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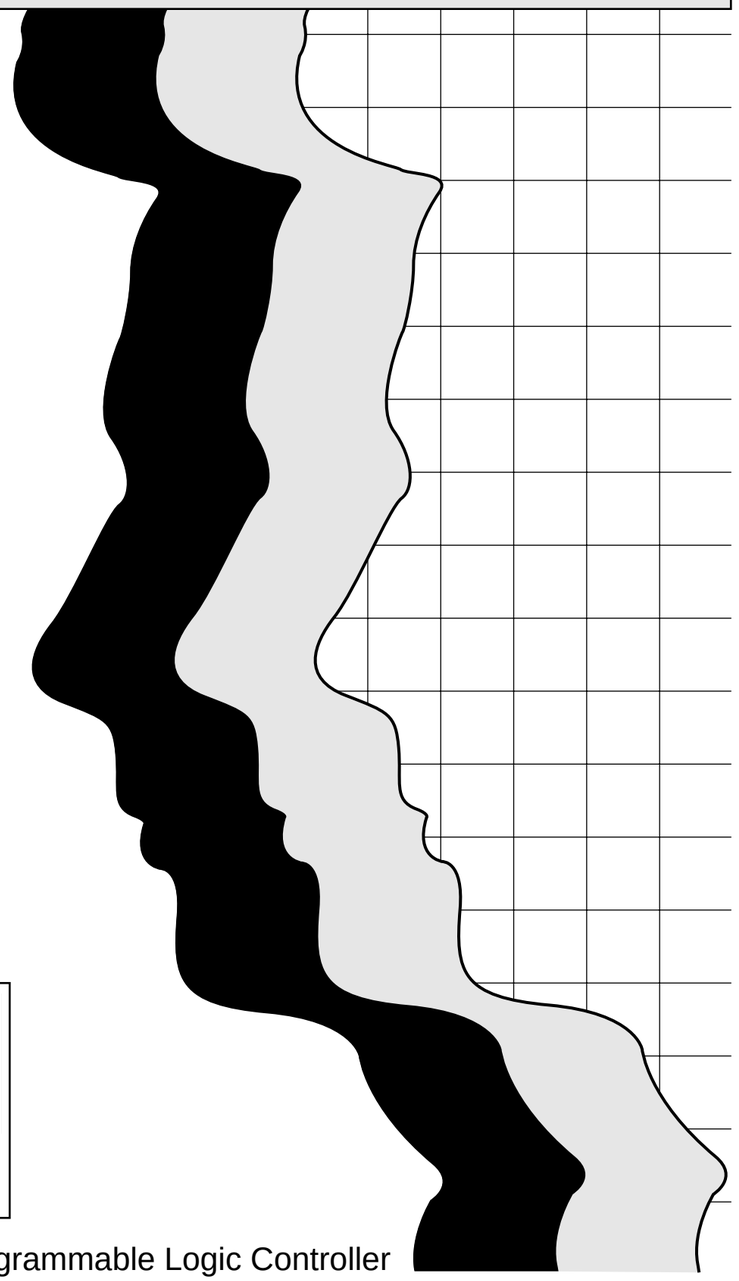
MITSUBISHI

Type AD57(S1)/AD58 CRT/LCD Controller Module

User's Manual

Type AD57(S1)/AD58 CRT/LCD Controller Module

User's Manual



MODEL	AD57/58-USERS-E
MODEL CODE	13J646
IB(NA)66072-B(9007)MEE	

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : MITSUBISHI DENKI BLDG MARUNOUCHI TOKYO 100-8310 TELEX : J24532 CABLE MELCO TOKYO
NAGOYA WORKS : 1-14 , YADA-MINAMI 5 , HIGASHI-KU, NAGOYA , JAPAN

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A MELSEC

Mitsubishi Programmable Logic Controller

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INTRODUCTION

Thank you for choosing the Mitsubishi MELSEC-A Series of General Purpose Programmable Controllers. Please read this manual carefully so that the equipment is used to its optimum. A copy of this manual should be forwarded to the end User.

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1. INTRODUCTION

This manual gives information on the specifications, handling, etc. for the AD57/AD57S1 CRT controller module and the AD58 LCD controller module for use with the MELSEC-A series of Programmable Controllers.

The AD57, AD57S1 and AD58 provide for the implementation of an on-line man-machine interface. Features are:

(1) Screen capacity

The displays have the following capacities and project clear information on PC control status monitoring.

AD57: allows switching between 80 characters × 20 lines and 40 characters × 10 lines
AD57S1: 80 characters×20 lines
AD58: 80 characters×10 lines

(2) Character entry

Characters can be created by using the AD57 system disk and displayed on the screen.
Up to 833 points of 8×20-dot characters can be entered.
One 16×20-dot character occupies two points.

(3) Canvas screen entry

Up to the following points of character data may be entered as a screen by using the AD57 system disk:

AD57: max. 8 standard screens, max. 32 magnified screen (number of standard screens × 4 + number of magnified screens ≦ 32)
AD57S1: 8 screens max.
AD58: 8 screens max.

The canvas data allows the screen to be displayed and changed quickly.

(4) Screen display program

Characters can be displayed on the screen by executing the corresponding instruction of the AD57/AD57S1/AD58 microcomputer subroutines (known as "AD57 commands") which have been added to the sequence program by the AD57 system disk.

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(5) Connection of AD57 or AD57S1 or AD58 and operation panel

Up to 64 keys on the operation panel can be used for the AD57S1 or AD58.
Keyboard entries from the operation panel are processed as inputs (X). Screen switching, data entry, etc. may be performed by using the AD57 subroutines in accordance with the ON/OFF states of inputs (X).
Up to 16 LEDs on the operation panel may be on/off-controlled.

(6) Connection of AD57 or AD57S1 or AD58 and display

The AD57 or AD57S1 or AD58 may be connected to a display for distances up to the following:

Color CRT: AD57:	30m (98.4ft) max.
AD57S1:	10m (32.8ft) max.
Monochrome CRT:	30m (98.4ft) max.
Plasma CRT:	5m (16.4ft) max.
LCD:	30m (98.4ft) max.

Packing list

AD57

Description	Quantity
AD57 CRT controller module	1
Color CRT connector (R.G.B. connector)	1
Monochrome CRT connector (BNC connector)	1
16KHROM (fitted on the ROM socket of the module)	2

AD57S1

Description	Quantity
AD57S1 CRT controller module	1
Color CRT connector (R.G.B. connector)	1
16KHROM (fitted on the ROM socket of the module)	2

AD58

Description	Quantity
AD58 LCD controller module	1
16KHROM (fitted on the ROM socket of the module)	2

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1.1 Performance Comparison between AD57, AD57S1 and AD58

			AD57	AD57S1	AD58
Number of characters displayed			Standard screen: 80 characters × 20 lines Magnified screen: 40 characters × 10 lines	80 characters×20 lines	80 characters×10 lines
Number of canvases entered			Standard screen: 8 screens Magnified screen: 32 screens (number of standard screens × 4 + number of magnified screens ≦ 32)	8 screens max.	8 screens max.
Applicable/recommended display	Color CRT		Applicable CRT (14 inch): JUM-1481ALP (100V AC) A6CRTE-115UL (115V AC, UL type power cable) A6CRTE-220VD (220V AC, VD type power cable)	See Appendix 3	———
		Max. cable length	30m (98.4ft)	10m (32.8ft)	———
	Monochrome CRT		Recommended CRT: MIC-953V (9 inch) MIC-120F (12 inch) MIC-140F (14 inch)	———	———
		Max. cable length	30m (98.4ft)	———	———
	Plasma display (desk top)		Applicable display: FPF2000S-M (There are restrictions on screen display. For details, see Appendix 3.)	Recommended display: FPF4000S-MN	———
		Max. cable length	5m (16.4ft)	5m (16.4ft)	———
	LCD		———	———	Applicable CRT: DSPU-128GL
		Max. cable length	———	———	30m (98.4ft)
Connection of operation panel			Allowed	Allowed	Allowed
Restriction on AD57 commands (microcomputer subroutine instructions)			None	Display mode cannot be set by CMODE instruction. (set by sequence program) For details, see Appendix 1.	None
Current consumption (A)			1.21	1.55	1.27
Size mm (inch)			250 (9.84) (H)×37.5 (1.48) (W)×128 (5.04) (D)	250 (9.84) (H)×37.5 (1.48) (W)×128 (5.04) (D)	250 (9.84) (H)×37.5 (1.48) (W)×128 (5.04) (D)
Weight kg (lb)			0.62 (1.37)	0.68 (1.50)	0.58 (1.28)

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1.2 Glossary of Terms

1. Character generator data

   (1) Character generator data indicates characters entered as dot matrix patterns.

   (2) The required character can be called to the display by specifying the corresponding address.

   (3) Up to 1024 points of 8×20-dot characters can be entered. (One 16×20-dot character occupies two points.)

   (4) To create the character generator data, the A6GPP or A6PHP with the AD57 system disk is used. (For more information, see the AD57/AD58 Operating Manual.)

2. Canvas data

   (1) Canvas data indicates character data entered as a screen.

   (2) The required screen can be displayed easily by entering the canvas data.

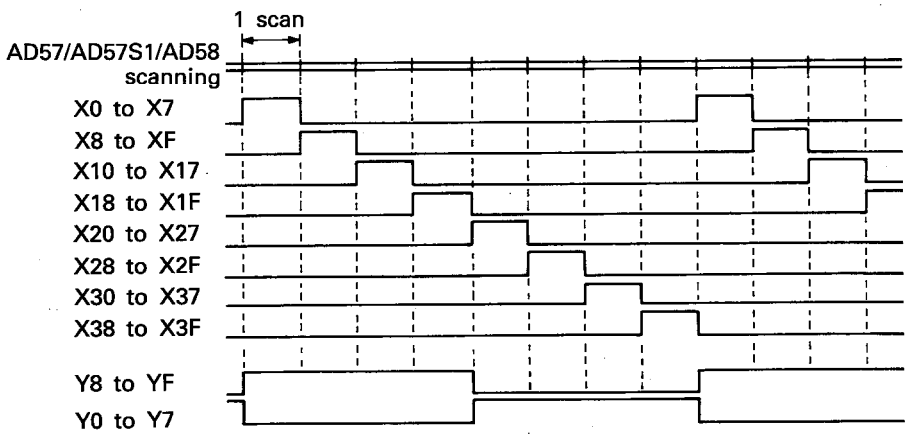
   (3) The canvas screen can be displayed using the canvas screen display instruction of the AD57 commands (AD57/AD57S1/AD58 microcomputer subroutines).

   (4) To create canvas screens, the A6GPP or A6PHP with the AD57 system disk is used. (For further details, refer to the AD57/AD58 Operating Manual.)

3. Dynamic scanning

   (1) In dynamic scanning mode, the full keyboard is processed in a number of scans.

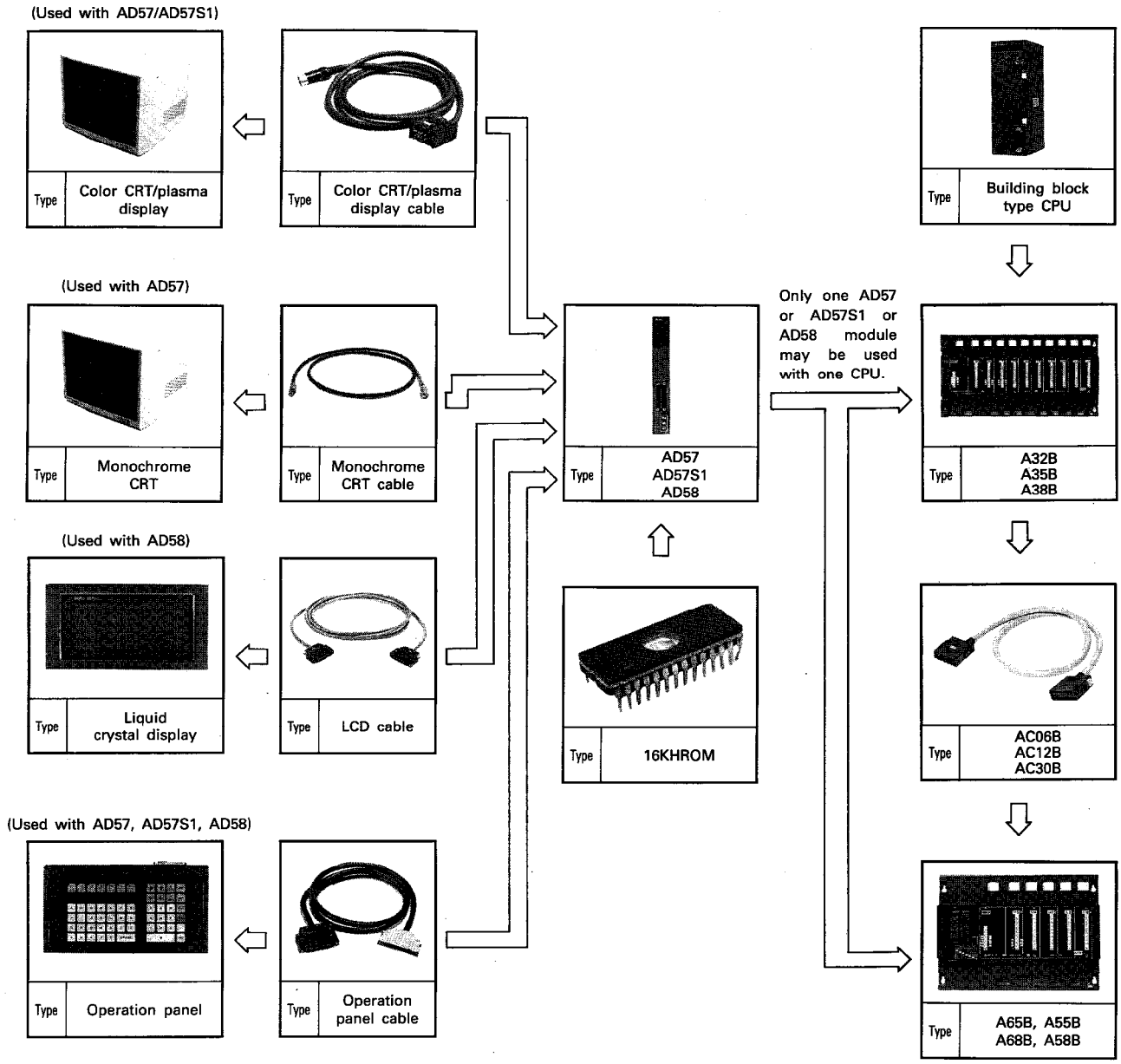
   (2) All inputs and outputs (total: 64 points) are divided into groups of eight and one group is processed each scan as shown below.



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2. SYSTEM CONFIGURATION

2.1 Overall Configuration

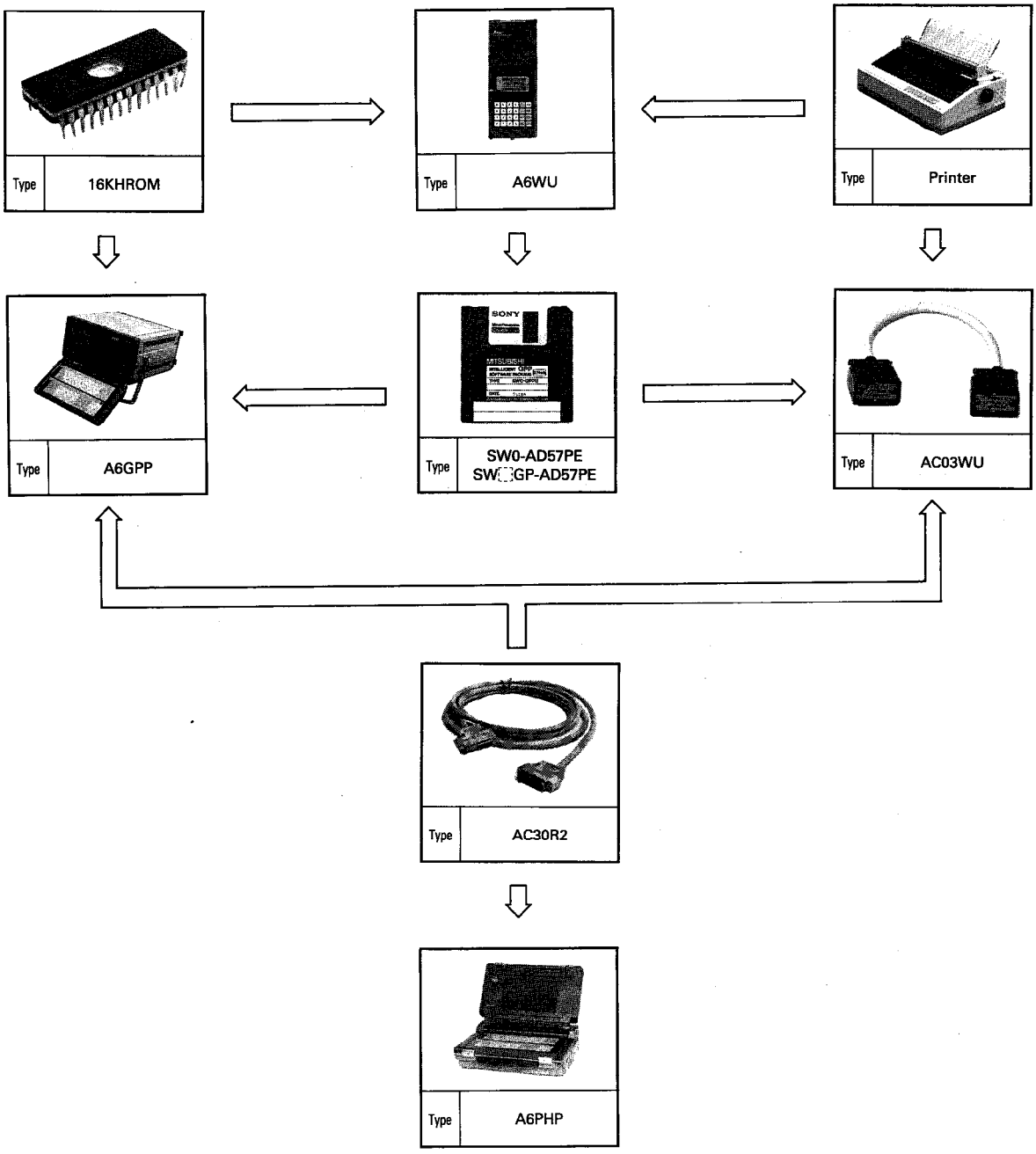


POINT

(1) The 16KHROM is used to store character generator data and canvas data.

(2) Two 16KHROMs are required for each module.

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POINT

The SW0-AD57PE system disk may only be used with the A6GPP.
The SW□GP-AD57PE system disk may be used with the A6GPP and A6PHP.

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2.2 Notes on System Configuration

(1) The CPU used with the AD57, AD57S1 and AD58 depends on the software package used as indicated below:

	AD57 Commands in SW0-AD57P	AD57 Commands in SW1GP-AD57P	AD57 Commands Not Required
Applicable CPU	A1CPU A2CPU A2CPU-S1 A3CPU A0J2HCPU	A1NCPU, A1CPU A2NCPU, A2CPU A2NCPU-S1, A2CPU-S1 A3NCPU, A3CPU A3HCPU A3MCPU (when controlled by sequence program) A73CPU A0J2HCPU	A3MCPU (when controlled by BASIC prgram) A2ACPU A2ACPU-S1 A3ACPU

POINT

(1) Selection of PC memory capacity when using the AD57, AD57S1 or AD58
8K bytes of microcomputer program are required when using the AD57, AD57S1 or AD58 with other than the A3MCPU controlled by BASIC program or the A2ACPU(S1)/A3ACPU. In addition, sequence program memory is required for the control of the AD57, AD57S1 or AD58. Hence, note the program capacity when using any of the following CPUs and memory cassettes:

- **A1CPU/A1NCPU**
- **A3MCA-0/A3NMCA-0 memory cassette**
- **A3MCA-2/A3NMCA-2 memory cassette**

(2) When the AD57, AD57S1 or AD58 is used with the A3MCPU controlled by the BASIC program or the A2ACPU(S1)/A3ACPU, the SW1GP-AD57P (or SW0-AD57P) system disk is required to create character generator data and canvas screens.

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(2) The AD57, AD57S1 and AD58 can be loaded onto any base unit I/O slot with the following exeptions

(a) Base units without power supplies (i.e. A55B and A58B extention bases). Where this is unavoidable, endure that the main base unit power supply has sufficient current capacity after taking into account the volt drop over the length of the extension cable.

(b) The final slot of the seventh extension base in an A3(E)CPU (P21/R21) system (not for an A3NCPU or A3HCPU).

(c) Only one AD57, AD57S1 or AD58 can be used per PC CPU. There is no restriction on the number of modules used when the AD57/AD57S1/AD58 modules are used with the A3MCPU controlled by BASIC program or the A2ACPU(S1)/A3ACPU. When used with other than the A3MCPU controlled by the BASIC program or the A2ACPU(S1)/A3ACPU, two or more AD57/AD57S1/AD58 modules may be loaded but the one nearest the PC CPU is only enabled.

(d) The AD57/AD57S1/AD58 may be loaded into the master station or a local station but not into a remote I/O station in a data link system. The following CPU modules are required for the data link system:

Applicable CPU models (Master, local stations)	A1NCPU P21/R21, A1CPU P21/R21 A2NCPU P21/R21, A2CPU P21/R21 A2NCPU P21/R21-S1, A2CPU P21/R21-S1 A3NCPU P21/R21, A3CPU P21/R21 A3HCPU P21/R21 A3MCPU P21/R21 A73CPU P21/R21 A2ACPUP21/R21 A2ACPUP21/R21-S1 A3ACPUP21/R21

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2.3 Auxiliary Equipment

Equipment required for AD57, AD57S1 and AD58 operation is shown below. For further details, refer to relevant manuals.

Description	Type	Applicable System			Note
		AD57	AD57S1	AD58	
CRT controller module	AD57	○			• Requires two 16KHROMs. • Supplied with one CRT output (R.G.B) connector and one keyboard connector. • Supplied with one monochrome CRT output (composite) connector
CRT controller module	AD57S1		○		• Requires two 16KHROMs. • Supplied with one CRT output (R.G.B) connector and one keyboard connector.
LCD controller module	AD58			○	• Requires two 16KHROMs.
Color CRT	——	○	○		• See Appendix 3. • To be prepared by user. • Note that the color CRTs for the AD57 and AD57S1 are different in model.
Cable for color CRT	——				
Plasma display	——	○	○		• See Appendix 3. • To be prepared by user. • Supplied with cable. • Note that the plasma displays for the AD57 and AD57S1 are different in model.
Monochrome CRT	——	○			• See Appendix 3. • To be prepared by user.
Cable for Monochrome CRT	——				
LCD (Liquid Crystal Display)				○	• Supplied with connection cable.
Operation panel	——	○	○	○	• See Appendix 4.
EP-ROM	16KHROM	○	○	○	• ROMs for storing character generator and canvas data. • Two ROMs are required for both the AD57, AD57S1 and AD58.
System disk	SW0-AD57PE SW□GP-AD57PE	○	○	○	• For creating character generator and canvas data and blowing ROMs. • Compiles display data into code suitable for implementation in the PC microcomputer program memory area.
User disk	SW0-GPPU	○	○	○	• For storing the character generator data, canvas data, and user program. (Already formatted)
Intelligent GPP	A6GPPEE-SET	○	○	○	Includes:

Type	Remarks
A6GPPEE	• Programming panel with CRT • Equipped with ROM writer, FDD, and printer interface functions.
SW□-GPPAEE	A series system disk
SW□-GPPKEE	K series system disk
SW0-GPPU	User disk (3.5 inch, formatted)
AC30R4	Connection cable between the PC CPU and the A6GPP, 3m (9.84ft) long.

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<table>
<tr><th rowspan="2">Description</th><th rowspan="2">Type</th><th colspan="3">Applicable System</th><th rowspan="2">Note</th></tr>
<tr><th>AD57</th><th>AD57S1</th><th>AD58</th></tr>
<tr><td>Plasma handy programmer</td><td>A6PHPEE-SET</td><td>○</td><td>○</td><td>○</td><td>Includes:
<table>
<tr><th>Type</th><th>Remarks</th></tr>
<tr><td>A6PHPEE</td><td>• Programming panel with plasma display
• Equipped with FDD and printer interface functions.</td></tr>
<tr><td>SW□-GPPAEE</td><td>A series system disk</td></tr>
<tr><td>SW□-GPPKEE</td><td>K series system disk</td></tr>
<tr><td>SW0-GPPU</td><td>User disk (3.5 inch, formatted)</td></tr>
<tr><td>AC30R4</td><td>Connection cable between the PC CPU and the A6PHP, 3m(9.84ft) long.</td></tr>
</table></td></tr>
<tr><td rowspan="2">Printer</td><td>K6PRE</td><td rowspan="2">○</td><td rowspan="2">○</td><td rowspan="2">○</td><td rowspan="2">For print out of character generator data, canvas data and user program.</td></tr>
<tr><td>K7PRE</td></tr>
<tr><td>Print paper</td><td>k6PR-Y</td><td>○</td><td>○</td><td>○</td><td>9 inch wide, 11 inch long (between perforations), available in units of 2000 pieces.</td></tr>
<tr><td rowspan="2">Ink ribbon</td><td>K6PR-R</td><td>○</td><td>○</td><td>○</td><td>Ink ribbon for K6PRE</td></tr>
<tr><td>K7PR-R</td><td>○</td><td>○</td><td>○</td><td>Ink ribbon for K7PR</td></tr>
<tr><td>RS-232C cable</td><td>AC30R2</td><td>○</td><td>○</td><td>○</td><td>• Connection cable, A6GPP/A6PHP to printer, 3m (9.84ft) long.</td></tr>
</table>

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3. SPECIFICATIONS

3.1 General Specifications

<table>
<tr><th>Item</th><th colspan="5">Specifications</th></tr>
<tr><td>Operating ambient temperature</td><td colspan="5">0 to 55℃</td></tr>
<tr><td>Storage ambient temperature</td><td colspan="5">−20 to 75℃</td></tr>
<tr><td>Operating ambient humidity</td><td colspan="5">10 to 90%RH, non-condensing</td></tr>
<tr><td>Storage ambient humidity</td><td colspan="5">10 to 90%RH, non-condensing</td></tr>
<tr><td rowspan="3">Vibration resistance</td><td rowspan="3">Conforms to * JIS C 0911</td><td>Frequency</td><td>Acceleration</td><td>Amplitude</td><td>Sweep Count</td></tr>
<tr><td>10 to 55Hz</td><td>——</td><td>0.075mm (0.003inch)</td><td rowspan="2">10 times *(1 octave/minute)</td></tr>
<tr><td>55 to 150Hz</td><td>1g</td><td>——</td></tr>
<tr><td>Shock resistance</td><td colspan="5">Conforms to JIS C 0912 (10g×3 times in 3 directions)</td></tr>
<tr><td>Noise durability</td><td colspan="5">By noise simulator of 1500Vpp noise voltage,
1μs noise width and 25 to 60Hz noise frequency</td></tr>
<tr><td>Dielectric withstand voltage</td><td colspan="5">1500V AC for 1 minute across batch of AC external terminals and ground</td></tr>
<tr><td>Insulation resistance</td><td colspan="5">5MΩ or larger by 500V DC insulation resistance tester across
AC external terminals and ground</td></tr>
<tr><td>Grounding</td><td colspan="5">Class 3 grounding</td></tr>
<tr><td>Operating ambience</td><td colspan="5">Free of corrosive gases. Dust should be minimal.</td></tr>
<tr><td>Cooling method</td><td colspan="5">Self-cooling</td></tr>
</table>

REMARKS

One octave marked * indicates a change from the initial frequency to double or half frequency. For example, any of the changes from 10Hz to 20Hz, from 20Hz to 40Hz, from 40Hz to 20Hz, and 20Hz to 10Hz are referred to as one octave.

Note: * JIS: Japanese Industrial Standard

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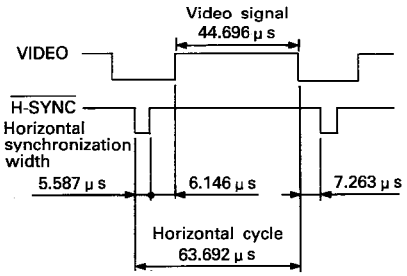
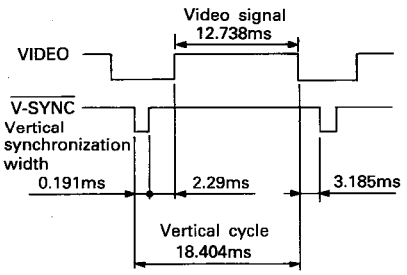
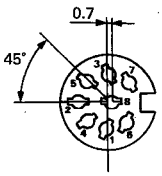
3.2 AD57 Performance Specifications

3.2.1 AD57 performance specifications

Item		Specifications
Structure of display characters	Standard mode	80 characters × 20 lines (8 × 20 dots/character) 40 characters × 20 lines (16 × 20 dots/character)
	Magnification mode	40 characters × 10 lines (8 × 20 dots/character) 20 characters × 10 lines (16 × 20 dots/character)
		One dot in magnification mode is equivalent to four dots in standard mode.
Number of canvas data (screen data) entries	Standard mode	8 screens
	Magnification mode	32 screens (number of standard screens × 4 + number of magnified screens ≦ 32)
Number of input points		64 max. (See Sections 3.6, 5.6.)
Number of output points		16 max.
Number of I/O points occupied		64
Internal current consumption (5V DC)		1.21A
External power supply	Rated voltage	24V DC
	Operating voltage range	21.6 to 26.4V DC (ripple rate: 5% or less)
	Current consumption	0.16A
Connectors	KEY connector	For connection of operation panel (See Sections 3.6, 5.6, 5.7.)
	MONO. DISPLAY connector	For connection of monochrome CRT (for the monochrome CRT, see Appendix 3.)
	COLOR DISPLAY connector	For connection of color CRT and plasma display (for the color CRT and plasma display, see Appendix 3.)
Character generator ROM		16KHROM (16KROM cannot be used.)
Canvas data ROM		
Size mm (inch)		250 (9.84) (H)×37.5 (1.48) (W)×128 (5.04) (D)
Weight kg (lb)		0.62 (1.36)

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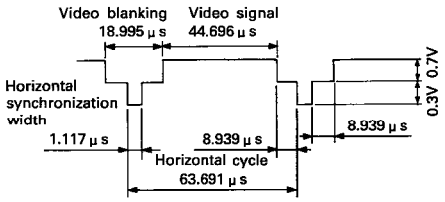
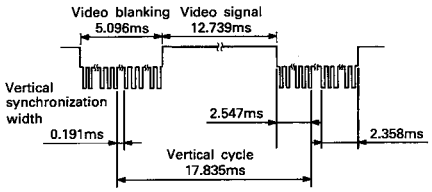
3.2.2 Color CRT/plasma display interface specifications (AD57)

<table>
<tr><th colspan="2">Item</th><th>Specifications</th></tr>
<tr><td colspan="2">Processing method</td><td>Digital R.G.B. video signal</td></tr>
<tr><td colspan="2">Screen display</td><td>80 characters×20 lines</td></tr>
<tr><td colspan="2">Dot clock</td><td>14.32MHz</td></tr>
<tr><td colspan="2">Horizontal scanning frequency</td><td>15.7KHz</td></tr>
<tr><td colspan="2">Vertical scanning frequency</td><td>54Hz</td></tr>
<tr><td rowspan="2">Timing Chart</td><td>Horizontal synchronization timing</td><td>
</td></tr>
<tr><td>Vertical synchronization timing</td><td>
</td></tr>
<tr><td rowspan="2">Connector (AD57 side)</td><td>Type</td><td>Conforms to DIN 45326.</td></tr>
<tr><td>Pin arrangement</td><td>

<table>
<tr><th>Pin Number</th><th>Signal</th></tr>
<tr><td>1</td><td>(Vacant)</td></tr>
<tr><td>2</td><td>Ground</td></tr>
<tr><td>3</td><td>Intensity signal</td></tr>
<tr><td>4</td><td>Horizontal synchronization signal</td></tr>
<tr><td>5</td><td>Vertical synchronization signal</td></tr>
<tr><td>6</td><td>Red</td></tr>
<tr><td>7</td><td>Green</td></tr>
<tr><td>8</td><td>Blue</td></tr>
</table>
(Viewed from module front)</td></tr>
<tr><td colspan="2">Color CRT connected</td><td>JUM-1481ALP, A6CRT-⬚ (See Appendix 3.)</td></tr>
<tr><td colspan="2">Plasma display connected</td><td>FPF2000S-M</td></tr>
<tr><td rowspan="2">Cable</td><td>Color CRT</td><td>General-purpose CRT cable (shielded cable)</td></tr>
<tr><td>Plasma display</td><td>Special-purpose cable (see Appendix 3.)</td></tr>
<tr><td rowspan="2">Maximum cable length</td><td>Color CRT</td><td>30m (98.4ft)</td></tr>
<tr><td>Plasma display</td><td>5m (16.4ft)</td></tr>
</table>

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3.2.3 Monochrome CRT interface specifications (AD57)

Item		Specifications
Processing method		Composite video signal
Screen display		80 characters×20 lines
Dot clock		14.32MHz
Horizontal scanning frequency		15.7KHz
Vertical scanning frequency		56Hz
Timing Chart	Horizontal synchronization timing	
	Vertical synchronization timing	
Connector (AD57 side)		BNC connector (for 3C2V)
Recommended monochrome CRT		MIC-953V MIC-120F (See Appendix 3.) MIC-140F
Cable*1		3C2V
Max. cable length		30m (98.4ft)

POINT

***1: The AC10MD cable is available, length 1m (3.28ft).**

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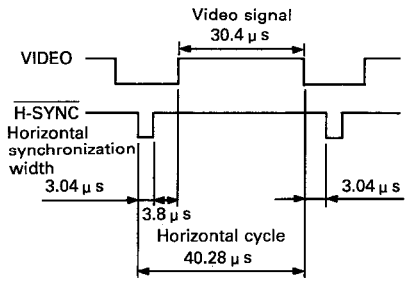
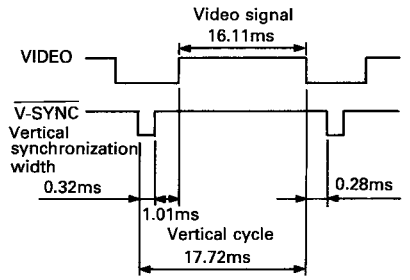
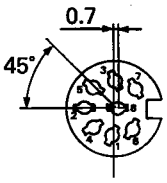
3.3 AD57S1 Performance Specifications

3.3.1 AD57S1 performance specifications

Item		Specifications
Structure of display characters		80 characters×20 lines (8×20 dots/character)
		40 characters×20 lines (16×20 dots/character)
Number of canvas (screen) data entries		8 screens
Number of input points		64 max. (See Sections 3.6, 5.6.)
Number of output points		16 max.
Number of I/O points occupied		64
Internal current consumption (5V DC)		1.55A
External power supply	Rated voltage	24V DC
	Operating voltage range	21.6 to 26.4V DC (ripple rate: 5% or less)
	Current consumption	0.16A
Connectors	KEY connector	For connection of operation panel (See Sections 3.6, 5.6, 5.7.)
	COLOR DISPLAY connector	For connection of color CRT or plasma display
Character generator ROM		16KHROM (16KROM cannot be used.)
Canvas data ROM		
Size mm (inch)		250 (9.84) (H)×37.5 (1.48) (W)×128 (5.04) (D)
Weight kg (lb)		0.68 (1.50)

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3.3.2 Color CRT/plasma display interface specifications

<table>
<tr><th colspan="2">Item</th><th>Specifications</th></tr>
<tr><td colspan="2">Processing method</td><td>Digital R.G.B. video signal</td></tr>
<tr><td colspan="2">Screen display</td><td>80 characters×20 lines</td></tr>
<tr><td colspan="2">Dot clock</td><td>21.05MHz</td></tr>
<tr><td colspan="2">Horizontal scanning frequency</td><td>24.83KHz</td></tr>
<tr><td colspan="2">Vertical scanning frequency</td><td>56.42Hz</td></tr>
<tr><td rowspan="2">Timing Chart</td><td>Horizontal synchronization timing</td><td>
</td></tr>
<tr><td>Vertical synchronization timing</td><td>
</td></tr>
<tr><td rowspan="2">Connector (AD57S1 side)</td><td>Type</td><td>Conforms to DIN 45326.</td></tr>
<tr><td>Pin arrangement</td><td>

<table>
<tr><th>Pin Number</th><th>Signal</th></tr>
<tr><td>1</td><td>(Vacant)</td></tr>
<tr><td>2</td><td>Ground</td></tr>
<tr><td>3</td><td>(Vacant)</td></tr>
<tr><td>4</td><td>Horizontal synchronization signal</td></tr>
<tr><td>5</td><td>Vertical synchronization signal</td></tr>
<tr><td>6</td><td>Red</td></tr>
<tr><td>7</td><td>Green</td></tr>
<tr><td>8</td><td>Blue</td></tr>
</table>
(Viewed from module front)</td></tr>
<tr><td colspan="2">Color CRT connected</td><td>See Appendix 3.</td></tr>
<tr><td colspan="2">Plasma display connected</td><td>Available soon</td></tr>
<tr><td colspan="2">Connection cable</td><td>Shielded cable</td></tr>
<tr><td rowspan="2">Maximum cable length</td><td>Color CRT</td><td>10m (32.8ft)</td></tr>
<tr><td>Plasma display</td><td>5m (16.4ft)</td></tr>
</table>

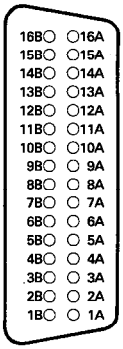
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3.4 AD58 Performance Specifications

3.4.1 AD58 performance specifications

Item		Specifications
Structure of display characters		80 characters×10 lines (8×20 dots/character)
		40 characters×10 lines (16×20 dots/character)
Number of canvas (screen) data entries		8 screens
Number of input points		64 max. (See Sections 3.6, 5.6.)
Number of output points		16 max.
Number of I/O points occupied		64
Internal current consumption (5V DC)		1.27A
External power supply	Rated voltage	24V DC
	Operating voltage range	21.6 to 26.4V DC (ripple rate: 5% or less)
	Current consumption	0.16A
Connectors	KEY connector	For connection of operation panel (See Sections 3.6, 5.6, 5.7.)
	LCD connector	DSPU-128GL
Character generator ROM		16KHROM (The 16KROM cannot be used.)
Canvas data ROM		
Size mm (inch)		250 (9.84) (H)×37.5 (1.48) (W)×128 (5.04) (D)
Weight kg (lb)		0.58 (1.28)

3.4.2 LCD interface specifications (AD58)

Item	Specifications
Pin arrangement	 (Viewed from module front)
Connector	FCN-361J032-AU (connector), FCN-360C032-B (cover)
Wire size	0.3mm² (0.0005inch²)
Max. cable length	30m (98.4ft)
LCD	DSPU-128GL note: see Appendix 3

Pin Number	Symbol	Description	Pin Number	Symbol	Description
1A	Vss	Grounding potential	1B	Vss	Grounding potential
2A		(Vacant)	2B		
3A		Not used	3B		
4A	LD3	Display data signal (Lower half screen)	4B		
5A	LD2		5B		
6A	LD1		6B		
7A	LD0		7B		
8A	UD3	Display data signal (Upper half screen)	8B		
9A	UD2		9B		
10A	UD1		10B		
11A	UD0		11B		
12A	FRM	Scanning start signal	12B		
13A	DLAT	Data latch signal	13B		
14A	DSHC	Data clock signal	14B		
15A	FRMAC	Driving waveform AC signal	15B		
16A		(Vacant)	16B		

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3.5 PC I/O Signals

PC CPU I/O signals for the AD57/AD57S1/AD58 are listed below. I/O signal device numbers depend on the I/O location of the AD57/AD57S1/AD58. The following assumes that the AD57 or AD57S1 or AD58 is loaded onto slot 0 of the main base unit.

3.5.1 AD57/AD58 I/O signals

Direction: AD57/AD58 → PC CPU		Direction: AD57/AD58 ← PC CPU	
Device number	Signal	Device number	Signal
X0 to X3F	Key input (1) Switched on/off by key inputs (see the table in Section 5.6.2). (2) Devices corresponding to key inputs are switched on/off.	Y0 to YF	LED output signal (1) Are output to keyboard LEDs. (2) Corresponding LEDs are lit.
		Y10 to Y3F	Not used

IMPORTANT

Do not address outputs Y10 to Y3F in the sequence program as these are reserved for processing information. If they are addressed (switched on/off) in the sequence program, the AD57 or AD58 may function improperly.

3.5.2 AD57S1 I/O signals

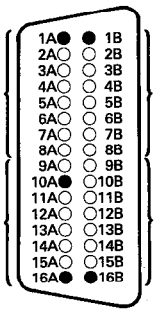
Direction: AD57S1 → PC CPU		Direction: AD57S1 ← PC CPU	
Device number	Signal	Device number	Signal
X0 to X3F	Key input (1) Switched on/off by key inputs (see the table in Section 5.6.2). (2) Devices corresponding to key inputs are switched on/off.	Y0 to YF	LED output signal (1) Are output to keyboard LEDs. (2) Corresponding LEDs are lit. Switched on/off as follows by sequence program when display mode is defined:
		Y10	Display mode setting signal Are switched by the sequence program to define display mode as indicated below: Y10 ····· ON Y11 ····· OFF
		Y11	
		Y12 to Y3F	Not used

IMPORTANT

Do not address outputs Y10 to Y3F in the sequence program as these are reserved for processing information. If they are addressed (switched on/off) in the sequence program, the AD57S1 may function improperly.

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3.6 Operation Panel Interface Specifications

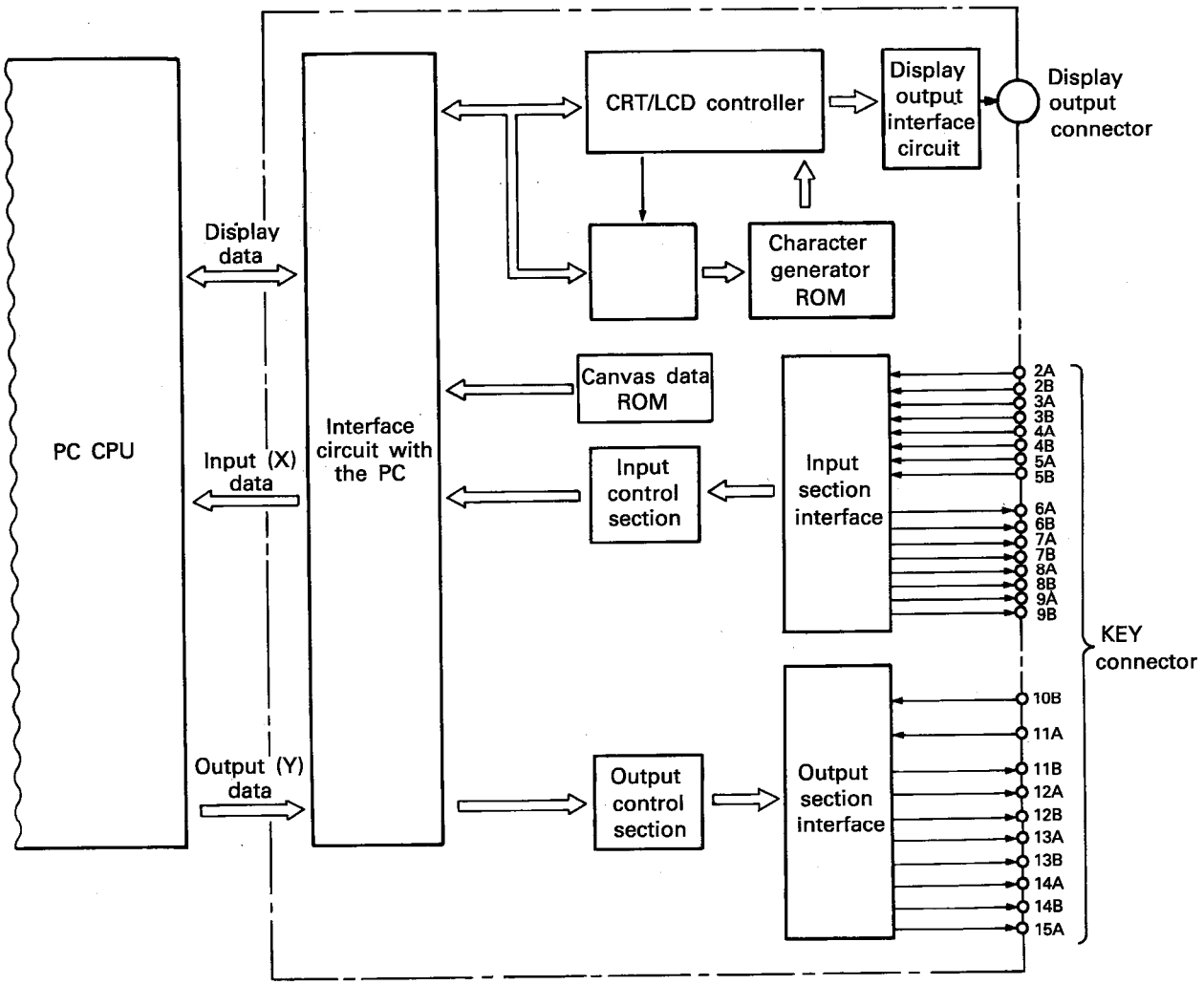
Item		Specifications
Connector		FCN-361J032-AU (connector), FCN-360C032 (cover)
Wire size		0.3mm² (0.0005inch²)
Maximum cable length		30m (98.4ft)
Pin arrangement		For connection of operation panel keyboard input / For connection of operation panel LED output  For connection of operation panel keyboard input / For connection of operation panel LED output Pins marked ● are not used. (Viewed from module front)
Input specifications	Input mode	Dynamic scanning mode (Refer to Section 1.2.)
	Number of input points	64 (8 points per scan) (*1)
	Isolation	Photocoupler
	Rated input voltage	24V DC
	Operating voltage range	21.6 to 26.4V DC (ripple rate: 5% or less)
	Maximum simultaneous input points	64
	ON voltage/ON current	9V/3mA (min.)
	OFF voltage/OFF current	6V/1.5mA (max.)
	Input resistance	About 1KΩ
	Response time	16ms or shorter (1 scan = 2ms)
Output specifications	Output mode	Dynamic scanning mode (Refer to Section 1.2.)
	Number of output points	16 (8 points per scan) (*1)
	Isolation	Photocoupler
	Rated load voltage	24V DC
	Operating load voltage range	21.6 to 26.4V DC
	Operating load current range	2.16 to 2.64mA
	Maximum load current	10mA
	"OFF" leakage current	0.1mA or lower
	Response time	8ms or shorter (1 scan = 2ms)

REMARK

1. *1: The scan is a function of the AD57, AD57S1 and AD58 and is independent of the PC CPU.
2. For the operation panel, see Appendix 4. For the wiring, see Sections 5.6 and 5.7.

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3.7 Function Block Diagram



POINT

(1) The VRAM (video RAM) is not battery backed.

(2) The canvas data ROM stores the CRT/LCD controller display mode setting data and canvas data.

(3) The display output connectors of the AD57, AD57S1 and AD58 are as follows:

AD57 ····· COLOR DISPLAY connector (for connection of color CRT/plasma display, R.G.B. video signal)

····· MONO. DISPLAY connector (for connection of monochrome CRT, composite video signal)

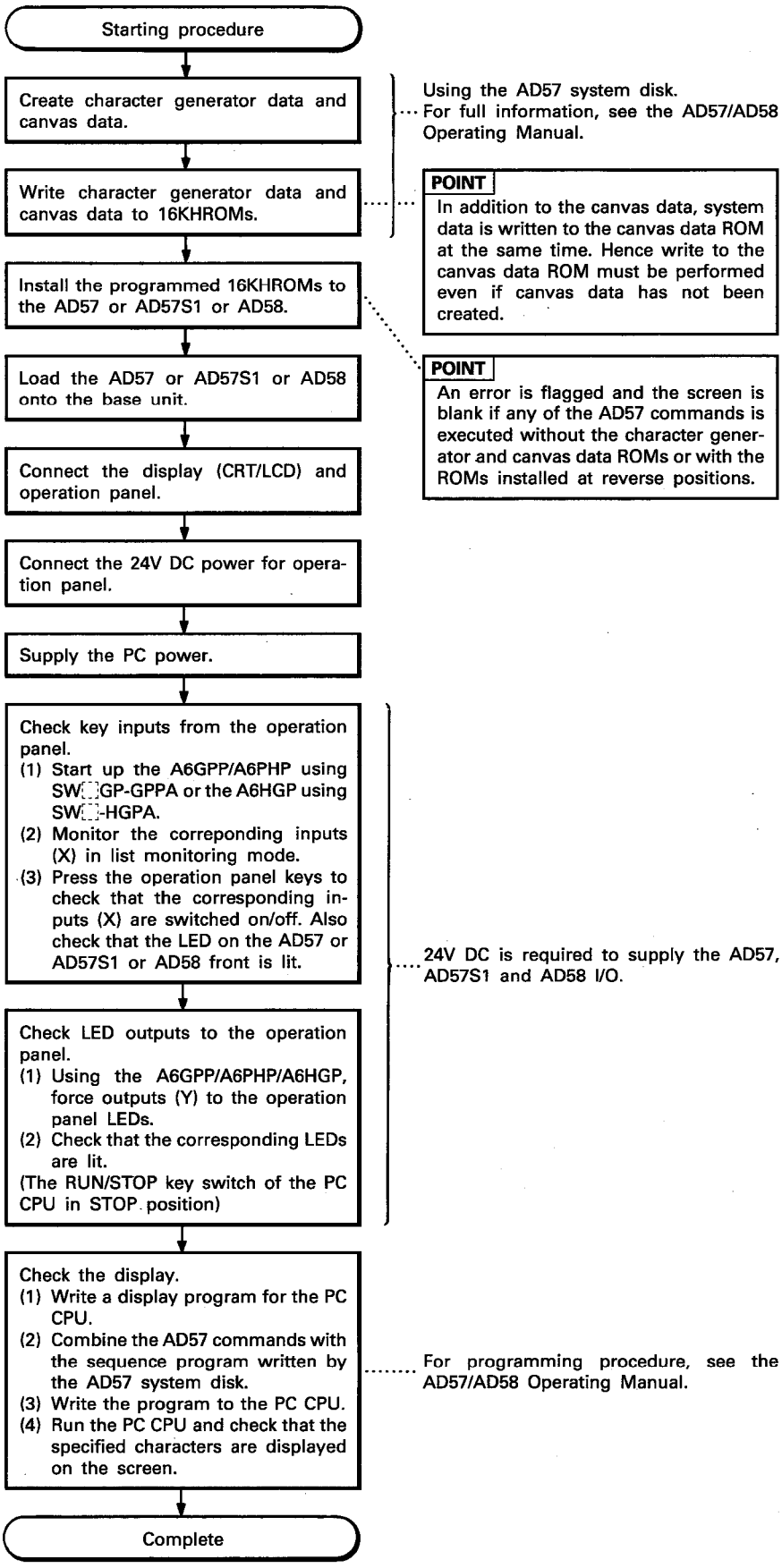
AD57S1 ····· COLOR DISPLAY connector (for connection of the color CRT/plasma display, digital R.G.B. video signal)

AD58 ····· DISPLAY connector (for connection of the LCD)

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4. PRE-OPERATION SETTINGS

4.1 Pre-Operation Procedure



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4.2 Handling Instructions

(1) Do not submit the module to impact loads.

(2) Do not touch the printed circuit board.

(3) Do not allow debris to enter the module casing.

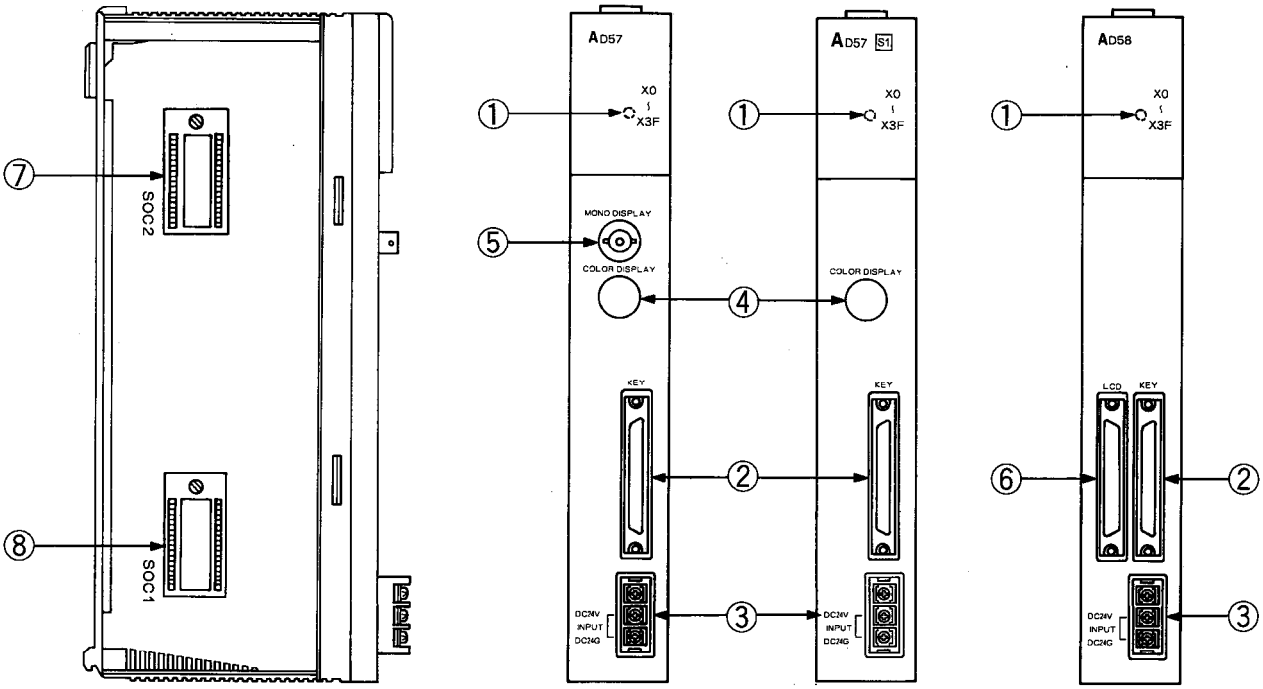
(4) Tighten terminal and module mounting screws as specified below.

Screw	Tightening Torque kg·cm (lb·inch)
24V DC input terminal screw	8 (6.93) to 14 (12.13)
Module fixing screw (optional) (M4×0.7)	8 (6.93) to 12 (10.39)

(5) When loading the module onto the base, push the module into place so that the catch is securely locked. When unloading the module, press the top white catch and pull the module toward you, rotating it around the bottom hooks.
(For further details, refer to the corresponding building block type CPU User's Manual.)

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4.3 Nomenclature

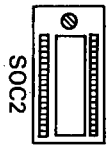
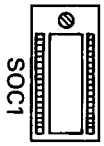


AD57/AD57S1/AD58 side view | AD57 front view | AD57S1 front view | AD58 front view

①	X0 O to X3F	Input signal LED (1) Lit when any one key on the operation panel key is pressed. (2) Is not lit if any operation panel key is pressed without 24V DC being supplied to the terminal block.
②	KEY	KEY connector (1) For connecting the operation panel. (2) For wiring, see Sections 5.6 and 5.7. (3) For the operation panel used, see Appendix 4.
③	DC24V INPUT DC24G	24V DC power input terminals For supplying 24V DC used in the operation panel interface circuit in the AD57 or AD57S1 or AD58. **POINT** **Never apply any voltage to the terminal not used.**

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④	COLOR DISPLAY 	COLOR DISPLAY connector (AD57/AD57S1) (1) For connecting the color CRT or plasma display. (2) For wiring, see Sections 5.2 and 5.3. (3) For the color CRT and plasma display, see Appendix 3.
⑤	MONO. DISPLAY 	MONO. DISPLAY connector (AD57) (1) For connecting the monochrome CRT. (2) For wiring, see Sections 5.4 and 5.5. (3) For the monochrome CRT, see Appendix 3.
⑥	LCD 	LCD connector (AD58) (1) For connecting the LCD. (2) For the LCD used, see Appendix 2.
⑦		Character generator ROM socket (1) For loading the character generator ROM. (2) For creating character generator data, see the AD57/AD58 Operating Manual. (3) For installation and removal of the ROM, see Section 4.4.
⑧		Canvas data ROM socket (1) For loading the canvas data ROM. (2) For creating canvas data, see the AD57/AD58 Operating Manual. (3) For installation and removal of the ROM, see Section 4.4.

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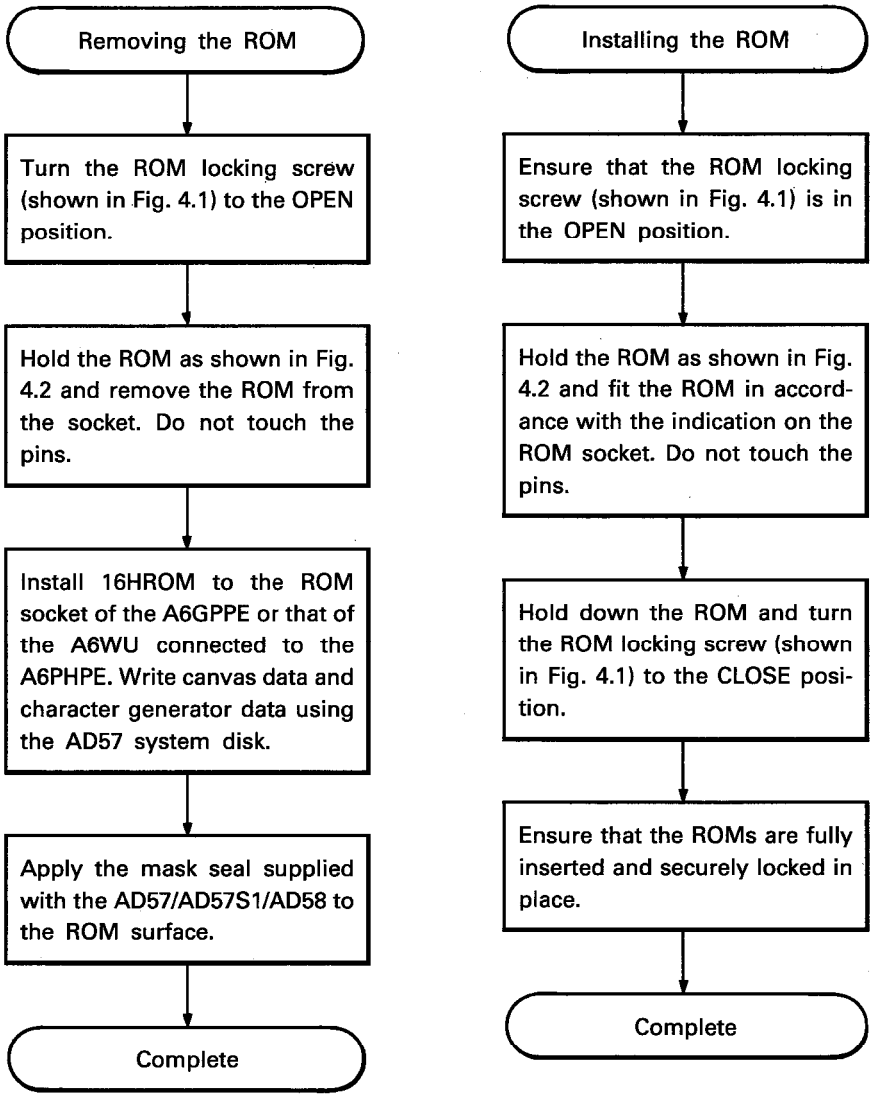
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4.4 Installation and Removal of ROMs

POINT

(1) Do not use any ROM other than the 16KHROM for storing character generator data and canvas data.

(2) The AD57/AD57S1/AD58 is supplied complete with one blank canvas data ROM and one blank character generator ROM (both 16KHROMs).
Canvas and character generator data must be written onto these ROMs using the A6GPP/A6PHP with the AD57 system disk before operating the AD57, AD57S1 and AD58.
Display devices will remain blank if ROMs are omitted.



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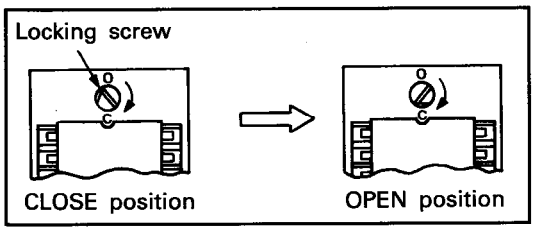


Fig. 4.1

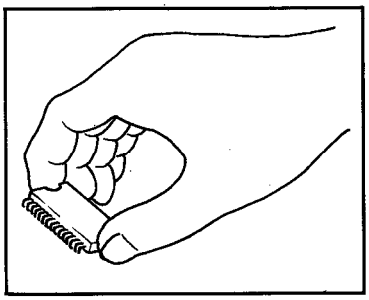


Fig. 4.2

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5. EXTERNAL WIRING

5.1 Wiring Precautions

When wiring, take adequate precautions against noise.

(1) The connection cables to the CRT or LCD and the operation panel must not run close to the main circuit, high voltage lines or wires carrying significant loads.

(2) Separate all AC carrying cables and AD57/AD57S1/AD58 wiring to prevent induced signals.

(3) Always use the connector fixing screws for the keyboard and the LCD display.

(4) Use a shielded wire for the color CRT/plasma display cable and connect the shield wire to the grounding terminal in the COLOR DISPLAY connector.

(5) Never apply any voltage to the top terminal of the 24V DC input terminal block. (See Section 4.3.)

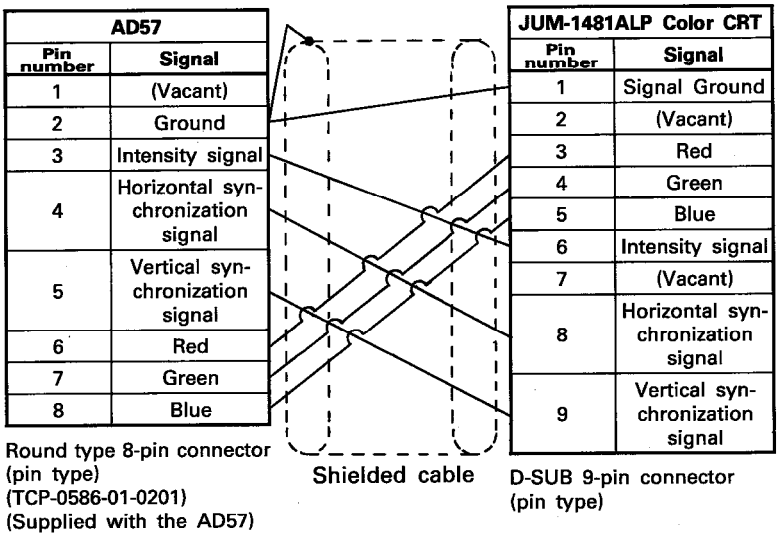
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5.2 Connection of Color CRT/Plasma Display

5.2.1 Connection of AD57 and color CRT/plasma display

Connection of color CRT

The cable (type: AC15CD) of 1.5m length is available as standard for use between the AD57 and JUM-1481ALP color CRT.
A cable of other than 1.5m length should be user-prepared in accordance with the following data and diagram:



AD57	
Pin number	Signal
1	(Vacant)
2	Ground
3	Intensity signal
4	Horizontal synchronization signal
5	Vertical synchronization signal
6	Red
7	Green
8	Blue

Round type 8-pin connector (pin type)
(TCP-0586-01-0201)
(Supplied with the AD57)

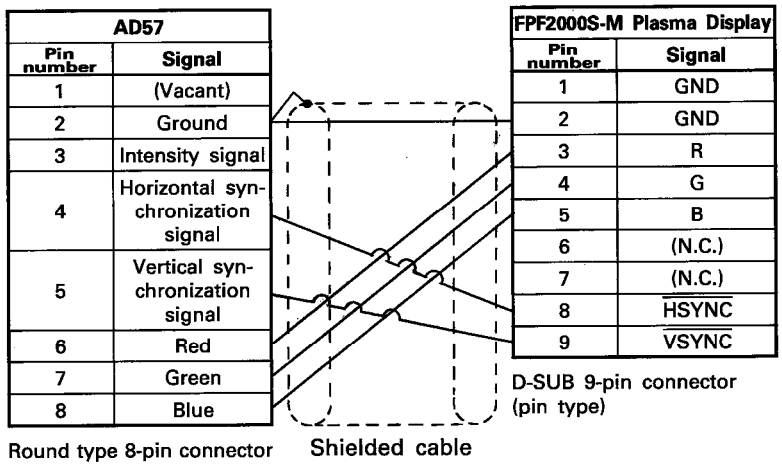
Shielded cable

JUM-1481ALP Color CRT	
Pin number	Signal
1	Signal Ground
2	(Vacant)
3	Red
4	Green
5	Blue
6	Intensity signal
7	(Vacant)
8	Horizontal synchronization signal
9	Vertical synchronization signal

D-SUB 9-pin connector (pin type)

Connection of plasma display

The cable of 5m length is supplied with the FPF2000S-M plasma display for use between the AD57 and plasma display.
A cable of other than 5m length should be user-prepared in accordance with the following data and diagram:



AD57	
Pin number	Signal
1	(Vacant)
2	Ground
3	Intensity signal
4	Horizontal synchronization signal
5	Vertical synchronization signal
6	Red
7	Green
8	Blue

Round type 8-pin connector (pin type)
(TCP-0586-01-0201)
(Supplied with the AD57)

Shielded cable

FPF2000S-M Plasma Display	
Pin number	Signal
1	GND
2	GND
3	R
4	G
5	B
6	(N.C.)
7	(N.C.)
8	$\overline{\text{HSYNC}}$
9	$\overline{\text{VSYNC}}$

D-SUB 9-pin connector (pin type)

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5.2.2 Connection of AD57S1 and color CRT

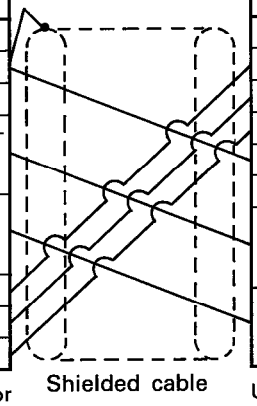
Connection of color CRT

The cable used between the AD57S1 and color CRT should be specified by the user in accordance with the following data and diagrams.

(1) Color CRT connector is unified I-type 8-pin connector

AD57S1	
Pin number	Signal
1	(Vacant)
2	Ground
3	(Vacant)
4	Horizontal synchronization signal
5	Vertical synchronization signal
6	Red
7	Green
8	Blue

Round type 8-pin connector
(pin type)
(TCP-0586-01-0201)
(Supplied with the AD57S1)



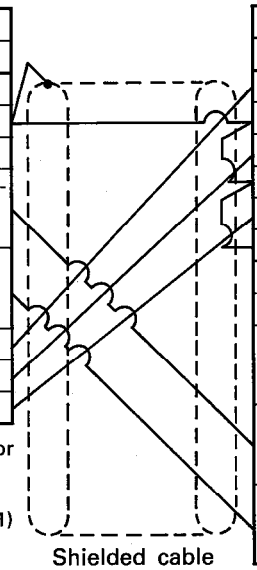
Color CRT	
Pin number	Signal
1	(Vacant)
2	Red
3	Green
4	Blue
5	Ground
6	Ground
7	Horizontal synchronization signal
8	Vertical synchronization signal

Unified I-type 8-pin connector
Pin type - PC-TV [illegible]
TX-1404MA
Socket type - KD551K

(2) Color CRT connector is D-SUB 15-pin connector

AD57S1	
Pin number	Signal
1	(Vacant)
2	Ground
3	(Vacant)
4	Horizontal synchronization signal
5	Vertical synchronization signal
6	Red
7	Green
8	Blue

Round type 8-pin connector
(pin type)
(TCP-0586-01-0201)
(Supplied with the AD57S1)



Color CRT	
Pin number	Signal
1	Red
2	Ground
3	Green
4	Ground
5	Blue
6	Ground
7	(Vacant)
8	ANALOG/TTL
9 to 13	(Vacant)
14	Horizontal synchronization signal
15	Vertical synchronization signal

D-SUB 15-pin connector
(pin type)

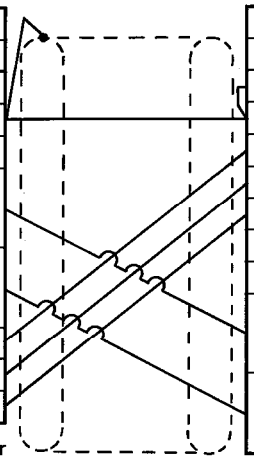
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Connection of plasma display

The cable of 5m length is supplied with the FPF4000S-MN plasma display for use between the AD57 and plasma display.
A cable of other than 5m length should be user-prepared in accordance with the following data and diagram:

AD57S1	
Pin number	Signal
1	(Vacant)
2	Ground
3	(Vacant)
4	Horizontal synchronization signal
5	Vertical synchronization signal
6	Red
7	Green
8	Blue

Round type 8-pin connector
(pin type)
(TCP-0586-01-0201)
(Supplied with the AD57S1)



Shielded cable

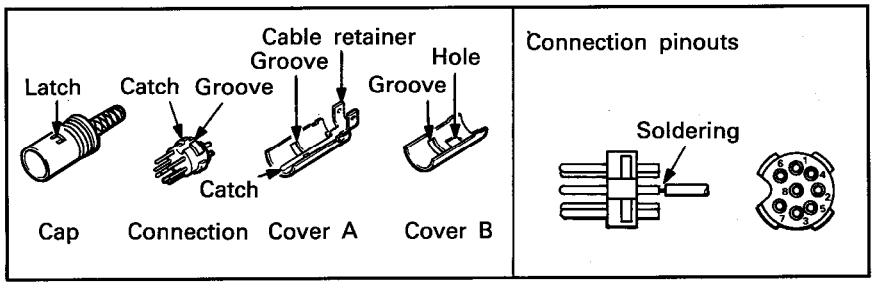
Plasma Display	
Pin number	Signal
1	Ground
2	Ground
3	Red
4	Green
5	Blue
6	Clock
7	(Vacant)
8	Horizontal synchronization signal
9	Vertical synchronization signal

D-SUB 9-pin connector
(pin type)

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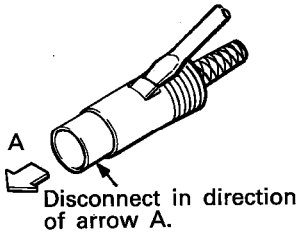
5.3 Connection of COLOR DISPLAY Connector and Cable

The COLOR DISPLAY (R.G.B.) connector is supplied with the AD57/AD57S1 and consists of the following parts:

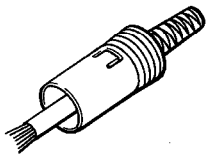


Wiring procedure:

1) Raise the cap latch with a slotted screwdriver and remove the covers and connection.

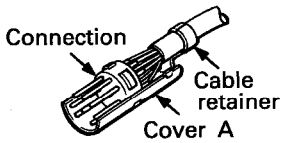


2) Pass the cable into the cap.

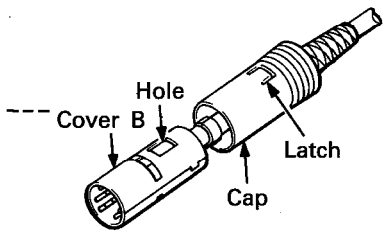


3) Solder the wires to the connection pins.

4) Combine the connection and cover A (fit the catch of cover A into the groove in the connection and the catch of the connection into the groove in cover A), and secure the cable by the cable retainer of cover A.



5) Fit the catch of the connection into the groove in cover B.



6) Fit the cap. (Engage the latch of the cap into the hole in cover B.)

5.4 Connection of AD57 and Monochrome CRT

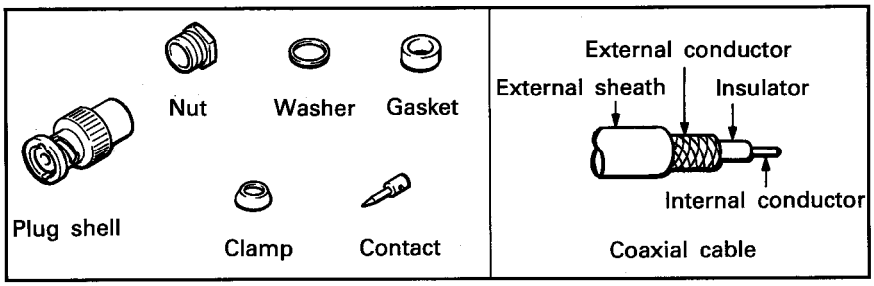
The cable for connection of the AD57 and monochrome CRT should be user-prepared using the 3C-2V or 5C-2V high-frequency coaxial cable.

AD57		Monochrome CRT
Connector type: BNC-P-3-Ni (for 3C-2V) BNC-P-5-Ni (for 5C-2V)	3C-2V or 5C-2V	RCA connector, plug type (for 3C-2V, 5C-2V)

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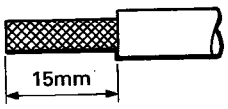
5.5 Connection of MONO. DISPLAY Connector and Cable

The BNC connector supplied with the AD57 consists of the following parts:

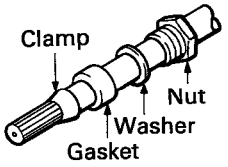


Wiring procedure:

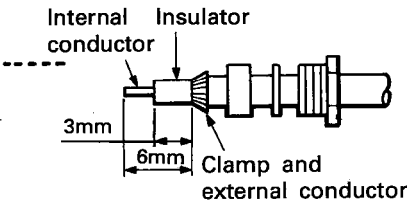
1) Strip the external sheath of the coaxial cable to the specified dimension shown on the right. Do not damage the external conductor.



2) Fit the nut, washer, gasket and clamp onto the coaxial cable as shown on the right and loosen the external conductor.



3) Cut the external conductor, insulator and internal conductor to the specified dimensions shown on the right.
At this time, cut the external conductor to the dimension of the tapered clamp and smooth it down onto the clamp.



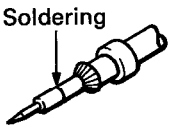
4) Solder the contact onto the internal conductor.

POINT

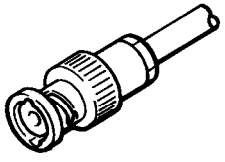
(1) The solder must not come out.

(2) Fit the contact to the cable insulator securely in place.

(3) Solder the contact as soon as possible so that the insulator may not be deformed.



5) Insert the contact assembly made in step 4) into the plug shell and screw the nut into the plug shell.



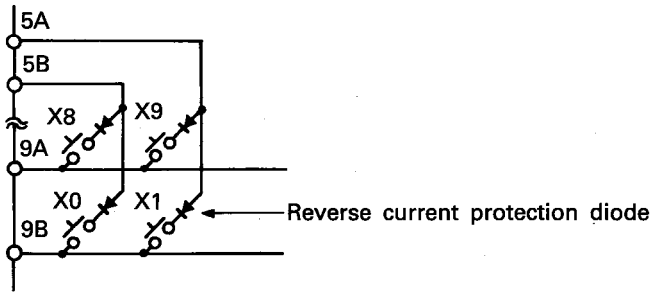
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5.6 Connection of AD57/AD57S1/AD58 and Operation Panel

5.6.1 Precautions for connection of operation panel

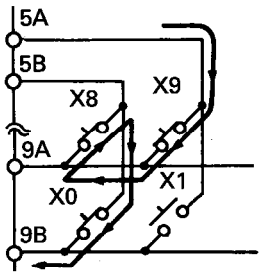
(1) Operation panels should be specified in accordance with the data and diagram in Section 5.6.2.
For the standard operation panel, see Appendix 4.

Use a reverse current protection diode in the operation panel keyboard as shown below.



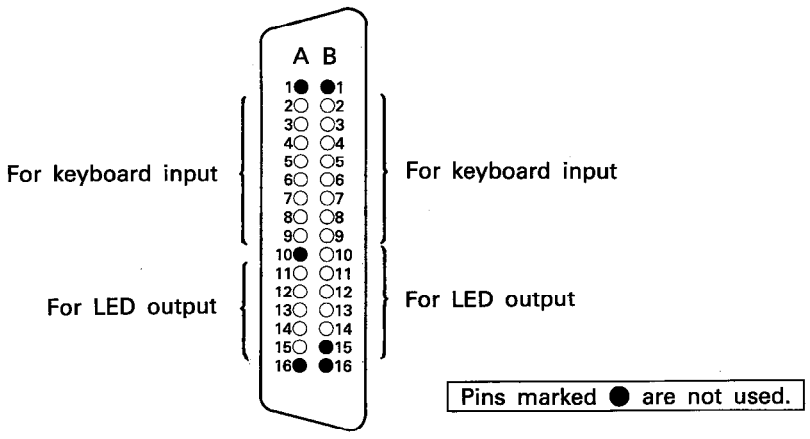
Reverse voltage:	30V min.
Forward voltage:	1.3V max.
Reverse current:	1mA max.
Forward current:	30mA min.

Use a reverse current protection diode to prevent the following from occurring:



If X0, X8 and X9 are switched on at the same time as shown on the left, processing of X0 to X7 forces a current to flow from pin 5A to 9B, causing X0 and X1 to be judged as on.

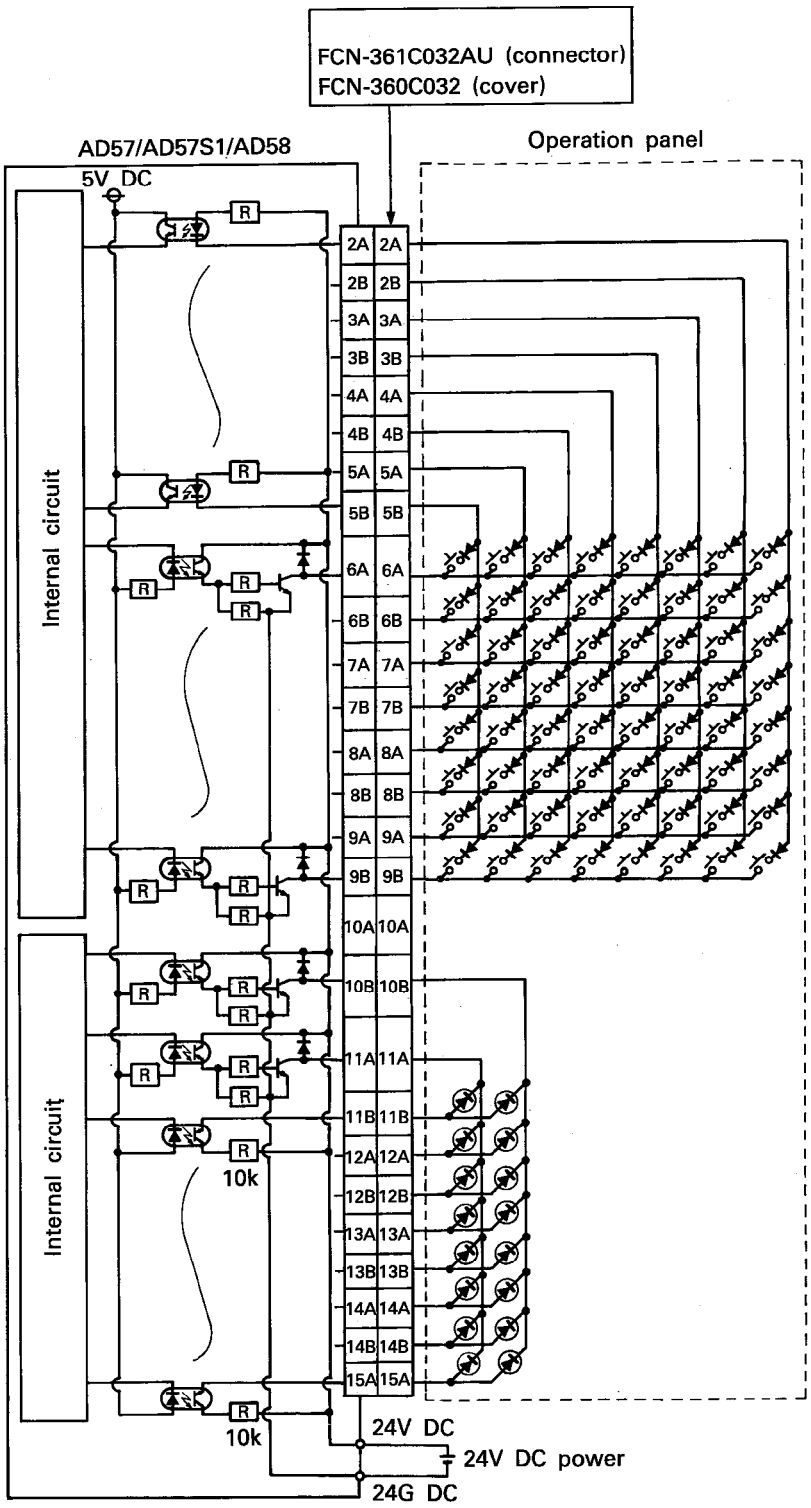
(2) The AD57, AD57S1 or AD58's KEY connector pinouts are as shown below:



(Viewed from module front)

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5.6.2 External wiring



When the AD57 or AD57S1 or AD58 is loaded onto slot 0 of the main base unit, input (X) and output (Y) device numbers are as follows:

Pin number	5B	5A	4B	4A	3B	3A	2B	2A
6A	X38	X39	X3A	X3B	X3C	X3D	X3E	X3F
6B	X30	X31	X32	X33	X34	X35	X36	X37
7A	X28	X29	X2A	X2B	X2C	X2D	X2E	X2F
7B	X20	X21	X22	X23	X24	X25	X26	X27
8A	X18	X19	X1A	X1B	X1C	X1D	X1E	X1F
8B	X10	X11	X12	X13	X14	X15	X16	X17
9A	X8	X9	XA	XB	XC	XD	XE	XF
9B	X0	X1	X2	X3	X4	X5	X6	X7

Pin number	11A	10B
11B	Y7	YF
12A	Y6	YE
12B	Y5	YD
13A	Y4	YC
13B	Y3	YB
14A	Y2	YA
14B	Y1	Y9
15A	Y0	Y8

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5.7 KEY Connector Assembly

Wiring the connector

Disassemble the connector as shown in Fig. 5.1.
(1) Loosen and remove the four screws.
(2) Open the connector covers at the connection.

POINT
Do not mislay the screws, nuts, etc. removed.

Connect the wires.
(1) Wires of max. 0.3mm2 size may be used.
(2) Solder the wires in reference to the connector pin arrangement (Fig. 5.2).

POINT
Use care not to short the terminals during soldering. Where possible, protect the terminals with insulating tubes.

Assemble the connector.
(1) Bundle up the wires properly within the cover clamp.
(2) Install the fixing screws into the sockets and fit the connector into one cover.
(3) Fit the other cover, starting at the connection.
(4) Tighten the four screws. Use the longer screws in the cable clamp.

POINT
Tape the bundled wires if they are too small in number to be held by the cable clamp.
Appendix 2 Precautions for Changing AD57 for AD57S1

Complete

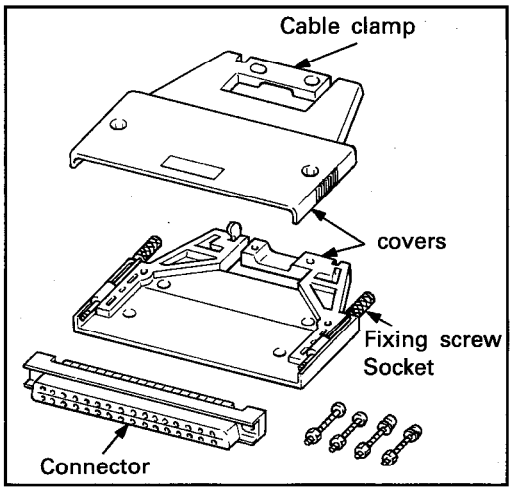


Fig. 5.1

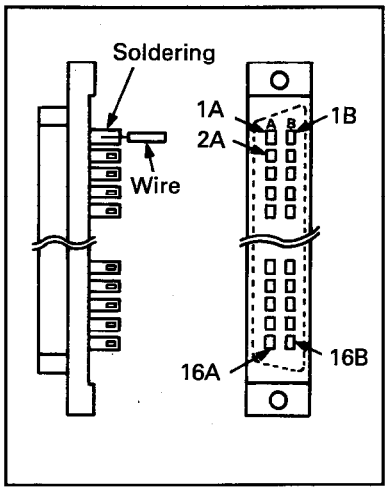


Fig. 5.2

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APPENDICES

Appendix 1 AD57S1 Mode Setting Program

When the AD57S1 is used, the CMODE instruction cannot be used to define display mode. Hence it is necessary to define display mode by using the TO instruction in the AD57S1 display mode setting area.

POINT

The CMODE instruction defines display mode and checks AD57(S1)/AD58 status check. When the AD57S1 is used, display mode cannot be defined but the AD57S1 status should be checked by the CMODE instruction after powering up.

1.1 Display mode setting area

Data should be defined in the AD57S1 display mode setting area by the sequence program as shown below.
The setting programs are indicated in Appendix 1.2.

Address (Decimal)	Set data
504	6900H
505	5001H
506	5902H
507	8803H
508	1504H
509	0005H
510	1406H
511	1407H
512	E008H
513	1309H
514 to 515	(Reserved)
516	010CH
517	FF0DH
518 to 532	(Reserved)
533	001DH

POINT

When defining display mode data, output signals Y10 and Y11 must be switched as indicated below:
Y10·····ON
Y11·····OFF

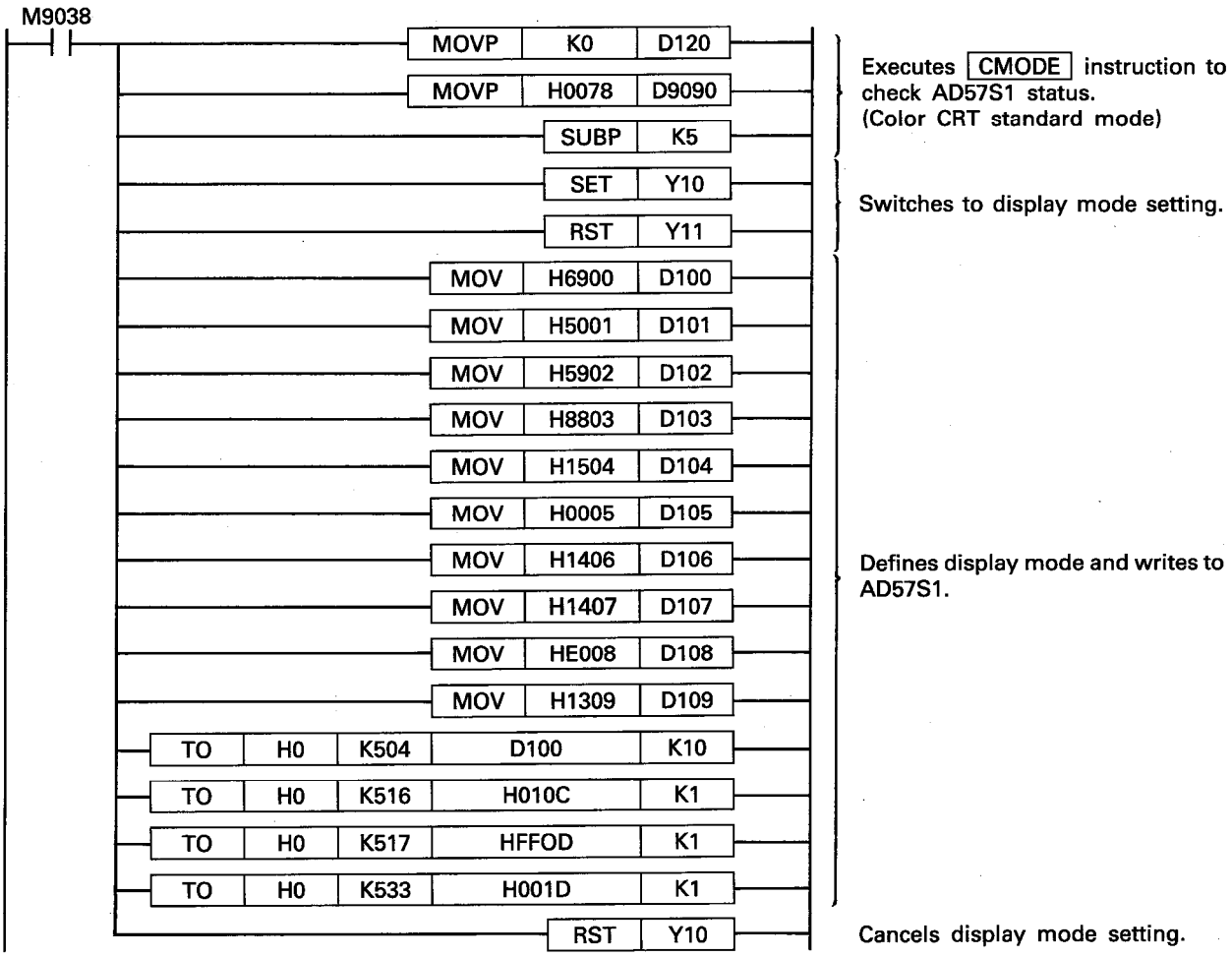
APP

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1.2 Display mode setting program

To define display mode for the AD57S1, the following program should be written at the head of the sequence program.
This program assumes that the AD57S1 is loaded on slot 0 of the main base unit.

Output in direct mode

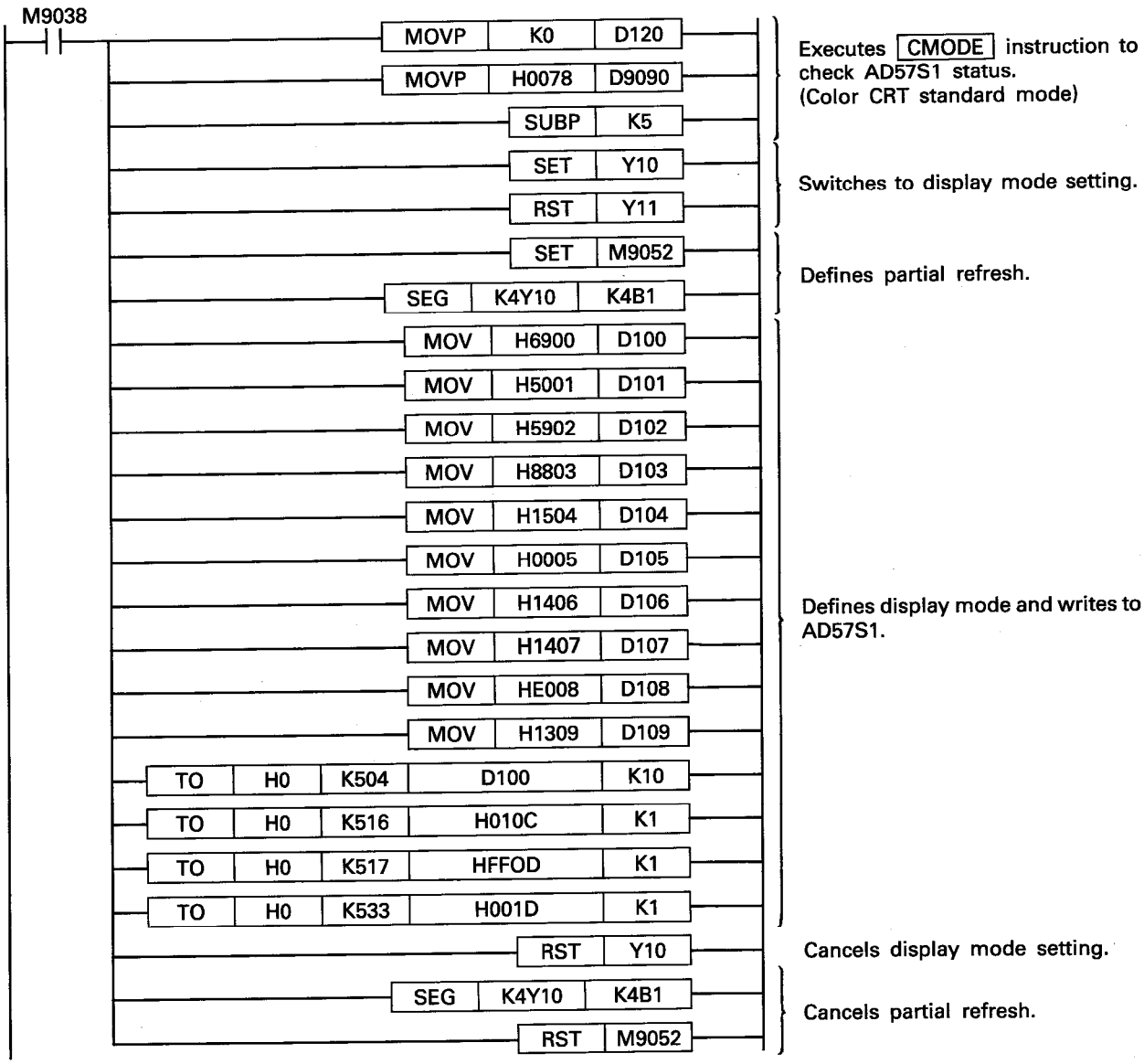


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Output in refresh mode



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Appendix 2 Precautions for Changing AD57 for AD57S1

2.1 Software precautions

(1) Additional display mode setting program for use with the AD57S1 only

The display mode setting program for use with the AD57S1 only shown in Appendix 1 is added to the beginning of the sequence program to compensate for the AD57S1's inability to perform display mode setting using the CMODE instruction.

(2) Correction of magnified screens

Magnified screens cannot be displayed by the AD57S1.
All canvas screens entered in magnification mode are corrected into those in standard mode.
Correction is made to the areas specified for magnified screens in the sequence program.

2.2 Hardware precautions

(1) Connection of a display

The display used and cable for connection of the display are different between the AD57 and AD57S1. Use the AD57S1 with a proper display in accordance with Appendix 3, and with a proper cable in accordance with Section 5.2.2.
(The AD57S1 cannot be used with a monochrome CRT.)

(2) Current consumption of the modules

Currents consumed by the AD57 and AD57S1 are as follows:

	AD57	AD57S1
Current consumption (5VDC) A	1.21	1.55

Note the current capacity of the power supply module when changing the AD57 for the AD57S1.

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Appendix 3 CRT, Plasma Display and LCD

3.1 Displays for use with the AD57

The following displays are available for use with the AD57. (For wiring, see Section 5.)

(1) Color CRTs

The following color CRTs are available for use with the AD57.

	Type	Screen Size	Remarks	
CRT	JUM-1481ALP	14 inch	100VAC	Cable for connection of AD57 is optional.
	A6CRTE-115UL	14 inch	115VAC, UL type power cable	
	A6CRTE-220VD	14 inch	220VAC, VD type power cable	
Cable	AC15CD	—	1.5m (4.92ft) (for connection of AD57-CRT)	

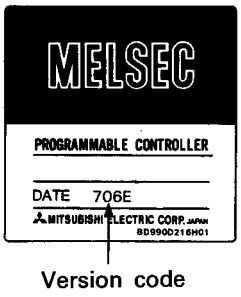
(2) Plasma display

The following plasma display is available for use with the AD57.

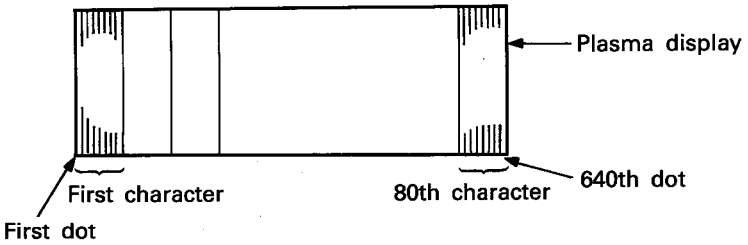
Type	Screen Size	Remarks
FPF2000S-M	210.9 (8.30) (W) × 131.7 (5.19) (H) (Identical in size to 12 inch CRT)	Supplied with cable for connection of AD57 only (5m 16.4ft)).

Notes on use

1) The plasma display may only be used with the AD57s of versions "E" and down, indicated following the serial number in the rating plate as shown on the right.



2) When the plasma display is used with the AD57, note that the first and 640th dots on each line of the plasma display cannot be used as shown below.



(3) Monochrome CRT

Type	Screen Size	Connector	Remarks
MIC-953V	9 inch	RCA connector (plug type)	
MIC-120F	12 inch		
MIC-140F	14 inch		

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3.2 Displays for use with the AD57S1

The following color CRTs is available for use with the AD57S1. (For wiring, see Section 5.)

(1) Color CRTs

Type	Screen Size	Remarks
KD551K	14 inch	1.5m (59.1inch) cable is supplied for connection with the AD57S1.
N5913L		
FC9853		
PC-TV352	15 inch	
PC-TV451N		
PC-TV452		
PC-TV453N		
PC-TV471	21 inch	
PC-TV472		
TX-1404MA	14 inch	

(2) Plasma display

Type	Screen Size	Remarks
FPF4000S-MN	210.9 (8.30) (W) X 131.7 (5.19) (H) (Identical in size to 12 inch CRT)	Supplied with cable for connection of AD57 only (5m (16.4ft)).

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3.3 LCD for use with the AD58

1) The panel mounted LCD unit is available as a separate part.

2) The standard cable supplied with the unit is 3m (9.84ft) long.

3) The display size is 600×200 dots, dimensions are indicated in Appendix 4.

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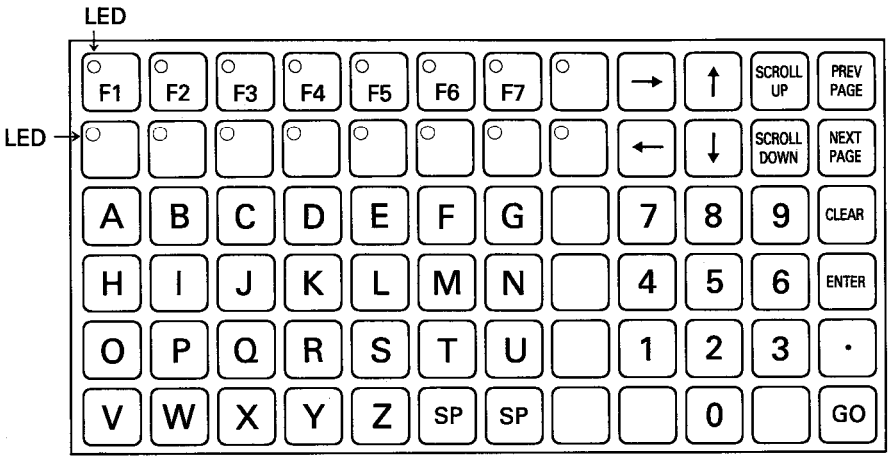
Appendix 4 Operation Panel Keyboard

The following operation panels are available for use with the AD57/AD57S1/AD58.

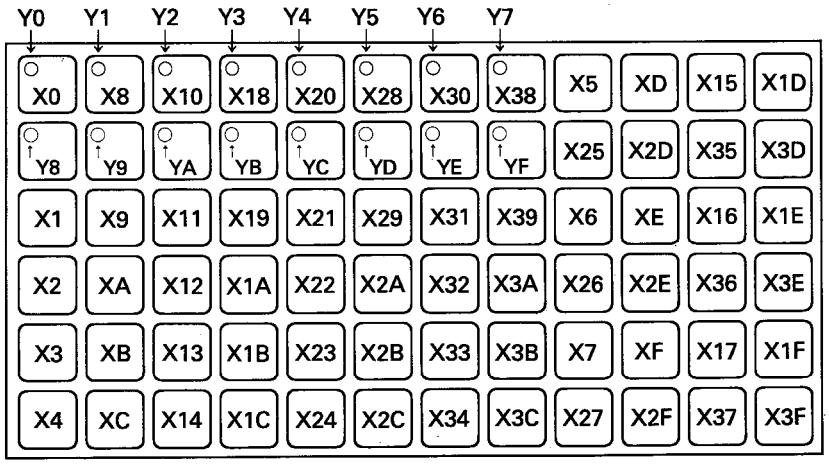
1. Standard operation panels

Type	Remarks
FP5-MD41-A	Desk-top type (with 1.5m (4.92ft) cable)
FP5-MD41-B	Panel mounting type (with 1.5m (4.92ft) cable)

(1) Keyboard layout



(2) Input (X)/output (Y) device numbers with the AD57/AD57S1/AD58 loaded on slot 0 of the main base unit



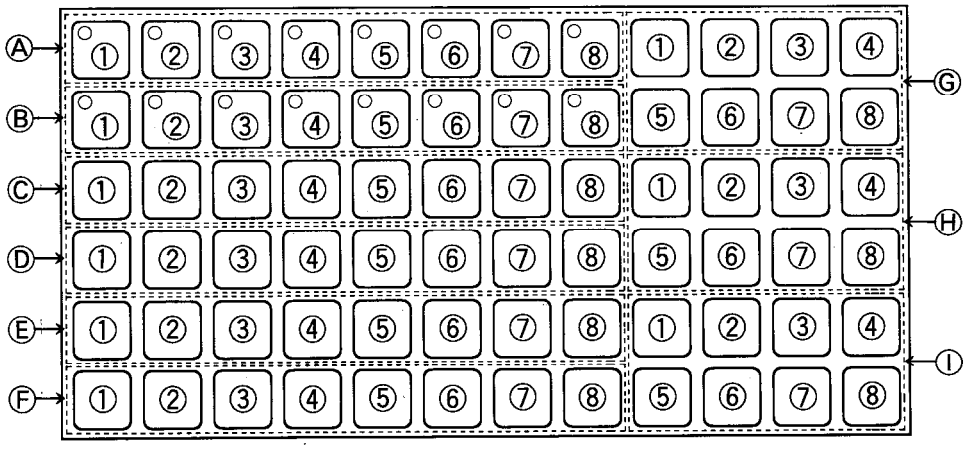
(3) Key names can be changed using key labels and protective seals supplied. (For more information, see the operation panel manual.)
The required key sheet will be printed for order of 50 or more operation panels of the same key names and key arrangement. Please consult your sales representative.

(4) The cable of 1.5m (4.92ft) long is available as standard for connection of the AD57/AD57S1/AD58 and operation panel. A cable of other than the standard length required should be specified on order.

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2. Note

(1) Although there are a total of 72 keys on the operation panel, a maximum of 64 keys can be used for the AD57 or AD57S1 or AD58. One of the blocks Ⓐ to Ⓘ on the diagram below will therefore be unused.



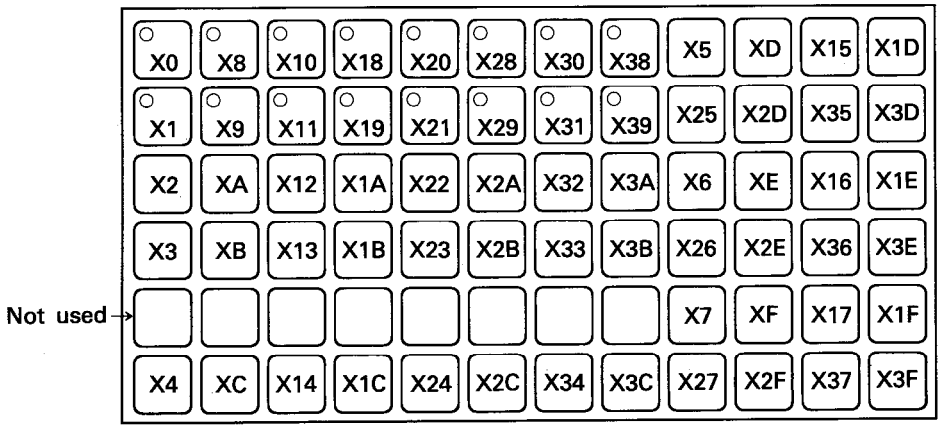
Keys with LEDs are in blocks Ⓐ and Ⓑ only.

(2) 8 of the 9 keys marked ① in each of the blocks Ⓐ to Ⓘ will correspond to inputs X0 to X7.
Similarly, 8 of the 9 keys marked ② in each block will correspond to inputs X8 to XF, etc.
This is summarized in the table below.

With reference to the above keyboard.

Key number	Input
1	X0 to X7
2	X8 to XF
3	X10 to X17
4	X18 to X1F
5	X20 to X27
6	X28 to X2F
7	X30 to X37
8	X38 to X3F

Example: When block Ⓔ is not used



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(3) For the AD57S1/AD58, general-purpose outputs (Y) are assigned as given below:

LED of key ① in block Ⓐ ····· Y0
LED of key ② in block Ⓐ ····· Y1

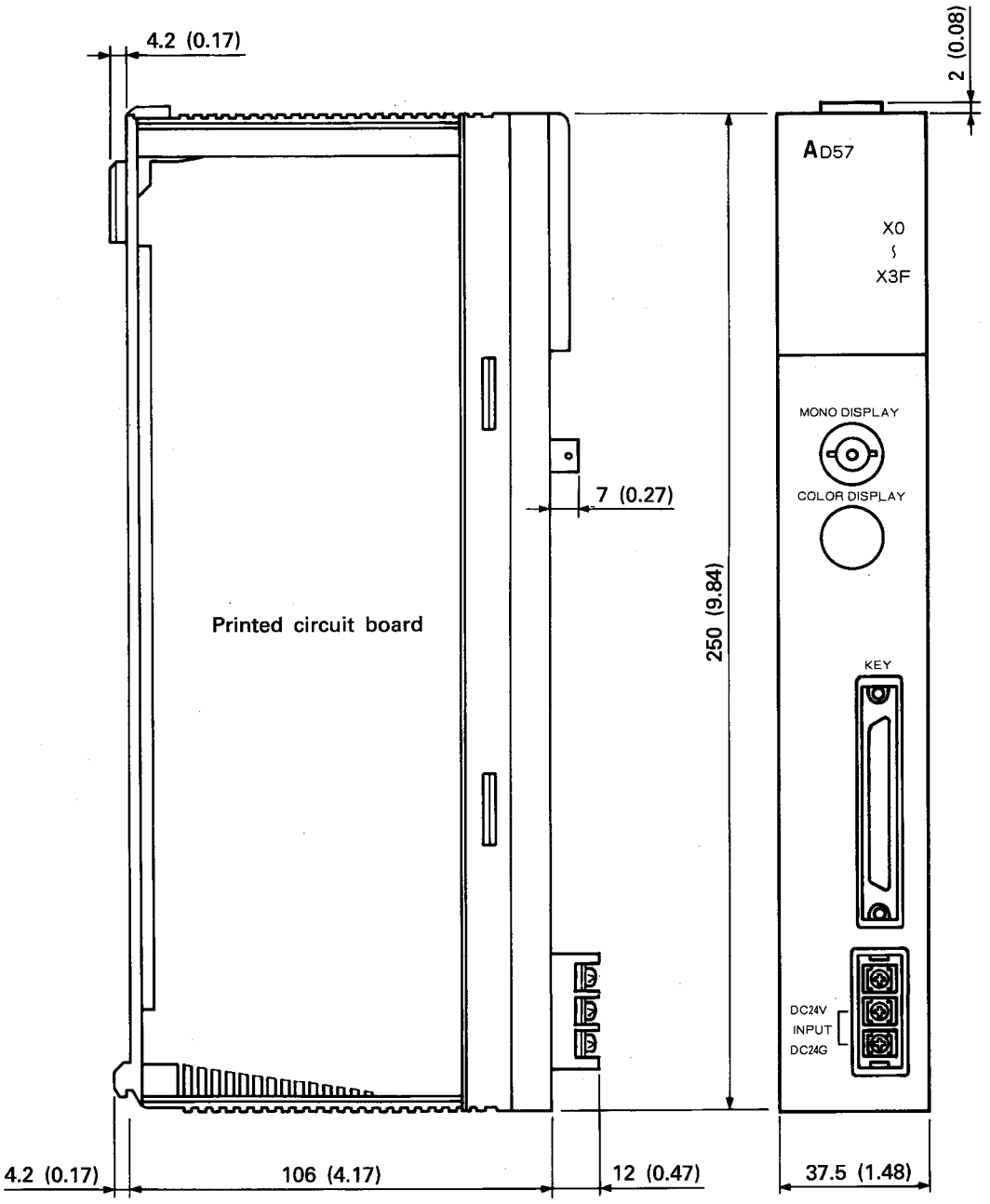
LED of key ⑧ in block Ⓐ ····· Y7
LED of key ① in block Ⓑ ····· Y8
LED of key ② in block Ⓑ ····· Y9

LED of key ⑧ in block Ⓑ ····· YF etc.

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Appendix 5 Dimensions

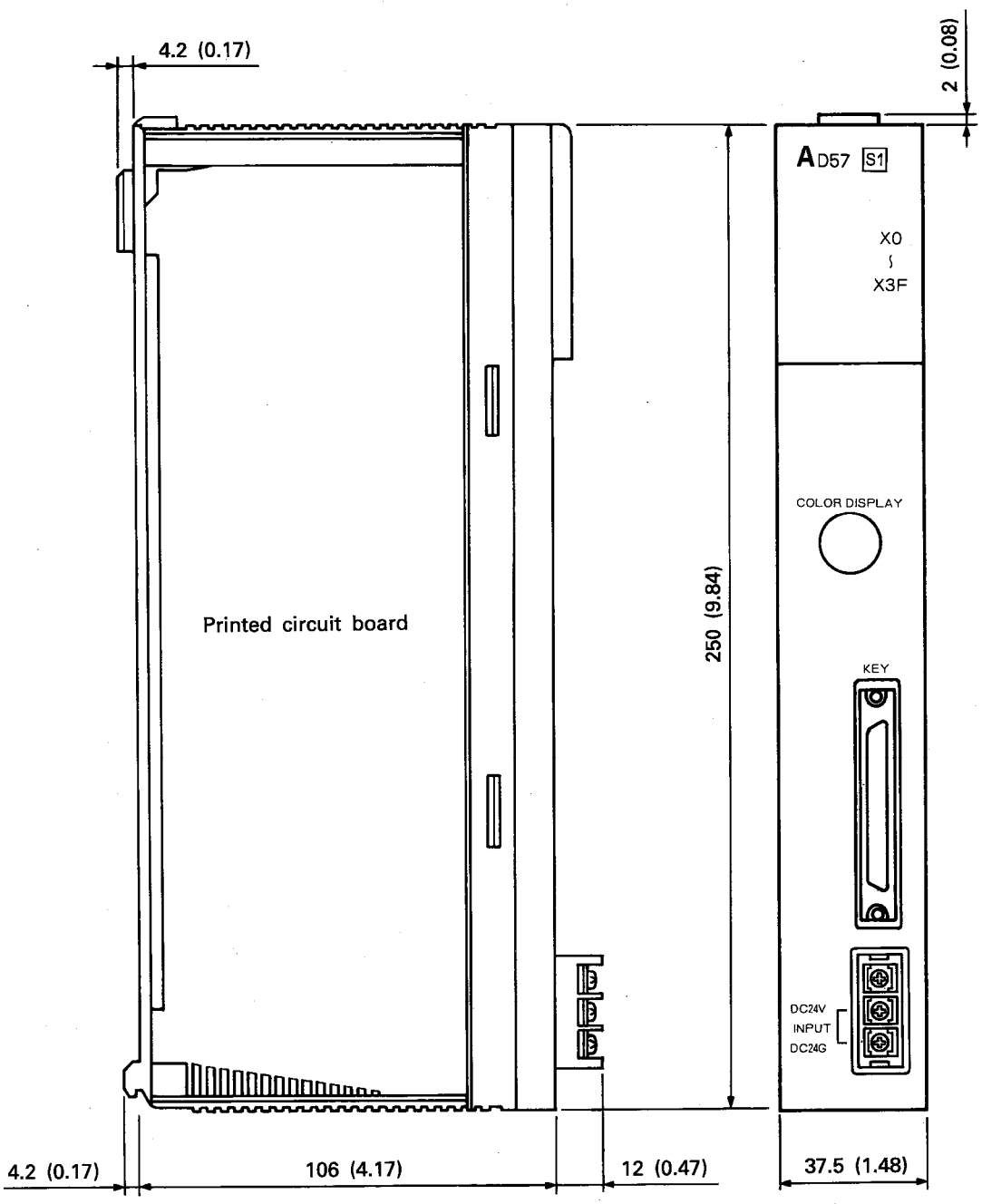
(1) AD57 CRT controller module



Unit: mm (inch)

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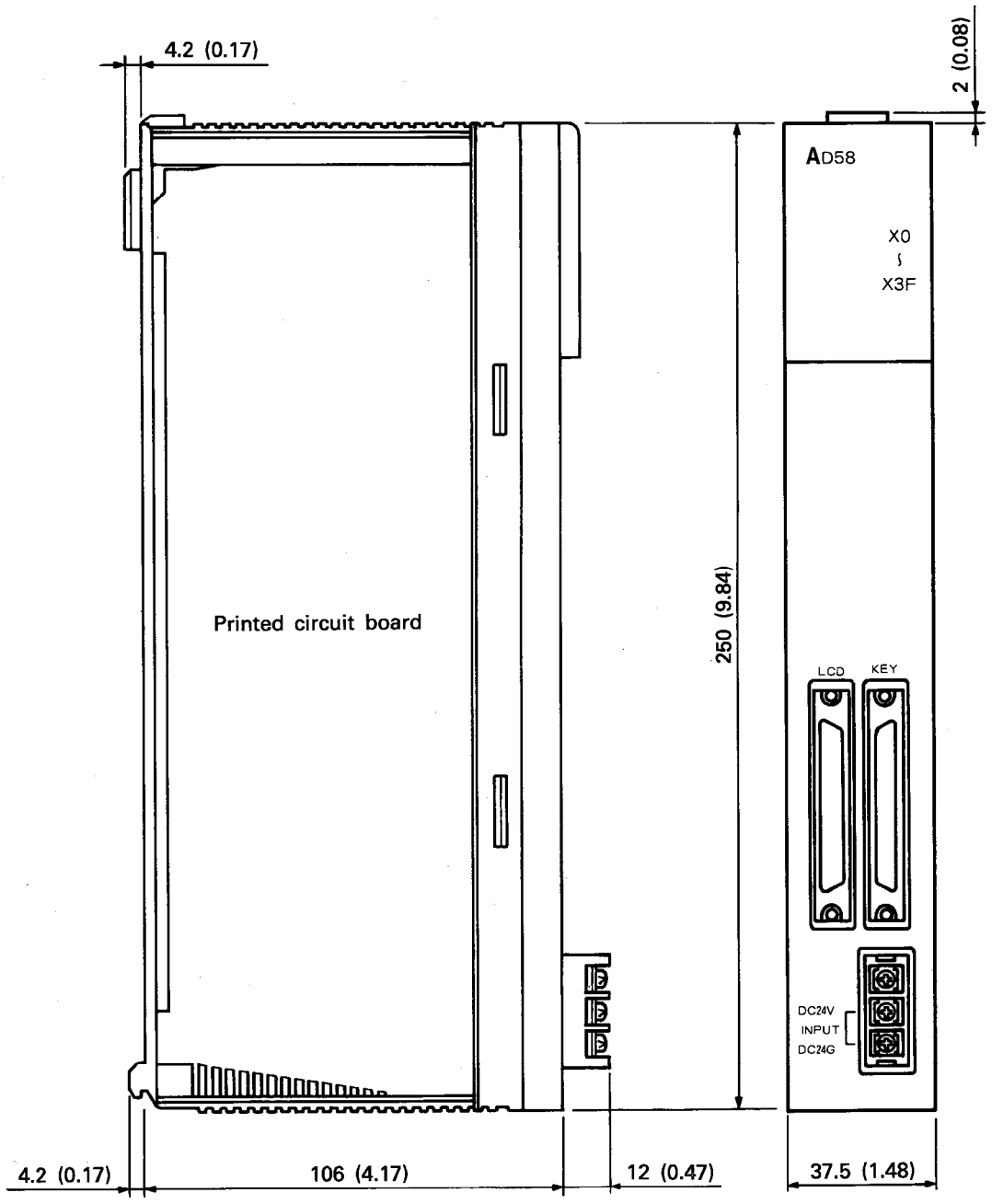
(2) AD57S1 CRT controller module



Unit: mm (inch)

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(3) AD58 LCD controller module

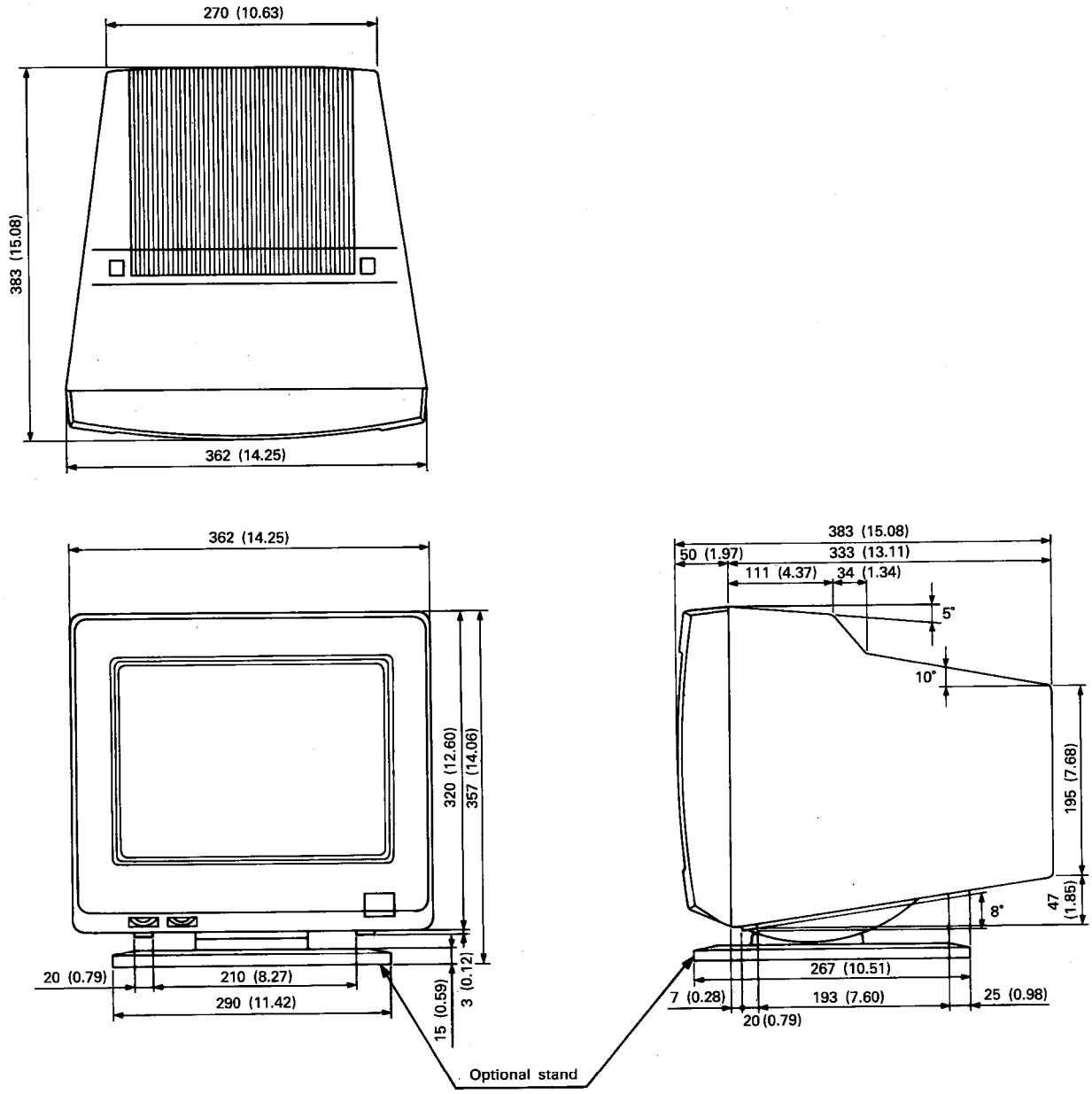


Unit: mm (inch)

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(4) JUM-1481ALP color CRT
A6CRT- [ ] color CRT

Weight
CRT: 13kg (28.6lb)
Optional stand: 0.87kg (1.91lb)

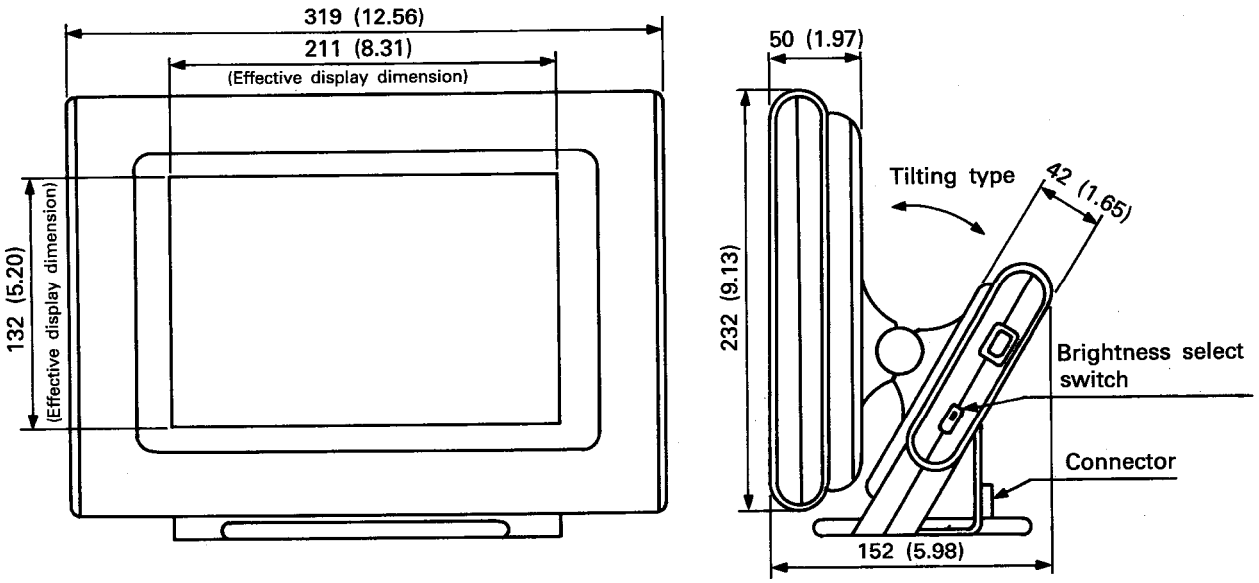


Unit: mm (inch)

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(5) FPF2000S-M plasma display
FPF4000S-MN plasma display

Weight: 3.3kg (7.26lb)

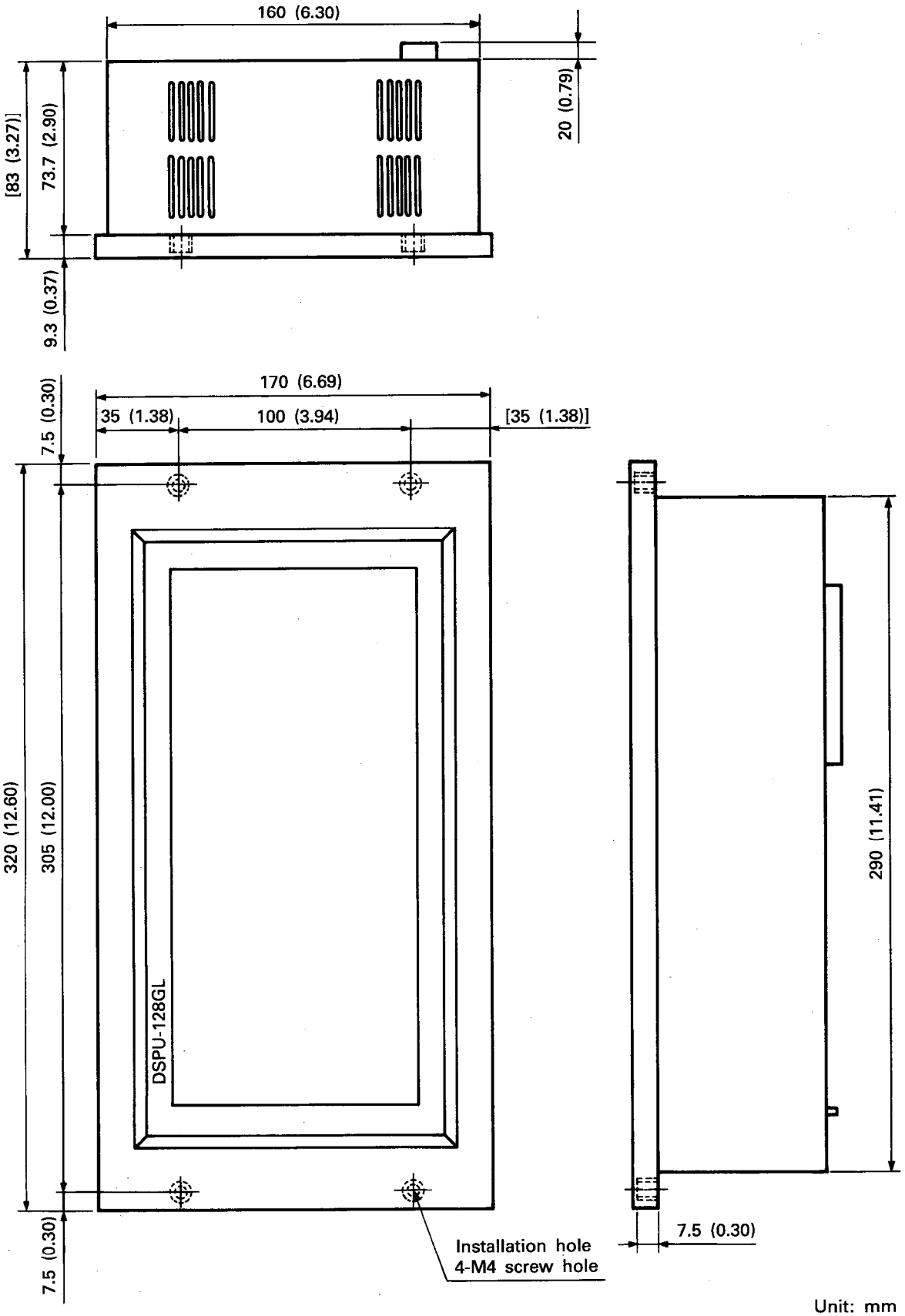


Unit: mm (inch)

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(6) DSPU-128GL LCD

Weight: 3.6kg (7.92lb)

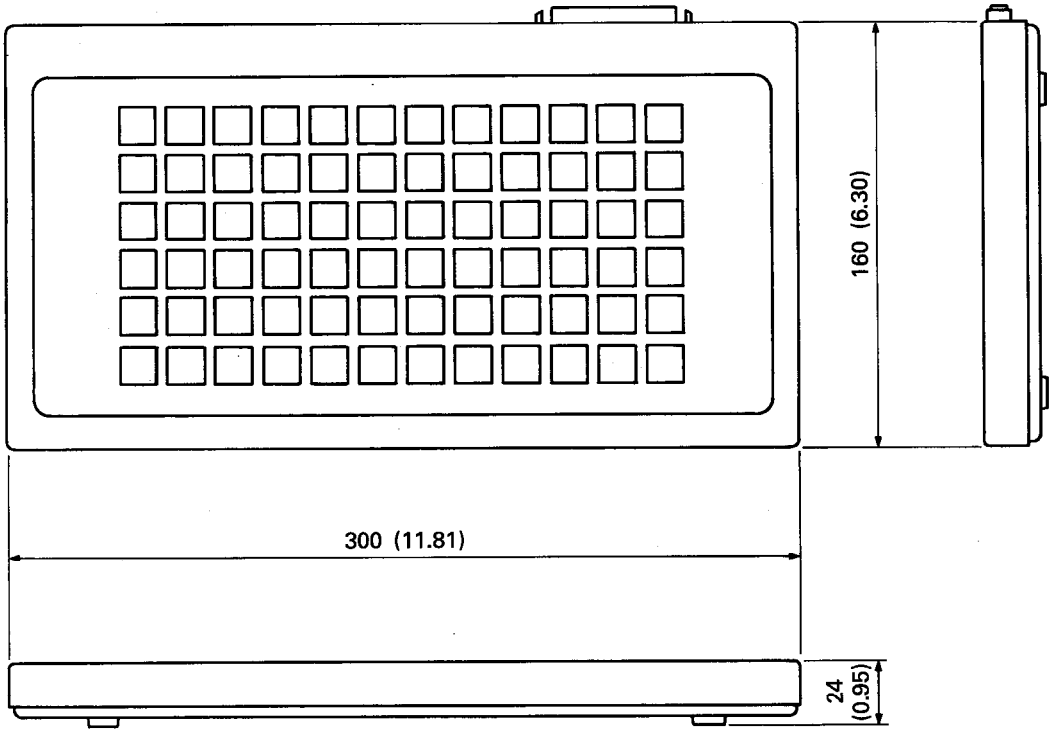


Unit: mm (inch)

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(7) FP5-MD41-A operation panel (desktop)

Weight: 1.35kg (2.97lb)

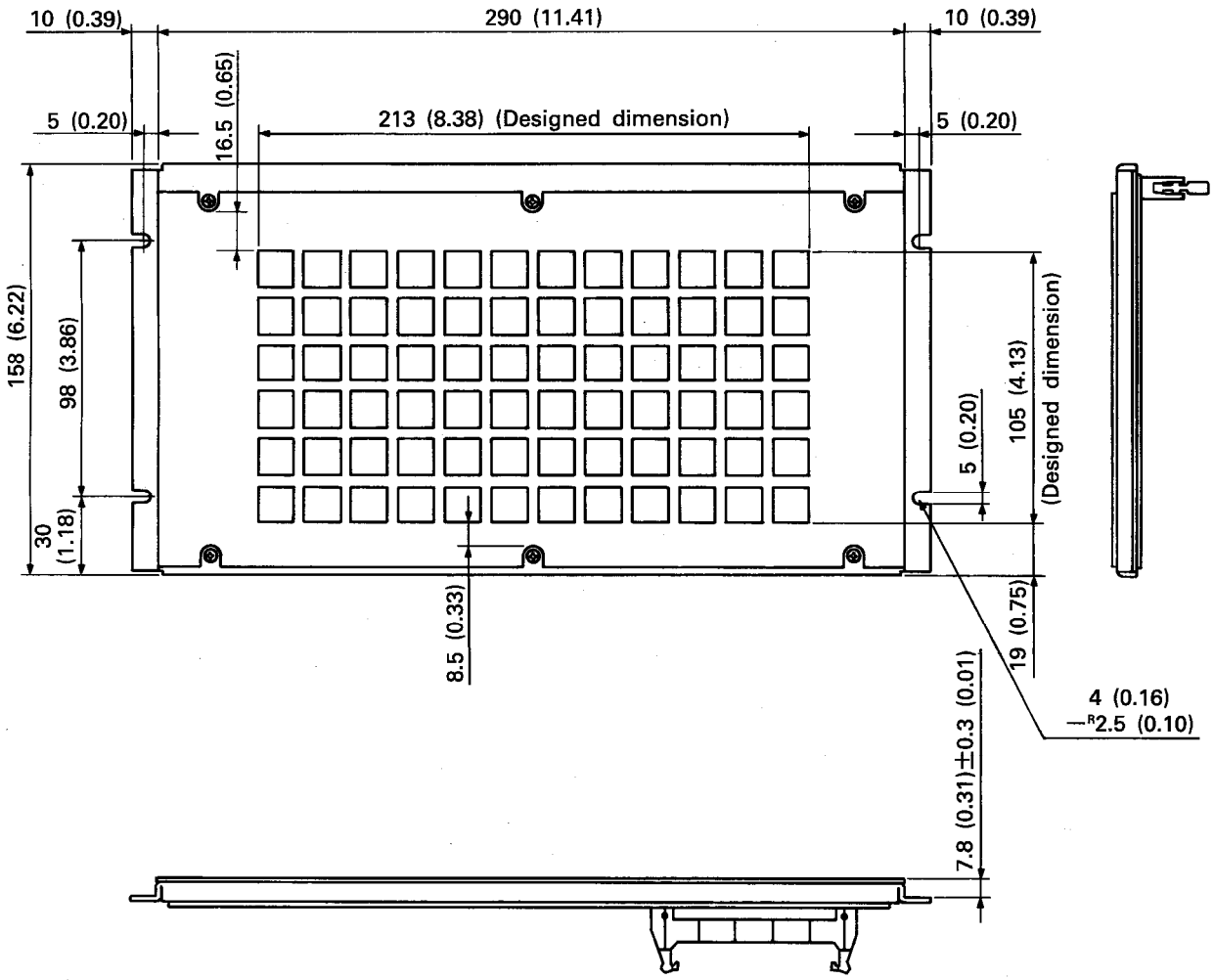


Unit: mm (inch)

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(8) FP5-MD41-B operation panel (panel-mounted)

Weight: 1.3kg (2.86lb)



Unit: mm (inch)

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IMPORTANT

The components on the printed circuit boards will be damaged by static electricity, so avoid handling them directly. If it is necessary to handle them take the following precautions.

(1) Ground human body and work bench.

(2) Do not touch the conductive areas of the printed circuit board and its electrical parts with any non-grounded tools etc.

Under no circumstances will Mitsubishi Electric be liable or responsible for any consequential damage that may arise as a result of the installation or use of this equipment.

All examples and diagrams shown in this manual are intended only as an aid to understanding the text, not to guarantee operation. Mitsubishi Electric will accept no responsibility for actual use of the product based on these illustrative examples.

Owing to the very great variety in possible applications of this equipment, you must satisfy yourself as to its suitability for your specific application.

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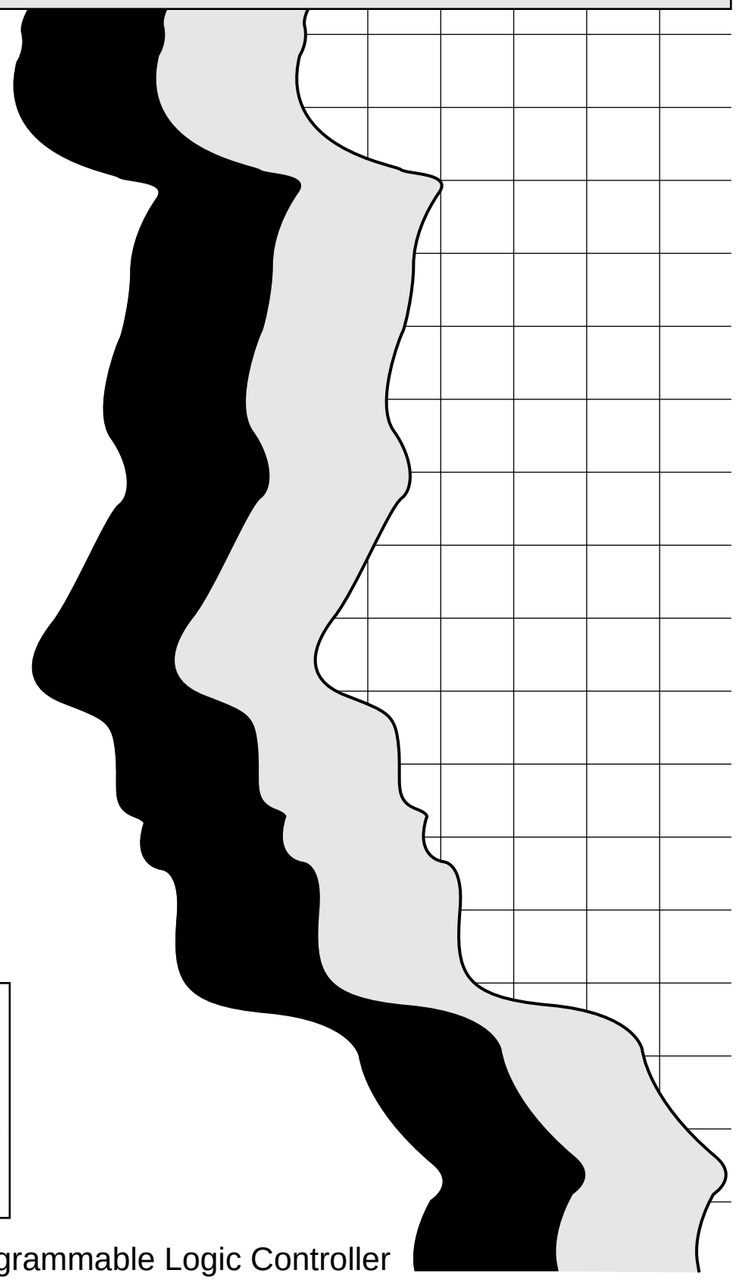
MITSUBISHI

Type AD57(S1)/AD58 CRT/LCD Controller Module

User's Manual

Type AD57(S1)/AD58 CRT/LCD Controller Module

User's Manual



MODEL	AD57/58-USERS-E
MODEL CODE	13J646
IB(NA)66072-B(9007)MEE	

MITSUBISHI ELECTRIC CORPORATION

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