

# Display Attached Controller

@E.Terminal for MC

USER'S MANUAL

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Hardware - Additional Volume -

5.7 inch model

Thank you for purchasing Display Attached Controller @E.Terminal 5.7 inch model. This hardware edition of the user's manual describes particular specifications for 5.7 inch model, and handling of the @E.Terminal. Please also read the user's manual hardware version (FEH300). carefully. When using modules or peripheral devices, be sure to read the corresponding user's manuals listed below.

Title	Manual No.	Contents
@E.Terminal for MC User's Manual <Function>	FEH301	Describes functions and the usage of motion control content for @E.Terminal for MC.
V806 series Hardware Specifications	2017NEx	Hardware specifications and handling procedures of the MONITOUCH V806 series are explained.
V8 series Reference Manual	1055NEx	Describes functions and the usage of the MONITOUCH V8 series.
V series Macro Reference	1056NEx	Describes overview of the macro of the V-SFT version 5, the usage of the macro editor and contents of the macro commands.
V8 series Introductory Manual	1057NEx	Describes basic operation of the MONITOUCH V8 series.
V8 series Operation Manual	1058NEx	Describes contents about operations such as structure of V-SFT-5, instruction to edit items and restrictions.
V8 series Connection Manual	2201NEx	The connection and communication parameters for the V8 series and controllers are explained in detail.
User's Manual Hardware, MICREX-SX series SPH	FEH201	Describes the system configuration, the specifications and operations of modules in the MICREX-SX series.
User's Manual Instruction (Standard Loader), MICREX-SX series	FEH588	Describes the memory, language and system definitions of the MICREX-SX series.
User's Manual SX-Programmer Standard <Reference>, MICREX-SX series	FEH590	Describes the menu and icon of the SX-Programmer Standard all of the operations of the SX-Programmer Standard.
User's Manual Instruction (D300win), MICREX-SX series	FEH200	Describes the memory, language and system definitions of the MICREX-SX series.
User's Manual D300win <Reference>, MICREX-SX series	FEH257	Describes the menu and icon of D300winV3 and all of the operations of D300winV3.
FALDIC a series User's Manual, RYS-V Type	MHT258 (Eng)	Describes the specifications and operations of FALDIC a series.
ALPHA 5 series User's Manual, RYT-SX Type	MEHT301	Describes the specifications and operations of ALPHA 5 series.

In addition to the above manuals, the following Fuji Electric Systems Co., Ltd. site offers various manuals and technical documents associated with the @E.Terminal for MC.

**URL** <http://www.fesys.co.jp/eng/>

## Notes

1. This manual may not be reproduced in whole or part in any form without prior written approval by the manufacturer.
2. The contents of this manual (including specifications) are subject to change without prior notice.
3. If you find any ambiguous or incorrect descriptions in this manual, please write them down (along with the manual No. shown on the cover) and contact FUJI.

- Windows is a registered trademark of Microsoft Corporation in the United States.
- Pentium is a registered trademark of Intel Corporation in the United States.

# Safety Precaution

Be sure to read the "Safety Precautions" thoroughly before using the module.

Here, the safety precaution items are classified into "Warning" and "Caution."



: Incorrect handling of the device may result in death or serious injury.



: Incorrect handling of the device may result in minor injury or physical damage.

Even some items indicated by "Caution" may also result in a serious accident.

Both safety instruction categories provide important information. Be sure to strictly observe these instructions.

## **Warning**

- ◇ Never use the output signal of @E.Terminal for operations that may threaten human life or damage the system, such as signals used in case of emergency. Please design the system so that it can cope with the malfunctions of a touch switch. A malfunction of a touch switch will result in machine accident or damage.
- ◇ Turn off the power supply when you set up the unit, connect new cables or perform maintenance or inspections. Otherwise, electrical shock or damage may occur.
- ◇ Never touch any terminals while the power is on. Otherwise, electric shock may occur.
- ◇ You must put a cover on the terminals on the unit when you turn the power on and operate the unit. Otherwise, electric shock may occur.
- ◇ The liquid crystal in the LCD panel is a hazardous substance. If the LCD panel is damaged, do not ingest the leaked liquid crystal. If the liquid crystal spills on skin or clothing, use soap and wash off thoroughly.
- ◇ Never disassemble, recharge, deform by pressure, short-circuit, reverse the polarity of the lithium battery, nor dispose of the lithium battery in fire. Failure to follow these conditions will lead to explosion or ignition.
- ◇ Never use a lithium battery that is deformed, leaks, or shows any other signs of abnormality. Failure to follow these conditions will lead to explosion or ignition.
- ◇ The power lamp flashes when the backlight is at the end of life or is faulty. However, the switches on the screen are operable at this time. Do not touch the screen when the screen becomes dark and the power lamp flashes. Otherwise, a malfunction may occur and result in machine accident or damage.

# Safety Precaution



Check the appearance of the unit when it is unpacked. Do not use the unit if any damage or deformation is found. Failure to do so may lead to fire, damage or malfunction.

For use in a facility or for a system related to nuclear energy, aerospace, medical, traffic equipment, or mobile installations, please consult your local distributor.

Operate (or store) @E.Terminal under the conditions indicated in this manual and related manuals. Failure to do so could cause fire, malfunction, physical damage or deterioration.

Understand the following environmental limits for use and storage of @E.Terminal. Otherwise, fire or damage to the unit may result.

- Avoid locations where there is a possibility that water, corrosive gas, flammable gas, solvents, grinding fluids or cutting oil can come into contact with the unit.

- Avoid high temperature, high humidity, and outside weather conditions, such as wind, rain or direct sunlight.

- Avoid locations where excessive dust, salt, and metallic particles are present.

- Avoid installing the unit in a location where vibration or physical shock may be transmitted.

Equipment must be correctly mounted so that the main terminal of @E.Terminal will not be touched inadvertently. Otherwise, an accident or electric shock may occur.

Check periodically that terminal screws on the power supply terminal block and fixtures are firmly tightened. Loosened screws may result in fire or malfunction.

Tighten terminal screws on the power supply terminal block of display part equally to a torque of 1.2 N·m. And tighten terminal screws on the power supply terminal block of the controller unit equally to a torque of 0.5 to 0.6 N·m.

Improper tightening of screws may result in fire, malfunction, or trouble.

Tighten mounting screws on the unit equally to a torque of 0.5 to 0.7 N·m. Excessive tightening may distort the panel surface. Loose tightening may cause @E.Terminal to come off, malfunction or be short-circuited.

@E.Terminal has a glass screen. Do not drop or give physical shock to the unit. Otherwise, the screen may be damaged.

Connect the cables correctly to the terminals of @E.Terminal in accordance with the specified voltage and wattage. Over-voltage, over-wattage, or incorrect cable connection could cause fire, malfunction or damage to the unit.

Be sure to establish a ground of @E.Terminal. The FG terminal must be used exclusively for the unit with the level of grounding resistance less than 100. Otherwise, electric shock or a fire may occur.

Prevent any conductive particles from entering into @E.Terminal. Failure to do so may lead to fire, damage, or malfunction.

After wiring is finished, remove the paper used as a dust cover before starting to operate @E.Terminal. Operation with the cover attached may result in accident, fire, malfunction, or trouble.

Do not attempt to repair @E.Terminal at your site. Ask us or the designated contractor for repair.

Do not repair, disassemble or modify @E.Terminal. We are not responsible for any damages resulting from repair, disassembly or modification of @E.Terminal that was performed by an unauthorized person.

Do not use a sharp-pointed tool when pressing a touch switch. Doing so may damage the screen. Doing so may damage the screen.

Only experts are authorized to set up the unit, connect the cables or perform maintenance and inspection.

Lithium batteries contain combustible material such as lithium or organic solvent. Mishandling may cause heat, explosion or ignition resulting in fire or injury. Read related manuals carefully and handle the lithium battery correctly as instructed.

When using @E.Terminal that has analog switch resolution with resistance film, do not press two or more points on the screen at the same time. If two or more positions are pressed at the same time, the switch located between the pressed positions activates.

Take safety precautions during such operations as setting change during running, forced output, start, and stop.

Any misoperation may cause unexpected machine motions, resulting in machine accident or damage.

In facilities where a failure of @E.Terminal could lead to accident threatening human life or other serious damage, be sure that the facilities are equipped with adequate safeguards.

At the time of disposal, @E.Terminal must be treated as industrial waste.

Before touching @E.Terminal, discharge static electricity from your body by touching grounded metal. Excessive static electricity may cause malfunction or trouble.

Do not eject CF card, unplug a cable, or power off @E.Terminal during accessing to CF card.

It causes the corrupted data in CF card and error of CF card.

# Safety Precaution

## [General Notes]

- Never bundle control cables nor input/output cables with high-voltage and large-current carrying cables such as power supply cables. Keep these cables at least 200 mm away from the high-voltage and large-current carrying cables. Otherwise, malfunction may occur due to noise.
- When using @E.Terminal in an environment where a source of high-frequency noise is present, it is recommended that the FG shielded cable (communication cable) be grounded at its ends. However, the cable may be grounded only at one end if this is necessary due to unstable communication conditions or for any other reason.
- Plug connectors or sockets of @E.Terminal in the correct orientation. Failure to do so may lead to damage or malfunction.
- If a LAN cable is inserted into the MJ1 or MJ2 connector on @E.Terminal, the counterpart device may be damaged. Check the indication on the unit and insert a cable into the correct position.
- Do not use thinners for cleaning because they may discolor @E.Terminal surface. Use alcohol or benzine commercially available.
- If a data receive error occurs when @E.Terminal and the counterpart (PLC, temperature controller, etc.) are started at the same time, read the manual for the counterpart unit and remove the error correctly.
- Avoid discharging static electricity on the mounting panel of @E.Terminal. Static charges can damage the unit and cause malfunctions. Otherwise, malfunction may occur due to noise.
- Avoid prolonged display of any fixed pattern. Due to the characteristics of the liquid crystal display, an afterimage may occur. If a prolonged display of a fixed pattern is expected, use the auto OFF function of the backlight.

## [Notes on LCD]

Note that the following conditions may occur under normal circumstances.

- The response time, brightness and colors of @E.Terminal may be affected by the ambient temperature.
- Tiny spots (dark or luminescent) may appear on the display due to the liquid crystal characteristics.
- There are variations in brightness and colors on each unit.
- Cold cathode tubes are incorporated into the LCD display for backlights. Optical properties (brightness, irregular colors, etc.) may change in a low-temperature environment or over time of operation.

# Revisions

\*Manual No. is shown on the cover.

Printed on	*Manual No.	Revision contents
Jun. 2009	FEH300-1	First edition

**Preface**

**Safety Precautions**

**Revisions**

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# Section 1 General

## 1-1 Types

- @E.Terminal for MC

Product types	Display size	Specifications	
NP5M0101-2S4	5.7 inch	TFT color	- 320 x 240 dots, DC power supply - Controller unit
NP5M0101-2L4	5.7 inch	STN color	- Contents of the motion control (Screen data, built in software in the controller)

- @E.Terminal (No contents installed)

Product types	Display size	Specifications	
NP5N0011-2S4	5.7 inch	TFT color	- 320 x 240 dots, DC power supply - Controller unit
NP5N0011-2L4	5.7 inch	STN color	

- Accessories

Product types	Names	Quantity
NP5M0101-2S4 NP5M0101-2L4 NP5N0011-2S4 NP5N0011-2L4	Instruction Manual	1
	Backup CD of the @E.Terminal for MC (Note)	1
	SX bus terminating plug	2
	Screw driver	1
	Fixture	4
	Binder for USB cable	1

Note: Backup CD is not attached to 2S4/ 2L4.

- Screen drawing tools

Names	Types	Specifications
Configuration software: English version	V-SFT-5	Screen editor: Windows98SE/NT4.0/Me/2000/XP/XP64Edition/Vista32-bit compatible
Screen data transfer cable	V-CP	3m, Used for connection between the V8 series and a personal computer.

- Programming support tool for controller

Names	Types	Specifications
SX-Programmer Standard	NP4H-SWN	Programming support tool SX-Programmer Standard, Standard expansion FB, Windows95/98/ME/2000/XP/NT4.0
SX-Programmer Expert (D300win)	NP4H-SEDBV3	IEC61131-3 based on Programming support tool D300winV3, Standard expansion FB, Windows2000/XP/NT4.0
Support tool cable	NW0H-CNV	RS-232C/RS-422 converter for the programming support tool for AT compatible personal computer
	NW0H-CA3	Support tool connection cable (Used to combined the NW0H-CNV)

# 1-1 Types

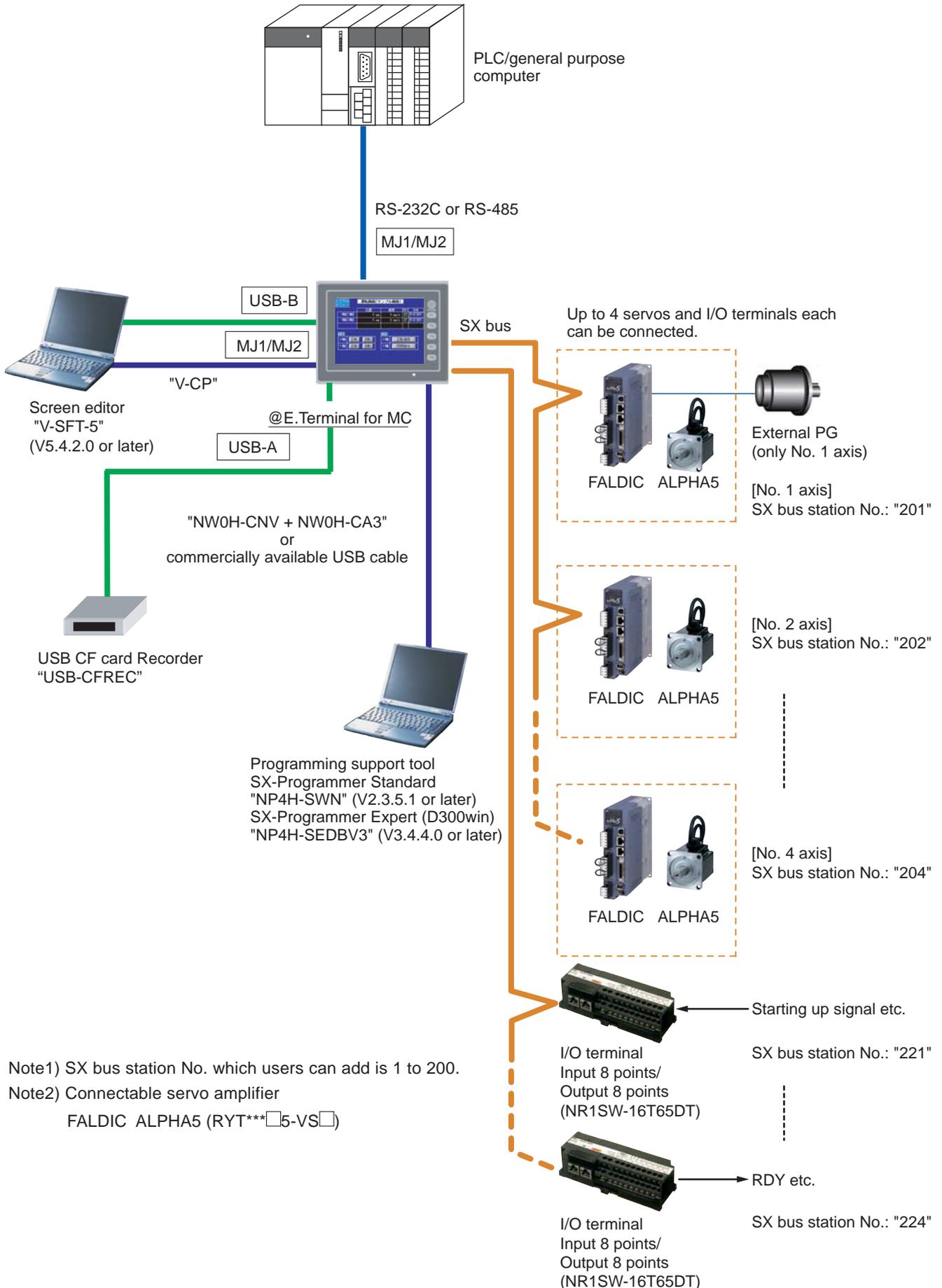
## - Auxiliaries and others

Names	Types	Specifications
Battery for display unit	V7-BT	Replacement lithium primary battery for the V8 series
USB CF card recorder	USB-CFREC	CF card recorder to connect with USB-Aport of V806 series
Battery for controller	NP8P-BT	Primary lithium battery for memory data backup for controller unit
SX bus terminating plug	NP8B-BP	For SX bus loop terminating (1 piece)
SX bus expansion cabl	NP1C-P3	Cable length: 300mm
	NP1C-P6	Cable length: 600mm
	NP1C-P8	Cable length: 800mm
	NP1C-02	Cable length: 2000mm
	NP1C-05	Cable length: 5000mm
	NP1C-10	Cable length: 10000mm
	NP1C-15	Cable length: 15000mm
	NP1C-25	Cable length: 25000mm

\*For information about peripheral accessories of the display unit not documented in this manual, please refer to “V806 series Hardware Specifications (2017NEx)”.

# 1-2 System Composition

The following illustration shows the system composition of @E.Terminal for MC 5.7 inch.



Note1) SX bus station No. which users can add is 1 to 200.

Note2) Connectable servo amplifier

FALDIC ALPHA5 (RYT\*\*\*□5-VS□)

# Section 2 Specifications

## 2-1 Specifications

### 2-1-1 General specifications

Items		Specifications
		NP5M0101-2S4/ 2L4, NP5N0011-2S4/ 2L4
Physical environmental conditions	Operational ambient temperature	0 to +50°C
	Storage ambient temperature	-10 to +60°C
	Operational ambient humidity	85% RH or less (Without dew condensation, max. wet-bulb temperature: 39 or less)
	Operational altitude	2000m or less above sea level (Transport condition: 70kPa or more)
	Operational atmosphere	No corrosive gas, no excessive dust, no conductive dust contamination, and not stained with organic solvents.
	Pollution degree	2 (Note1)
Mechanical working conditions	Vibration resistance	Half-amplitude: 0.075mm, acceleration: 9.8m/s <sup>2</sup> , X, Y, Z: 3 directions for one hour
	Shock resistance	Peak acceleration: 147m/s <sup>2</sup> , X, Y, Z: 3 directions three times each
Electrical working conditions	Noise resistance	Rising time: 1ns, pulse width: 1μs, Noise voltage: 1.5kVp-p (Measured by using a noise simulator.)
	Static electricity discharge resistance	Contact: ±4kV, air: ±8kV
Power supply	Rated input voltage	24V DC (Note2)
	Rated voltage (tolerance)	24V DC 10%
	Permissible momentary power failure	1ms or less
	power supply consumption (Max. rated)	27W or less
	Rush current	167A or less
	Input terminal block	
	Display unit	Terminal block screw: M3.5 Tightening torque: 1.2N·m
Controller unit	Terminal block screw: M3 Tightening torque: 0.5 to 0.6N·m	
	NDielectric strength	500V AC 1 minute (Between external terminals and frame ground)
Isolation resistance		500V DC, 5MW or more
Dimensions W x H x D (mm)		182.5 x 138.8 x 81.0
Mass		Approx. 1.34kg

Note 1) Pollution degree 2: This pollution does not conduct usually, but under certain circumstances temporary conductivity occurs due to condensation.

Note 2) Use 24V DC power supply which comply to UL standard Class2 insulation.

#### - Installation specifications

Item		Specifications
Grounding		Less than 100W, FG/SG separated
Protection structure	Front panel (Note 1)	Compliant with IP65 (When using waterproof gasket) (Note 2)
Cooling system		Cooling naturally
Structure		Inserted in a mounting panel
Appropriate mounting panel thickness @E.Terminal		1.5 to 5 mm

Note 1) Protection structure for the front when the @E.Terminal is mounted on the mounting panel.

Note 2) It is recommended to use the mounting panel whose thickness (steel, stainless) is 2.0 mm or more to keep the unit compliant with IP65. The strength differs depending on the material of the mounting panel. Check the environment where the @E.Terminal is used.

## 2-1 Specifications

### 2-1-2 Display unit specifications

#### (1) Display unit specifications

Item	NP5M0101-2S4 NP5N0011-2S4	NP5M0101-2L4 NP5N0011-2L4
Display device	TFT color	STN color
Display size	5.7 inch	
Colors	65,536 colors (without blinks)/ 32,768 colors (with blinks)/ 128 colors (with 16blinks)	
Display resolution (W x H)	320 x 240 dots	
Dot pitch (W x H)	0.36 x 0.36mm	
Backlight	Cold cathode tube	
Backlight life (average life of backlight only)	Approx. 50,000 hours (at the normal temperature of 25°C )	Approx. 75,000 hours (at the normal temperature of 25°C )
Backlight auto OFF function	Always ON, random setting	
Brightness adjustment	Function switch: 3 levels Macro: 128 levels	-
Contrast adjustment	-	Function switch: F2 to F4
Surface sheet material	Polycarbonate, 0.3 mm thick	
POWER lamp	ON: Normal (green) Blink: Backlight error	

#### (2) Touch switch specifications

Item	Specifications
Method	Analog resistance film type
Number of switches	1024 x 1024
Mechanical life	One million activations or more
Surface treatment	Hard-coated, anti-glare treatment 5 %

#### (3) Function switch specifications

Item	Specifications
Number of function switches	6 pcs.
Method	Matrix resistance film type
Mechanical life	One million activations or more

**(4) Interface specifications**

Item		Specifications	
Modular jack 8-pin (MJ1)	Applicable standards	RS-232C, RS-485 (2-wire connection)	
	Synchronization	Asynchronous type	
	Data length	7- or 8-bit	
	Parity	None, odd, even	
	Stop bit	1- or 2-bit	
	Baud rate	4800, 9600, 19200, 38400, 57600, 76800, 115.2kbps	
	Applications	Screen data transfer, PLC, temperature controller, CREC, barcode reader, V-I/O, Multi-link 2, V-Link, etc.	
Modular jack 8-pin (MJ2)	Applicable standards (Note1)	RS-232C, RS-485 (2-wire connection), RS-422 (4-wire connection)	
	Synchronization	Asynchronous type	
	Data length	7- or 8-bit	
	Parity	None, odd, even	
	Stop bit	1- or 2-bit	
	Baud rate	4800, 9600, 19200, 38400, 57600, 76800, 115.2kbps (187500 bps for MPI connection (Note 2))	
	Applications	PLC, temperature controller, CREC, barcode reader, V-I/O, Multi-link 2, V-Link, etc.	
USB connector (USB-A/B)	USB-A	Applicable standards	Compliant with USB version 1.1
		Baud rate	Low speed: 1.5 Mbps, full speed: 12 Mbps
		Applications	Printer (EPSON PM series), USB-CFRECC
	USB-B	Applicable standards	Compliant with USB version 1.1
		Baud rate	Low speed: 1.5 Mbps, full speed: 12 Mbps
		Applications	Screen data transfer, PictBridge-compatible printer
Extensional communication port (CN5)	Controller unit connection (The communication unit is not connectable.)		

Note 1) Use the slide switch flanks on the display unit to switch the signal of MJ2. for details, refer to “Modular jack(MJ1/MJ2)”

Note 2) For details, refer to the User’s Manual <V8 Series Connection Manual> (2201NEx).

**(5) Clock and backup memory specifications**

Item	Specifications
Battery specification	Coin-type lithium primary cell
Backup memory	SRAM 128 kbytes
Backup period	Approx. 5 years (Ambient temperature at 25 °C)
Battery voltage drop detection	Provided (Internal memory of 167 allocated)
Calendar accuracy	Monthly deviation ±90s (Ambient temperature at 25°C) (Note)

Note ) Time loss is approximately 90 seconds a month in an ambient temperature of 25 °C in the non-energized state (backup with battery). Depending on the ambient temperature, the calendar may lose 356 seconds or advance 189 seconds in a month at the maximum. Correct the clock periodically.

## 2-1 Specifications

### (6) Drawing environment

Item	Specifications
Drawing method	Exclusive configuration software
Drawing tool	Name of exclusive configuration software: V-SFT-5 Personal computer: Pentium III 800 MHz or above (Pentium IV 2.0 GHz or above recommended) OS: Windows98SE/NT4.0/Me/2000/XP/XP64 Edition/Vista 32-bit Capacity of hard disk required: Free space of approx. 850 Mbytes or more Display: Resolution 1024 x 800 or above Screen color: 16 bits or more

### (7) Display function specifications

Item	Specifications
Interface language (Note: 1)	Japanese English/ Western Europe Chinese (Traditional) Chinese (Simplified) Korean
Characters	1/4-size, 1-byte ANK code Latin 1 ASCII code ASCII code ASCII code
	2-byte 16-dot JIS #1, 2 levels - Chinese (traditional) Chinese (simplified) Hangul (without Kanji)
	2-byte 32-dot JIS #1 level - - -
Font	Windows font Stroke font (under development)
Character size	1/4-size 8 x 8 dots
	1-byte 8 x 16 dots
	2-byte 16 x 16 dots or 32 x 32 dots
	Enlargement factor X: 1 to 8 times, Y: 1 to 8 times Point (Note: 2) : 8, 9, 10, 11, 12, 14, 16, 18, 20, 22, 24, 26, 28, 36, 48, 72
Number of displayable characters	Display resolution 320 x 240
	1/4-size 40 characters x 30 lines
	1-byte 40 characters x 15 lines
	2-byte 20 characters x 15 lines
Character properties	Display properties: Normal, reverse, blink, bold, shadow, transparent Colors: 65,536 colors (without blinks) / 32,768 colors (with blinks) 128 colors (with blinks)
Graphics	Lines: Line, continuous line, box, parallelogram, polygon Circles: Circle, arc, sector, ellipse, elliptical arc Others: Tile patterns
Graphic properties	Line types: 6 (thin, thick, dot, chain, broken, two-dot chain) Tile patterns: 16 (incl. user-definable 8 patterns) Display properties: Normal, reverse, blink Colors: 65,536 colors (without blinks) 32,768 colors (with blinks) 128 colors (with blinks) Color selection: Foreground, background, boundary (line)

Note 1) In addition, the following fonts are available.

Gothic, English/Western Europe HK Gothic, English/Western Europe HK Times, Central Europe, Cyrillic, Greek, Turkish. For more information, refer to the "V8 series Reference Manual (1055NEx)."

Note 2) Applicable when Gothic font, Windows font or stroke font is used.

**(8) Function performance specifications**

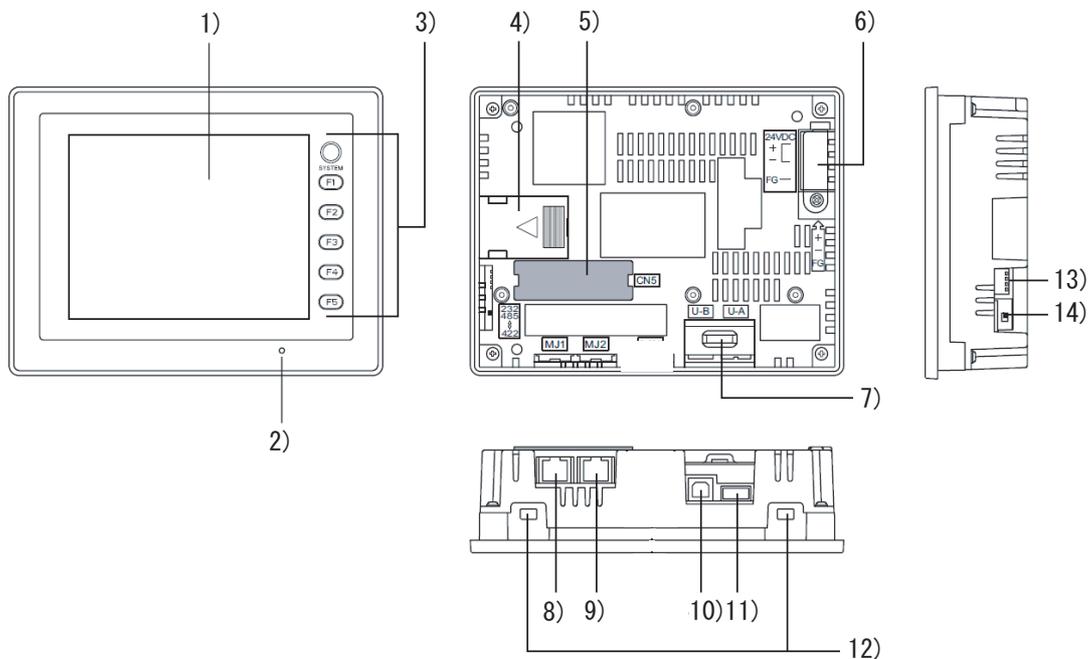
Item		Specifications
Screens		Max. 1024
Screen memory (FLASH memory)		Approx. 4.5 Mbytes (Varies depending on the font)
Switch		192 per screen
Switch actions		Set, reset, momentary, alternate, to light (Possible to press a function switch and a switch on the display at the same time)
Lamp		Reverse, blink, exchange of graphics 192 per screen
Graph		Pie, bar, panel meter and closed area graph: No limitation (Note: 1) Statistics and trend graphs: Max. 256 per layer (Note: 2)
Data setting	Numerical data display	No limitation (Note: 1)
	Character display	No limitation (Note: 1)
	Message display	No limitation (Note: 1) Display resolution: Max. 40 characters (1-byte)
Sampling		Sampling display of buffer data (Constant sampling, bit synchronization, alarm logging, time order alarming, alarm function)
Graphic library		Max. 2560
Overlap library		Max. 1024
Data blocks		Max. 1024
Messages		Max. 32768 lines
Patterns		Max. 1024
Macro blocks		Max. 1024
Page blocks		Max. 1024
Direct blocks		Max. 1024
Screen blocks		Max. 1024
Data sheets		Max. 1024
Screen library		Max. 1024
Comments		Max. 32767
Device memory map		Max. 32 x 8 (PLC1 to PLC8)
Time display		Provided
Hard copy		Provided
Buzzer		Provided, 2 sounds (short beep, long beep)
Auto OFF function		Always ON, random setting
Self-diagnostic function		Switch self-test function Communication parameter setting check function Communication check function

Note 1) The number of setting memory locations is limited to 256 per screen. For details, refer to "V8 series Operation Manual (1058NEx)."

Note 2) Layer: 4 per screen (base + 3 overlap displays)



<Display>



- 1) Display  
This is the display unit.
- 2) Power lamp (POWER)  
Illuminates in green when the display unit is powered on, and is operating normally. Flashes when an error occurs to the backlight (burned-out backlight, etc.).
- 3) Function keys  
Used for RUN/STOP selection, brightness adjustment and backlight ON/OFF (setting on the V-SFT-5 editor required). These switches can be used as user-defined switches in the RUN mode.
- 4) Battery holder  
Contains a backup battery for SRAM and clock.  
When the battery voltage drops, replace the battery with a new one (V7-BT).  
\* Hidden by the controller unit. Replace battery by detaching the controller unit.
- 5) Communication interface unit connector (CN5)  
Connects with the controller unit.  
\* Hidden by the controller unit.
- 6) Power supply terminal block (display unit)  
Supplies the power to the display unit (24 V DC).
- 7) USB cable mounting hole  
This hole is the insulation lock to hold a USB cable.

## 2-3 Names and Functions

### 8) Modular jack 1 (MJ1)

Used for screen data transfer and connection with PLCs or other peripheral devices.

### 9) Modular jack 2 (MJ2)

Used for connection with PLCs or other peripheral devices.

### 10) USB-B (slave port)

Used for screen data transfer or connection with a PictBridge-compatible printer.

### 11) USB-A (master port)

This is the connector where a printer or a CF card recorder "USB-CFREC" is connected.

USB memory cannot be used instead of CF card.

### 12) Mounting holes

Used for inserting fixtures when securing the @E.Terminal to the mounting panel.

### 13) Dip switch

This is dip switch to set terminating resistance of MJ1/MJ2 RS-422/RS-485 signal line.

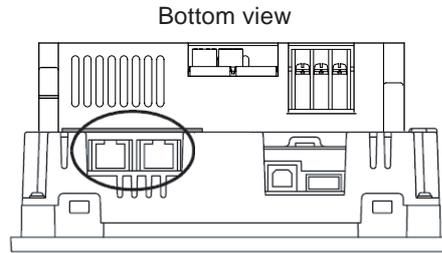
### 14) Slide switch

Used for switching the signal of MJ2 RS-232C/RS-485 and RS-422.

The top is the signal of RS-232C/RS-485, and the bottom is the signal of RS-422.

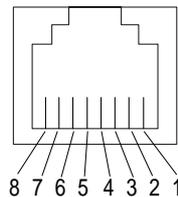
## 2-4 Modular Jack (MJ1 / MJ2)

Communication (RS-232C, RS-422/485) with a controller is enabled via the serial connector (CN1).



The serial connector pins correspond to signals as given below.

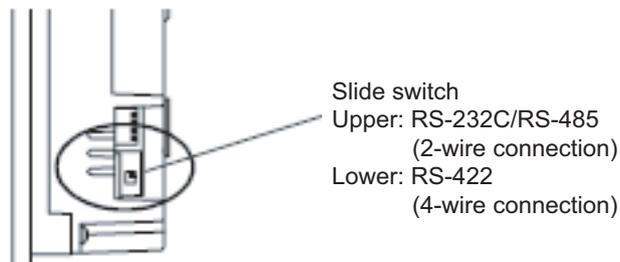
CN1 (D-sub 9-pin, female)



Pin No.	MJ1		MJ2		
	Signal	Contents	Slide switch (Note:1)	Signal	Contents
1	+SD/RD	RS-485 + data	Upper	+SD/RD	RS-485 + data
			Lower	+SD	RS-422 + sending data
2	-SD/RD	RS-485 - data	Upper	-SD/RD	RS-485 - data
			Lower	-SD	RS-422 - sending data
3	+5V	External supply + 5V (Note 2)	-	+5V	External supply + 5V (Note 2)
4	+5V			+5V	
5	SG	Signal ground		SG	Signal ground
6	SG			SG	
7	RD	RS-232C receiving data	Upper	RD	RS-232C receiving data
			Lower	+RD	RS-422 + receiving data
8	SD	RS-232C sending data	Upper	SD	RS-232C sending data
			Lower	-RD	RS-422 - receiving data

Note 1) The slide switch for MJ2 is mounted on the lower side of the display unit.

Side View

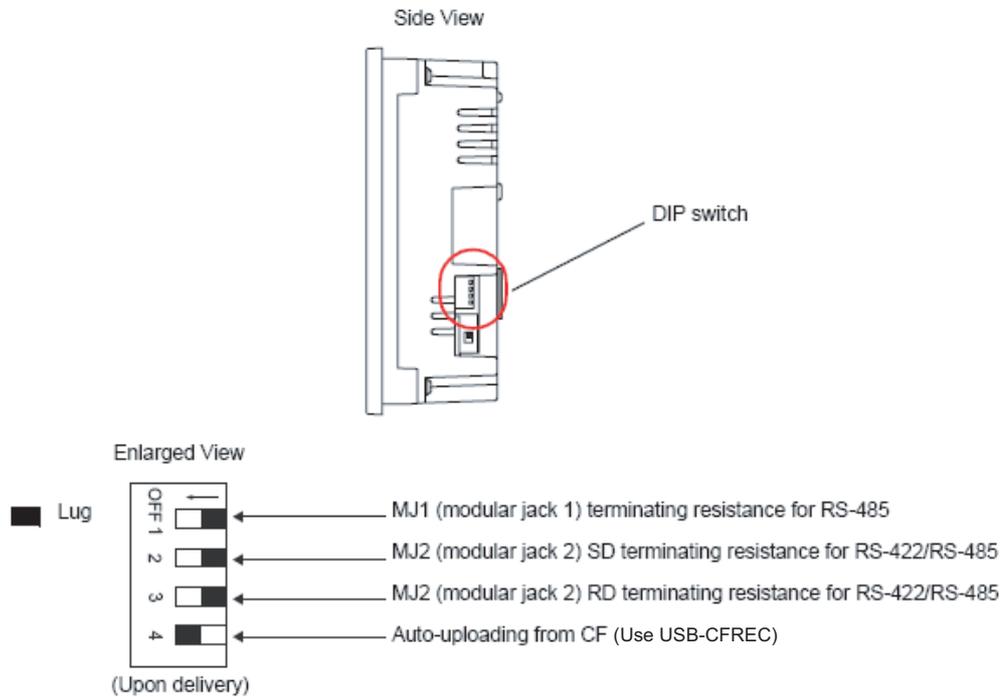


Note 2) The allowable current of the external supply +5V from the display unit to MJ1/MJ2/USB-A port :

- 150mA is the maximum current supply for the total of MJ1 and MJ2.
- Please pay attention to the maximum current supply for the total of USB-A, MJ1 and MJ2. It shouldn't be more than 500mA.

## 2-5 DIP Switches

DIP switches (1 to 4) are equipped on side of the display unit.  
When setting the DIP switches, turn the power off.



### DIPSW1, 2, 3 (Terminating Resistance Setting)

- MJ1 can be used for RS-232C or RS-485 (2-wire) connection. For the following connections, set DIPSW1 to the ON position.
  - Master station for multi-link2 connection
  - Connection with a controller (PLC, temperature controller, etc.) via RS-485
  - Connection with the card recorder "CREC" (optional)
  - Connection with the serial extension I/O "V-I/O" (optional)
  - Connection to the @E. Terminal unit at the termination of V-link connection via RS-485
- MJ2 can be used for RS-232C, RS-422 (4-wire) or RS-485 (2-wire) connection.  
For connection via RS-485 (2-wire connection), set the DIPSW3 to the ON position. For connection via RS-422 (4-wire connection), set the DIPSW2,3 to the ON positions.

### DIP switch #4\* (Auto-uploading from CF)

Set the DIPSW4 to the ON position when auto-loading a screen data file saved on a CF card.

#### Procedure

1. Have a CF card to which the screen data is loaded using the V-SFT-5 editor (for the loading procedure, refer to the V8 Series Reference Manual(1055NEx)).
2. Power off the display unit and set the DIPSW4 to the ON position. Insert a CF card to USB CF card recorder (USB-CFREC) connected with USB-A port.
3. Turn the V806 unit on. The screen data is automatically loaded into the FLASH memory of the display unit.

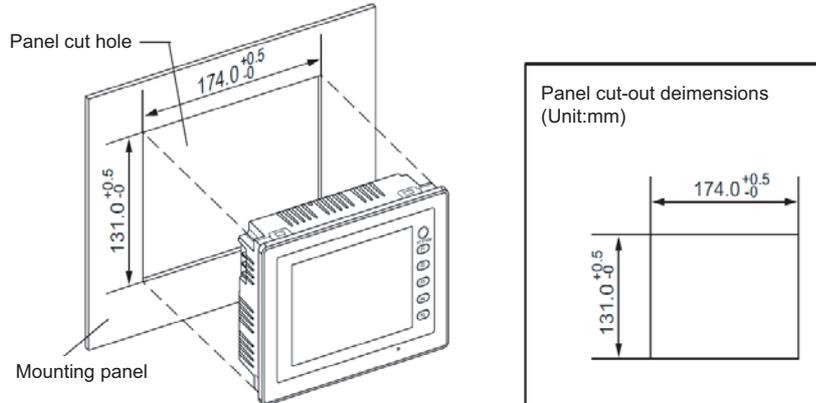
\* Be sure to set the DIPSW4 to the OFF position if the auto-uploading function is not being used.

# Section 3 Installation

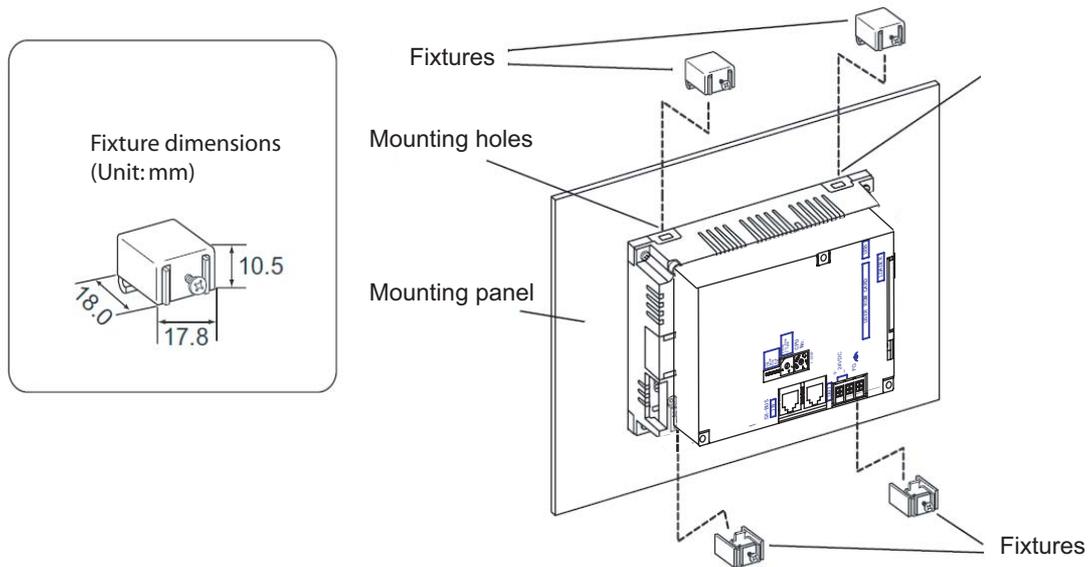
## 3-1 Mounting Procedure

### (1) Mounting procedure

- 1) Insert the @E.Terminal unit into the mounting panel (max. thick: 5 mm).



- 2) Insert four fixtures attached to the @E.Terminal unit into the mounting holes, and tighten them with the tightening screws.  
Tightening torque: 0.5 to 0.7 N·m



\* When the @E.Terminal unit is attached to the mounting panel, the fixtures and frame grounds (FG) are connected. To prevent static electricity, be sure to connect the mounting panel to the frame ground.

- 3) Mount the gasket so that it will be sandwiched securely between the @E.Terminal unit and the mounting panel.

Note) @E.terminal cannot be vertically mounted.

## 3-2 Power Supply Cable Wiring

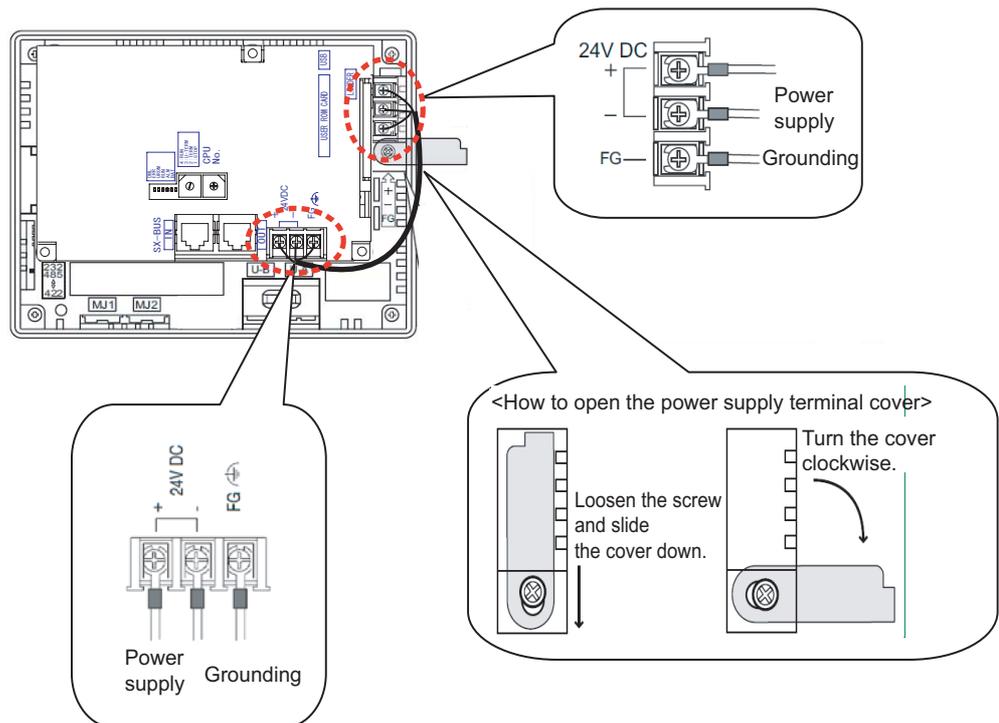


### Warning

Electric shock hazard.  
Shut the power off before wiring the power supply cable.

### (1) Power supply cable wiring

Power supply terminal blocks of the display unit and the controller unit are connected with each other with a cable by default. Connect power supply cable to power supply terminal blocks of display unit.



- Tighten terminal screws on the power supply terminal block of the display unit with the following torque.  
Use a power supply cable within the range shown below.

Types	Terminal screw			Power Cable
	Screw size	Tightening torque	Crimp-style terminal	
NP5M0101-2S4 NP5M0101-2L4 NP5N0011-2S4 NP5N0011-2L4	M3.5	1.2N·m		AWG16 - 14

# Section 4 Inspection and Maintenance

## 4-1 Battery Replacement

When the time comes to replacement the battery, replace it for a new one even if battery error is not displayed.

Also, when low battery voltage of the display unit and the controller unit is discovered, replace the battery for a new one immediately.

Replacement the batteries of the display unit and the controller unit at the same time.

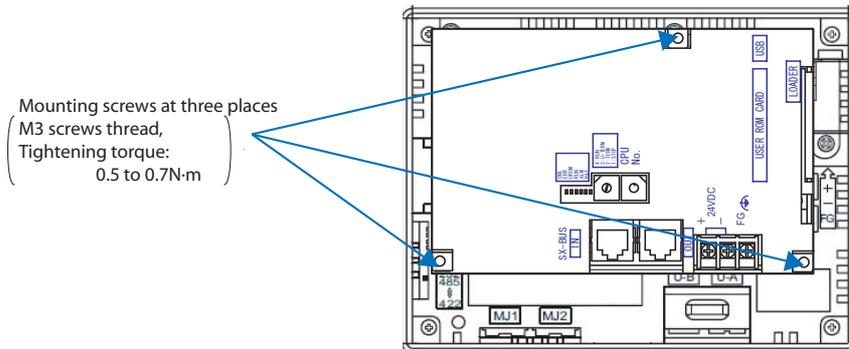
### <How to replacement battery>

#### (1) Battery replacement of controller unit

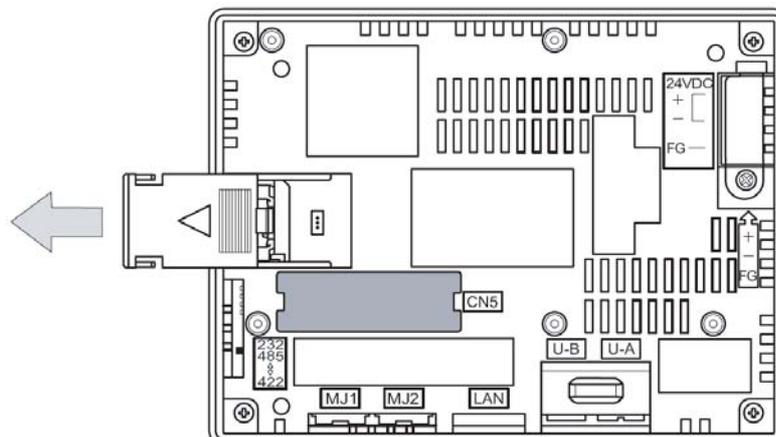
- 1) Turn off power supply of the @E.Terminal.
- 2) Remove battery holder cover at top of controller unit. Remove battery connector and then remove battery from battery holder.
- 3) Attach a new battery connector, mount battery into the battery holder, and attach the cover. Perform the exchange quickly (within five minutes). When battery is detached for a long time, the data retained during power outage may become erased.
- 4) Enter the battery guarantee period on a seal to be used on the occasion of the next battery replacement, and affix seal to the controller unit.

#### (2) Battery replacement of display unit

- 1) Remove controller unit from @E.Terminal.  
Remove mounting screws at three places to remove the controller unit from the display unit.  
Be careful not to drop or lose the mounting screws.

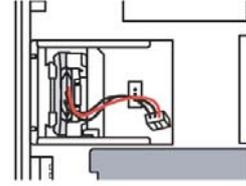


- 2) While holding down the position around the rectangle (<|>) mark on the battery holder cover (as shown below), slide the cover to the left until it is dislodged.

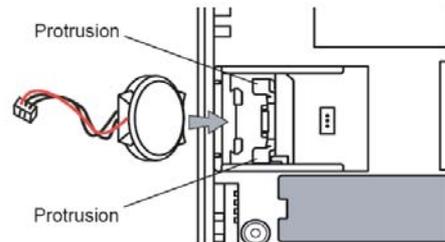
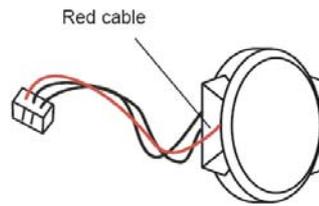


## 4-1 Battery Replacement

- 3) Disconnect the battery connector. Disengage the battery from the socket by pulling the battery toward you.



- 4) Insert a new battery in an upright position. Check that the side with the red cable faces the right, and fit the battery on the protrusions inside the socket.



- 5) Plug in the battery connector and close the battery holder cover.

- 6) Attach the controller unit to the display unit and fix it with mounting screws at three places.

Note: Replace the display unit battery "V7-BT" within three minutes after the unit is turned off. If it is not possible to replace within three minutes, make a backup copy of data in the SRAM.

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## **Fuji Electric Co., Ltd.**

Gate City Ohsaki, East Tower,  
11-2, Osaki 1-chome, Shinagawa-ku, Tokyo 141-0032, Japan

E-mail: [micrex-sx@fujielectric.co.jp](mailto:micrex-sx@fujielectric.co.jp)  
URL: <http://www.fujielectric.com/>

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Materials covered in this document are subject to revision due to the modification of the product.

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