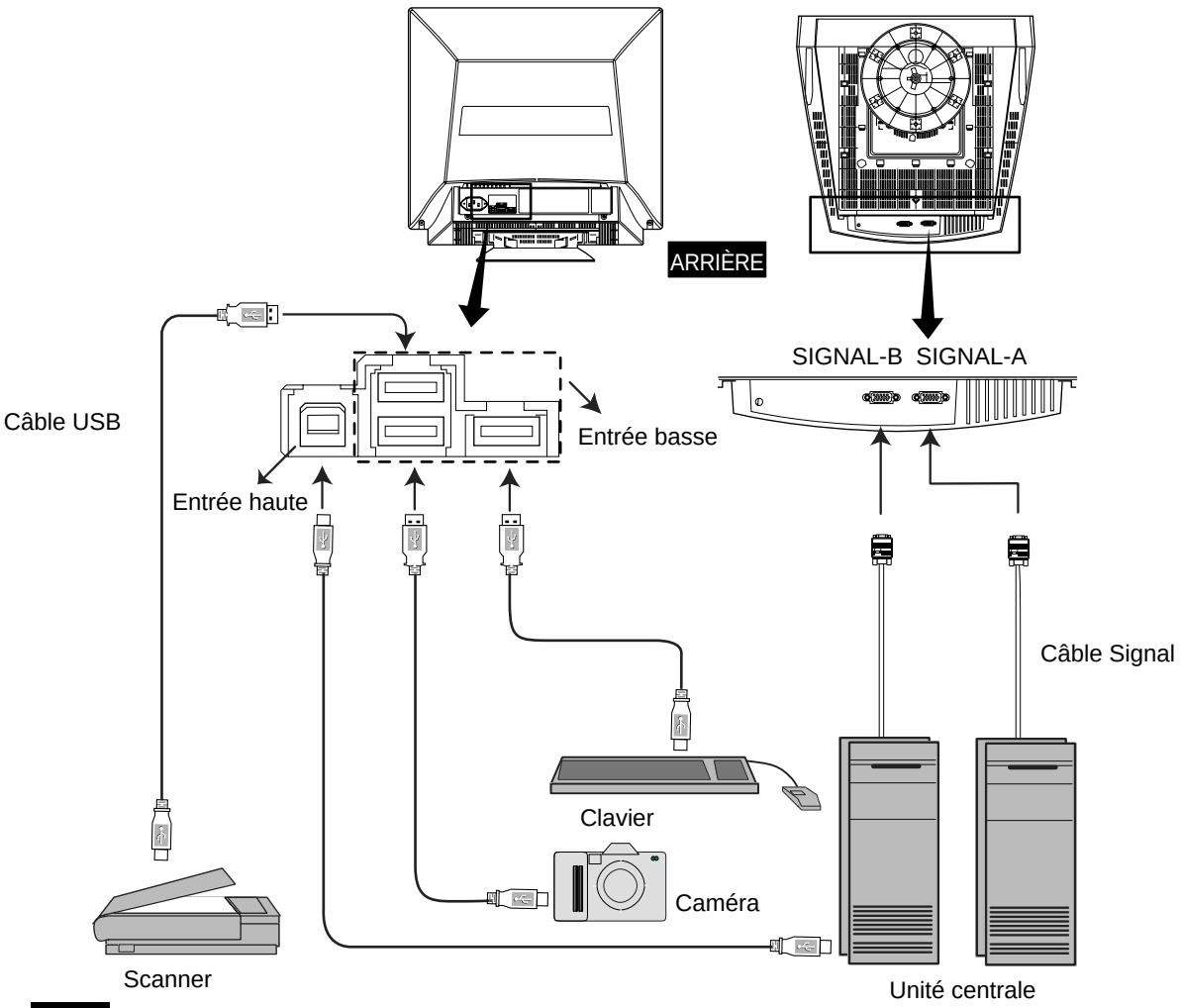


Figure 7

3.3 Fonctionnement de L'USB



NOTE

L'ordinateur doit disposer de fonctions USB et de Windows® 98 ou supérieur installé.

3.4 Installation de la Fonction USB

La procédure suivante permet à votre ordinateur de reconnaître ou "énumérer" (un terme USB) le répartiteur USB.

1. Eteindre le moniteur et l'unité centrale.
2. Start "Enumeration" from the Windows® Desktop.

NOTE

- Pendant l'installation de la fonction USB, le clavier ainsi que la souris équipés de fonction USB devront être connectés à l'unité centrale et non pas sur les entreés basses du moniteur. Après l'installation, le clavier et la souris pourront être connectés au moniteur.
- Ne pas débrancher le cable USB pendant la phase de reconnaissance

(1) Connecter l'unité centrale et le moniteur à l'aide du câble USB. L'écran 8 doit apparaître.
(2) Choisisser "Next" pour passer à l'écran 9.
(3) Choisisser "Finish" sur l'écran 9 afin de terminer l'installation.

Figure 8

Figure 9

Vous pouvez vous assurer du bon fonctionnement de l'USB à l'aide de la procédure suivante.

- Ouvrir "Poste de travail", aller dans "System" situé dans "Panneau de contrôle". Assurez vous que "Generic USB HUB" sont bien listés dans "Universal Serial Bus Controller", s'ils n'apparaîssent pas, reprendre l'installation depuis (a) ou (b).

(a) Déconnecter et connecter le câble USB sur l'entrée haute du moniteur.
(b) Eteindre / Allumer l'écran.

NOTE

Si le caractère ⓘ apparaît dans le fichier "Generic USB HUB" , alors l'installation a échouée. Sélectionner "Generic USB HUB" sur lesquels la marque ⓘapparaît. Cliquer sur "Remove" et "Refresh". Dès lors l'installation démarre automatiquement.

NOTE

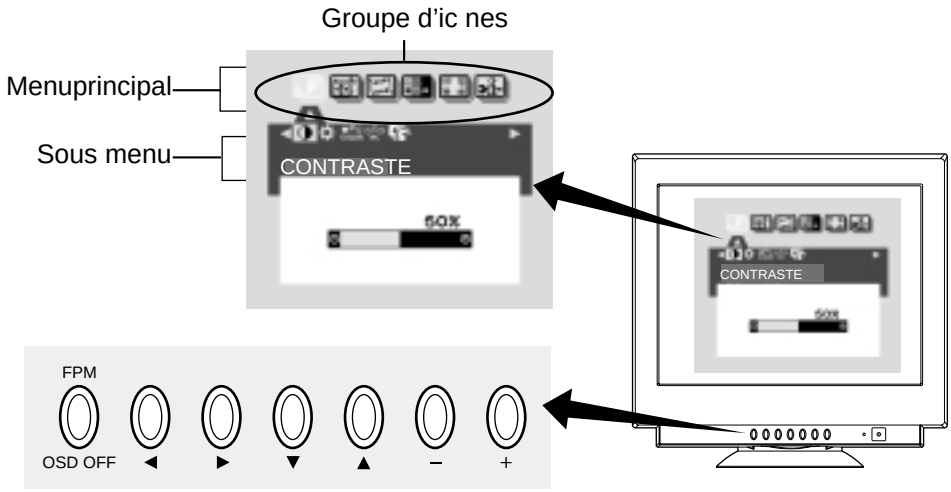
L'installation de la fonction USB est nécessaire pour chaque port USB de l'unité centrale.

Figure 10

4 UTILISATION DES FONCTIONS

4.1 Comment régler l'écran

Le moniteur est pourvu d'une fonction menu à l'écran.(OSD)
La procédure suivante indique comment éffectuer les réglages de l'écran à partir de la fonction Menu à l'écran.



(1) Allumez le moniteur en appuyant sur ⏻

(2) Affichez l'écran OSD en appuyant sur ◄ ► ▼ ▲ – +

(3) Sélectionnez une icône du groupe du Menu principal en appuyant sur ◄ ►

(4) Affichez le Sous-menu en appuyant sur ▼

(5) Sélectionnez une icône d'élément du Sous-menu en appuyant sur ◄ ►

(6) Réglez en appuyant sur – +

(7) Appuyez sur le bouton FPM OSD OFF pour éteindre l'écran OSD

L'OSD s'éteint automatiquement si vous n'avezé sur aucun bouton à l'expiration du délai défini dans "EXTINCTION DE L'OSD".

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4.2 Adjustment Items

X: Disponibles

Groupe d'icônes	Icône	Objet	Appuyer sur la touche de réglage: ☞ ⓪ ⓪ (−)	Appuyer sur la touche de réglage: ⓪ ⓪ ☜ (+)	A	B	C
		CONTRASTE	Diminue le contraste.	Augmente le contraste.	X	X	X
		LUMINOSITE	Diminue la luminosité.	Augmente la luminosité.	X	X	X
		COULEUR	Pour sélectionner le mode d'affichage des couleurs préféré. Et pour régler la balance de couleur par rapport au mode de couleur sélectionné.		X	X	X
		NOTE Lors de la sélection de "sRVB", "COULEUR TEMPERATURE", "CONTRASTE" et "LUMINOSITE" sont disponibles.					
		TEMPÉRATURE COULEURE	Pour diminuer la température de couleur du mode de couleurs sélectionné par "COULEUR"	Pour augmenter la température de couleur du mode de couleurs sélectionné par "COULEUR"	X	X	X
		FINE PICTURE MODE	Pour sélectionner le statut qui permet d'obtenir la meilleure image. MODE NORMAL pour un fonctionnement normal MODE TEXTE pour des images comportant beaucoup de lettres et caractéres MODE GRAPHIQUE pour des images graphiques ou photographiques.				
		PRÉRÉGLAGE USIN	————	Retour aux reglages usines.	-	-	-
	AUTO	AUTOSIZE ADJUST	————	Pour régler automatiquement les dimensions de l'écran selon le calage de l'entrée.	-	-	-
		NOTE "REGLAGE TAILLE AUTO" n'est pas disponible si aucun signal d'image n'est présent ou si sa taille est réduite.					
		LARGEUR	Diminue la largeur d'image sur l'écran.	Augmente la largeur d'image sur l'écran.	X	X	
		CENTRAGE HORIZONTAL	Déplace l'image vers la gauche.	Déplace l'image vers la droite.	X	X	
		HAUTEUR D'IMAGE	Diminue la hauteur de l'image sur l'écran.	Augmente la hauteur de l'image sur l'écran.	X	X	
		CENTRAGE VERTICAL	Permet de déplacer l'image ver le bas.	Permet de déplacer l'image vers le haut.	X	X	
		ROTATION	Pour tourner l'image dans le sens opposé aux aiguilles d'une montre.	Pour tourner l'image dans le sens des aiguilles d'une montre.	X	X	X
	GTF AUTO	REGALGE GTF	————	Réglage automatique de la taille, de la position et de la position et de la géométrie de l'image.	-	-	-
		NOTE "REGLAGE AUTOMATIQUE GTF" est disponible en l'utilisant avec un ordinateur où la fonction VESA GTF est installée.					
		PRÉRÉGLAGE USINE	————	Retour aux reglages usines.	-	-	-
		NOTE Si la synchronisation utilisée n'est pas un préréglage usine, "PREREGLAGE USINE" n'est pas disponible.					
		CORRECTION AMPHORE	Réduit la largeur de la partie centrale de l'image.	Augmente la largeur de la partie centrale de l'image.	X	X	
		COURBURE	Permet de déplacer vers la droite la partie inférieure et la partie supérieure de l'image affichée.	Permet de déplacer vers la gauche la partie inférieure et la partie supérieure de l'image affichée.	X	X	
		CORRECTION TRAPEZE	Diminue la largeur de la partie supérieure de l'image, et augmenta la largeur de la partie inférieure de l'image.	Augmente la largeur de la partie supérieure de l'image, et diminue la largeur de la partie inférieure de l'image	X	X	
		INCLINAISON	Incline l'écran vers la gauche.	Incline l'écran vers la droite.	X	X	
		COUSSIN SUP.	Augmente la taille de l'image dans les angles de la partie haute de l'écran.	Diminue la taille de l'image dans les angles de la partie haute de l'écran.	X	X	
		BALANCE SUP.	Pour incliner l'écran vers la gauche du sommet.	Pour incliner l'écran vers la droite du sommet.	X	X	
		COUSSIN INF.	Augmente la taille de l'image dans les angles de la partie basse de l'écran.	Diminue la taille de l'image dans les angles de la partie basse de l'écran.	X	X	
		BALANCE INF.	Pour incliner l'écran vers la gauche du bas.	Pour incliner l'écran vers la droite du bas.	X	X	
		LINEARITE V.EQUIL	Pour étendre verticalement le bas de l'image et compresser le haut.	Pour compresser verticalement le bas de l'image et étendre le haut.	X	X	
		LINEARITE V.	Pour étendre verticalement le centre de l'image et compresser le haut et le bas.	Pour compresser verticalement le centre de l'image et étendre le haut et le bas.	X	X	
		PRÉRÉGLAGE USINE	————	Retour aux reglages usines.	-	-	-
		NOTE Si la synchronisation utilisée n'est pas un préréglage usine, "PREREGLAGE USINE" n'est pas disponible.					

A. Presser "PRÉRÉGLAGE USINE" pour revenir sur le réglage usine.
B. Presser les touches ⓪ et ⓪ simultanément ramène au réglage memorisé en usine.
C. Les informations ne sont pas affectées par le changement de timing.

NOTE
Si vous utilisez un préréglage qui n'est pas d'usine, "PRÉRÉGLAGE USINE" ne sont pas opérationnelles.

X: Disponibles

Groupe d'icônes	Icône	Objet	Appuyer sur la touche de réglage: ☞ −	Appuyer sur la touche de réglage: + ☞	A	B	C
		PURETE COINS SUPG	Réglage de la pureté dans le coin supérieur gauche.		X	X	X
		PURETE COINS SUPD	Réglage de la pureté dans le coin supérieur droit.		X	X	X
		PURETE COINS INFG	Réglage de la pureté dans le coin inférieur gauche.		X	X	X
		PURETE COINS INFD	Réglage de la pureté dans le coin inférieur droit.		X	X	X
		NIVEAU DE MOIRAGE	Pour diminuer l'effet de moirage.		X	X	
	CLAMP	FRONT DE SYNCHRO	Elimine l'excés de couleur verte ou lde luminosité qui peuvent apparaître lorsqu'un signal de synchronisation externe sont appliqués simultanément sur les entrées du moniteur.		X		
			Synchronise le signal vidéo sur le front montant de l'impulsion de synchro horizontale.	Synchronise le signal vidéo sur le front descendant de l'impulsion de synchro horizontale. Si vous utilisez un Macintosh ancienne génération, vous devez presser le bouton "Plus".	-	-	-
		PRÉRÉGLAGE USINE	———	Retour aux reglages usines.			
		CONVERGENCE STAT.H	Régler l'alignement du canon horizontal sur toute la surface de l'écran.		X	X	X
		CONVERGENCE STAT.V	Régler l'alignement du canon vertical sur toute la surface de l'écran.		X	X	X
		PRÉRÉGLAGE USINE	———	Retour aux reglages usines.	-	-	-
		DÉMAGNÉTISATION	———	Elimine les éventuels défauts de pureté ou problèmes de shading.	-	-	-
		SIGNAL D'ENTRÉE	Pour sélectionner le connecteur d'entrée de signal' SIGNAL A ou B.				
		ECONOMISEUR	Sélectionne une consommation d'énergie constante.	Sélectionne le mode économiseur d'énergie. (Votre unité centrale doit être configurée dans le mode économiseur d'énergie)	X		X
		VERROUILLAGE OSD	Pour autoriser tous les réglages depuis le OSD.	Fige les fonctions du Menu à l'écran à l'exception de la "LUMINOSITE"et du "CONTRASTE".			X
			NOTE "LUMINOSITE" et "CONTRASTE" ne sont pas disponibles en condition de verronillage.				
		POSITION DU MENU	Pour bouger la position du menu à l'écran (OSD) dans le sens opposé des aiguilles d'une montre.	Pour bouger le menu à l'écran (OSD) dans le sens des aiguilles d'une montre.	X		X
	OFF	EXTINCTION DE L'OSD	Pour régller le détlai d'extinction de l'écran OSD si aucune action nest exécutée.		X	X	X
	INFO	DIAGNOSTIC	Indique le fréquence de travail utilisé, le numéro du timing et le connecteur vidéo utilisés.		-	-	-
		LANGUAGE	Pour choisir le langage du Menu à L'écran. ENG.....Anglais, GER.....Allemand, FRA.....Français, ESP.....Espagnol, ITA ..... Italien, 日本語.....Japonnais				X
	AUTO SAVE	MÉMORISATION AUTUM	Pour enregistrer les nouveaux réglages avec un message de confirmation.	Pour enregistrer automatiquement les nouveaux réglages.			X
			NOTE En sélectionnant "ARRET", si aucune opération "SAVE"(enregistrer)n'est exécutée avant l'extinction de l'écran OSD, les nouveaux réglages ne sont pas enregistrés.				
	ALL RESET	RESET GENERAL	———	Rétablit la valeur définie en usine pour tous les éléments.	-	-	-
		PRÉRÉGLAGE USINE	———	Retour aux reglages usines.	-	-	-

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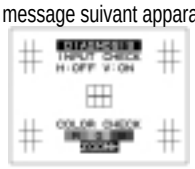
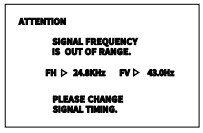
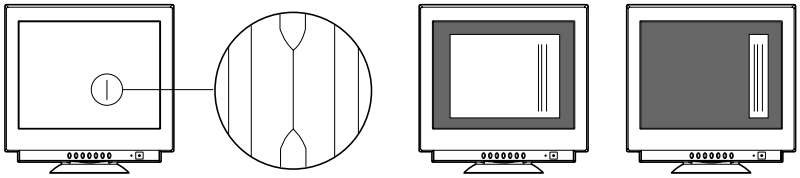
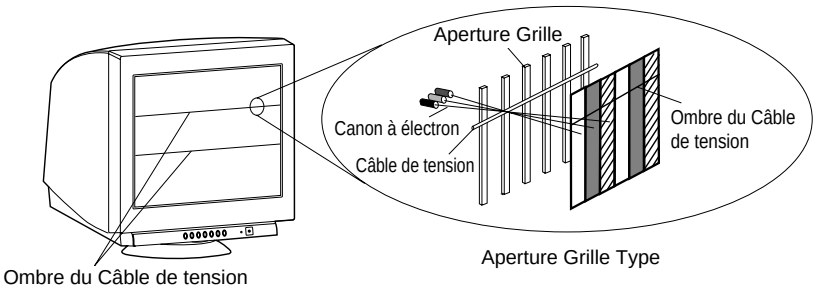
5 DEPANNAGE

Avant de retourner votre moniteur auprès de votre revendur, assurez vous que les points suivants soient respectés. Dans le cas d'une utilisation sous un signal vidéo standard, veillez à la compatibilité du brochage du connecteur vidéo ainsi que des specifications êlectriques définies dans ce manuel.

PROBLEME		ARTICLE A CONTROLER	LOCALISATION
Pas d'image	LED allumee (Vert)	• Contrast luminosité.	• Face avant
	LED éteinte	• Interrupteur de mise en marche. • Câble d'alimentation non connecté.	• Face avant • Face arrière
	LED allumee (Orange)	• Câble vidéo non connecté. • Systeme non allumé. • Fonction économiseur d'energie active.	• Face arrière • Système • Appuyez sur une touche du clavier ou bougez la souris.
Le message suivant apparaît 		• Câble vidéo non connecté. • Systeme non allumé. • Fonction économiseur d'energie active.	• Face arrière • Système • Appuyez sur une touche du clavier ou bougez la souris.
Le message suivant apparaît 		• La plage de fréquence du signal d'entrée est trop élevée ou trop basse pour que le moniteur se synchronise.	• Contrôler les specifications de la source graphique et du moniteur.
Image Anormale	Absence d'image Mauvais centrage Image trop petite ou trop grande	• Procéder à un "FACTORY-PRESET" dabs le cas d'un signal standard. • Presser le bouton de réinitialisation. Le moniteur peut ne pas obtenir une image plein écran, • selon le signal. Dans ce cas, sélectionner une autre résolution, ou une autre fréquence de rafraîchissement écran. • Régler la taille à la position horizontales et verticales attendez quelques secondes après avoir effectué le réglage de la taille avant de dèconnecter ou d'eteindre le moniteur.	• Face avant (OSD) • Face avant (OSD)
	Périphériques USB non opérationnels	• [contrôleur Universail serial bus] n'est pas listé pas listé dans [Panneau de configuration].	• Assurer vous que Windows98 est installé dans l'unité centrale.
		• [Generic USB HUB] n'est pas listé dans le [Panneau de configuration].	• Contrôler les câbles de connexion. • Redémmarer l'unité centrale • Mettre le moniteur sur arrêt puis sur marche. • Déconnecter puis connecter de nouveau tous les câbles du port Upstream.

PROBLEME		ARTICLE A CONTROLER	LOCALISATION
Image Anormale	Lignes verticales noires visibles sur l'écran	Lignes fines verticales noires visibles sur un ou les deux côtés de l'écran. Ce phénomène peu important est provoqué par un chevauchement des éléments de la grille qui aurait pu se produire pendant le transport. Si vous n'obtenez aucun résultat, positionnez une fenêtre ouverte blanche sur l'endroit affecté de l'écran et maximalisez les contrôles de luminosité et de contraste. Ceci provoquera un échauffement localisé du chevauchement et fera disparaître le problème après quelques minutes. Veillez à remettre les contrôles de la luminosité et du contraste aux niveaux de vision normales après avoir terminé ce procédé. 	
Deux lignes fines horizontales sont visibles sur l'écran.		• Les deux lignes fines très faibles traversant l'écran sont normales. Ces lignes apparaissent à cause des filaments de stabilisarion de la grille d'ouverture, nécessaires pour tous CRT de grilles d'ouverture.  	
Un bruit sonore lorsque l'écran est allumé.		• La brève vibration ou le ronflement léger que vous ressentez lorsque vous allumez l'écran sont des phénomènes normaux. Ceux-ci sont provoqués par la fonction de démagnétisation automatique. Vous remarquerez ces phénomès chaque fois que vous allumez le moniteur froid et chaque fois que vous activez le boutton de démagnetisation manuelle.	
FONCTION d'AUTO-DIAGNOSTIC	Le moniteur possède un "AUTO-DIAGNOSTIC" pour vérifier ses conditions de fonctionnement. Les messages suivant apparaissent si le câble de signal est déconnecté ou si un signal anormal est reçu.	• Vérifier la barre de couleurs. (p.ex. ROUGE, VERT, BLEU) • VERIFIER le signal d'entrée H, V. • Appuyer sur le bouton ▷ , la taille de l'image est agrandie. • Vérifier l'indicateur d'alimentation sur la façade. Une panne est possible si cet indicateur clignote (Orange -> Eteint -> Orange). Veuillez appeler votre support produit autorisé.	

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6 SPÉCIFICATIONS

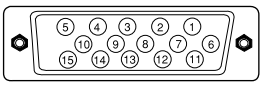
TUBE COULEUR	Dimensions	55cm/22" (508mm/20" Aire d'affichage)
	Masque	Aperture grille
	Canon	En ligne
	Angle de déflexion	90°
	Luminophones	Rouge, Vert, Bleu EBU (persistance moyenne/courte)
	Pas	0.24mm
	Pas du phosphore.	0.25mm
	Ecran	G-WARAS(Ecran anti-reflets, non diffusant, avec revêtement antistatique)
	Focalisation	Mise en forme dynamique du faisceau
SIGNAUX D'ENTREE	Vidéo	0.7Vp-p analogique RGB
	Sync	Synchro sur signal Vert, ou synchro H et V séparées, ou synchro composite
INTERFACE	Connecteur d'entrée	DB9-15P x 2
	Impédance d'entrée	75Ω (video), 2.2kΩ(sync.)
	Fonction	HUB Autoalimenté compatible avec les spécifications de USB revision 1.1
		•Upstream port/12Mbps •3 ports Downstream/12Mbps, 1.5Mbps, possibilité de fournir 500 mA max. Par Port
FREQUENCE DE BALAYAGE	Horizontal	30 - 121kHz
	Vertical	50 - 160Hz
RÉSOLUTION (HxV)	2048 points x 1536 Lignes Résolution maximale en mode non entrelacé à 75Hz.	
TEMPS DE MISE EN TEMPERATURE	30 minutes pour obtenir les performances optimales	
LUMINOSITE	100cd/m^2, Blanc à 9300K (+ 8MPCD) aux signaux vidéo standard	
TEMPS D'EFFACEMENT	Horizontal	≧ 2.0 μsec (typigue.)
	Vertical	≧400 μsec (typigue.)
DIMENSIOND'IMAGE	396mm x 297mm(typigue.) Rapport 4:3 (371mm x 297mm(typigue.) Rapport 5:4)	
NUMERO DE COULEUR	5000K~9300K	
ALIMENTATION	AC100-120/220-240V±10% 50/60Hz 140W (typigue.) (155W (typigue.) : avec le mode USB opérant)	
CONDITION DE FONCTION.	Température	5 - 35°C
	Hygrométrie	10 - 90%RH (sans condensation)
BOITIER	(W)19.5" x (H)19.4" x (D)18.6" / (W) 495mm x (H) 493.5mm x (D) 473mm	
POIDS	Environ 29.7kg (65.5lbs.)	
SOCLE PIVOTANT ET INCLINABLE	Angle d'inclinaison	-5° - +10°
	Angle de pivotement	±90°
NORMES	Sécurité	UL1950 (UL), CSA C22.2 No.950 (C-UL) EN60950 (TÜV-GS)
	EMI	FCC Classe B, DOC Classe B EN55022 Classe B, VCCI Classe B EN61000-3-2, EN61000-3-3, EN55024
	X-Ray	DHHS, HWC, Röv vom 8.1, 1987
	Other	CE-Marking, MPR-II/TCO'91 ISO9241-3, ISO9241-7, ISO9241-8 (TÜV-GS) TCO '99 International ENERGY STAR Program Energy 2000 Labeling Award Guidelines for the Suppression of Harmonics in Appliances and General-Use Equipment

Ce moniteur est enregistré / certifié avec le numéro de modèle NSZ2107STTUW.

7 APPEXES

7.1 Connecteur d'entrée signal de moniteur (DB9-15P)

(Femelle)

DB9-15P 

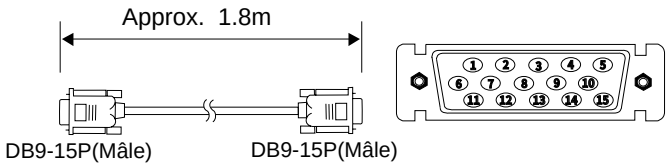
MONTE EN FACE ARRIERE

BROCHAGE DES CONNECTEURS

PIN N°	DESIGNATION
1	VIDEO ROUGE
2	VIDEO VERTE ou SYNCHRO.COMPOSITE avec VIDEO VERTE
3	VIDEO BLEUE
4	MASSE
5	MASSE DDC
6	MASSE ROUGE
7	MASSE VERTE
8	MASSE BLEUE
9	N.C
10	MASSE SYNCHRO.
11	MASSE
12	SDA
13	SYNCHRO. HORIZONTALE ou SYNCHRO. COMPOSITE
14	SYNCHRO. VERTICALE
15	SCL

DDC ..... EXPRESSION DATUM CHAÎNE
SDA ..... SÉRIE DATUM
SCL ..... SÉRIE MONTRE
NC ..... NON CONNECTÉ

7.2 Câble signal SC-B110



BROCHAGE DES CONNECTEURS

PIN N°	DESIGNATION
1	ROUGE
2	VERT
3	BLUE
4	MASSE
5	MASSE DDC
6	MASSE ROUGE
7	MASSE VERTE
8	MASSE BLEUE
9	N.C
10	MASSE
11	MASSE
12	SDA
13	SYNCHRO HORIZONTALE
14	SYNCHRO VERTICALE
15	SCL

DDC ..... EXPRESSION DATUM CHAÎNE
SDA ..... SÉRIE DATUM
SCL ..... SÉRIE MONTRE
NC ..... NON CONNECTÉ

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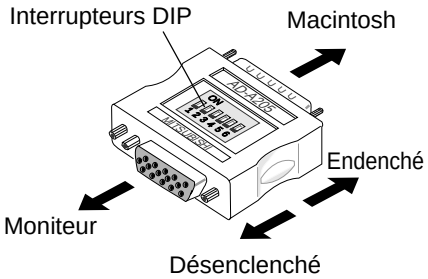
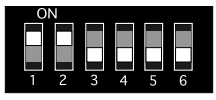
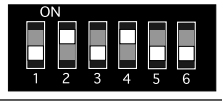
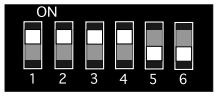
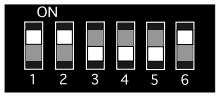
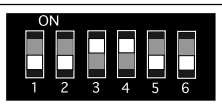
7.3 Configuration de l'adaptateur optionnel Macintosh AD-A205

L'adaptateur Macintosh AD-A205 (Option) vous permet de faire fonctionner votre moniteur á partir des interfaces graphiques intégrés dans votre Macintosh.

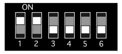
(1) Régler les interrupteurs DIP de l'adaptateur avant de raccorder à l'ordinateur.

(2) Régler les interrupteurs DIP en fonction du graphique suivant.
En suivant le graphique est possible de choisir rapidement une résolution principale.
Si on désire opérer avec une autre résolution, se référer à la page suivante, "Graphique de réglage de l'adaptateur Mac AD-A205".



Apple Macintosh	Interrupteur Enclenché	Réglage de l'interrupteur
Macintosh IIsi, IIci, IIvi, IIvx, LC, LC II	1,2	
Macintosh LC III, LC475, LC630	2,4	
Macintosh Quadra 610, 650, 700, 800, 840AV, 900, 950 Macintosh Centris 610, 650, 660AV	1,2,3,4	
Performa 6260, 6310, 6410, 6420 Power Macintosh 6100, 6100AV, 6200, 6300 Power Macintosh 7100AV, 7200, 7300, 7500, 7600 Power Macintosh 8100, 8100AV, 8500, 8600 Power Macintosh 9500, 9600 Workgroup Server 7350, 8150, 9150, 9650	1,2,6	
Power Macintosh 4400, G3	3,4	

<GRAPHIQUE DE RÉGLAGE DE L'ADAPTATEUR OPTIONNEL MAC AD-A205>

● Régler l'interrupteur DIP sur "ON" comme montré ci-dessous. (Exemple: "1,2" )

	Macintosh								Performa		Power Macintosh									
RÉSOLUTION	IIsi IIci	IIvi IIvx	LC LCII	LCIII LC475	LC630	Quadra 700 900	Quadra 610 650 800 950 Centris 610 650	Quadra 840AV Centris 660AV	6260 6310	6410 6420	Workgroup Server 8150 9150 6100 8100 6100AV 7100AV 8100AV DRAM Video Port (HDI-45)	8100 VRAM Video Card (DB-15) 6100AV 7100AV 8100AV AV Video Card (DB-15)	6200 6300	7200	4400	7300 7500 7600 8500 8600 Workgroup Server 7350	9500	9600/233 Workgroup Server 9650	9600/300 9600/350	G3
640 x480@60Hz		3,4	3,4	3,4	3,4	3,4	3,4	3,4	1,2,6	1,2,6	3,4	3,4	1,2,6	3,4	3,4	3,4	3,4	3,4	3,4	3,4
640 x480@67Hz	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
640 x480@72Hz															3,4					3,4
640 x480@75Hz															3,4					3,4
640 x480@85Hz																				3,4
800 x600@60Hz					3,4				1,2,6	1,2,6			1,2,6	3,4	3,4	3,4	3,4	3,4	3,4	3,4
800 x600@72Hz					3,4			3,4	1,2,6	1,2,6		3,4	1,2,6	3,4	3,4	3,4	3,4	3,4	3,4	3,4
800 x600@75Hz														3,4	3,4	3,4	3,4	3,4	3,4	3,4
800 x600@85Hz																			3,4	3,4
832 x624@75Hz				2,4	2,4	2,4	2,4	2,4	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
1024 x768@60Hz								3,4		1,2,6		3,4		3,4	3,4	3,4	3,4	3,4	3,4	3,4
1024 x768@70Hz								3,4				3,4			3,4		3,4		3,4	3,4
1024 x768@72Hz										1,2,6				3,4		3,4		3,4		
1024 x768@75Hz							2,3	2,3				1,2,6		1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
1024 x768@85Hz																			3,4	3,4
1152 x870@75Hz						1,2,3,4	1,2,3,4	1,2,3,4				1,2,6		1,2,6	3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
1280 x960@60Hz																			3,4	
1280 x960@75Hz															3,4	1,2,6	3,4	1,2,6	1,2,6	3,4
1280 x960@85Hz																			3,4	
1280 x1024@60Hz															3,4		3,4		3,4	3,4
1280 x1024@75Hz															3,4	1,2,6	1,2,6	1,2,6	1,2,6	3,4
1280 x1024@85Hz																			3,4	3,4
1600 x1200@60Hz																		1,2,6	1,2,6	3,4
1600 x1200@65Hz																			1,2,6	3,4
1600 x1200@67Hz																		1,2,6		
1600 x1200@70Hz																				3,4
1600 x1200@75Hz																		1,2,6	1,2,6	3,4

1. La résolution ne change pas alors que l’ordinateur est sous tension lorsque les interrupteurs DIP sont réglés.
   Veiller à mettre l’ordinateur hors tension pour régler les interrupteurs DIP.
2. Régler les interrupteur DIP en appliquant une pointe, ‘un crayon ou un stylo à bille à l’extrémité de la rainure de l’interrupteur.

(3) Le “Graphique de réglage de l'adaptateur Mac AD-A205” montre tous les modes disponibles pour les systèmes Macintosh et toutes les combinaisons possibles avec le moniteur.
Cependant, nous vous recommandons d'utiliser le moniteur avec une synchronisation préréglée. (Voir la section 1.2 Possibilités de la mémoire préréglée interne)

(4) Veuillez vous référer au manuel d'instructions de votre ordinateur pour le réglage de la résolution. Il se peut que sur certains ordinateurs, il ne soit pas possible de changer la résolution.

Registration

To learn about other special offers, register online at,
http://www.necmitsubishi.com/productregistration

Limited Warranty

NEC-Mitsubishi Electronics Display of America, Inc. (hereinafter "NMD-A") warrants this Product to be free from defects in material and workmanship and, subject to the conditions set forth below, agrees to repair or replace (at NMD-A's sole option) any part of the enclosed unit which proves defective for a period of three (3) years from the date of first consumer purchase. Spare parts are warranted for ninety (90) days. Replacement parts or unit may be new or refurbished and will meet specifications of the original parts or unit.

This warranty gives you specific legal rights and you may also have other rights, which vary from state to state. This warranty is limited to the original purchaser of the Product and is not transferable. This warranty covers only NMD-A-supplied components. Service required as a result of third party components is not covered under this warranty. In order to be covered under this warranty, the Product must have been purchased in the U.S.A. or Canada by the original purchaser. This warranty only covers Product distribution in the U.S.A. or Canada by NMD-A No warranty service is provided outside of the U.S.A. or Canada. Proof of Purchase will be required by NMD-A to substantiate date of purchase. Such proof of purchase must be an original bill of sale or receipt containing name and address of seller, purchaser, and the serial number of the product.

It shall be your obligation and expense to have the Product shipped, freight prepaid, or delivered to the authorized reseller from whom it was purchased or other facility authorized by NMD-A to render the services provided hereunder in either the original package or a similar package affording an equal degree of protection. All Products returned to NMD-A for service MUST have prior approval, which may be obtained by calling 1-800-632-4662. The Product shall not have been previously altered, repaired, or serviced by anyone other than a service facility authorized by NMD-A to render such service, the serial number of the product shall not have been altered or removed. In order to be covered by this warranty the Product shall not have been subjected to displaying of fixed images for long periods of time resulting in image persistence (afterimage effects), accident, misuse or abuse or operated contrary to the instructions contained in the User's Manual. Any such conditions will void this warranty.

NMD-A SHALL NOT BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR OTHER TYPES OF DAMAGES RESULTING FROM THE USE OF ANY NMD-A PRODUCT OTHER THAN THE LIABILITY STATED ABOVE. THESE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SOME STATES DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR THE LIMITATION OR EXCLUSION OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THE ABOVE EXCLUSIONS OR LIMITATIONS MAY NOT APPLY TO YOU.

This Product is warranted in accordance with the terms of this limited warranty. Consumers are cautioned that Product performance is affected by system configuration, software, the application, customer data, and operator control of the system, among other factors. While NMD-A Products are considered to be compatible with many systems, specific functional implementation by the customer of the Product may vary. Therefore, suitability of a Product for a specific purpose or application must be determined by consumer and is not warranted by NMD-A.

For the name of your nearest authorized NEC-Mitsubishi Electronics Display service facility, contact NEC-Mitsubishi Electronics Display at 1-800-632-4662.

All Parts List

MODEL NO. Diamond Pro 2060u (NSZ2107STTUW)

SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
***** SURGE-ABSORBER *****			
AG200B	CP252P00106	SURGE-ABSORBER	DSP-301N-C04F
AG200G	CP252P00106	SURGE-ABSORBER	DSP-301N-C04F
AG200R	CP252P00106	SURGE-ABSORBER	DSP-301N-C04F
AG205S	CP252P00502	SURGE-ABSORBER	AG15PC152FB-K2M
AG701	CP252P00102	SURGE-ABSORBER	DSP-201M
AG703	CP252P00502	SURGE-ABSORBER	AG15PC152FB-K2M
***** CAPACITOR *****			
C 100	CP182P16508	C-ELECTROLYTIC	CE04W 50V 47M-M
C 101	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 102	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 103	CP156P06002	C-CER-CHIP	B50V 103-K
C 104	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 105	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 106	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 107	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 108	CP156P06003	C-CERAMIC-CHIP	B16V 104-K
C 109	CP182P16204	C-ELECTROLYTIC	CE04W 16V 100M-M
C 110	CP156P06002	C-CER-CHIP	B50V 103-K
C 111	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 112	CP182P16204	C-ELECTROLYTIC	CE04W 16V 100M-M
C 113	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 114	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 117	CP156P06002	C-CER-CHIP	B50V 103-K
C 118	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 119	CP156P06002	C-CER-CHIP	B50V 103-K
C 120	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 123	CP156P05007	C-CERAMIC-CHIP	CH50V 10P-D 1.6X0.8
C 124	CP156P05007	C-CERAMIC-CHIP	CH50V 10P-D 1.6X0.8
C 128	CP156P06002	C-CER-CHIP	B50V 103-K
C 129	CP156P06002	C-CER-CHIP	B50V 103-K
C 130	CP156P06003	C-CERAMIC-CHIP	B16V 104-K
C 131	CP182P16204	C-ELECTROLYTIC	CE04W 16V 100M-M
C 132	CP156P06002	C-CER-CHIP	B50V 103-K
C 133	CP156P05403	C-CERAMIC-CHIP	CH50V 220P-J 1.6X0.8
C 134	CP156P05403	C-CERAMIC-CHIP	CH50V 220P-J 1.6X0.8
C 135	CP182P16504	C-ELECTROLYTIC	CE04W 50V 4.7M-M
C 136	CP156P06002	C-CER-CHIP	B50V 103-K
C 137	CP156P06104	C-CERAMIC-CHIP	B50V 221-K
C 139	CP182P16504	C-ELECTROLYTIC	CE04W 50V 4.7M-M
C 140	CP156P05502	C-CERAMIC-CHIP	CH50V 470P-J 1.6X0.8
C 141	CP156P06002	C-CER-CHIP	B50V 103-K
C 142	CP156P06002	C-CER-CHIP	B50V 103-K
C 143	CP156P06002	C-CER-CHIP	B50V 103-K
C 1A0	CP182P16105	C-ELECTROLYTIC	CE04W 10V 220M-M
C 1A1	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 1A2	CP156P06002	C-CER-CHIP	B50V 103-K
C 1A3	CP182P16203	C-ELECTROLYTIC	CE04W 16V 47M-M
C 1A4	CP156P05209	C-CERAMIC-CHIP	CH50V 68P-J 1.6X0.8
C 1A5	CP156P05209	C-CERAMIC-CHIP	CH50V 68P-J 1.6X0.8
C 1A6	CP156P05209	C-CERAMIC-CHIP	CH50V 68P-J 1.6X0.8
C 1A7	CP156P05209	C-CERAMIC-CHIP	CH50V 68P-J 1.6X0.8
C 1A8	CP156P05209	C-CERAMIC-CHIP	CH50V 68P-J 1.6X0.8
C 1A9	CP156P05209	C-CERAMIC-CHIP	CH50V 68P-J 1.6X0.8
C 1B0	CP156P05102	C-CERAMIC-CHIP	CH50V 15P-J
C 1B1	CP156P05102	C-CERAMIC-CHIP	CH50V 15P-J
C 1B2	CP156P05502	C-CERAMIC-CHIP	CH50V 470P-J 1.6X0.8
C 1B3	CP182P16105	C-ELECTROLYTIC	CE04W 10V 220M-M
C 1B6	CP156P05304	C-CERAMIC-CHIP	CH50V 100P-J 1.6X0.8
C 1B7	CP156P06002	C-CER-CHIP	B50V 103-K
C 1C0	CP182P16105	C-ELECTROLYTIC	CE04W 10V 220M-M

All Parts List

MODEL NO. Diamond Pro 2060u (NSZ2107STTUW)

SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
C 1C3	CP156P05304	C-CERAMIC-CHIP	CH50V 100P-J 1.6X0.8
C 1C4	CP182P16105	C-ELECTROLYTIC	CE04W 10V 220M-M
C 1C7	CP156P05304	C-CERAMIC-CHIP	CH50V 100P-J 1.6X0.8
C 1C9	CP156P06003	C-CERAMIC-CHIP	B16V 104-K
C 1D0	CP156P06003	C-CERAMIC-CHIP	B16V 104-K
C 1D1	CP156P06003	C-CERAMIC-CHIP	B16V 104-K
C 1D2	CP182P16105	C-ELECTROLYTIC	CE04W 10V 220M-M
C 1D3	CP156P05104	C-CERAMIC-CHIP	CH50V 18P-J 1.6X0.8
C 1D4	CP156P05104	C-CERAMIC-CHIP	CH50V 18P-J 1.6X0.8
C 1D5	CP156P05209	C-CERAMIC-CHIP	CH50V 68P-J 1.6X0.8
C 1D6	CP156P05209	C-CERAMIC-CHIP	CH50V 68P-J 1.6X0.8
C 203H	QX142P02308	C-CERAMIC	BF50V 0.01M-Z
C 205S	CP155P01109	C-CERAMIC	B2KV 1000P-K
C 210B	CP172P20101	C-M-POLYESTER	ECQ-E2104JF OR RJF
C 210G	CP172P20101	C-M-POLYESTER	ECQ-E2104JF OR RJF
C 210R	CP172P20101	C-M-POLYESTER	ECQ-E2104JF OR RJF
C 211B	CP156P06003	C-CERAMIC-CHIP	B16V 104-K
C 211G	CP156P06003	C-CERAMIC-CHIP	B16V 104-K
C 211R	CP156P06003	C-CERAMIC-CHIP	B16V 104-K
C 220B	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 220G	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 220R	CP156P06601	C-CERAMIC-CHIP	F 10V 105-Z 1.6X0.8
C 221B	CP182P18107	C-ELECTROLYTIC-NP	04W 16V 47M-M NP 5/6.3X11
C 221G	CP182P18109	C-ELECTROLYTIC-NP	04W 16V 100M-M NP 6.3/8X11.5
C 221R	CP182P18107	C-ELECTROLYTIC-NP	04W 16V 47M-M NP 5/6.3X11
C 222B	CP156P06002	C-CER-CHIP	B50V 103-K
C 222G	CP156P06002	C-CER-CHIP	B50V 103-K
C 222R	CP156P06002	C-CER-CHIP	B50V 103-K
C 240B	CP182P18107	C-ELECTROLYTIC-NP	04W 16V 47M-M NP 5/6.3X11
C 240G	CP182P18109	C-ELECTROLYTIC-NP	04W 16V 100M-M NP 6.3/8X11.5
C 240R	CP182P18107	C-ELECTROLYTIC-NP	04W 16V 47M-M NP 5/6.3X11
C 250B	CP182P17305	C-ELECTROLYTIC	04W 250V 0.47M-M/Q 6.3X11
C 250G	CP182P17305	C-ELECTROLYTIC	04W 250V 0.47M-M/Q 6.3X11
C 250R	CP182P17305	C-ELECTROLYTIC	04W 250V 0.47M-M/Q 6.3X11
C 251B	CP156P06002	C-CER-CHIP	B50V 103-K
C 251G	CP141P51201	C-CERAMIC-CHIP	B 50V 103-K 2.0X1.25
C 251R	CP156P06002	C-CER-CHIP	B50V 103-K
C 260	CP182P17308	C-ELECTROLYTIC	04W 250V 3.3M-M/Q 8X11.5
C 261	CP156P06002	C-CER-CHIP	B50V 103-K
C 262	CP182P16204	C-ELECTROLYTIC	CE04W 16V 100M-M
C 263	CP156P06002	C-CER-CHIP	B50V 103-K
C 264	CP156P06002	C-CER-CHIP	B50V 103-K
C 265	CP156P06002	C-CER-CHIP	B50V 103-K
C 266	CP156P06002	C-CER-CHIP	B50V 103-K
C 280	CP182P16203	C-ELECTROLYTIC	CE04W 16V 47M-M
C 281	CP182P19707	C-ELECTROLYTIC	04W 100V 47M-M 10X12.5
C 283	QX142P01205	C-CERAMIC	B500V 0.01M-K 103 SO
C 284	CP156P06002	C-CER-CHIP	B50V 103-K
C 285	CP182P16204	C-ELECTROLYTIC	CE04W 16V 100M-M
C 286	CP156P06002	C-CER-CHIP	B50V 103-K
C 287	CP182P16204	C-ELECTROLYTIC	CE04W 16V 100M-M
C 288	CP156P06002	C-CER-CHIP	B50V 103-K
C 289	CP156P06001	C-CERAMIC-CHIP	B50V 102-K
C 290	CP182P16203	C-ELECTROLYTIC	CE04W 16V 47M-M
C 291	CP182P16203	C-ELECTROLYTIC	CE04W 16V 47M-M
C 292	CP172P40004	C-POLYESTER	50V 0.1M-J
C 294	CP182P16203	C-ELECTROLYTIC	CE04W 16V 47M-M
C 295	CP156P06002	C-CER-CHIP	B50V 103-K
C 296	CP156P06002	C-CER-CHIP	B50V 103-K
C 298	CP156P06002	C-CER-CHIP	B50V 103-K
C 299	CP182P16203	C-ELECTROLYTIC	CE04W 16V 47M-M

All Parts List

MODEL NO. Diamond Pro 2060u (NSZ2107STTUW)

SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
C 2C0	CP156P06002	C-CER-CHIP	B50V 103-K
C 2C1	CP182P16203	C-ELECTROLYTIC	CE04W 16V 47M-M
C 2D0	CP182P16204	C-ELECTROLYTIC	CE04W 16V 100M-M
C 2D1	CP156P06002	C-CER-CHIP	B50V 103-K
C 2D2	CP172P13100	C-POLYESTER	50V 0.033M-K-OR-J 333 SO
C 2D3	CP156P06002	C-CER-CHIP	B50V 103-K
C 2D4	CP141P51201	C-CERAMIC-CHIP	B 50V 103-K 2.0X1.25
C 2D5	CP182P16203	C-ELECTROLYTIC	CE04W 16V 47M-M
C 2D6	CP155P54201	C-CERAMIC-CHIP	CH 50V 47P-J 2.0X1.25
C 2D7	CP156P05205	C-CERAMIC-CHIP	CH50V 47P-J 1.6X0.8
C 2D8	CP182P16504	C-ELECTROLYTIC	CE04W 50V 4.7M-M
C 2D9	CP182P16504	C-ELECTROLYTIC	CE04W 50V 4.7M-M
C 2E1	CP156P05207	C-CERAMIC-CHIP	CH50V 56P-J
C 2E2	CP156P05102	C-CERAMIC-CHIP	CH50V 15P-J
C 2E3	CP182P16504	C-ELECTROLYTIC	CE04W 50V 4.7M-M
C 2L0	CP156P06002	C-CER-CHIP	B50V 103-K
C 2L1	CP182P16204	C-ELECTROLYTIC	CE04W 16V 100M-M
C 2P0	CP141P51201	C-CERAMIC-CHIP	B 50V 103-K 2.0X1.25
C 2P1	CP141P51201	C-CERAMIC-CHIP	B 50V 103-K 2.0X1.25
C 2P2	CP156P06002	C-CER-CHIP	B50V 103-K
C 2P4	CP156P06002	C-CER-CHIP	B50V 103-K
C 2P6	QX142P01103	C-CERAMIC	B500V 1000P-K 102 SO
C 2P8	QX142P01103	C-CERAMIC	B500V 1000P-K 102 SO
C 2W0	CP156P05304	C-CERAMIC-CHIP	CH50V 100P-J 1.6X0.8
C 2W1	CP156P05304	C-CERAMIC-CHIP	CH50V 100P-J 1.6X0.8
C 401	CP182P16308	C-ELECTROLYTIC	CE04W 25V 1000M-M
C 402	CP182P16308	C-ELECTROLYTIC	CE04W 25V 1000M-M
C 403	CP156P06208	C-CERAMIC-CHIP	B50V 471-K
C 404	CP182P16509	C-ELECTROLYTIC	CE04W 50V 100M-M
C 405	CP173P23108	C-POLY	100V 224-J
C 406	CP156P06208	C-CERAMIC-CHIP	B50V 471-K
C 407	CP172P13705	C-POLYESTER	50V 1500P-J 152 SO
C 410	CP173P23009	C-POLY	100V 473-J
C 501	CP172P40103	C-POLYESTER	50V 0.47M-J
C 502	CP156P06106	C-CERAMIC-CHIP	B25V 223-K
C 503	CP156P06002	C-CER-CHIP	B50V 103-K
C 504	CP182P16307	C-ELECTROLYTIC	CE04W 25V 470M-M
C 505	QX142P01107	C-CERAMIC	B500V 2200P-K 222 SO
C 506	CP173P25102	C-M-PP	1800V 4400P-H
C 508	CP155P02501	C-CERAMIC	R2KV 220P-K
C 509	CP155P03004	C-CERAMIC	R250V 3300P-K
C 510	CP181P27405	C-ELE	04W 250V 47M-M
C 511	CP182P20402	C-ELECTROLYTIC	04W 250V 22M-M 12.5X20
C 514	CP182P17307	C-ELECTROLYTIC	04W 250V 2.2M-M/Q 6.3X11
C 515	CP182P17202	C-ELECTROLYTIC	04W 200V 2.2M-M/Q 6.3X11
C 516	CP182P17202	C-ELECTROLYTIC	04W 200V 2.2M-M/Q 6.3X11
C 521	CP173P14007	C-M-PP	DHSM204 250V 823JTP
C 522	CP173P14407	C-M-PP	DHSM204 250V 913JTP
C 523	CP173P19304	C-M-PP	250V 824-J
C 524	CP173P19309	C-M-PP	250V 135-J
C 525	CP173P09104	C-M-PLASTIC-PP	MPW 250V 154-J
C 526	CP173P19003	C-M-PP	250V 563-J
C 527	CP173P19207	C-M-PP	250V 474-J
C 528	CP173P19109	C-M-PP	250V 244-J
C 529	CP173P14408	C-M-PP	DHSM204 250V 243JTP
C 540	QX142P01101	C-CERAMIC	B500V 680P-K 681 SO
C 541	QX142P01009	C-CERAMIC	B500V 470P-K 471 SO
C 560	CP156P05403	C-CERAMIC-CHIP	CH50V 220P-J 1.6X0.8
C 5A1	CP182P16208	C-ELECTROLYTIC	CE04W 16V 1000M-M
C 5A2	CP182P16208	C-ELECTROLYTIC	CE04W 16V 1000M-M
C 5J1	CP156P06002	C-CER-CHIP	B50V 103-K

All Parts List

MODEL NO. Diamond Pro 2060u (NSZ2107STTUW)

SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
C 5J2	CP182P16205	C-ELECTROLYTIC	CE04W 16V 220M-M
C 5J3	CP173P23001	C-POLY	100V 103-J
C 5J4	CP172P40106	C-POLYESTER	50V 0.82M-J
C 5J5	CP172P20101	C-M-POLYESTER	ECQ-E2104JF OR RJF
C 5K1	CP182P16502	C-ELECTROLYTIC	CE04W 50V 2.2M-M
C 5L1	CP156P05407	C-CERAMIC-CHIP	CH50V 330P-J
C 5L2	CP156P05104	C-CERAMIC-CHIP	CH50V 18P-J 1.6X0.8
C 5L3	CP182P16203	C-ELECTROLYTIC	CE04W 16V 47M-M
C 5L6	CP156P06001	C-CERAMIC-CHIP	B50V 102-K
C 5M1	CP172P13903	C-POLYESTER	50V 0.047M-J 473 SO
C 601	CP141P51500	C-CERAMIC-CHIP	B 25V 104-K 2.0X1.25
C 602	CP182P16204	C-ELECTROLYTIC	CE04W 16V 100M-M
C 603	CP141P51401	C-CERAMIC-CHIP	B 50V 183-K
C 604	CP156P06002	C-CER-CHIP	B50V 103-K
C 605	CP141P51604	C-CERAMIC-CHIP	F 16V 105-Z 2.0X1.25
C 606	CP141P51500	C-CERAMIC-CHIP	B 25V 104-K 2.0X1.25
C 607	CP156P06002	C-CER-CHIP	B50V 103-K
C 608	CP182P16204	C-ELECTROLYTIC	CE04W 16V 100M-M
C 609	CP156P06002	C-CER-CHIP	B50V 103-K
C 610	CP156P06002	C-CER-CHIP	B50V 103-K
C 611	CP156P06002	C-CER-CHIP	B50V 103-K
C 612	CP182P16107	C-ELECTROLYTIC	CE04W 10V 470M-M
C 613	CP156P06002	C-CER-CHIP	B50V 103-K
C 614	CP156P06002	C-CER-CHIP	B50V 103-K
C 615	CP141P51107	C-CERAMIC-CHIP	B 50V 472-K 2.0X1.25
C 616	CP156P06002	C-CER-CHIP	B50V 103-K
C 617	CP141P51500	C-CERAMIC-CHIP	B 25V 104-K 2.0X1.25
C 618	CP141P51500	C-CERAMIC-CHIP	B 25V 104-K 2.0X1.25
C 619	CP141P51009	C-CERAMIC-CHIP	B 50V 102-K 2.0X1.25
C 620	CP182P16107	C-ELECTROLYTIC	CE04W 10V 470M-M
C 621	CP182P16203	C-ELECTROLYTIC	CE04W 16V 47M-M
C 622	CP141P51406	C-CERAMIC-CHIP	B 50V 473-K
C 623	CP182P16505	C-ELECTROLYTIC	CE04W 50V 10M-M
C 624	CP156P06002	C-CER-CHIP	B50V 103-K
C 625	CP182P31402	C-ELECTROLYTIC	25V 47M-M 5X11
C 626	CP156P06002	C-CER-CHIP	B50V 103-K
C 627	CP141P51604	C-CERAMIC-CHIP	F 16V 105-Z 2.0X1.25
C 628	CP141P51703	C-C-CHIP	B25V 823-J 2.0X1.25
C 630	CP182P29006	C-ELECTROLYTIC	6.3V 330M-M 8X7
C 631	CP156P06002	C-CER-CHIP	B50V 103-K
C 632	CP141P51500	C-CERAMIC-CHIP	B 25V 104-K 2.0X1.25
C 633	CP156P06002	C-CER-CHIP	B50V 103-K
C 634	CP156P06002	C-CER-CHIP	B50V 103-K
C 635	CP182P16203	C-ELECTROLYTIC	CE04W 16V 47M-M
C 636	CP182P29002	C-ELECTROLYTIC	6.3V 33M-M 5X7
C 638	CP156P05304	C-CERAMIC-CHIP	CH50V 100P-J 1.6X0.8
C 639	CP156P05304	C-CERAMIC-CHIP	CH50V 100P-J 1.6X0.8
C 6A1	CP156P06002	C-CER-CHIP	B50V 103-K
C 6A2	CP156P06002	C-CER-CHIP	B50V 103-K
C 6A3	CP156P06002	C-CER-CHIP	B50V 103-K
C 6A4	CP156P06002	C-CER-CHIP	B50V 103-K
C 6A5	CP156P06002	C-CER-CHIP	B50V 103-K
C 6A6	CP156P06002	C-CER-CHIP	B50V 103-K
C 6A7	CP156P06002	C-CER-CHIP	B50V 103-K
C 6A8	CP156P05308	C-CERAMIC-CHIP	CH50V 150P-J 1.6X0.8
C 6A9	CP156P06002	C-CER-CHIP	B50V 103-K
C 6B3	CP182P16206	C-ELECTROLYTIC	CE04W 16V 330M-M
C 6B4	CP182P16505	C-ELECTROLYTIC	CE04W 50V 10M-M
C 6B5	CP156P06002	C-CER-CHIP	B50V 103-K
C 701	CP181P09707	C-ELECTROLYTIC	04W 100V 220 M-M
C 702	CP173P27509	C-P-PP	630V 822-J OR K

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
C 703	CP156P07101	C-CERAMIC-CHIP	BJ 16V 0.22MF-K 2.1X1.25
C 704	CP173P26509	C-M-PP	800V 222-H ORJ
C 705	CP182P31402	C-ELECTROLYTIC	25V 47M-M 5X11
C 706	CP156P05205	C-CERAMIC-CHIP	CH50V 47P-J 1.6X0.8
C 707	CP156P07005	C-CERAMIC-CHIP	BJ 50V 0.1MF-K 2.1X1.25
C 708	CP182P16505	C-ELECTROLYTIC	CE04W 50V 10M-M
C 709	CP156P07005	C-CERAMIC-CHIP	BJ 50V 0.1MF-K 2.1X1.25
C 710	CP182P16502	C-ELECTROLYTIC	CE04W 50V 2.2M-M
C 711	CP156P06002	C-CER-CHIP	B50V 103-K
C 712	CP156P07005	C-CERAMIC-CHIP	BJ 50V 0.1MF-K 2.1X1.25
C 713	CP156P07005	C-CERAMIC-CHIP	BJ 50V 0.1MF-K 2.1X1.25
C 714	CP156P06002	C-CER-CHIP	B50V 103-K
C 715	CP156P05304	C-CERAMIC-CHIP	CH50V 100P-J 1.6X0.8
C 716	CP182P16502	C-ELECTROLYTIC	CE04W 50V 2.2M-M
C 717	CP182P16502	C-ELECTROLYTIC	CE04W 50V 2.2M-M
C 719	CP182P16502	C-ELECTROLYTIC	CE04W 50V 2.2M-M
C 720	CP156P07005	C-CERAMIC-CHIP	BJ 50V 0.1MF-K 2.1X1.25
C 721	CP156P06002	C-CER-CHIP	B50V 103-K
C 722	CP156P06002	C-CER-CHIP	B50V 103-K
C 723	CP182P27006	C-ELE	6.3V 2200M-M 12.5X20
C 724	CP156P06002	C-CER-CHIP	B50V 103-K
C 725	CP156P06002	C-CER-CHIP	B50V 103-K
C 7A1	CP181P04900	C-ELECTROLYTIC	04W 450V 2.2M-M
C 7A2	QX142P01007	C-CERAMIC	B500V 330P-K 331 SO
C 7B1	CP181P03409	C-ELECTROLYTIC	04W 100V 47M-M
C 7B2	CP173P23201	C-POLY	100V 334-J
C 801	CP156P06002	C-CER-CHIP	B50V 103-K
C 805	CP182P19302	C-ELECTROLYTIC	04W 25V 220M-M 8X11.5
C 806	CP182P19302	C-ELECTROLYTIC	04W 25V 220M-M 8X11.5
C 807	CP156P06403	C-CERAMIC-CHIP	B25V 104-K
C 811	CP156P06403	C-CERAMIC-CHIP	B25V 104-K
C 812	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 813	CP156P06002	C-CER-CHIP	B50V 103-K
C 814	CP156P06002	C-CER-CHIP	B50V 103-K
C 815	CP156P06403	C-CERAMIC-CHIP	B25V 104-K
C 816	CP156P05502	C-CERAMIC-CHIP	CH50V 470P-J 1.6X0.8
C 817	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 818	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 819	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 820	CP156P05502	C-CERAMIC-CHIP	CH50V 470P-J 1.6X0.8
C 821	CP156P06403	C-CERAMIC-CHIP	B25V 104-K
C 827	CP156P06403	C-CERAMIC-CHIP	B25V 104-K
C 828	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 829	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 830	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 831	CP156P06002	C-CER-CHIP	B50V 103-K
C 832	CP156P06002	C-CER-CHIP	B50V 103-K
C 834	CP156P05502	C-CERAMIC-CHIP	CH50V 470P-J 1.6X0.8
C 835	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 836	CP156P06403	C-CERAMIC-CHIP	B25V 104-K
C 838	CP156P05502	C-CERAMIC-CHIP	CH50V 470P-J 1.6X0.8
C 840	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 841	CP156P06002	C-CER-CHIP	B50V 103-K
C 842	CP156P06002	C-CER-CHIP	B50V 103-K
C 843	CP156P05502	C-CERAMIC-CHIP	CH50V 470P-J 1.6X0.8
C 844	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 845	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 846	CP156P06209	C-CERAMIC-CHIP	B50V 472 K
C 847	CP156P05502	C-CERAMIC-CHIP	CH50V 470P-J 1.6X0.8
C 8A1	CP156P05106	C-CERAMIC-CHIP	CH50V 22P-J 1.6X0.8
C 8A2	CP156P05308	C-CERAMIC-CHIP	CH50V 150P-J 1.6X0.8

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
C 8A3	CP156P05201	C-CERAMIC-CHIP	CH50V 33P-J 1.6X0.8
C 8A4	CP156P05201	C-CERAMIC-CHIP	CH50V 33P-J 1.6X0.8
C 8A5	CP182P31404	C-ELECTROLYTIC	25V 220M-M 8X11.5
C 8A6	CP182P31404	C-ELECTROLYTIC	25V 220M-M 8X11.5
C 8A8	CP156P05106	C-CERAMIC-CHIP	CH50V 22P-J 1.6X0.8
C 8A9	CP156P05308	C-CERAMIC-CHIP	CH50V 150P-J 1.6X0.8
C 901	CP172P93007	C-M-P	RE105-C
C 902	CP156P11009	C-CERAMIC-AC	E 2200P-M-KX
C 903	CP156P11009	C-CERAMIC-AC	E 2200P-M-KX
C 906	CP173P25005	C-M-P	HCE450V 105K-SC-I
C 907	CP172P40004	C-POLYESTER	50V 0.1M-J
C 908	CP172P40105	C-POLYESTER	50V 0.68M-J
C 909	CP156P06002	C-CER-CHIP	B50V 103-K
C 910	CP156P06208	C-CERAMIC-CHIP	B50V 471-K
C 911	CP185P04001	C-ELE	450V 220M LI B45
C 912	CP173P21007	C-M-P	C630V 0.033M-J-OR-K
C 914	CP155P00309	C-CERAMIC	SL2KV 220P-J
C 915	CP182P16405	C-ELECTROLYTIC	CE04W 35V 47M-M
C 916	CP156P05601	C-CERAMIC-CHIP	CH25V 1000P-J 1.6X0.8
C 917	CP156P06208	C-CERAMIC-CHIP	B50V 471-K
C 918	CP156P06002	C-CER-CHIP	B50V 103-K
C 919	CP156P06002	C-CER-CHIP	B50V 103-K
C 920	CP156P06302	C-CERAMIC-CHIP	B25V 473-K
C 921	CP156P06002	C-CER-CHIP	B50V 103-K
C 930	CP182P31506	C-ELECTROLYTIC	35V 56M-M 6.3X11
C 931	CP182P16504	C-ELECTROLYTIC	CE04W 50V 4.7M-M
C 932	QX142P02107	C-CERAMIC	B50V 4700P-K 472 SO
C 933	QX142P02005	C-CERAMIC	B50V 470P-K 471 SO
C 935	CP182P16504	C-ELECTROLYTIC	CE04W 50V 4.7M-M
C 938	CP156P06302	C-CERAMIC-CHIP	B25V 473-K
C 939	CP173P21007	C-M-P	C630V 0.033M-J-OR-K
C 940	CP155P02407	C-CERAMIC	SL2KV 100P-J
C 941	QX142P02107	C-CERAMIC	B50V 4700P-K 472 SO
C 961	CP182P11404	C-ELECTROLYTIC	250V 100M-M 16X31.5
C 963	CP182P31901	C-ELECTROLYTIC	100V 82M-M 10X20
C 964	CP182P31408	C-ELECTROLYTIC	25V 820M-M 10X23
C 965	CP182P31408	C-ELECTROLYTIC	25V 820M-M 10X23
C 966	CP172P13805	C-POLYESTER	50V 0.01M-J 103 SO
C 967	CP182P19705	C-ELECTROLYTIC	04W 100V 22M-M 6.3X11
C 968	CP182P16204	C-ELECTROLYTIC	CE04W 16V 100M-M
C 969	CP182P31209	C-ELECTROLYTIC	16V 120M-M 6.3X11
C 971	CP182P31203	C-ELECTROLYTIC	10V 2200M-M 12.5X20
C 972	CP182P10208	C-ELECTROLYTIC	16V 220M-M 6.3X11
C 973	CP172P40102	C-POLYESTER	50V 0.39M-J
C 9A0	CP182P31507	C-ELECTROLYTIC	35V 150M-M 8X11.5
C 9A1	CP182P31507	C-ELECTROLYTIC	35V 150M-M 8X11.5
C 9A2	QX142P01103	C-CERAMIC	B500V 1000P-K 102 SO
C 9A3	QX142P01103	C-CERAMIC	B500V 1000P-K 102 SO
***** DIODE *****			
D 100	CP264P29206	DIODE	MTZ J 5.6A
D 101	CP264P46202	DIODE-ZENER-CHIP	HZU 5.6G TRF
D 102	CP264P42603	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 107	CP264P29206	DIODE	MTZ J 5.6A
D 108	CP264P29206	DIODE	MTZ J 5.6A
D 1A0	CP264P43901	DIODE-ZENER-CHIP	MA8056
D 1A1	CP264P43901	DIODE-ZENER-CHIP	MA8056
D 1A2	CP264P43901	DIODE-ZENER-CHIP	MA8056
D 1A3	CP264P43901	DIODE-ZENER-CHIP	MA8056
D 1A4	CP264P43901	DIODE-ZENER-CHIP	MA8056
D 1A5	CP264P43901	DIODE-ZENER-CHIP	MA8056
D 1A6	CP264P43901	DIODE-ZENER-CHIP	MA8056

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
D 1A7	CP264P43901	DIODE-ZENER-CHIP	MA8056
D 1A8	CP264P43901	DIODE-ZENER-CHIP	MA8056
D 1A9	CP264P43901	DIODE-ZENER-CHIP	MA8056
D 1B0	CP264P43901	DIODE-ZENER-CHIP	MA8056
D 1B1	CP264P43901	DIODE-ZENER-CHIP	MA8056
D 210B	CP264P32001	DIODE	1SS244
D 210G	CP264P32001	DIODE	1SS244
D 210R	CP264P32001	DIODE	1SS244
D 211B	CP264P32001	DIODE	1SS244
D 211G	CP264P32001	DIODE	1SS244
D 211R	CP264P32001	DIODE	1SS244
D 220B	CP264P40801	DIODE-CHIP	KDS226
D 220G	CP264P40801	DIODE-CHIP	KDS226
D 220R	CP264P40801	DIODE-CHIP	KDS226
D 240B	CP264P40801	DIODE-CHIP	KDS226
D 240G	CP264P40801	DIODE-CHIP	KDS226
D 240R	CP264P40801	DIODE-CHIP	KDS226
D 250B	CP264P32001	DIODE	1SS244
D 250G	CP264P32001	DIODE	1SS244
D 250R	CP264P32001	DIODE	1SS244
D 251B	CP264P32001	DIODE	1SS244
D 251G	CP264P32001	DIODE	1SS244
D 251R	CP264P32001	DIODE	1SS244
D 260	CP264P38001	DIODE	1SS355TE-17
D 261	CP264P47001	DIODE	1SS133 T-72
D 262	CP264P47001	DIODE	1SS133 T-72
D 263	CP264P47001	DIODE	1SS133 T-72
D 2C0	CP264P47001	DIODE	1SS133 T-72
D 2C1	CP264P47001	DIODE	1SS133 T-72
D 2C2	CP264P46202	DIODE-ZENER-CHIP	HZU 5.6G TRF
D 2C3	CP264P46202	DIODE-ZENER-CHIP	HZU 5.6G TRF
D 2C4	CP264P46202	DIODE-ZENER-CHIP	HZU 5.6G TRF
D 2C5	CP264P46202	DIODE-ZENER-CHIP	HZU 5.6G TRF
D 2H0	CP264P42603	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 2H5	CP264P42603	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 2V0	CP264P42603	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 2V5	CP264P42603	DIODE-ZENER-CHIP	UDZS TE17 5.6B (DH)
D 401	CP264P49901	DIODE	1N4005E-6580
D 402	CP264P07305	DIODE	HZ5C1 (DH)
D 501	CP264P47001	DIODE	1SS133 T-72
D 502	CP264P46402	DIODE	SB560L-6511
D 503	CP264P46501	DIODE	FMQ-G2FS
D 504	CP264P49901	DIODE	1N4005E-6580
D 505	CP264P29405	DIODE	MTZ J 10 B
D 506	CP264P01901	DIODE	EG-1
D 510	CP264P49901	DIODE	1N4005E-6580
D 512	CP264P49901	DIODE	1N4005E-6580
D 540	CP264P15501	DIODE	RGP10G
D 541	CP264P12402	DIODE	EU2A LF012
D 5A1	CP264P25002	DIODE	EGP10D STRAIGHT
D 5A2	CP264P25002	DIODE	EGP10D STRAIGHT
D 5J1	CP264P56304	DIODE	UG06D
D 5J2	CP264P38001	DIODE	1SS355TE-17
D 5J3	CP264P47001	DIODE	1SS133 T-72
D 5J5	CP264P32001	DIODE	1SS244
D 5K1	CP264P47001	DIODE	1SS133 T-72
D 5M1	CP264P47001	DIODE	1SS133 T-72
D 600	CP264P38001	DIODE	1SS355TE-17
D 601	CP264P38001	DIODE	1SS355TE-17
D 6A2	CP264P29203	DIODE	MTZ J 5.1 A
D 6A3	CP264P38001	DIODE	1SS355TE-17

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
D 701	CP264P47001	DIODE	1SS133 T-72
D 702	CP264P08003	DIODE	HZ11A3
D 703	CP264P47101	DIODE	CB903-4SV1
D 704	CP264P22201	DIODE	UF5408
D 705	CP264P34104	DIODE	UF4004
D 706	CP264P34104	DIODE	UF4004
D 707	CP264P22801	DIODE	MPG06JG23
D 709	CP264P29206	DIODE	MTZ J 5.6A
D 710	CP264P38001	DIODE	1SS355TE-17
D 712	CP264P29206	DIODE	MTZ J 5.6A
D 713	CP264P47001	DIODE	1SS133 T-72
D 715	CP264P07307	DIODE	HZ5C3
D 7A1	CP264P34109	DIODE	UF4005-FORMING UF1JL-6396
D 7B1	CP264P47001	DIODE	1SS133 T-72
D 7B2	CP264P47001	DIODE	1SS133 T-72
D 901	CP264P12304	DIODE	RBV-606 STRAIGHT
D 902	CP264P47701	DIODE	FMG-G26S
D 904	CP264P34107	DIODE	UF4007
D 905	CP264P32001	DIODE	1SS244
D 906	CP264P18603	DIODE-ZENER	HZS24-2L
D 907	CP264P47001	DIODE	1SS133 T-72
D 908	CP264P47001	DIODE	1SS133 T-72
D 909	CP264P47001	DIODE	1SS133 T-72
D 910	CP264P18603	DIODE-ZENER	HZS24-2L
D 911	CP264P47001	DIODE	1SS133 T-72
D 912	CP264P32001	DIODE	1SS244
D 920	CP264P48002	LED	SML 19460C LF68
D 929	CP264P56304	DIODE	UG06D
D 930	CP264P34107	DIODE	UF4007
D 931	CP264P47001	DIODE	1SS133 T-72
D 932	CP264P56304	DIODE	UG06D
D 933	CP264P49801	DIODE	RM10A
D 934	CP264P47001	DIODE	1SS133 T-72
D 961	CP264P34107	DIODE	UF4007
D 963	CP264P25603	DIODE	EGP30G(FORMING) 15MM
D 964	CP264P49101	DIODE	FMB-G16L
D 965	CP264P49101	DIODE	FMB-G16L
D 966	CP264P47001	DIODE	1SS133 T-72
D 967	CP264P39801	DIODE	ERA83-006V1
D 968	CP264P47001	DIODE	1SS133 T-72
D 969	CP264P47001	DIODE	1SS133 T-72
D 970	CP264P47001	DIODE	1SS133 T-72
D 971	CP264P57101	DIODE	FMB-24M
D 972	CP264P47001	DIODE	1SS133 T-72
D 973	CP264P47001	DIODE	1SS133 T-72
D 976	CP264P39801	DIODE	ERA83-006V1
D 978	CP264P47001	DIODE	1SS133 T-72
D 979	CP264P15401	DIODE	RGP10D
*** FUSE ***			
F 901	CP283P01708	FUSE	215-T5.0AH 250V
*** IC ***			
IC100	CP266P30901	IC	RN5VS45AA-TR
IC101	CP266P36002	IC-MOS	ST72T771N9B1/2107 NSZ21XX
IC102	CP263P35301	IC	BU2090AF
IC103	CP263P34602	IC-LINEAR	LM324DT
IC104	CP266P91601	IC-MOS	M24C32-W/24LC32A 282-1/288-1
IC1A0	CP266P32703	IC-MOS-USB	ISP1122ANB
IC210	CP267P14801	IC	LM2402T
IC211	CP263P35001	IC	MC13289ASP
IC212	CP263P34901	IC-OSD	XC3825P2
IC213	CP263P12901	IC-LINEAR	BA4558F-E2

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
IC214	CP267P13201	HIC	MIU-211
IC216	CP263P35201	IC	MM1470AD(DIP)
IC217	CP266P92802	IC-MOS	24LC21TSN/BR24C21F
IC401	CP263P32701	IC	LA7841
IC501	CP263P33901	IC-MOS	SLA5070
IC5J1	CP263P26501	IC	BA9757
IC5K1	CP260P44901	TRANSISTOR-CHIP	RN1502(TE85R)
IC601	CP267P15101	IC	CP267P151-1
IC602	CP263P28202	IC-REGULATOR	TA48M033F(TE16L) 3.3V
IC603	CP263P12901	IC-LINEAR	BA4558F-E2
IC6A1	CP263P34402	IC-MOS	74VHC14SJ
IC6A2	CP263P34302	IC	TL084CD
IC6A3	CP263P27401	IC	KIA4558F
IC6A4	CP263P34501	IC-LINEAR	KIA7027AP
IC701	CP263P36501	IC-LINEAR	AN5751N
IC702	CP263P12901	IC-LINEAR	BA4558F-E2
IC801	CP263P30001	IC	LA6510
IC803	CP263P30001	IC	LA6510
IC804	CP263P30001	IC	LA6510
IC8A1	CP267P12801	HIC	STK391-110
IC901	CP263P26901	IC	MC33262P
IC902	CP263P30401	HIC	STR-F6676
IC903	CP267P15601	HIC	STR-G6352 LXA595W
IC911	CP268P01207	PHOTO-COUPLER	TCET1106(G)
IC912	CP268P01207	PHOTO-COUPLER	TCET1106(G)
IC913	CP268P01207	PHOTO-COUPLER	TCET1106(G)
IC921	CP263P33801	IC	SE-B3
IC922	CP263P21502	IC	KIA431A-AT
IC923	CP263P34001	IC-REG	KIA7812API
*** CONNECTOR ***			
J 100	CP452C06403	CONNECTOR-EH	B3B-EH (MI)
J 102	CP452C06406	CONNECTOR-EH	B6B-EH (MI)
J 103	CP452P18209	CONNECTOR-FFC	19FE-BT-VK-N (MI)
J 1A0	CP452P25401	CONNECTOR-USB	UBB-4R-D14C (MI)
J 1A1	CP452P29001	CONNECTOR-USB	UBA-4R-D10C2 (MI)
J 1A2	CP452P25601	CONNECTOR-USB	UBA-4RS-D10C (MI)
J 1A3	CP452C06405	CONNECTOR-EH	B5B-EH (MI)
J 1X0	CP452C02706	CONNECTOR-EH	S6B-EH (MI)
J 200	CP449P02401	SOCKET-CRT	CVT3280-5101
J 201	CP452P28301	CONNECTOR	TP00705-51 (MI)
J 211	CP452C06406	CONNECTOR-EH	B6B-EH (MI)
J 212	CP452P18209	CONNECTOR-FFC	19FE-BT-VK-N (MI)
J 215	CP452C07001	CONNECTOR-D-SUB	NFN8715F
J 216	CP452C07001	CONNECTOR-D-SUB	NFN8715F
J 401	CP452P24703	CONNECTOR	B2P3-VH-B (MI)
J 501	CP452P24806	CONNECTOR	B6P-VH-B (MI)
J 600	CP452P28808	CONNECTOR-RF	RF-H164TD-1190-W1 (MI)
J 601	CP452P28808	CONNECTOR-RF	RF-H164TD-1190-W1 (MI)
J 801	CP452C06408	CONNECTOR-EH	B8B-EH (MI)
J 802	QX452D10902	CONNECTOR	B2B-XH-AM
J 803	QX452D10903	CONNECTOR	B3B-XH-AM
J 8A1	QX452D10904	CONNECTOR	B4B-XH-AM
J 901	CP452P24703	CONNECTOR	B2P3-VH-B (MI)
J 902	CP442P00101	FUSE-CLIP	TP00351-51
J 903	CP442P00101	FUSE-CLIP	TP00351-51
J 904	CP452P24703	CONNECTOR	B2P3-VH-B (MI)
J 906	CP452P31403	CONNECTOR	B2P3-VH-B-E (MI)
J 907	CP452D01601	CONNECTOR-VH	B2P3S-VH (MT)
J 908	CP452C06403	CONNECTOR-EH	B3B-EH (MI)
J 950	CP452P33301	CONNECTOR-XAD	B26B-XADSS-N-A
J 9A0	CP452C06407	CONNECTOR-EH	B7B-EH (MI)

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
J 9A1	CP452C06408	CONNECTOR-EH	B8B-EH (MI)
*** FILTER, COIL ***			
L 1A3	CP410P07003	FERRITE-CHIP	BLM21P300SPT
L 1A4	CP410P10102	BEAD-FERRITE-CHIP	BK2125LL121
L 1A5	CP410P10102	BEAD-FERRITE-CHIP	BK2125LL121
L 1A6	CP410P07003	FERRITE-CHIP	BLM21P300SPT
L 1A7	CP410P10102	BEAD-FERRITE-CHIP	BK2125LL121
L 1A8	CP410P10102	BEAD-FERRITE-CHIP	BK2125LL121
L 1A9	CP410P07003	FERRITE-CHIP	BLM21P300SPT
L 1B0	CP410P10102	BEAD-FERRITE-CHIP	BK2125LL121
L 1B1	CP410P10102	BEAD-FERRITE-CHIP	BK2125LL121
L 200B	CP410P01204	BEAD-FERRITE	FBR07UA850
L 200G	CP410P01204	BEAD-FERRITE	FBR07UA850
L 200R	CP410P01204	BEAD-FERRITE	FBR07UA850
L 201B	CP410P01204	BEAD-FERRITE	FBR07UA850
L 201G	CP410P01204	BEAD-FERRITE	FBR07UA850
L 201R	CP410P01204	BEAD-FERRITE	FBR07UA850
L 280	CP410P01204	BEAD-FERRITE	FBR07HA850
L 281	CP410P04101	FERRITE-CHIP	BK2125HS121
L 282	CP321P03109	COIL-RF	100MH-K 101 SO
L 283	CP410P04101	FERRITE-CHIP	BK2125HS121
L 284	CP410P04101	FERRITE-CHIP	BK2125HS121
L 2C0	CP410P04101	FERRITE-CHIP	BK2125HS121
L 2D0	CP410P04101	FERRITE-CHIP	BK2125HS121
L 2D1	CP410P04101	FERRITE-CHIP	BK2125HS121
L 2D2	CP410P04101	FERRITE-CHIP	BK2125HS121
L 2H0	CP410P07205	FERRITE-CHIP	BLM21A601SPT
L 2H5	CP410P07205	FERRITE-CHIP	BLM21A601SPT
L 2P0	CP410P04101	FERRITE-CHIP	BK2125HS121
L 2P1	CP410P04101	FERRITE-CHIP	BK2125HS121
L 2P2	CP410P01201	BEAD-FERRITE	FBR07HA850
L 2P4	CP410P01201	BEAD-FERRITE	FBR07HA850
L 2P6	CP410P01201	BEAD-FERRITE	FBR07HA850
L 2V0	CP410P07205	FERRITE-CHIP	BLM21A601SPT
L 2V5	CP410P07205	FERRITE-CHIP	BLM21A601SPT
L 2W0	CP410P04101	FERRITE-CHIP	BK2125HS121
L 2W1	CP410P04101	FERRITE-CHIP	BK2125HS121
L 501	CP410P01201	BEAD-FERRITE	FBR07HA850
L 506	CP321P19106	COIL-RF	2200MH-J 222
L 507	CP321P03302	COIL-RF	1200MH-J 122 SO
L 508	CP321P03301	COIL-RF	1000MH-J 102 SO
L 509	CP321P03301	COIL-RF	1000MH-J 102 SO
L 540	CP333P04701	COIL-HORIZ-LIN	77A-0001 (MI)
L 541	CP321P03201	COIL-RF	150MH-K 151 SO
L 5A1	CP321P41101	COIL-CHOKE	(MI)
L 600	CP410P07205	FERRITE-CHIP	BLM21A601SPT
L 601	CP410P07205	FERRITE-CHIP	BLM21A601SPT
L 602	CP410P07205	FERRITE-CHIP	BLM21A601SPT
L 603	CP410P07205	FERRITE-CHIP	BLM21A601SPT
L 604	CP410P07205	FERRITE-CHIP	BLM21A601SPT
L 6A1	CP410P07205	FERRITE-CHIP	BLM21A601SPT
L 6A2	CP410P07205	FERRITE-CHIP	BLM21A601SPT
L 701	CP321P17005	COIL-RF	3.3MH-L 3R3
L 702	CP321P17005	COIL-RF	3.3MH-L 3R3
L 704	CP410P01201	BEAD-FERRITE	FBR07HA850
L 8A1	CP321P03109	COIL-RF	100MH-K 101 SO
L 8A2	CP321P03109	COIL-RF	100MH-K 101 SO
L 901	CP351P07201	LINE-FILTER	25060 (MI)
L 902	CP351P07402	LINE-FILTER	SN10P-601JB (MI)
L 903	CP321P43101	TRANS-CHOKE	7101-0297 (MI)
L 905	CP410P01203	BEAD-FERRITE	FBR07VB850

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
L 906	CP410D00202	CORE-FERRITE	ZBF503D-00
L 907	CP410P01203	BEAD-FERRITE	FBR07VB850
L 961	CP321P03105	COIL-RF	47MH-K 470 SO
L 971	CP321P03105	COIL-RF	47MH-K 470 SO
	CP409B03101	COIL-SET	NSV1107K (MT)
	CP410D01304	CORE-FERRITE	3A4 TR-23-11-14
	CP452P25301	NOISE-FILTER	SUP-L3G-E-3B TFA1105U (MT)
*** TRANSISTOR ***			
Q 100	CP260P48801	TRANSISTOR	KRA107M
Q 1A1	CP260P47001	FET-CHIP	SI3457DV
Q 1A2	CP260P47001	FET-CHIP	SI3457DV
Q 1A3	CP260P47001	FET-CHIP	SI3457DV
Q 250B	CP260P49201	TRANSISTOR	2SD2651TZ
Q 250G	CP260P49201	TRANSISTOR	2SD2651TZ
Q 250R	CP260P49201	TRANSISTOR	2SD2651TZ
Q 251B	CP260P49101	TRANSISTOR	2SB1688TZ
Q 251G	CP260P49101	TRANSISTOR	2SB1688TZ
Q 251R	CP260P49101	TRANSISTOR	2SB1688TZ
Q 260	CP260P49401	TR-CHIP	DTC114WUA
Q 280	CP260P49501	TR-CHIP	DTA114EUA
Q 501	CP260P32501	MOS-FET	2SK2292
Q 502	CP260P43105	TRANSISTOR	2SC5516005M1
Q 503	CP260P33402	TRANSISTOR	ET453MR-F143
Q 504	CP260P42302	MOS-FET	2SJ512-LB107
Q 510	CP260P30801	MOS-FET	2SK1088-MR-F1111
Q 540	CP260P47901	TRANSISTOR	KTC2026-Y
Q 560	CP260P59701	MOS-FET-CHIP	2SK1581
Q 561	CP260P45401	TRANSISTOR-CHIP	C2412K-R,S/C3928A-R,
Q 562	CP260P45501	TRANSISTOR-CHIP	A1037K-R,S/A1530A-R,114-3/330-4
Q 5A1	CP260P47901	TRANSISTOR	KTC2026-Y
Q 5A2	CP260P48001	TRANSISTOR	KTA1046-Y
Q 5L1	CP260P42201	TRANSISTOR-CHIP	KRC102S
Q 601	CP260P45701	TRANSISTOR-CHIP	DTC124EK/RT1N241C319
Q 602	CP260P45401	TRANSISTOR-CHIP	C2412K-R,S/C3928A-R,
Q 603	CP260P45701	TRANSISTOR-CHIP	DTC124EK/RT1N241C319
Q 604	CP260P45701	TRANSISTOR-CHIP	DTC124EK/RT1N241C319
Q 605	CP260P45501	TRANSISTOR-CHIP	A1037K-R,S/A1530A-R,114-3/330-4
Q 701	CP260P38402	MOS-FET	2SK2645-01MR-F111
Q 7A1	CP260P41901	TRANSISTOR	2SC4620
Q 7B1	CP260P41701	TRANSISTOR	KTC4370-Y
Q 7B2	CP260P41801	TRANSISTOR	KTA1659-Y
Q 7B3	CP260P13801	TRANSISTOR	2SC2240-GR
Q 7B4	CP260P42401	TRANSISTOR	2SA970-GR
Q 7B5	CP260P36701	TRANSISTOR	2SC3200GR-AT
Q 901	CP260P46401	MOS-FET	2SK2148 FORMING
Q 902	CP260P46101	TRANSISTOR	KRA224M
Q 903	CP260P42201	TRANSISTOR-CHIP	KRC102S
Q 904	CP260P46201	TRANSISTOR-CHIP	KRA107S
Q 905	CP260P45401	TRANSISTOR-CHIP	C2412K-R,S/C3928A-R,
Q 961	CP260P46201	TRANSISTOR-CHIP	KRA107S
Q 962	CP260P36801	TRANSISTOR	KRC102M-AT
Q 963	CP260P46301	TRANSISTOR	KRC105M
Q 966	CP260P01202	TRANSISTOR	2SA1020-Y
Q 967	CP260P36801	TRANSISTOR	KRC102M-AT
*** RESISTOR ***			
D 5J4	CP103P06402	R-METAL-S	1/4W 510-F
L 1A0	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
L 1A1	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
R 101	QX103P41303	R-CARBON	1/4W 4.7K-J 472 RD-H
R 102	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 103	CP103P10400	R-CARBON-CHIP	1/10W 10K-J

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION		
R 105	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 106	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 107	CP103P06303	R-METAL-S	1/4W 220-F	221 RN-H
R 108	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 109	QX103P41303	R-CARBON	1/4W 4.7K-J	472 RD-H
R 110	QX103P41109	R-CARBON	1/4W 330-J	331 RD-H
R 111	CP103P11402	R-CARBON-CHIP	1/10W 15K-F	
R 112	CP103P11406	R-CARBON-CHIP	1/10W 33K-F	
R 113	CP103P06703	R-METAL-S	1/4W 10K-F	103 RN-H
R 114	CP103P06801	R-METAL-S	1/4W 22K-F 223RN-H	
R 115	CP103P11400	R-CARBON-CHIP	1/10W 10K-F	
R 116	CP103P11400	R-CARBON-CHIP	1/10W 10K-F	
R 117	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 118	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 119	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 120	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 121	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 122	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 123	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 124	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 125	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 127	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 128	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 129	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 130	QX103P41103	R-CARBON	1/4W 100-J	101 RD-H
R 131	QX103P41103	R-CARBON	1/4W 100-J	101 RD-H
R 132	QX103P41103	R-CARBON	1/4W 100-J	101 RD-H
R 133	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 135	CP103P11307	R-CARBON-CHIP	1/10W 5.6K-F	
R 136	CP103P11300	R-CARBON-CHIP	1/10W 1.5K-F	
R 137	CP103P11400	R-CARBON-CHIP	1/10W 10K-F	
R 138	CP103P11502	R-CARBON-CHIP	1/10W 100K-F	
R 139	CP103P10604	R-CARBON-CHIP	1/10W 1.0M-J	
R 140	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 141	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 142	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 143	CP103P11302	R-CARBON-CHIP	1/10W 2.2K-F	
R 145	CP103P10106	R-CARBON-CHIP	1/10W 100-J	
R 146	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER	
R 147	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER	
R 148	CP103P11600	R-CARBON-CHIP	1/10W 470K-F	
R 149	CP103P11808	R-CARBON-CHIP	1/10W 240K-F	
R 151	CP103P11306	R-CARBON-CHIP	1/10W 4.7K-F	
R 152	CP103P11309	R-CARBON-CHIP	1/10W 8.2K-F	
R 153	CP103P10106	R-CARBON-CHIP	1/10W 100-J	
R 154	CP103P10106	R-CARBON-CHIP	1/10W 100-J	
R 155	QX103P41103	R-CARBON	1/4W 100-J	101 RD-H
R 156	CP103P10106	R-CARBON-CHIP	1/10W 100-J	
R 157	CP103P10106	R-CARBON-CHIP	1/10W 100-J	
R 158	CP103P10300	R-CARBON-CHIP	1/10W 1.5K-J	
R 159	CP103P10204	R-CARBON-CHIP	1/10W 470-J	
R 160	QX103P41103	R-CARBON	1/4W 100-J	101 RD-H
R 161	QX103P41103	R-CARBON	1/4W 100-J	101 RD-H
R 162	QX103P41302	R-CARBON	1/4W 3.9K-J	392 RD-H
R 163	QX103P41302	R-CARBON	1/4W 3.9K-J	392 RD-H
R 164	CP103P10101	R-CARBON-CHIP	1/10W 39-J	
R 165	CP103P10004	R-CARBON-CHIP	1/10W 10-J	
R 166	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 167	CP103P10408	R-CARBON-CHIP	1/10W 47K-J	
R 168	CP103P10106	R-CARBON-CHIP	1/10W 100-J	
R 169	QX103P41103	R-CARBON	1/4W 100-J	101 RD-H

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
R 170	CP103P10106	R-CARBON-CHIP	1/10W 100-J
R 171	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 172	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 173	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 174	QX103P41205	R-CARBON	1/4W 1K-J 102 RD-H
R 175	CP103P10300	R-CARBON-CHIP	1/10W 1.5K-J
R 178	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 179	CP103P10102	R-CARBON-CHIP	1/10W 47-J
R 180	CP103P10102	R-CARBON-CHIP	1/10W 47-J
R 181	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 188	QX103P41307	R-CARBON	1/4W 10K-J 103 RD-H
R 189	QX103P41307	R-CARBON	1/4W 10K-J 103 RD-H
R 190	QX103P41001	R-CARBON	1/4W 10-J 100 RD-H
R 195	QX330H50909	SO-COPPER-WIRE	030N001 0.6
R 1A0	CP103P10502	R-CARBON-CHIP	1/10W 100K-J
R 1A1	CP103P10604	R-CARBON-CHIP	1/10W 1.0M-J
R 1A2	CP103P10502	R-CARBON-CHIP	1/10W 100K-J
R 1A3	QX103P41207	R-CARBON	1/4W 1.5K-J 152 RD-H
R 1A4	CP103P10009	R-CARBON-CHIP	1/10W 27-J
R 1A5	CP103P10009	R-CARBON-CHIP	1/10W 27-J
R 1A6	QX103P41005	R-CARBON	1/4W 22-J 220 RD-H
R 1A7	QX103P41005	R-CARBON	1/4W 22-J 220 RD-H
R 1A8	CP103P10009	R-CARBON-CHIP	1/10W 27-J
R 1A9	CP103P10009	R-CARBON-CHIP	1/10W 27-J
R 1B0	CP103P10402	R-CARBON-CHIP	1/10W 15K-J
R 1B1	CP103P10402	R-CARBON-CHIP	1/10W 15K-J
R 1B2	CP103P10402	R-CARBON-CHIP	1/10W 15K-J
R 1B3	CP103P10402	R-CARBON-CHIP	1/10W 15K-J
R 1B5	CP103P10009	R-CARBON-CHIP	1/10W 27-J
R 1B6	CP103P10009	R-CARBON-CHIP	1/10W 27-J
R 1B7	CP103P10402	R-CARBON-CHIP	1/10W 15K-J
R 1B8	CP103P10402	R-CARBON-CHIP	1/10W 15K-J
R 1B9	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
R 1C0	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 1C2	CP103P10306	R-CARBON-CHIP	1/10W 4.7K-J
R 1C3	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
R 1C4	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 1C5	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 1C6	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 1C7	CP103P10502	R-CARBON-CHIP	1/10W 100K-J
R 1D0	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
R 1D1	CP103P10307	R-CARBON-CHIP	1/10W 5.6K-J
R 1D2	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 1D3	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 1D4	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 1X2	CP103P06409	R-METAL-S	1/4W 1K-F 102 RN-H
R 1X3	CP103P06402	R-METAL-S	1/4W 510-F
R 1X4	CP103P06409	R-METAL-S	1/4W 1K-F 102 RN-H
R 1X5	CP103P06509	R-METAL-S	1/4W 2.7K-F 272 RN-H
R 1X6	CP103P06408	R-METAL-S	1/4W 910-F 911 RN-H
R 1X7	CP103P06307	R-METAL-S	1/4W 330-F 331 RN-H
R 1X8	CP103P06509	R-METAL-S	1/4W 2.7K-F 272 RN-H
R 200B	CP103P41007	R-CARBON	1/2W 33-J
R 200G	CP103P41007	R-CARBON	1/2W 33-J
R 200R	CP103P41007	R-CARBON	1/2W 33-J
R 203H	CP103P41801	R-CARBON	1/2W 1.2-J
R 205S	CP103P41107	R-CARBON	1/2W 220-J
R 210B	CP103P41100	R-CARBON	1/2W 56-J
R 210G	CP103P41101	R-CARBON	1/2W 68-J
R 210R	CP103P41100	R-CARBON	1/2W 56-J
R 211B	QX103P41105	R-CARBON	1/4W 150-J 151 RD-H

All Parts List

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION		
R 211G	QX103P41105	R-CARBON	1/4W 150-J	151 RD-H
R 211R	QX103P41105	R-CARBON	1/4W 150-J	151 RD-H
R 212B	CP103P10202	R-CARBON-CHIP	1/10W 330-J	
R 212G	CP103P10202	R-CARBON-CHIP	1/10W 330-J	
R 212R	CP103P10202	R-CARBON-CHIP	1/10W 330-J	
R 220B	CP103P51004	R-METAL-CHIP	1/8W 10-J	3.2X1.6
R 220G	CP103P51004	R-METAL-CHIP	1/8W 10-J	3.2X1.6
R 220R	CP103P51004	R-METAL-CHIP	1/8W 10-J	3.2X1.6
R 222B	CP103P10104	R-CARBON-CHIP	1/10W 68-J	
R 222G	CP103P10104	R-CARBON-CHIP	1/10W 68-J	
R 222R	CP103P10104	R-CARBON-CHIP	1/10W 68-J	
R 223B	CP103P10004	R-CARBON-CHIP	1/10W 10-J	
R 223G	CP103P10004	R-CARBON-CHIP	1/10W 10-J	
R 223R	CP103P10004	R-CARBON-CHIP	1/10W 10-J	
R 224B	CP103P48204	R-METAL-CHIP	1/4W 75-F	
R 224G	CP103P48204	R-METAL-CHIP	1/4W 75-F	
R 224R	CP103P48204	R-METAL-CHIP	1/4W 75-F	
R 240B	CP103P10004	R-CARBON-CHIP	1/10W 10-J	
R 240G	CP103P10004	R-CARBON-CHIP	1/10W 10-J	
R 240R	CP103P10004	R-CARBON-CHIP	1/10W 10-J	
R 241B	CP103P48204	R-METAL-CHIP	1/4W 75-F	
R 241G	CP103P48204	R-METAL-CHIP	1/4W 75-F	
R 241R	CP103P48204	R-METAL-CHIP	1/4W 75-F	
R 250B	QX103P41502	R-CARBON	1/4W 180K-J	184 RD-H
R 250G	QX103P41502	R-CARBON	1/4W 180K-J	184 RD-H
R 250R	QX103P41502	R-CARBON	1/4W 180K-J	184 RD-H
R 251B	QX103P41500	R-CARBON	1/4W 120K-J	124 RD-H
R 251G	QX103P41500	R-CARBON	1/4W 120K-J	124 RD-H
R 251R	QX103P41500	R-CARBON	1/4W 120K-J	124 RD-H
R 252B	QX103P41401	R-CARBON	1/4W 22K-J	223 RD-H
R 252G	QX103P41401	R-CARBON	1/4W 22K-J	223 RD-H
R 252R	QX103P41401	R-CARBON	1/4W 22K-J	223 RD-H
R 253B	CP103P10004	R-CARBON-CHIP	1/10W 10-J	
R 253G	CP103P10004	R-CARBON-CHIP	1/10W 10-J	
R 253R	CP103P10004	R-CARBON-CHIP	1/10W 10-J	
R 254B	CP103P11703	R-CARBON-CHIP	1/10W 24K-F	
R 254G	CP103P11703	R-CARBON-CHIP	1/10W 24K-F	
R 254R	CP103P11703	R-CARBON-CHIP	1/10W 24K-F	
R 255B	CP103P11702	R-CARBON-CHIP	1/10W 20K-F	
R 255G	CP103P11702	R-CARBON-CHIP	1/10W 20K-F	
R 255R	CP103P11702	R-CARBON-CHIP	1/10W 20K-F	
R 256B	CP103P10306	R-CARBON-CHIP	1/10W 4.7K-J	
R 256G	CP103P10306	R-CARBON-CHIP	1/10W 4.7K-J	
R 256R	CP103P10306	R-CARBON-CHIP	1/10W 4.7K-J	
R 257B	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 257G	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 257R	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	
R 260	CP103P11308	R-CARBON-CHIP	1/10W 6.8K-F	
R 261	CP103P06609	R-METAL-S	1/4W 6.8K-F 682 RN-H	
R 263	CP103P11404	R-CARBON-CHIP	1/10W 22K-F	
R 264	CP103P11308	R-CARBON-CHIP	1/10W 6.8K-F	
R 265	CP103P10106	R-CARBON-CHIP	1/10W 100-J	
R 266	CP103P10106	R-CARBON-CHIP	1/10W 100-J	
R 267	CP103P11404	R-CARBON-CHIP	1/10W 22K-F	
R 268	CP103P11702	R-CARBON-CHIP	1/10W 20K-F	
R 269	CP103P10106	R-CARBON-CHIP	1/10W 100-J	
R 271	CP103P10308	R-CARBON-CHIP	1/10W 6.8K-J	
R 272	CP103P10401	R-CARBON-CHIP	1/10W 12K-J	
R 273	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 274	QX103P41307	R-CARBON	1/4W 10K-J	103 RD-H
R 275	CP103P10400	R-CARBON-CHIP	1/10W 10K-J	

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
R 282	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 283	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 284	CP103P10604	R-CARBON-CHIP	1/10W 1.0M-J
R 285	QX103P41009	R-CARBON	1/4W 47-J 470 RD-H
R 286	QX103P41303	R-CARBON	1/4W 4.7K-J 472 RD-H
R 289	CP103P10306	R-CARBON-CHIP	1/10W 4.7K-J
R 290	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
R 291	CP103P11106	R-CARBON-CHIP	1/10W 100-F
R 292	CP103P11108	R-CARBON-CHIP	1/10W 150-F
R 293	CP103P10202	R-CARBON-CHIP	1/10W 330-J
R 2A1	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
R 2A2	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
R 2A4	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 2C0	CP103P10106	R-CARBON-CHIP	1/10W 100-J
R 2C1	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 2C2	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 2C3	CP103P10408	R-CARBON-CHIP	1/10W 47K-J
R 2C4	CP103P10004	R-CARBON-CHIP	1/10W 10-J
R 2C5	CP103P10106	R-CARBON-CHIP	1/10W 100-J
R 2D0	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 2D1	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 2D2	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 2D3	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 2D4	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 2D5	CP103P10004	R-CARBON-CHIP	1/10W 10-J
R 2D6	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 2D7	CP103P10106	R-CARBON-CHIP	1/10W 100-J
R 2D8	QX103P41307	R-CARBON	1/4W 10K-J 103 RD-H
R 2E0	CP103P10004	R-CARBON-CHIP	1/10W 10-J
R 2E1	QX103P41201	R-CARBON	1/4W 470-J 471 RD-H
R 2E2	QX103P41201	R-CARBON	1/4W 470-J 471 RD-H
R 2E3	CP103P11507	R-CARBON-CHIP	1/10W 270K-F
R 2E4	CP103P11307	R-CARBON-CHIP	1/10W 5.6K-F
R 2E5	CP103P10309	R-CARBON-CHIP	1/10W 8.2K-J
R 2E6	QX103P41201	R-CARBON	1/4W 470-J 471 RD-H
R 2H0	CP103P14507	R-METAL-CHIP	1/8W 2.2K-F 3.2X1.6
R 2H1	CP103P10102	R-CARBON-CHIP	1/10W 47-J
R 2H5	CP103P14507	R-METAL-CHIP	1/8W 2.2K-F 3.2X1.6
R 2H6	CP103P10102	R-CARBON-CHIP	1/10W 47-J
R 2H8	CP103P10102	R-CARBON-CHIP	1/10W 47-J
R 2H9	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
R 2L0	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 2L1	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 2V0	CP103P14507	R-METAL-CHIP	1/8W 2.2K-F 3.2X1.6
R 2V1	QX103P41009	R-CARBON	1/4W 47-J 470 RD-H
R 2V2	CP103P10306	R-CARBON-CHIP	1/10W 4.7K-J
R 2V5	CP103P14507	R-METAL-CHIP	1/8W 2.2K-F 3.2X1.6
R 2V6	CP103P10102	R-CARBON-CHIP	1/10W 47-J
R 2V8	CP103P10102	R-CARBON-CHIP	1/10W 47-J
R 2V9	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
R 2W0	CP103P10106	R-CARBON-CHIP	1/10W 100-J
R 2W1	CP103P10106	R-CARBON-CHIP	1/10W 100-J
R 2W2	QX103P41001	R-CARBON	1/4W 10-J 100 RD-H
R 2W3	QX103P41001	R-CARBON	1/4W 10-J 100 RD-H
R 2W4	CP103P10308	R-CARBON-CHIP	1/10W 6.8K-J
R 2W5	CP103P10308	R-CARBON-CHIP	1/10W 6.8K-J
R 403	CP104P11109	R-METAL	1W 270-J
R 404	QX103P41800	R-CARBON	1/4W 1-J 010 RD-H
R 405	CP103P06608	R-METAL-S	1/4W 6.2K-F 622 RN-H (DH)
R 406	CP103P11307	R-CARBON-CHIP	1/10W 5.6K-F
R 407	CP103P06605	R-METAL-S	1/4W 4.7K-F 472RN-H

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
R 408	CP103P06603	R-METAL-S	1/4W 3.9K-F 392 RN-H (DH)
R 409	CP103P06607	R-METAL-S	1/4W 5.6K-F 562 RN-H
R 410	CP104P30301	R-METAL	2W 0.56-F
R 411	CP103P11605	R-CARBON-CHIP	1/10W 6.2K-F
R 417	CP103P41203	R-CARBON	1/2W 680-J
R 418	QX330H50909	SO-COPPER-WIRE	030N001 0.6
R 419	QX330H50909	SO-COPPER-WIRE	030N001 0.6
R 501	QX103P41105	R-CARBON	1/4W 150-J 151 RD-H
R 502	QX103P41205	R-CARBON	1/4W 1K-J 102 RD-H
R 503	CP104P36800	R-FUSE	1/2W 1-J FMR
R 504	CP104P11104	R-METAL	1W 100-J
R 505	CP103P33809	R-METAL	3W 5.6-J RHU
R 506	CP103P33809	R-METAL	3W 5.6-J RHU
R 507	CP103P33704	R-METAL	3W 0.33-J RHU
R 508	CP104P11006	R-METAL	1W 27-J
R 509	CP103P33809	R-METAL	3W 5.6-J RHU
R 510	CP104P36300	R-FUSE	1/2W 2.7K-J FMR
R 511	QX103P41505	R-CARBON	1/4W 330K-J 334 RD-H
R 512	QX103P41303	R-CARBON	1/4W 4.7K-J 472 RD-H
R 513	QX103P41105	R-CARBON	1/4W 150-J 151 RD-H
R 515	CP103P33808	R-METAL	3W 4.7-J RHV
R 519	CP103P33809	R-METAL	3W 5.6-J RHU
R 520	CP103P41007	R-CARBON	1/2W 33-J
R 521	CP103P41009	R-CARBON	1/2W 47-J
R 522	CP103P41101	R-CARBON	1/2W 68-J
R 523	QX103P41409	R-CARBON	1/4W 100K-J 104 RD-H
R 524	QX103P41409	R-CARBON	1/4W 100K-J 104 RD-H
R 525	QX103P41409	R-CARBON	1/4W 100K-J 104 RD-H
R 526	QX103P41409	R-CARBON	1/4W 100K-J 104 RD-H
R 527	QX103P41409	R-CARBON	1/4W 100K-J 104 RD-H
R 528	QX103P41409	R-CARBON	1/4W 100K-J 104 RD-H
R 529	QX103P41409	R-CARBON	1/4W 100K-J 104 RD-H
R 530	QX103P41107	R-CARBON	1/4W 220-J 221 RD-H
R 531	QX103P41107	R-CARBON	1/4W 220-J 221 RD-H
R 532	QX103P41107	R-CARBON	1/4W 220-J 221 RD-H
R 533	QX103P41107	R-CARBON	1/4W 220-J 221 RD-H
R 534	QX103P41107	R-CARBON	1/4W 220-J 221 RD-H
R 535	QX103P41107	R-CARBON	1/4W 220-J 221 RD-H
R 536	QX103P41107	R-CARBON	1/4W 220-J 221 RD-H
R 540	CP104P11104	R-METAL	1W 100-J
R 541	CP103P33100	R-METAL	3W 56-J RHU
R 542	CP103P33100	R-METAL	3W 56-J RHU
R 543	CP103P41203	R-CARBON	1/2W 680-J
R 550	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 560	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 561	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 562	QX103P41209	R-CARBON	1/4W 2.2K-J 222 RD-H
R 563	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 564	QX103P41004	R-CARBON	1/4W 18-J 180 RD-H
R 5A3	QX103P41201	R-CARBON	1/4W 470-J 471 RD-H
R 5A4	QX103P41201	R-CARBON	1/4W 470-J 471 RD-H
R 5J1	CP103P11503	R-CARBON-CHIP	1/10W 120K-F
R 5J2	CP103P06609	R-METAL-S	1/4W 6.8K-F 682 RN-H
R 5J3	CP103P11403	R-CARBON-CHIP	1/10W 18K-F
R 5J4	CP103P11502	R-CARBON-CHIP	1/10W 100K-F
R 5J5	QX330H50909	SO-COPPER-WIRE	030N001 0.6
R 5K1	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 5K7	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 5K9	QX103P41905	R-CARBON	1/4W 0OHM
R 5L1	CP103P11501	R-CARBON-CHIP	1/10W 82K-F
R 5L3	CP103P10106	R-CARBON-CHIP	1/10W 100-J

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
R 5L4	CP103P11706	R-CARBON-CHIP	1/10W 7.5K-F
R 5L5	QX103P41405	R-CARBON	1/4W 47K-J 473 RD-H
R 5L6	CP103P07001	R-METAL-S	1/4W 100K-F 104 RN-H
R 5L7	QX103P41401	R-CARBON	1/4W 22K-J 223 RD-H
R 5L8	CP103P10408	R-CARBON-CHIP	1/10W 47K-J
R 5L9	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 5M1	CP103P10407	R-CARBON-CHIP	1/10W 39K-J
R 5M2	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 602	CP103P49100	R-CHIP	1/16W 33-J
R 603	CP103P49100	R-CHIP	1/16W 33-J
R 604	CP103P49200	R-CHIP	1/16W 220-J
R 605	CP103P49004	R-CHIP	1/16W 10-J
R 606	CP103P49200	R-CHIP	1/16W 220-J
R 607	CP103P49200	R-CHIP	1/16W 220-J
R 608	CP103P49200	R-CHIP	1/16W 220-J
R 609	CP103P49406	R-CHIP	1/16W 33K-J
R 610	CP103P49400	R-CHIP	1/16W 10K-J
R 611	CP103P49406	R-CHIP	1/16W 33K-J
R 612	CP103P49406	R-CHIP	1/16W 33K-J
R 614	CP103P49208	R-CHIP	1/16W 1.0K-J
R 615	CP103P49400	R-CHIP	1/16W 10K-J
R 616	CP103P49400	R-CHIP	1/16W 10K-J
R 617	CP103P49406	R-CHIP	1/16W 33K-J
R 618	CP103P49308	R-CHIP	1/16W 6.8K-J
R 619	CP103P49208	R-CHIP	1/16W 1.0K-J
R 620	CP104P00606	R-CHIP	1/16W 5.1K-F 1.6X0.8
R 621	CP103P49208	R-CHIP	1/16W 1.0K-J
R 622	CP103P49208	R-CHIP	1/16W 1.0K-J
R 623	CP103P49701	R-CHIP	1/16W 0 JUMPER
R 624	CP103P49004	R-CHIP	1/16W 10-J
R 625	CP103P49208	R-CHIP	1/16W 1.0K-J
R 626	CP103P49208	R-CHIP	1/16W 1.0K-J
R 627	CP103P49306	R-CHIP	1/16W 4.7K-J
R 628	CP103P49208	R-CHIP	1/16W 1.0K-J
R 629	CP104P00408	R-CHIP	1/16W 910-F 1.6X0.8
R 630	CP103P49606	R-CHIP	1/16W 1.5M-J
R 631	CP103P49206	R-CHIP	1/16W 680-J
R 632	CP103P49208	R-CHIP	1/16W 1.0K-J
R 633	CP104P00406	R-CHIP	1/16W 750-F 1.6X0.8
R 634	CP104P00202	R-CHIP	1/16W 75-F 1.6X0.8
R 635	CP103P49502	R-CHIP	1/16W 100K-J
R 636	CP103P49102	R-CHIP	1/16W 47-J
R 637	CP104P00403	R-CHIP	1/16W 560-F 1.6X0.8
R 638	CP103P49200	R-CHIP	1/16W 220-J
R 639	CP103P49200	R-CHIP	1/16W 220-J
R 640	CP103P49200	R-CHIP	1/16W 220-J
R 641	CP103P49200	R-CHIP	1/16W 220-J
R 642	CP104P00703	R-CHIP	1/16W 10K-F 1.6X0.8
R 643	CP104P00409	R-CHIP	1/16W 1K-F 1.6X0.8
R 644	CP104P00405	R-CHIP	1/16W 680-F 1.6X0.8
R 645	CP104P01009	R-CHIP	1/16W 220K-F 1.6X0.8
R 646	CP104P00703	R-CHIP	1/16W 10K-F 1.6X0.8
R 647	CP104P01201	R-CHIP	1/16W 680K-F 1.6X0.8
R 648	CP104P01300	R-CHIP	1/16W 1.6M-F 1.6X0.8
R 649	CP104P01205	R-CHIP	1/16W 1M-F 1.6X0.8
R 650	CP104P00809	R-CHIP	1/16W 47K-F 1.6X0.8
R 651	CP104P00809	R-CHIP	1/16W 47K-F 1.6X0.8
R 652	CP104P00809	R-CHIP	1/16W 47K-F 1.6X0.8
R 653	CP104P00809	R-CHIP	1/16W 47K-F 1.6X0.8
R 654	CP104P00507	R-CHIP	1/16W 2.2K-F 1.6X0.8
R 655	CP104P00507	R-CHIP	1/16W 2.2K-F 1.6X0.8

All Parts List

MODEL NO. Diamond Pro 2060u (NSZ2107STTUW)

SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
R 656	CP104P00301	R-CHIP	1/16W 180-F 1.6X0.8
R 657	CP104P00705	R-CHIP	1/16W 12K-F 1.6X0.8
R 658	CP104P00809	R-CHIP	1/16W 47K-F 1.6X0.8
R 659	CP103P49308	R-CHIP	1/16W 6.8K-J
R 660	CP103P49308	R-CHIP	1/16W 6.8K-J
R 661	CP103P49305	R-CHIP	1/16W 3.9K-J
R 662	CP103P49305	R-CHIP	1/16W 3.9K-J
R 6A1	CP103P10305	R-CARBON-CHIP	1/10W 3.9K-J
R 6A2	CP103P10405	R-CARBON-CHIP	1/10W 27K-J
R 6A3	CP103P06707	R-METAL-S	1/4W 15K-F 153 RN-H
R 6A4	CP103P06705	R-METAL-S	1/4W 12K-F 123 RN-H
R 6A5	CP103P11501	R-CARBON-CHIP	1/10W 82K-F
R 6A6	CP103P10405	R-CARBON-CHIP	1/10W 27K-J
R 6A7	CP103P06707	R-METAL-S	1/4W 15K-F 153 RN-H
R 6A8	CP103P06707	R-METAL-S	1/4W 15K-F 153 RN-H
R 6A9	CP103P10305	R-CARBON-CHIP	1/10W 3.9K-J
R 6B1	CP103P06707	R-METAL-S	1/4W 15K-F 153 RN-H
R 6B2	CP103P11800	R-CARBON-CHIP	1/10W 43K-F
R 6B3	QX103P41307	R-CARBON	1/4W 10K-J 103 RD-H
R 6B4	CP103P06705	R-METAL-S	1/4W 12K-F 123 RN-H
R 6B5	CP103P11501	R-CARBON-CHIP	1/10W 82K-F
R 6B6	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 6B7	CP103P06708	R-METAL-S	1/4W 16K-F 163 RN-H
R 6B8	CP103P06801	R-METAL-S	1/4W 22K-F 223RN-H
R 6B9	CP103P11502	R-CARBON-CHIP	1/10W 100K-F
R 6C1	CP103P11800	R-CARBON-CHIP	1/10W 43K-F
R 6C2	CP103P11400	R-CARBON-CHIP	1/10W 10K-F
R 6C3	CP103P11405	R-CARBON-CHIP	1/10W 27K-F
R 6C4	CP103P11401	R-CARBON-CHIP	1/10W 12K-F
R 6C5	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 6C6	CP103P11407	R-CARBON-CHIP	1/10W 39K-F
R 6C7	CP103P10400	R-CARBON-CHIP	1/10W 10K-F
R 6C8	CP103P11703	R-CARBON-CHIP	1/10W 24K-F
R 6C9	CP103P10302	R-CARBON-CHIP	1/10W 2.2K-J
R 6D1	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 6D2	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 6D3	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 6D4	CP103P10204	R-CARBON-CHIP	1/10W 470-J
R 6D5	CP103P10103	R-CARBON-CHIP	1/10W 56-J
R 6D6	CP103P10106	R-CARBON-CHIP	1/10W 100-J
R 6D7	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 701	CP103P33100	R-METAL	3W 56-J RHU
R 702	CP103P33100	R-METAL	3W 56-J RHU
R 703	CP103P10103	R-CARBON-CHIP	1/10W 56-J
R 704	QX103P41307	R-CARBON	1/4W 10K-J 103 RD-H
R 705	CP103P41302	R-CARBON	1/2W 3.9K-J
R 706	CP104P12702	R-METAL	2W 0.22-J
R 707	CP104P12703	R-METAL	2W 0.27-J
R 708	CP103P06803	R-METAL-S	1/4W 27K-F 273 RN-H
R 709	CP103P06605	R-METAL-S	1/4W 4.7K-F 472RN-H
R 710	CP103P11502	R-CARBON-CHIP	1/10W 100K-F
R 711	QX103P41205	R-CARBON	1/4W 1K-J 102 RD-H
R 712	QX103P41205	R-CARBON	1/4W 1K-J 102 RD-H
R 713	CP103P06900	R-METAL-S	1/4W 51K-F
R 714	QX103P41300	R-CARBON	1/4W 2.7K-J 272 RD-H
R 715	QX103P41304	R-CARBON	1/4W 5.6K-J 562 RD-H
R 716	CP103P06808	R-METAL-S	1/4W 43K-F 433 RN-H
R 717	CP103P11304	R-CARBON-CHIP	1/10W 3.3K-F
R 718	CP103P11306	R-CARBON-CHIP	1/10W 4.7K-F
R 719	QX103P41307	R-CARBON	1/4W 10K-J 103 RD-H
R 720	CP103P10400	R-CARBON-CHIP	1/10W 10K-J

MODEL NO. Diamond Pro 2060u (NSZ2107STTUW)

SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
R 722	CP103P06604	R-METAL-S	1/4W 4.3K-F 432 RN-H
R 723	CP103P11501	R-CARBON-CHIP	1/10W 82K-F
R 724	CP103P11407	R-CARBON-CHIP	1/10W 39K-F
R 725	CP103P11502	R-CARBON-CHIP	1/10W 100K-F
R 726	CP103P11509	R-CARBON-CHIP	1/10W 390K-F
R 727	CP103P11503	R-CARBON-CHIP	1/10W 120K-F
R 728	CP103P06805	R-METAL-S	1/4W 33K-F 333RN-H
R 730	CP103P06801	R-METAL-S	1/4W 22K-F 223RN-H
R 735	CP103P10302	R-CARBON-CHIP	1/10W 2.2K-J
R 736	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 737	CP103P10606	R-CARBON-CHIP	1/10W 1.5M-J
R 738	CP104P05002	R-CARBON	1/4W 1.5M-J
R 739	CP103P33100	R-METAL	3W 56-J RHU
R 741	QX103P39800	R-FUSE	1/2W 1.0-J 010RNF-H
R 7A1	QX330H50909	SO-COPPER-WIRE	030N001 0.6
R 7A2	CP103P46205	R-SURGE	1/2W 3.3K-J
R 7A3	CP103P41505	R-CARBON	1/2W 330K-J
R 7A4	CP103P06701	R-METAL-S	1/4W 8.2K-F 822 RN-H
R 7A5	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 7A6	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 7B1	CP104P35001	R-FUSE	1/4W 10-J FMR
R 7B2	CP103P41004	R-CARBON	1/2W 18-J
R 7B5	CP104P35201	R-FUSE	1/4W 470-J FOR
R 7B6	CP104P11401	R-METAL	1W 10K-J
R 7B7	CP103P11208	R-CARBON-CHIP	1/10W 1.0K-F
R 7B9	CP103P10106	R-CARBON-CHIP	1/10W 100-J
R 802	CP103P11708	R-CARBON-CHIP	1/10W 30K-F
R 803	CP103P11404	R-CARBON-CHIP	1/10W 22K-F
R 809	CP103P11601	R-CARBON-CHIP	1/10W 560K-F
R 811	CP103P11601	R-CARBON-CHIP	1/10W 560K-F
R 813	CP103P11601	R-CARBON-CHIP	1/10W 560K-F
R 817	CP103P07001	R-METAL-S	1/4W 100K-F 104 RN-H
R 818	CP103P11601	R-CARBON-CHIP	1/10W 560K-F
R 820	CP103P07001	R-METAL-S	1/4W 100K-F 104 RN-H
R 823	CP103P11507	R-CARBON-CHIP	1/10W 270K-F
R 825	CP103P07001	R-METAL-S	1/4W 100K-F 104 RN-H
R 826	CP103P10502	R-CARBON-CHIP	1/10W 100K-J
R 827	CP103P33102	R-METAL	3W 82-J RHU
R 828	CP103P11502	R-CARBON-CHIP	1/10W 100K-F
R 829	CP103P11601	R-CARBON-CHIP	1/10W 560K-F
R 831	CP103P11502	R-CARBON-CHIP	1/10W 100K-F
R 832	CP103P07001	R-METAL-S	1/4W 100K-F 104 RN-H
R 833	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 8A2	CP103P11304	R-CARBON-CHIP	1/10W 3.3K-F
R 8A3	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 8A4	CP103P10308	R-CARBON-CHIP	1/10W 6.8K-J
R 8A5	CP103P10308	R-CARBON-CHIP	1/10W 6.8K-J
R 8A6	CP103P33804	R-METAL	3W 2.2-J RHU
R 8A7	CP104P12102	R-METAL	2W 68-J
R 8A9	CP104P12102	R-METAL	2W 68-J
R 8B1	CP103P11304	R-CARBON-CHIP	1/10W 3.3K-F
R 8B2	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 8B3	CP103P10308	R-CARBON-CHIP	1/10W 6.8K-J
R 8B4	CP103P10308	R-CARBON-CHIP	1/10W 6.8K-J
R 8B7	CP103P33800	R-METAL	3W 1-J RHU
R 903	CP103P46501	R-SURGE	1/2W 470K-J
R 904	CP103P07107	R-METAL-S	1/4W 470K-F 474 RN-H
R 905	CP103P07107	R-METAL-S	1/4W 470K-F 474 RN-H
R 906	CP103P11506	R-CARBON-CHIP	1/10W 220K-F
R 907	CP103P11502	R-CARBON-CHIP	1/10W 100K-F
R 908	CP103P11400	R-CARBON-CHIP	1/10W 10K-F

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
R 909	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 910	CP104P12702	R-METAL	2W 0.22-J
R 911	CP103P10404	R-CARBON-CHIP	1/10W 22K-J
R 912	QX103P41002	R-CARBON	1/4W 12-J 120 RD-H
R 913	CP103P07108	R-METAL-S	1/4W 510KF
R 914	CP103P07108	R-METAL-S	1/4W 510KF
R 915	CP103P07108	R-METAL-S	1/4W 510KF
R 916	CP103P11703	R-CARBON-CHIP	1/10W 24K-F
R 917	CP103P11400	R-CARBON-CHIP	1/10W 10K-F
R 918	CP103P07103	R-METAL-S	1/4W 330K-F
R 919	CP103P07103	R-METAL-S	1/4W 330K-F
R 920	CP103P07005	R-METAL-S	1/4W 150K-F 154 RN-H
R 921	CP103P11408	R-CARBON-CHIP	1/10W 47K-F
R 922	CP104P12405	R-METAL	2W 22K-J
R 923	CP104P12405	R-METAL	2W 22K-J
R 924	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 925	CP103P11801	R-CARBON-CHIP	1/10W 2.4K-F
R 926	QX103P41807	R-CARBON	1/4W 3.9-J 3R9 RD-H
R 927	CP103P10206	R-CARBON-CHIP	1/10W 680-J
R 928	CP104P20003	R-CEMENT	2W 0.33-J
R 929	CP103P06601	R-METAL-S	1/4W 3.3K-F
R 930	QX103P41808	R-CARBON	1/4W 4.7-J 4R7 RD-H
R 931	CP104P12709	R-METAL	2W 0.82-J
R 932	CP103P06601	R-METAL-S	1/4W 3.3K-F
R 933	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 934	QX103P41002	R-CARBON	1/4W 12-J 120 RD-H
R 935	QX103P41104	R-CARBON	1/4W 120-J 121 RD-H
R 936	QX103P41203	R-CARBON	1/4W 680-J 681 RD-H
R 937	CP104P12702	R-METAL	2W 0.22-J
R 938	QX103P41108	R-CARBON	1/4W 270-J 271 RD-H
R 939	CP104P12409	R-METAL	2W 47K-J
R 941	CP104P12405	R-METAL	2W 22K-J
R 944	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 946	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 947	QX103P14300	R-CARBON	1/2W 2.7K-J 272 RD-H
R 950	QX103P41503	R-CARBON	1/4W 220K-J 224 RD-H
R 951	QX103P41503	R-CARBON	1/4W 220K-J 224 RD-H
R 952	QX103P41503	R-CARBON	1/4W 220K-J 224 RD-H
R 960	CP103P06900	R-METAL-S	1/4W 51K-F
R 961	CP103P06900	R-METAL-S	1/4W 51K-F
R 962	CP103P06806	R-METAL-S	1/4W 36K-F 363 RN-H (DH)
R 963	CP103P06409	R-METAL-S	1/4W 1K-F 102 RN-H
R 964	CP103P41502	R-CARBON	1/2W 180K-J
R 965	CP103P10306	R-CARBON-CHIP	1/10W 4.7K-J
R 966	QX103P41307	R-CARBON	1/4W 10K-J 103 RD-H
R 967	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 968	QX103P41408	R-CARBON	1/4W 82K-J 823 RD-H
R 969	CP103P10309	R-CARBON-CHIP	1/10W 8.2K-J
R 970	CP103P10401	R-CARBON-CHIP	1/10W 12K-J
R 971	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 972	CP103P10306	R-CARBON-CHIP	1/10W 4.7K-J
R 973	CP103P10306	R-CARBON-CHIP	1/10W 4.7K-J
R 974	QX103P41106	R-CARBON	1/4W 180-J 181 RD-H
R 975	QX103P41205	R-CARBON	1/4W 1K-J 102 RD-H
R 976	CP103P06702	R-METAL-S	1/4W 9.1K-F 912 RN-H (DH)
R 977	CP103P06503	R-METAL-S	1/4W 1.5K-F 152 RN-H
R 978	CP103P06703	R-METAL-S	1/4W 10K-F 103 RN-H
R 979	QX103P41205	R-CARBON	1/4W 1K-J 102 RD-H
R 980	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 981	CP103P41101	R-CARBON	1/2W 68-J
R 984	CP104P11006	R-METAL	1W 27-J

All Parts List

MODEL NO. Diamond Pro 2060u (NSZ2107STTUW)

SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
R 985	CP103P10208	R-CARBON-CHIP	1/10W 1K-J
R 986	CP103P10400	R-CARBON-CHIP	1/10W 10K-J
R 989	QX103P41307	R-CARBON	1/4W 10K-J 103 RD-H
R 990	QX103P41205	R-CARBON	1/4W 1K-J 102 RD-H
R 991	QX103P41307	R-CARBON	1/4W 10K-J 103 RD-H
R 993	QX103P41103	R-CARBON	1/4W 100-J 101 RD-H
R 994	QX330H50909	SO-COPPER-WIRE	030N001 0.6
R 995	QX330H50909	SO-COPPER-WIRE	030N001 0.6
R 996	CP104P11802	R-METAL	1W 1.2-J
R 997	CP103P41402	R-CARBON	1/2W 27K-J
	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
	CP103P10702	R-CARBON-CHIP	1/10W 0 JUMPER
	CP103P51605	R-METAL-CHIP	1/8W 0 JUMPER 3.2X1.6
	CP103P51605	R-METAL-CHIP	1/8W 0 JUMPER 3.2X1.6
***** POSISTOR *****			
RP901	CP265P12001	POSISTOR	PTH451A4R5Q23 (MI)
***** RELAY *****			
RY901	CP287P04401	RELAY	P040-1/P039-1
***** SWITCH *****			
SW1X0	CP432P02801	SW-TACT	KSH0612BT
SW1X1	CP432P02801	SW-TACT	KSH0612BT
SW1X2	CP432P02801	SW-TACT	KSH0612BT
SW1X3	CP432P02801	SW-TACT	KSH0612BT
SW1X6	CP432P02801	SW-TACT	KSH0612BT
SW1X7	CP432P02801	SW-TACT	KSH0612BT
SW1X8	CP432P02801	SW-TACT	KSH0612BT
SW901	CP432P02001	SW-PUSH	ESB92S21B
***** TRANS *****			
T 501	CP336P03301	TRANS-HORIZ-DRIVE	(MI)
T 502	CP332P03503	TRANS-HORIZ-OUT	0133016700 (MI)
T 701	CP334P06701	TRANS-FLYBACK	(MD)
T 7A1	CP409P08701	TRANS-DBF	0133013000 (MI)
T 901	CP350P09701	TRANS-POWER	EER40/42-18PIN
T 902	CP350P09801	TRANS-POWER	EE22/29-10PIN
***** THERMISTOR *****			
TH100	CP265P11401	THERMISTOR	NRD3103K400K03FMT
TH901	CP265P11302	THERMISTOR	E100L14D325JFZ00
***** CRT *****			
	O381F06B	M51LRY32X	CT2518022-4
***** PALSTIC PARTS *****			
	CP702A01402	CONNECTOR-COVER	ABS 500 NSV1107K (MI)
	CP706A00101	PLATE-LOGO	ABS 500 NSV1107K-JP(MI)
	CP720B09904	BEZEL-UNIT	CP700A257-1 NSZ2107U (ME)
	CP721B05501	BACK-COVER-UNIT	CP700A251-1 NSV1107K-JP(ME)
	CP722B02401	TILT-STAND-UNIT	CP770A036-1 NSV1107K-JP(ME)
***** OTHERS *****			
E 200	CP442P00401	EARTH-TERMINAL	TP00370-41
E 201	CP442P00401	EARTH-TERMINAL	TP00370-41
E 202	CP442P00401	EARTH-TERMINAL	TP00370-41
E 203	CP442P00401	EARTH-TERMINAL	TP00370-41
SP200	CP570D04501	SPRING	C5210R-H T0.2 NSV1107K
VR5A1	CP127C03107	VR-SEMIFIXED	1/5W B-3K
X 100	CP285P00804	CRYSTAL	HC49/U-S*24MHZ
X 1A0	CP285P00807	CRYSTAL	HC49/U-S*6MHZ
	CP077W00101	SILICON-COMPOUND	CP077N001/CP077N002
	CP081X00401	SILICONE-GUM	CP081N001 CP081N003
	CP081X00401	SILICONE-GUM	CP081N001 CP081N003
	CP096P01201	TAPE-AL	CCJ-36-201-W20MM (MT)
	CP223D07301	INSULATOR	SR1825P T0.45 NSV1107K (MI)
	CP223D07401	INSULATOR-TOP	FORMEX-18T=0.46 NSV1107K (MI)
	CP242C23808	USB-CABLE	NSZ2107U (MT)

All Parts List

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SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
	CP242C28607	SIGNAL-CABLE	SC-B110
	CP246B18304	LEAD-CONNECTOR	UL1007 AWG26 NSV1107K (MT)
	CP246B18305	LEAD-CONNECTOR	UL1007 AWG26 NSV1107K (MT)
	CP246B18306	LEAD-CONNECTOR	UL1672 AWG22 NSV1107K (MT)
	CP246B18308	LEAD-CONNECTOR	UL1007 AWG26 NSV1107K (MT)
	CP246B18302	LEAD-CONNECTOR	UL1007 AWG26 NSV1107K (MT)
	CP246C34302	PIN-LEAD	TFW9105K (MI)
	CP246C39407	TERMINAL-LEAD	PVC-UL UL1015 AWG16 NSV1107K (MT)
	CP246C42601	LEAD-CONNECTOR	NSZ2107U (MT)
	CP246C42901	FFC-CABLE	19P NSV1107K (MT)
	CP246C43001	LEAD-CONNECTOR	NSV1107K (MT)
	CP246C43101	LEAD-CONNECTOR	NSV1107K (MT)
	CP338P01302	CP-ASSY	TP-13000MZ2
	CP540C00403	LEAD-CLAMPER	CKN-10
	CP540C01303	EDGE-SADDLE	EDS-1208U
	CP540C05101	EDGE-SADDLE	PA66 NSV1107K (MI)
	CP540D00503	LEAD-CLAMPER	NYLON 6 (MI)
	CP540D02303	BAND-RIVET	NYLON 6 NAD-06 (MI)
	CP540D05002	LEAD-CLAMPER	NYLON6 THN9105K (MI)
	CP540D07601	CLAMPER	PA66 NSV1107K (MI)
	CP540D07601	CLAMPER	PA66 NSV1107K (MI)
	CP549D00502	CARD-SPACER	(MI)
	CP570C01001	SPRING	SUS304-CSPH T0.2 NSV1107K
	CP570C01001	SPRING	SUS304-CSPH T0.2 NSV1107K
	CP570C01002	SPRING	SUS304-CSPH T0.2 NSV1107K
	CP570D04701	SPRING	SUS304-CSPH T0.2
	CP580A10601	TILT-BASE	SECC-C E16/E16 T0.8 NSV1107K
	CP580A10801	COVER-VIDEO	A1100P-H24 T0.5 NSV1107K
	CP580A10901	SHIELD-TOP	A1100P-H24 T0.5 NSZ2107U
	CP580A11701	SHIELD-POWER	A5052P-H32 T0.5 NSV1107K
	CP580B08802	CONNECTOR-PLATE	SECC-C E16/E16 T0.8 NSZ2107U
	CP580C08701	SHIELD-USB	SPTE 5.6/5.6 T0.3 NSZ2107U
	CP590B07601	RADIATOR-HV	A1100P-H24 T3.0 NSV1107K
	CP590C12604	RADIATOR-FIN	A6063S-T5 NUH1107U
	CP590C16005	RADIATOR-FIN	A6063S-T5 NSV1107K
	CP590C16006	RADIATOR-FIN	A6063S-T5 NSV1107K
	CP590C17301	RADIATOR-FIN	A6063S-T5 NUH1107U
	CP590D07501	RADIATOR-TR	TERNE-SHEET T0.8 FFD6505K
	CP590D07602	RADIATOR-TR	TERNE-SHEET T1.0 TFG8705EK
	CP590D09001	RADIATOR-F	SILVER-TOP T1.0 TFA1105U
	CP590D09002	RADIATOR-F	SILVER-TOP T1.0 NUH1107U
	CP590D09401	RADIATOR-FIN	A6063S-T5 NUH1107U
	CP590D09501	RADIATOR	SILVER-TOP NSH1107U
	CP593A16001	REAR-PLATE	A1100P-H24 T1.5 NSZ2107U
	CP593B15101	HOLDER-TOP	SPTE-2.8/2.8 T0.25 NSV1107K
	CP593D20201	HOLDER-USB	SPTE-2.8/2.8 T0.25 NSZ2107U
	CP593D20301	HOLDER-BOTTOM	SECC-C E16/E16 T0.8 NSV1107K
	CP620A03101	FRAME-BOTTOM	SECC-C E16/16 T1.0 NSV1107K
	CP623A02301	FRAME-POWER	A5052P-H32 T1.0 NSZ2107U
	CP626A02201	FRAME-CRT-TB	SECC-C E16/E16 T0.8 NSV1107K
	CP626A02301	FRAME-CRT-SIDE	SECC-C E16/E16 T0.8 NSV1107K
	CP641C06601	LEVER-POWER	ABS 500 NSV1107K (MI)
	CP650D00201	SCREW-SEMS	M3X0.5-16
	CP669D01602	SCREW-TB-BIND-W	3X8 26AA005+BLACK
	CP669D03301	SCREW-TB-SOLDER	3X8 SOLDER 3X8
	CP669D04101	SCREW-HEX	JFS-4S-B1WM FS6605K
	CP669D07401	SCREW-TB-SEMS	3X8 LXM510J
	CP669D07401	SCREW-TB-SEMS	3X8 LXM510J
	CP669D07401	SCREW-TB-SEMS	3X8 LXM510J
	CP669D08001	SCREW	5X20 NFN8715F
	CP669D10301	SCREW-TB-CAP	SCREW-TB-CAP

All Parts List

MODEL NO. Diamond Pro 2060u (NSZ2107STTUW)

SYMBOL NO.	PART NO.	DESCRIPTION／SPECIFICATION	
	CP669D10301	SCREW-TB-CAP	SCREW-TB-CAP
	CP669D10301	SCREW-TB-CAP	SCREW-TB-CAP
	CP669D10301	SCREW-TB-CAP	SCREW-TB-CAP
	CP669D10301	SCREW-TB-CAP	SCREW-TB-CAP
	CP669D10301	SCREW-TB-CAP	SCREW-TB-CAP
	CP669D50202	SCREW-SEMS	M3X0.5-10
	CP669D50202	SCREW-SEMS	M3X0.5-10
	CP677D00101	EYELET	BSR T0.2
	CP677D00101	EYELET	BSR T0.2
	CP677D00101	EYELET	BSR T0.2
	CP677D02001	EYELET	2.0X3.0X3.3 0.2T
	CP677D02001	EYELET	2.0X3.0X3.3 0.2T
	CP677D02001	EYELET	2.0X3.0X3.3 0.2T
	CP677D02002	EYELET	1.6X3.0X3.0 0.2T
	CP677D02002	EYELET	1.6X3.0X3.0 0.2T
	CP775C34209	RATING-LABEL	YUPO 0.11 NSZ2107U-US
	CP803A10001	CUSHION	FOAMED-P.S P=0.017 NSV1107K
	CP831C02201	PACKING-BAG	POLYETHYLENE-SHEET-TTFA1105U
	CP850D26801	LABEL-CAUTION	WHITE-PAPER 70KG NUH1107U
	CP980C18101	SCHEMATIC-DIAGRAM	CRT NSZ2107U
	CP980D02001	SCHEMATIC-DIAGRAM	TACT-SW NSZ2107U
	CP980D02101	SCHEMATIC-DIAGRAM	POWER-SW NSZ2107U
	CT920A34001	ASSY PCB MAIN	
	CT920B58401	ASSY PCB POWER	
	CT920B58501	ASSY PCB VIDEO	
	CT920C25701	ASSY PCB CRT	
	CT920C25801	ASSY PCB TACT-SW	
	CT920C25901	ASSY PCB POWER-SW	
	QX077W72102	SILICON-COMPOUD	G746
	QX096Z46609	CARTON-TAPE	75X500M
	QX330H50909	SO-COPPER-WIRE	030N001 0.6
	QX330H50909	SO-COPPER-WIRE	030N001 0.6
	QX330H50909	SO-COPPER-WIRE	030N001 0.6
	QX330H50909	SO-COPPER-WIRE	030N001 0.6
	QX540D03601	LEAD-CLAMPER	* (MI)
	QX540D03601	LEAD-CLAMPER	* (MI)
	QX540D08501	LEAD-CLAMPER	NYLON-6 CM1017 (MI)
	QX540D08501	LEAD-CLAMPER	NYLON-6 CM1017 (MI)
	QX540D11101	LEAD-CLAMPER	NYLON CM1017 (MI)
	QX669D17301	SCREW(SW)-PAN	FE, M3X6 RKS-1BC0010
	QX669D22002	SCREW-TB	* 3X8
	QX669D22102	SCREW-TB	4X8 46LA005
	QX669D22104	SCREW-TB	
	QX669D22106	SCREW-TB	46LA005 4X16
	RX669D17105	SCREW-SEMS-W	M4X0.7-8

OPTIONAL PARTS

For USA			
	CP242C22906	AC-POWER-CORD	(MT)
	CP802C31203	PACKING-CASE	NSZ2107U-US
	CP859C24003	ACCESSORY	CP871C200A40 NSV2107U-US
For EUROPE			
	CP242C28902	AC-POWER-CORD	(MT)
	CP802C31207	PACKING-CASE	NSZ2107U-EU
	CP859C24004	ACCESSORY	CP871C200A60 NSZ2107U-EU