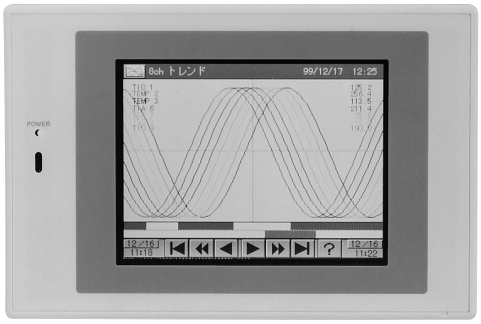
azbil

Specification

Medium size Color Programmable Display

Smart Terminal
EST240 Z

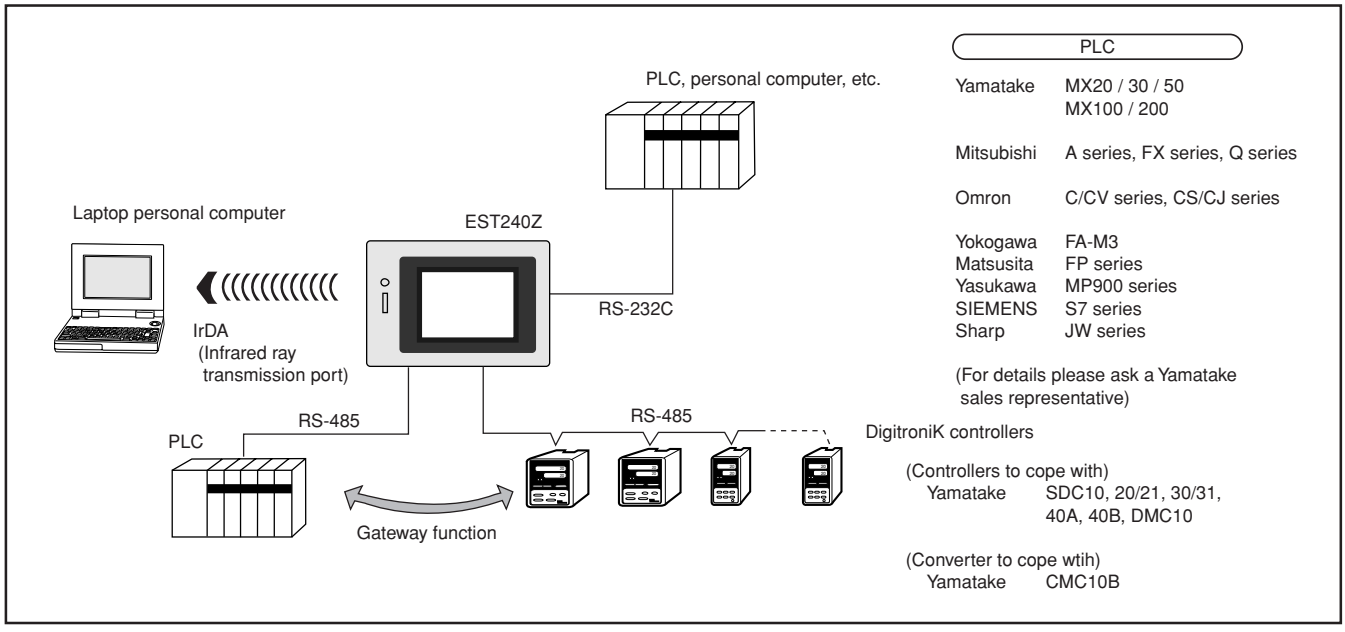
The EST240Z Smart Terminal is a medium size programmable display adopting multiwindows and the STN device with its reputed visibility.
It has the capability of producing vividly 256-color display with drawings of bit-mapped images, etc., and the application creation can be simply worked out with a new AP editor coping with Windows 98/Me/XP.
Smart objects (pictures + operating settings) can be selected from the library like the feeling of pasting them.
The interface to external devices is equipped with the serial communications port and the infrared ray transmission port (IrDA).



■ Features

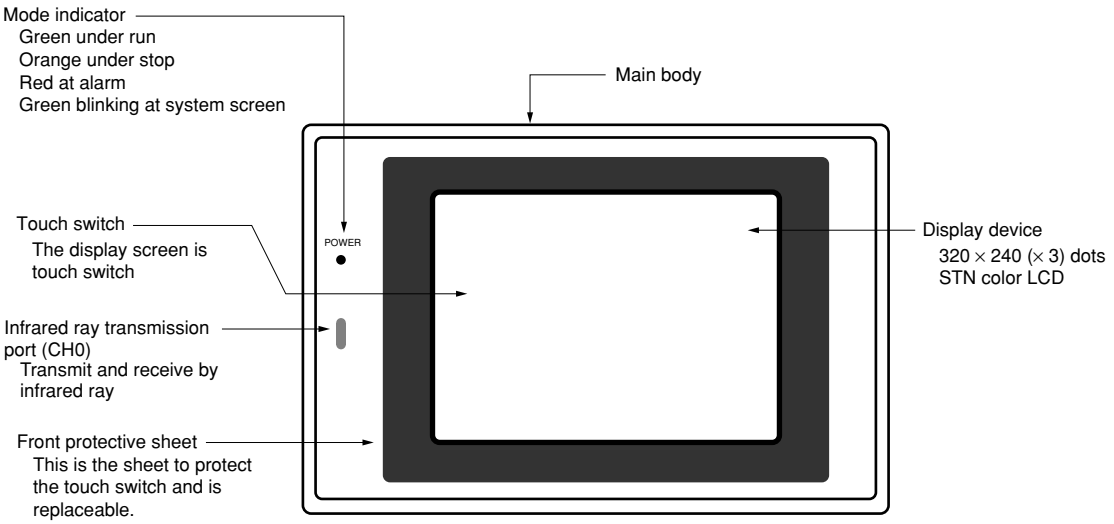
- Realized 256-color display with vivid image drawings. It can clearly draw the images taken by a digital camera.
- Multi-channel structure with RS-232C (one channel), RS-485 (3-channel) and infrared ray transmission port provided on the front side. It can also cope with the same applications to support simultaneously programmable logic controllers (PLCs) and controllers.
- Provided with instrumentation objects such as a long period trend function to store 2-week data in Smart Terminal (in case of 1 minute cycling and 5-channel).
- The DMC10 package is available to realize the loader and the monitoring functions of module type controllers without programming.
- The software of the AP editor for picture creation is considerably enhanced in its maneuverability to cope with Windows 98/Me/XP. Furthermore, it can gently support the creation of application data by utilizing smart objects.
- Easy to replace the components such as the display unit from front side, thus, providing the easiness in maintenance.
- The protective structure of IP65 is assured despite of the provision for the infrared ray transmission port. The installation location is not restricted.

■ System configuration

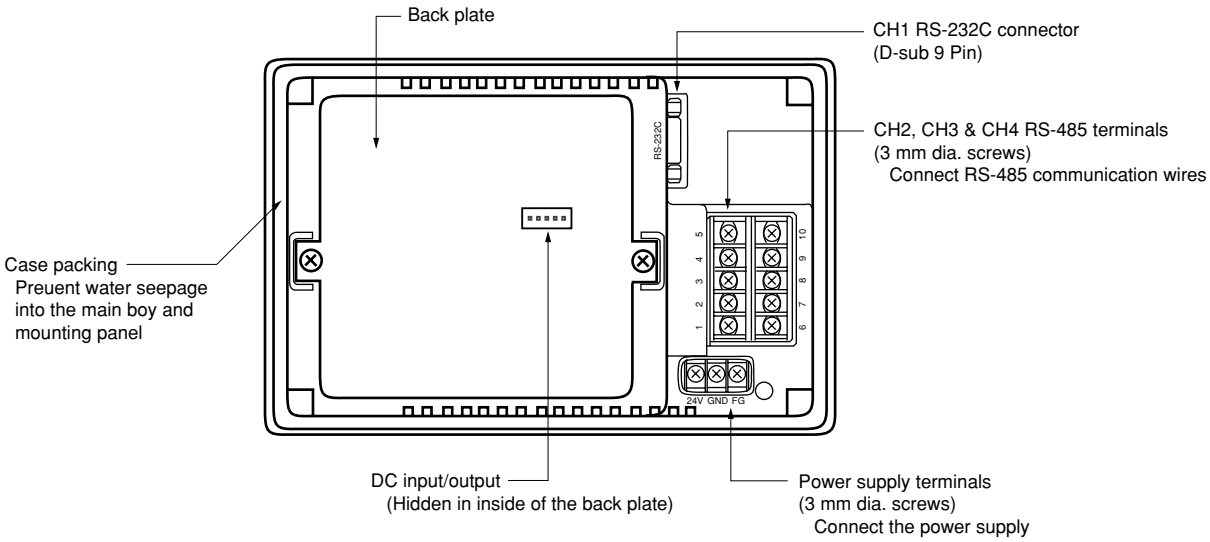


■ Name of each component

● The front



● The rear

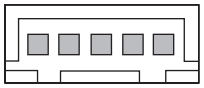


■ Part material and environment resistance

Part	Material	Chemical resistance/oil resistance
Case display unit chassis	**PC/ABS**	Rather being resistant to water, alcohol, oil, salt and weak acid but has effects of swelling and dissolution by alkaline, aromatic hydrocarbon and halogen acid.
Touch switch front protective sheet	**PET (polyethylene terephthalate)**	PET is susceptible to damage by strong acid, alkaline, boiling water and water and water vapor but has extremely high resistance to organic solvent and oily substances.
Case packing	**Nitrile rubber Class 1·A (JIS B 2401 Class 1·A)**	This is “O” ring for general mineral oil, and shows good characteristics for gasoline alcohol, inorganic acid and alkaline. However, it has less resistance to benzene, to luene, trichloroethylene, ether, ketone, ethyl acetate, organic acid, etc.
Back plate	**Incombustible/ heat-resistant vinyl chloride sheet**	Material has rigidity insulation resistance, excellent antiweatherability, water resistance and chemical resistance. It has low resistance to hydro-carbon, ester, ketone, aldehyde, uric acid, chlorinated solvent and rosin.

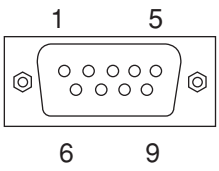
■ Specifications

Display unit	**Display element**	STN color LCD
	Display color	256 colors (bitmap display) / 64 colors (object display)
	Resolution	320 × 240 dots
	Dot pitch	0.3 mm
	Display unit life (at room temperature)	Approx. 50,000 hrs.
	Back-light life (at room temperature)	40,000 hrs. (in a half brightness)
	Back light	Turning-off is possible by time setting
	Display attribute	Blinking and color change
	Display character type	ANK: 158, kanji character: 6349 (including 453 symbols, JIS level/and 2 kanji sets)
	Display character number	40-character × 30-line (8 × 8 dots)
		40-character × 15-line (8 × 16 dots)
		20-character × 15-line (16 × 16 dots)
	Display character size	1 to 8 integers in vertical and horizontal directions
	Graphic element	Straight line, rectangle, circle, circular arc, ellipse, optional patterns, etc.
	Graphic display	Bar graph and line graph
	Display unit function	Numeric, lamp display, character string, sub-screen display, etc.
Screen memory	**Memory capacity**	1 M bytes
	No. of registered screens	999 panels (maximum number changes depending applications)
	Panel display	Simultaneously upto 8 panels
Touch switch	**Switching method**	Transparent resistance membrane
	Life	1 million times (by finger inputting)
DC input/output interface	**Point number**	Input: 1 Output: 1
	Output form	NPN transistor
	Dielectric strength	30 Vdc
	Leak current	0.3 mA max.
	Load voltage range	4.5 to 27.6 Vdc, 10mA
	Connector	Applicable connectors: Nippon Atsuchaku Tanshi Co. B5B-XH-AM

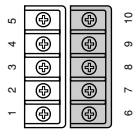


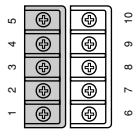
Pin No.	Signal name	Contents
1	DOVCC	Power supply input for output signal
2	DO	Output signal
3	DOGND	Output signal ground
4	DI	Input signal
5	DIGND	Input signal ground

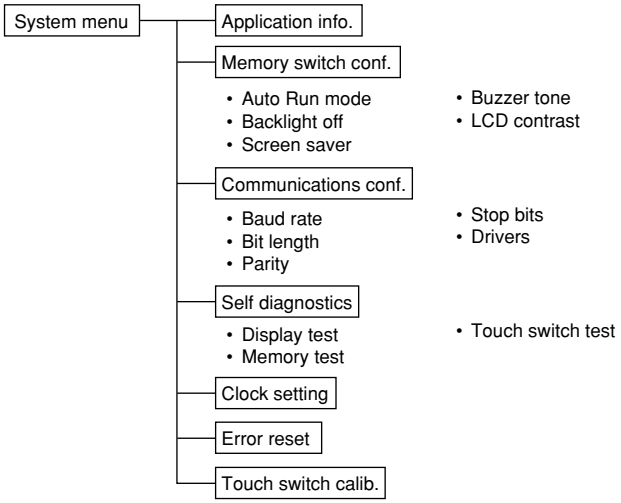
Communications (CHO) Interface	**Communications standard**	Infrared ray communications (IrDA 1.0 equipment)
	Transmission distance	0.4 to 1 m
Note 1)	**Unit connection number**	1 unit
	Transmission speed	9600, 19200, 38400, 57600 and 115200 bps
Communications (CH1) Interface	**Communication standard**	RS-232C equipment
	Transmission distance	15 m
	Unit connection number	1 unit
	Transmission speed	9600, 19200, 38400, 57600, adn 11520 bps
	Connector	Applicable connector: Daich Denshi Kogyo Co. 17JE-13090-02 (08C2) or equivalent D - sub 9 pin



Pin No.	Signal name	Contents	Channel	Input/ Output
1	NC	No connection		
2	RD1	Receiving data	CH1	Input
3	SD1	Transmitting data	CH1	Output
4	ER1	DR (6-pin) and internal connection	CH1	
5	SG	Signal ground		
6	DR1	ER (4-pin) and internal connection	CH1	
7	RS1	Transmitting request	CH1	Output
8	CS1	Transmitting enable	CH1	Input
9	NC	No connection		
Shell	—	No connection		

<table>
<tr><td rowspan="6">Communications (CH2) Interface</td><td>Communication standard</td><td colspan="2">RS-485 equivalent (full duplex/half duplex)</td></tr>
<tr><td>Transmission distance</td><td colspan="2">1000 m</td></tr>
<tr><td>Unit connection number</td><td colspan="2">31 units</td></tr>
<tr><td>Transmission speed</td><td colspan="2">4800, 9600, 19200, 38400, 57600 and 115200 bps</td></tr>
<tr><td>Connector</td><td colspan="2">3 mm dia. terminal block</td></tr>
<tr><td colspan="3"> 

<table>
<tr><th>Pin No.</th><th>Signal name</th><th>Contents</th><th>Channel</th><th>Input/ Output</th></tr>
<tr><td>1</td><td>SDA2</td><td>Transmitting data (+)</td><td>CH2</td><td>Output</td></tr>
<tr><td>2</td><td>SDB2</td><td>Transmitting data (–)</td><td>CH2</td><td>Output</td></tr>
<tr><td>3</td><td>RDA2</td><td>Transmitting data (+)</td><td>CH2</td><td>Input</td></tr>
<tr><td>4</td><td>RDB2</td><td>Transmitting data (–)</td><td>CH2</td><td>Input</td></tr>
<tr><td>5</td><td>SG</td><td>Signal ground</td><td></td><td></td></tr>
</table></td></tr>
<tr><td rowspan="6">Communications (CH3, CH4) Interface</td><td>Communication standard</td><td colspan="2">RS-485 equivalent (full duplex/half duplex)</td></tr>
<tr><td>Transmission distance</td><td colspan="2">1000 m</td></tr>
<tr><td>Unit connection number</td><td colspan="2">31 units</td></tr>
<tr><td>Transmission speed</td><td colspan="2">(CH3) 4800, 9600, 19200, 38400 bps, (CH4) 4800, 9600, 19200, 38400, 57600, 115200 bps</td></tr>
<tr><td>Connector</td><td colspan="2">3 mm dia. terminal block</td></tr>
<tr><td colspan="3"> 

<table>
<tr><th>Pin No.</th><th>Signal name</th><th>Contents</th><th>Channel</th><th>Input/Output</th></tr>
<tr><td>6</td><td>DA3</td><td>Trans. / receiving data (+)</td><td>CH3</td><td>Input/Output</td></tr>
<tr><td>7</td><td>DB3</td><td>Trans. / receiving data (–)</td><td>CH3</td><td>Input/Output</td></tr>
<tr><td>8</td><td>DA4</td><td>Trans. / receiving data (+)</td><td>CH4</td><td>Input/Output</td></tr>
<tr><td>9</td><td>DB4</td><td>Trans. / receiving data (–)</td><td>CH4</td><td>Input/Output</td></tr>
<tr><td>10</td><td>SG</td><td>Signal ground</td><td></td><td></td></tr>
</table>
! Precautions in handling
• CH3 and CH4 are for RS-485 duplex communication.
• Dedicated output terminals (RSA and RSB) are required when the mitsubishi CPU direct communication mode is designated.</td></tr>
<tr><td>System menu</td><td></td><td colspan="2">Basically an application can make each setting but the setting can be changed by the Smart terminal.
 
</td></tr>
<tr><td rowspan="6"></td><td>Application info.</td><td colspan="2">Display built-in application file names and down-load dates</td></tr>
<tr><td rowspan="5">Memory switch conf.</td><td>Automatic run start</td><td>Wait time till starting is set to find if the automatic run starts at power input</td></tr>
<tr><td>Screen saver start</td><td>Wait time till starting is set to find is screen saver starts to run</td></tr>
<tr><td>Automatic back · light off</td><td>Wait time till starting is set to find if the back-light is auto-matically turned off.</td></tr>
<tr><td>Buzzer tone</td><td>Selection of high, medium and low is possible.</td></tr>
<tr><td>LCD contrast adjustment</td><td>Adjust the LCD contrast.</td></tr>
<tr><td rowspan="5"></td><td>Communications conf.</td><td colspan="2">Set the transmission speed for communication port.</td></tr>
<tr><td rowspan="3">Self-diagnostics</td><td>Display test</td><td>To confirm if LCD is damaged.</td></tr>
<tr><td>Memory test</td><td>Conduct test for internal memory.</td></tr>
<tr><td>Touch switch test</td><td>Conduct test for touch switch.</td></tr>
<tr><td>Clock setting</td><td colspan="2">Adjust the built-in clock.</td></tr>
<tr><td>Error reset</td><td colspan="2">To clear the system error.</td></tr>
<tr><td>Touch switch calib.</td><td colspan="2">To calibrate the EST touch switches.</td></tr>
</table>

General specifications	**Electrical specifications**	**Supply voltage**	24 Vdc ± 15 % (20.4 to 27.6 Vdc)
		Current consumption	1A max.
		Dielectric strength	500 Vac for 1 min. between power input and FG terminals, and between each signal wire and power input/FG terminals.
		Insulation resistance	10MΩ min. at 500Vdc between power input and FG terminals, and between each signal wire and power input/FG terminals
		Grounding	Class 3 grounding
	Environmental specifications	**Ambient store temperature**	–20 to +60°C
		Ambient operating temperature	0 to 50°C
		Store · operating humidity range	30 to 85%RH (No condensation allowed) (However, the condition is the same as absolute humidity of 85% at 40°C under above 40°C temperature.
		Ambient gas	No presence of corrosive gases
		Vibration resistance	Conform to JIS C 0911. Subjected to 10 to 55 Hz vibrations in X, Y and Z axis directions at 9.8 m/s^2 for 6 minutes of signal sweep and 2 hours in each axis direction
		Shock resistance	Conform to JIS 0912: Acceleration 98 m/s^2 for 20 ms max.
		Noise resistance	±1000 V at 100 ns to 1 μs (by power input and inpulse noise simulator)
		Protective structure	IP65 (dust and drip-proof)
	Mechanical specifications	**External dimensions**	140(H) × 210 (V) × 71.2 (D) mm
		Weight	1.3 kg
		Mounting	Vertical panel mounting by fixing from the rear side with metal fittings.
		Cooling method	Natural cooling
		Terminal screw tightening torque	0.5 N·m (recommended)
		Back plate tightening torque	1.2 N·m (recommended)
		Metal fittings tightening	From no loose condition of metal fittings in place, make 1/2 to 1 turn further.

Item	Name	Model No.	Qty
Accessories	Instruction sheet	**CP-UM-5145E**	1
	Metal fittings	**ESTX939FB00**	4
Application software (separate order)	AP editor (CD-ROM) coping with Windows 98/Me/XP	**ESTX240SWWEC000**	1
	DMC10 package (3.5 in. FD)	**ESTX200D1AE3001**	1
Separate instruction sheet	Instruction sheet hardware edition	**CP-SP-1065E**	1

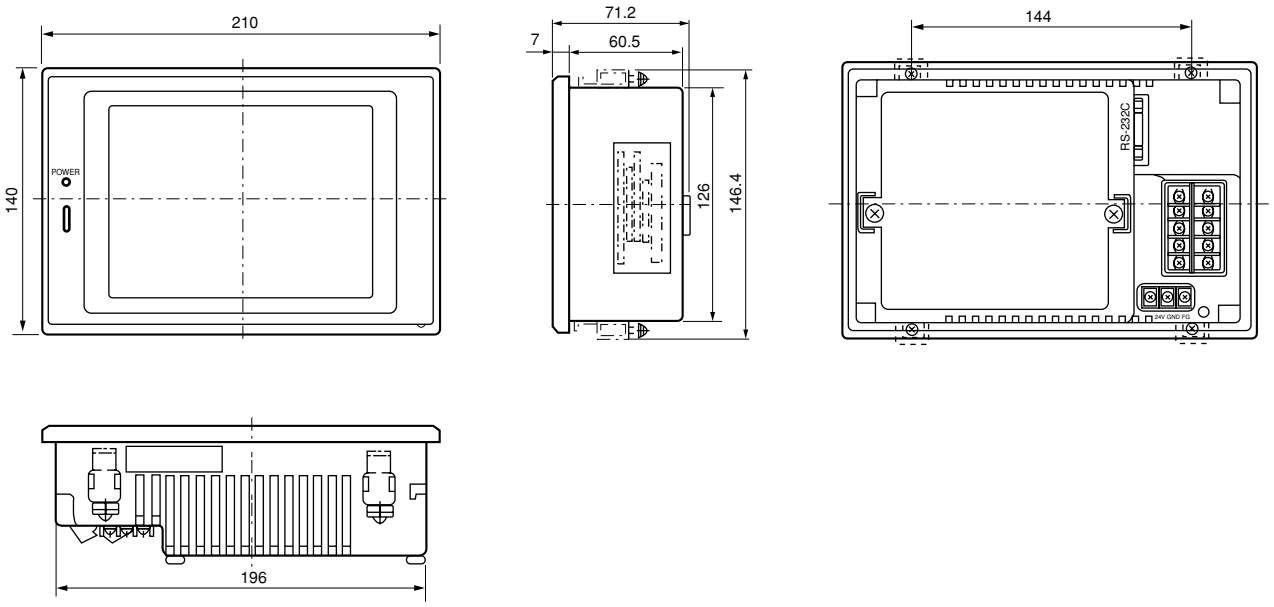
Item	Name	Model No.	Qty
Replacement part	Backlight	**ESTX924BL60** For the EST240Z not yet complying with the CE marking	1
		ESTX924BL61 For the EST240Z complying with the CE marking	1
	Protective sheet	**ESTX92XSS60**	1
Accessories	RS-232C cable (2 m) 9-9 pin	**CBL232FFT02**	1
	Battery	**81446345-001**	1

■ Model No. configuration

Type	Display device	Power supply	Memory
EST0240Z05WBX00	Color STN LCD with 320 × 240 pixels (white model)	24Vdc	1 M byte
EST0240Z05BBX00	Color STN LCD with 320 × 240 pixels (black model)	24Vdc	1 M byte

■ External dimensions

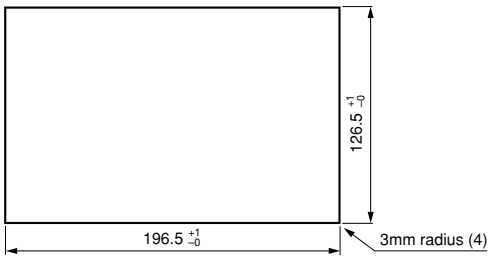
(Unit: mm)



■ Panel cut dimensions

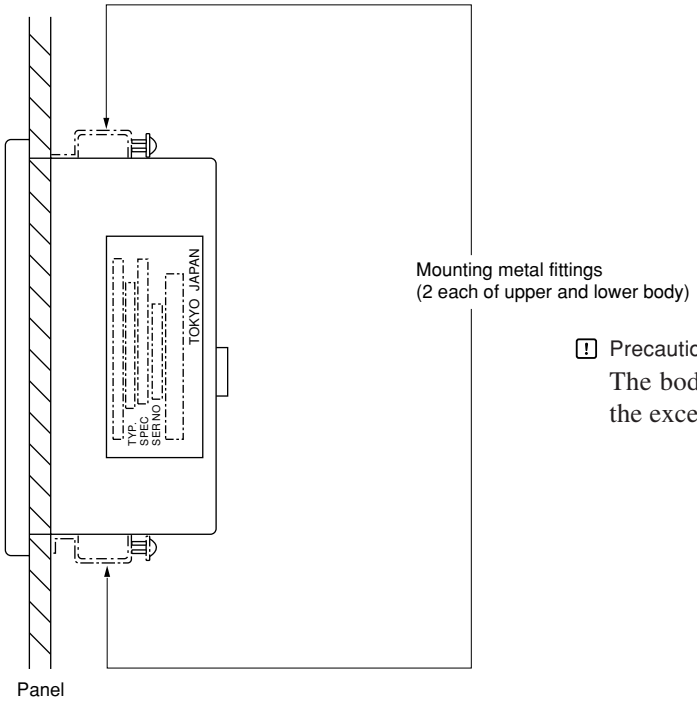
Cut the panel per the following dimensions and make the panel thickness as t = 1.6 to 5.5 mm.

(Unit: mm)



■ Mounting

The Smart Terminal is positioned in place from the panel front. Fasten the screws by inserting the mounting metal fittings into the upper and lower body holes.
Fix the body by turning additionally a half to one turn from the condition of the fittings being firmly in place.



Precautions in handling

The body case may be deformed or damaged in the excessive tightening of the mounting screws.

⚠ RESTRICTIONS ON USE

This product has been designed, developed and manufactured for general-purpose application in machinery and equipment. Accordingly, when used in applications outlined below, special care should be taken to implement a fail-safe and/or redundant design concept as well as a periodic maintenance program.

- **Units for concerning to control and safety of transportation vehicles (automobiles, trains and ships, etc.)**
- **Traffic control systems**
- **Anti-disaster systems, anti-crime systems**
- **Safety equipment**
- **Medical equipment (not specifically designed for life support)**

Never use this product in applications which require extremely high reliability, such as those outlined below.

- **Aeronautical machines**
- **Aerospace machines**
- **Submersible repeaters**
- **Nuclear reactor control systems**
- **Life support systems (medical equipment, etc.)**

Never use this product in applications where human safety may be put at risk.
Never use this product as a safety switch or as an emergency stop switch.
Special care should be taken to implement a fail-safe and/or redundant design which takes into account the possibility of operational delay, unit damage and malfunction of this product.

Specifications are subject to change without notice.

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