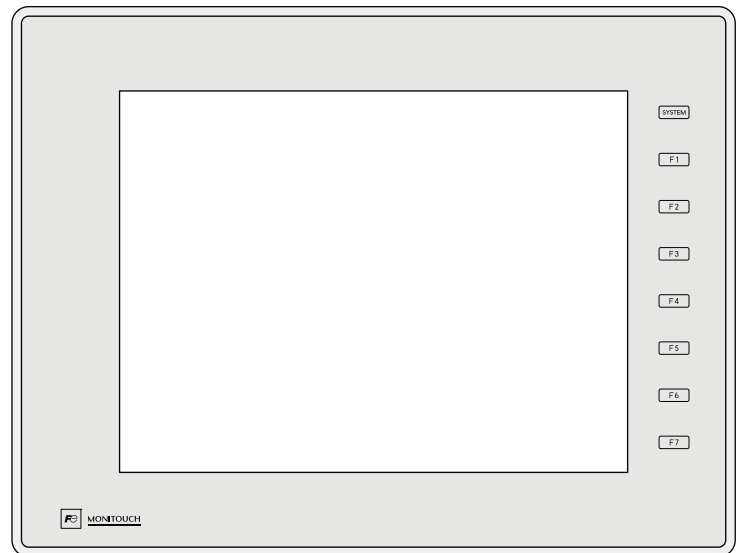


MONITOUCH

Hardware Specifications



V10 Series

Record of Revisions

Reference numbers are shown at the bottom left corner on the back cover of each manual.

Printing Date	Reference No.	Revised Contents
April 2023	2025NE0	First edition

Preface

Thank you for selecting the MONITOUCH V10 series.

For correct use of the V10 series, you are requested to read through this manual to understand more about the product.

The manuals shown below are related manuals for the V10 series. Refer to them as necessary.

Manual Name	Description	Reference No.
V10/V9 Series Reference Manual [1]	Explains the functions and operations of the V10/V9 series.	1065NE
V10/V9 Series Reference Manual [2]		1066NE
V10/V9 Series Setup Manual	Explains the installation procedure of V-SFT version 6, the process for configuring simple screen programs as well as how to transfer a created screen program using V-SFT version 6.	1067NE
V10 Series Unit Operation / Local Mode / Error Screen Manual	Explains the operating procedures, Local mode screens, and error list for the V10 series.	1093NE
V10/V9/X1 Series Macro Reference	An overview of macros of V-SFT version 6 as well as macro editor operations and macro command descriptions are explained.	1071NE
V10/V9 Series Operation Manual	Explains the configuration of V-SFT version 6, the editing process of each part, and limitations regarding operation in detail.	1072NE
V10/V9 Series Connection Manual [1]	Explains the connection and communication parameters for the V10/V9 series and controllers in detail.	2210NE
V10/V9 Series Connection Manual [2]		2211NE
V10/V9 Series Connection Manual [3]		2212NE
V10 Series Hardware Specifications	Explains the handling procedures and hardware specifications of the V10 series.	2025NE

For details about controllers (PLCs, temperature controllers, etc.), refer to the manual issued by each controller manufacturer.

Notes:

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2. The information in this manual is subject to change without prior notice.
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Notes on Safe Usage of MONITOUCH

In this manual, you will find various notes categorized under the following levels with the signal words "DANGER" and "CAUTION".



DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and could cause property damage.

Note that there is a possibility that items listed with  **CAUTION** may have serious ramifications.



DANGER

- Never use the output signal of the V10 series 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 a touch switch malfunction. A touch switch malfunction may result in machine accidents 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, electrical shock may occur.
- Always close the terminal covers before turning the power on and operating the unit. Otherwise, electrical 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 leaked liquid crystal makes contact with skin or clothing, wash it away with soap and water.
- Never disassemble, recharge, deform by pressure, short-circuit, or 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, leaking, or shows any other signs of abnormality. Failure to follow these conditions will lead to explosion or ignition.
- Switches on the screen are operable even when the screen has become dark due to a faulty backlight or when the backlight has reached the end of its service life. If the screen is dark and hard to see, do not touch the screen. Otherwise, unintended operations may occur resulting in machine accidents or damage.
- Tighten the mounting screws on the fixtures of the V10 series uniformly to the specified torque indicated below. Excessive tightening may cause deformation, breakage, or malfunction of the touch switch, which may result in damage to the machine or an accident. Insufficient tightening may cause the unit to fall down, short-circuit, or malfunction.
 - V1015, V1010, V1008: 5.31 lbf-in (0.6 N·m)
 - V1012: 7.97 lbf-in (0.9 N·m)



CAUTION

- 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 as part of a system related to nuclear energy, aerospace, medical, traffic equipment, or mobile installations, consult your local sales representative.
- Operate (or store) the V10 series under the conditions indicated in this manual and related manuals. Failure to do so could cause fire, malfunction, physical damage or deterioration.
- Observe the following environmental restrictions on use and storage of the unit. 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 temperatures, 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 vibrations or physical shocks may be transmitted.
- Protective functions may not function properly if a device is not used as specified by the manufacturer.
- Equipment must be correctly mounted so that the main terminal of the V10 series 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 or nuts may result in fire or malfunction.
- Tighten the terminal screws on the power supply terminal block of the V10 series to an equal torque of 7.1 lbf-in (0.8 N·m). Improper tightening of screws may result in fire, malfunction, or other serious trouble.
- The V10 series has a glass screen. Do not drop or give physical shock to the unit. Otherwise, the screen may be damaged.
- Correctly connect cables to the terminals of the V10 series in accordance with the specified voltage and wattage. Overvoltage, overwattage, or incorrect cable connection could cause fire, malfunction, or damage to the unit.
- Always ground the V10 series. The FG terminal must be used exclusively for the V10 series with the level of grounding resistance less than 100 Ω . Otherwise, you may sustain an electric shock, a fire may occur, MONITOUCH may not recognize touch operations, and malfunctions may occur.

CAUTION

- Prevent any conductive particles from entering into the V10 series unit. 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 operation of the V10 series. Operation with the dust cover attached may result in accidents, fire, malfunction, or other trouble.
- Do not attempt to repair, disassemble, or modify the V10 series unit yourself. Contact Hakko Electronics or the designated contractor for repairs.
- Do not repair, disassemble, or modify the V10 series unit. Hakko Electronics Co., Ltd. is not responsible for any damages resulting from repair, disassembly, or modification of the unit that was performed by an unauthorized person.
- Do not use sharp-pointed tools to press touch switches. Doing so may damage the display unit.
- Only technicians are authorized to set up the unit, connect cables, and perform maintenance and inspection.
- Lithium batteries contain combustible material such as lithium and organic solvents. Mishandling may cause heat, explosion, or ignition resulting in fire or injury. Read the related manuals carefully and correctly handle the lithium battery as instructed.
- Take safety precautions during operations such as changing settings when the unit is running, forced output, and starting and stopping the unit. Any misoperations may cause unexpected machine movement, resulting in machine accidents or damage.
- In facilities where the failure of the V10 series could lead to accidents that threaten human life or other serious damage, be sure that such facilities are equipped with adequate safeguards.
- When disposing of the V10 series unit, it must be treated as industrial waste.
- Before touching the V10 series unit, discharge static electricity from your body by touching grounded metal. Excessive static electricity may cause malfunction or trouble.
- Insert an SD card into MONITOUCH in the same orientation as pictured on the unit. Failure to do so may damage the SD card or the slot on the unit.
- The SD card access LED flashes red when the SD card is being accessed. Never remove the SD card or turn off power to the unit while the LED is flashing. Doing so may destroy the data on the SD card. Check that the LED has turned off before removing the SD card or turning off the power to the unit.
- Be sure to remove the protective sheet that is attached to the touch panel surface at delivery before use. If used with the protective sheet attached, MONITOUCH may not recognize touch operations or malfunctions may occur.
- Do not press two or more positions 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 may be activated.

[General Notes]

- Never bundle control cables or input/output cables with high-voltage and large-current carrying cables such as power supply cables. Keep control cables and input/output cables at least 200 mm away from high-voltage and large-current carrying cables. Otherwise, malfunction may occur due to noise.
- When using the V10 series 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 each end. However, when communication is unstable, select between grounding one or both ends, as permitted by the usage environment.
- Be sure to plug connectors and sockets of the V10 series 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, the device on the other end may be damaged. Check the connector names on the unit and insert cables into the correct connectors.
- Do not use thinners for cleaning because it may discolor the V10 series unit surface. Use commercially available alcohol.
- Clean the display area using a soft cloth to avoid scratching the surface.
- If a data receive error occurs when the V10 series unit and a counterpart unit (PLC, temperature controller, etc.) are started at the same time, read the manual of the counterpart unit to correctly resolve the error.
- Avoid discharging static electricity on the mounting panel of the V10 series unit. Discharging static electricity on the mounting panel may cause malfunction due to noise.
- The V10 series is identified as a class-A product in industrial environments. In the case of use in a domestic environment, the unit is likely to cause electromagnetic interference. Preventive measures should thereby be taken appropriately.
- The V10 series is equipped with a battery that contains lithium metal and therefore observance of transport regulations is necessary. Hakko Electronics ships V10 series units packed in accordance with transport regulations. If there is a need to transport a V10 series unit after it is once unpacked, transport the unit in accordance with the IATA Dangerous Goods Regulations, International Maritime Dangerous Goods (IMDG) Code, and transport regulations of the countries concerned. Ask your forwarding agent for details of transport regulations.

[Notes on the LCD]

Note that the following conditions may occur under normal circumstances.

- Avoid prolonged display of any fixed pattern. Due to the characteristic of liquid crystal displays, an afterimage may occur. If prolonged display of a fixed pattern is expected, use the backlight auto OFF function.
- The response time, brightness, and colors of the V10 series unit may be affected by the ambient temperature.
- Tiny spots (dark or luminescent) may appear on the display due to the characteristics of liquid crystal.
- Unevenness in brightness and flickering may occur depending on the screen display pattern due to the characteristics of liquid crystal.
- There are variations in brightness and color between units.
- Display colors may vary depending on the viewing angle because a converging lens is used in the backlight unit.

[Notes on Wireless LAN]

For details regarding supported wireless LAN standards, radio law certifications, and countries where wireless LAN can be used, refer to the "V10 Series About Wireless LAN" manual provided with the V10 series unit at delivery.

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1 Product Outline

1.1 Features

1.2 Models and Peripheral Equipment

1.3 System Configuration

1.1 Features

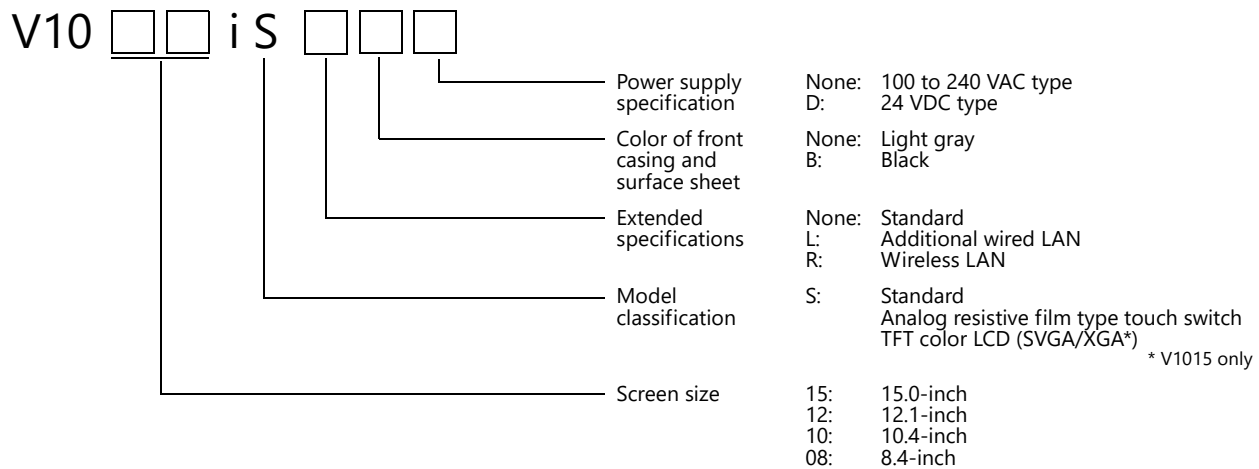
The V10 series inherits and improves on the features of the V9 series as described below.

1. A programmable display unit that offers a maximum of 16.77 million display colors^{*1} and an LCD with an LED backlight. Connectors for communication interface units and connectors for optional units^{*2} are provided as standard.
 - *1 Only for displaying "picture" images, 3D parts and video / RGB input images (excluding high-speed mode). All other content is displayed using 65,536 colors.
 - *2 Optional unit under development
2. Improved performance
Equipped with a quad-core CPU, high-speed processing and high-speed rendering are realized by parallel processing of application processes.
3. Fast booting
By adopting eMMC for internal storage, the time from when power is turned on until RUN mode starts is reduced greatly. Stress-free booting is achieved.
4. LAN connector
A LAN connector supporting 1000BASE-T (1000BASE-T/100BASE-TX/10BASE-T) is provided as standard, enabling high-speed communication.
Models equipped with two LAN connectors (models supporting additional wired LAN) are also available.
5. Wireless LAN (only on models supporting wireless LAN)
A wireless LAN function conforming to IEEE802.11b/g/n is available.
An access point is built-in, allowing direct communication with devices equipped with wireless LAN function such as tablets.
6. SD card interface
The SD/SDHC/SDXC card interface is provided as standard.
SD cards can be used as storage for saving screen programs and logging/alarm data, and transferring recipe data.
SDXC cards of up to 2 TB can be used.
7. USB port
A USB-A port complying with USB version 3.0 and a USB mini-B port complying with USB version 2.0 are provided as standard.
The USB-A port can be used to connect a USB flash drive for use as storage.
USB flash drives of up to 32 GB can be used.
8. Audio output port
An audio output port is provided as standard.
A speaker can be connected for playing an audio file such as when an alarm occurs.
9. Scrolling function
Single screens can be registered at sizes higher than the resolution of the display unit and the scrolling function can be used to display each part of such screens.
According to screen configuration, this function can be used to display screens of sizes that extend in the horizontal and vertical directions.
In addition, navigation display is supported which allows users to instantly check the current display position.
10. Zoom in/out function
Double-tap a displayed screen to zoom in by a maximum of 200%.
This enables users to check parts that are small and difficult to see.
11. VNC server function
All models can be remotely monitored and operated from a computer or tablet.
It is possible to perform only remote monitoring as necessary. In addition, direct operation of the V10 series unit can be prohibited during remote operation.
Security is enhanced by supporting MAC address specification of client devices so that access from unspecified devices can be disabled.
12. VPN function
All models are equipped with a VPN function, enabling safe, simple and low-cost VPN communication.
The routing function can be used to establish remote connection to devices connected to the V10 series unit via Ethernet, such as a PLC and network camera.
13. Scheduler function
Predetermined operations (turning bits ON, executing macros etc.) can be executed at a time set in advance, such as every week, every day, or a specified time.
Operations such as periodical saving of logging/alarm data can be scheduled easily.
14. TrueType font
TrueType fonts enable smoother character expression through anti-aliasing processing.
15. Configuration of settings in Local mode
The Local mode of the V10 series unit can be used to easily check and change settings such as for the backlight, buzzer, and communication with connected devices.
Settings can be changed without editing the screen program using the screen configuration software.
16. Portrait orientation for V10 series units
Mounting in a portrait orientation (90° left or 90° right) is possible to suit the installation environment of the V10 series unit. Since screen editing in the screen configuration software also supports portrait orientations, screens can be configured for display in the target orientation.

1.2 Models and Peripheral Equipment

1.2.1 MONITOUCH Models

The model name consists of the following information.



1.2.2 Lineup

Model		Screen size (Dot resolution)	Touch switch	Power supply	External Interface		
Light gray	Black				Additional wired LAN	Wireless LAN	Standard ports
V1015iS	V1015iSB	15.0-inch (1024 × 768)	Analog resistive film type	AC power supply	×	×	Wired LAN: 1 channel
V1015iSD	V1015iSBD			DC power supply			Serial communication port RS-232C/422/485: 1 channel RS-232C/485: 2 channels
V1015iSLD	V1015iSLBD			1 channel	SD card slot: 1 channel		
V1015iSRD	V1015iSRBD			×	1 channel	USB-A (Ver. 3.0): 1 channel	
V1012iS	V1012iSB	12.1-inch (800 × 600)		AC power supply	×	×	USB mini-B (Ver. 2.0): 1 channel
V1012iSD	V1012iSBD			DC power supply			Communication interface unit connector: 1 channel
V1012iSLD	V1012iSLBD			1 channel	Optional unit connector: 1 channel		
V1012iSRD	V1012iSRBD			×		1 channel	
V1010iS	V1010iSB	10.4-inch (800 × 600)		AC power supply	×	×	
V1010iSD	V1010iSBD			DC power supply			
V1010iSLD	V1010iSLBD			1 channel			
V1010iSRD	V1010iSRBD			×	1 channel		
V1008iSD	V1008iSBD	8.4-inch (800 × 600)		DC power supply	×	×	
V1008iSLD	V1008iSLBD				1 channel		
V1008iSRD	V1008iSRBD				×	1 channel	

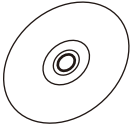
1.2.3 Conforming Standards

Model		UL61010-1 UL61010-2-201	CE/UKCA	KC	Wireless standards
Light gray	Black				
V1015iS	V1015iSB	×	×	○	×
V1015iSD	V1015iSBD	○	○		
V1015iSLD	V1015iSLBD				MIC/KC/RE/UKCA/ FCC/ISED
V1015iSRD	V1015iSRBD				
V1012iS	V1012iSB	×	×	○	×
V1012iSD	V1012iSBD	○	○		
V1012iSLD	V1012iSLBD				MIC/KC/RE/UKCA/ FCC/ISED
V1012iSRD	V1012iSRBD				
V1010iS	V1010iSB	×	×	○	×
V1010iSD	V1010iSBD	○	○		
V1010iSLD	V1010iSLBD				MIC/KC/RE/UKCA/ FCC/ISED
V1010iSRD	V1010iSRBD				
V1008iSD	V1008iSBD	○	○	○	×
V1008iSLD	V1008iSLBD				MIC/KC/RE/UKCA/ FCC/ISED
V1008iSRD	V1008iSRBD				

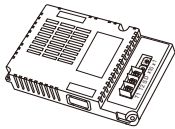
1.2.4 Peripheral Equipment

The following software and equipment are available as options for the V10 series.



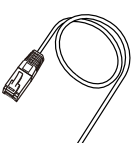
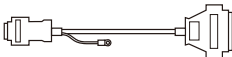
Screen Configuration Software

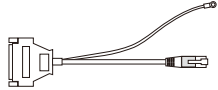


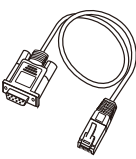
Model	Description
V-SFT-6 	Screen configuration software (V10 support: Version 6.2.0.0 and later) Application software for editing screen programs Supported OS: Vista (32-bit, 64-bit) / 7 (32-bit, 64-bit) / 8 (32-bit, 64-bit) / 8.1 (32-bit, 64-bit) / 10 (32-bit, 64-bit) / 11 (64-bit)

Communication Interface Unit

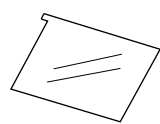
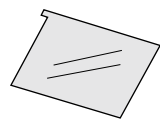
Model	Description
CUR-xx xx: 00/01/02/03/04/ 06/07/08/09 	Communication Interface Unit Communication units used for connecting to networks. CUR-00: OPCN-1 CUR-01: T-Link CUR-02: CC-Link (Ver. 2.00/1.10/1.00) CUR-03: Ethernet (UDP/IP) CUR-04: PROFIBUS-DP CUR-06: SX bus CUR-07: DeviceNet CUR-08: FL-net (Ver. 2.00) CUR-09: EtherCAT *1 *2 *1 CUR-09 cannot be used at the same time with "TC-D9". *2 EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Various Cables


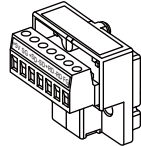
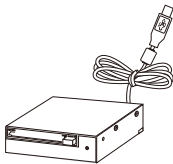
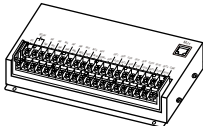
Model	Description
V6-BCD 	Barcode reader connection cable: 3 m A cable used for connecting a barcode reader to the MJ1/MJ2 port of the V10 series unit via RS-232C.
V6-MLT 	Multi-link2 master cable: 3 m A cable used for multi-link2 connection between a V10 series master station and V10 series slave station.
V6-TMP 	Connection cable for controllers A cable used for connecting a controller to the MJ1/MJ2 port of the V10 series unit via RS-232C or RS-485 (2-wire connection). V6-TMP: 3 m V6-TMP-5M: 5 m V6-TMP-10M: 10 m
D9-D25 	D-sub 9-pin-to-25-pin conversion cable: 0.3 m A conversion cable used for connecting the communication cable for the CN1 port (D-sub 25-pin) of the V6/V7 series to the CN1 port (D-sub 9-pin) of the V10 series unit.

Model	Description
MJ2-PLC 	MJ2-to-D-sub conversion cable: 0.3 m A conversion cable used for connecting the communication cable for the CN1 port (D-sub 25-pin) of the V6/V7 series to the MJ1/MJ2 port of the V10 series unit via RS-232C. * Use the MJ-D25 cable (see below) when connecting to a PLC via RS-485 (2-wire connection).
MJ-D25 	MJ-to-D-sub conversion cable: 0.3 m A conversion cable used for connecting the communication cable for the CN1 port (D-sub 25-pin) of the V6/V7 series to the MJ1/MJ2 port of the V10 series unit via RS-232C or RS-485 (2-wire connection).
UA-FR 	USB-A panel mounting cable: 1 m A cable for USB-A (master) that allows connection from the front of the mounting panel. * Complying USB standard: USB version 2.0
V-CP 	Screen program transfer cable: 3 m A cable for serial connection (RS-232C) between the V10 series unit and a computer. This can be used for universal serial communication and V-Link connection. * Screen program transfer can be done using a commercially available USB cable or by LAN connection.

Protective Sheet

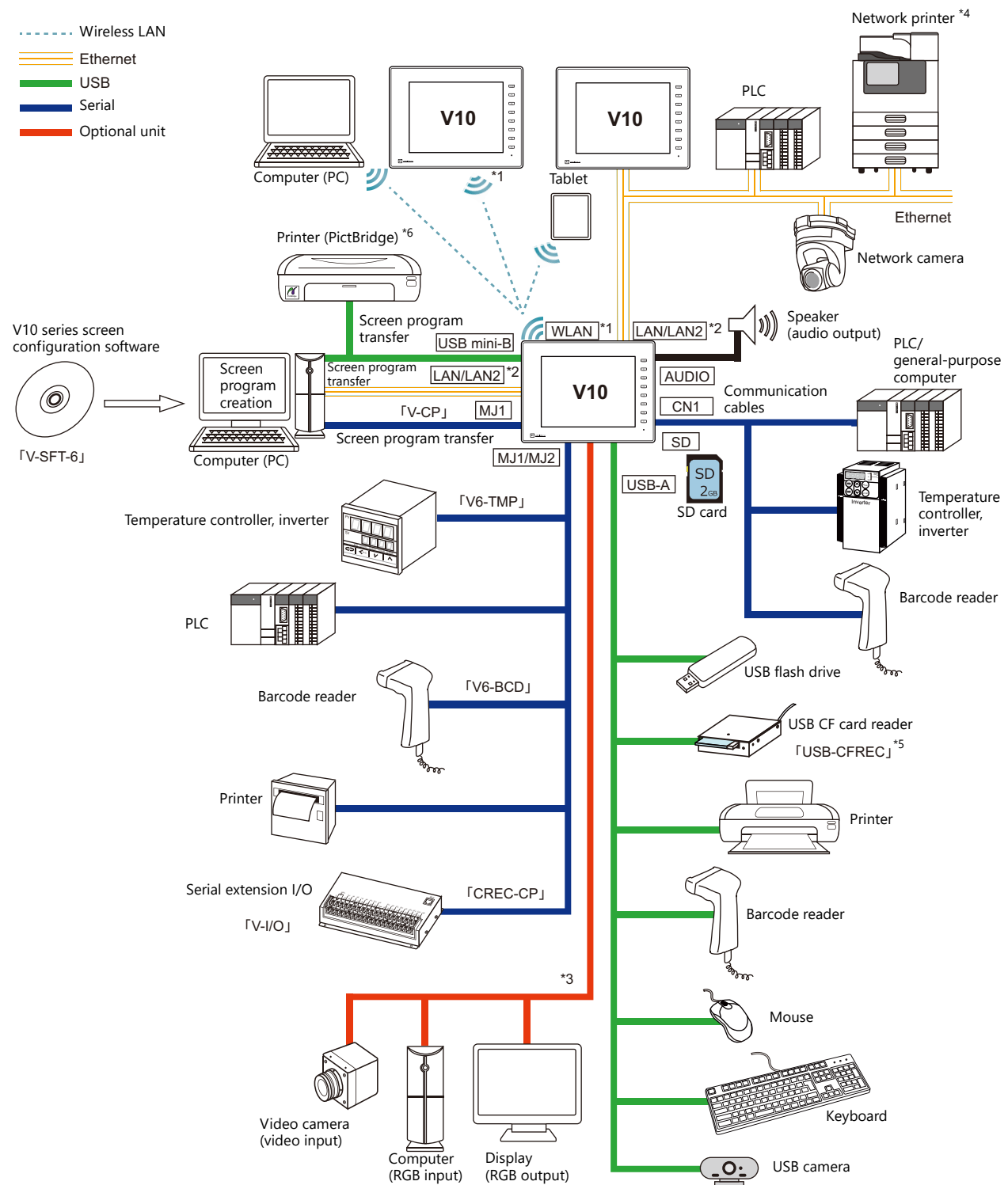
Model	Description
V10xx-GS xx: 15/12/10/08 	Protective sheet: 5 pcs/set A sheet used for protecting the operation panel surface. V1015S-GS: V1015 series V1012S-GS: V1012 series V1010S-GS: V1010 series V1008S-GS: V1008 series
V10xx-GSN10 xx: 15/12/10/08 	Protective sheet (anti-glare type): 5 pcs/set A sheet used for protecting the operation panel surface. The sheet is colored light gray and the graininess of its surface prevents light reflection. V1015S-GSN10: V1015 series V1012S-GSN10: V1012 series V1010S-GSN10: V1010 series V1008S-GSN10: V1008 series

Other Options

Model	Description
V9-BT 	Replacement battery A replacement lithium battery for the V1015, V1012, V1010, and V1008 series. * This is also used in the V9 series (V9150, V9120, V9100, V910xW, V9080).
TC-D9 	Terminal converter This converter is used for connecting a controller to the CN1 port (D-sub 9-pin) of the V10 series unit with an RS-422/485 terminal block.
USB-CFREC 	USB CF card recorder A unit that connects to the USB-A port of the V10 series unit and enables access to CF cards. * Use a unit of the hardware version "c" or later. Complying USB standard: USB version 2.0
V-I/O 	Serial extension I/O Used as an external I/O unit. It has 16 inputs and 16 outputs.

1.3 System Configuration

The following figure shows the possible system configurations when using the V10 series.



*1 Only on models supporting wireless LAN

*2 "LAN2" is only for models supporting the additional wired LAN port.

*3 The optional unit (under development) is required.

*4 On models supporting wireless LAN, connection via wireless LAN is also possible.

*5 Hardware version "c" or later

*6 Under development

2 Specifications

2.1 Specifications

2.2 External Dimensions and Panel Cut-out Dimensions

2.1 Specifications

2.1.1 General Specifications

V1015iS Series

Item		V1015iS / V1015iSB	V1015iSD / V1015iSBD V1015iSLD / V1015iSLBD	V1015iSRD / V1015iSRBD
Conforming standards	CE	Non-conforming	EMC directive (2014/30/EU) EN61000-6-2, EN61000-6-4 RoHS directive	
	UKCA	Non-conforming	EMC directive (2016 No. 1091) EN61000-6-2, EN61000-6-4 RoHS directive	
	UL/cUL	Non-conforming	UL61010-1, UL61010-2-201 (E313548) CAN/CSA-C22.2 No. 61010-1, CAN/CSA-C22.2 No. 61010-2-201	
	KC	Supported		
	Radio law	-		Japan: MIC USA: FCC Canada: ISED Europe: RE/UKCA South Korea: KC
Power supply	Permissible voltage range	100 to 240 VAC -15 % to +10 % (47 to 63 Hz)	24 VDC ± 10 %	
	Permissible momentary power failure	Within 20 ms (100 VAC or higher)	Within 1 ms	
	Power consumption (Max. rating)	76 VA or less	38 W or less	
	Rush current	56 A or less, 3 ms (ambient temperature at 25 °C)	29 A or less, 12 ms (ambient temperature at 25 °C)	
	Withstand voltage	AC external terminals to FG: 1500 VAC for 1 minute	DC external terminals to FG: 500 VAC for 1 minute	
Insulation resistance		AC external terminals to FG: At least 10 MΩ at 500 VDC	DC external terminals to FG: At least 10 MΩ at 500 VDC	
Physical environment	Operational ambient temperature	0 °C to +40 °C *1		
	Storage ambient temperature	-10 °C to +50 °C *1		
	Operational ambient humidity	85 % RH or less (without dew condensation) *1		
	Storage ambient humidity	85 % RH or less (without dew condensation) *1		
	Altitude	2000 m or less		
	Atmosphere	No corrosive gas, no excessive dust, and no conductive dust		
	Overvoltage category *2	Category II		
	Pollution degree *3	Pollution degree 2		
Mechanical working conditions	Vibration resistance	JIS B 3502 (IEC61131-2) compliant Vibration frequency: 5 to 9 Hz, Half-amplitude: 3.5 mm Vibration frequency: 9 to 150 Hz, Constant acceleration: 9.8 m/s ² (1 G) X, Y, and Z: 3 directions (10 times each)		
	Shock resistance	JIS B 3502 (IEC61131-2) compliant Peak acceleration: 147 m/s ² (15 G), X, Y, and Z: 3 directions, 3 times each (18 times in total)		
Electrical working conditions	Noise resistance	Noise voltage: 1500 Vp-p, Pulse width: 1 μs, Rising time: 1 ns (Measured using a noise simulator)	Noise voltage: 1000 Vp-p, Pulse width: 1 μs, Rising time: 1 ns (Measured using a noise simulator)	
	Static electricity discharge resistance	Compliant with IEC61000-4-2, Contact: 6 kV, Air: 8 kV		

2. Specifications

Item		V1015iS / V1015iSB	V1015iSD / V1015iSBD V1015iSLD / V1015iSLBD	V1015iSRD / V1015iSRBD
Mounting specifications	Grounding		Less than 100 Ω, FG/SG separated	
	Protection structure	Front *4	Compliant with IP66 (when waterproof gasket is installed)	Compliant with IP66, Type 4X/13 (when waterproof gasket is installed)
		Back	Compliant with IP20	
	Cooling system		Natural cooling	
	Mounting method		Inserted in a mounting panel	
	Mounting panel thickness		1.5 to 4 mm *5	
Weight		Approx. 3.7 kg		
Dimensions	Dimensions (W × H × D)		382.8 × 312.8 × 79.2 mm	
	Panel cut-out dimensions (W × H)		369.4 ^{+0.5} ₋₀ × 299.4 ^{+0.5} ₋₀ mm	
Unit color	Standard models		Front casing, surface sheet, rear casing: Light gray	
	Black models		Front casing, surface sheet: Black, Rear casing: Light gray	
Material	Casing		PBT+GF30 resin	
	Surface sheet		PET: 0.188 mm	

*1 Use the unit in an environment where the wet-bulb temperature is 39 °C or less, otherwise the unit may be damaged.

*2 This indicates the distribution section to which the unit is intended to be connected to within the path between the distribution of the public power network and machinery in the facility. "Category II" applies to devices supplied with power from mains sockets or similar points. The withstand surge voltage is 2,500 V for devices rated up to 300 V. The withstand surge voltage is 500 V for devices rated up to 50 V.

*3 This is an index that expresses the degree of conductive pollution in the environment where the unit is used.
"Pollution degree 2" indicates the condition where only non-conductive pollution occurs. However, due to condensation, temporary conductive pollution may occur.

*4 Protective structure for the front when the V10 series unit is mounted on a mounting panel.
While the protective structure has passed compliance testing, it is not guaranteed under all environments.

*5 Even when the mounting panel thickness is within the specified range, the panel itself may warp depending on the material and size of the mounting panel.
Use a panel that can withstand the forces of mounting.

V1012iS Series

Item		V1012iS / V1012iSB	V1012iSD / V1012iSBD V1012iSLD / V1012iSLBD	V1012iSRD / V1012iSRBD
Conforming standards	CE	Non-conforming	EMC directive (2014/30/EU) EN61000-6-2, EN61000-6-4 RoHS directive	
	UKCA	Non-conforming	EMC directive (2016 No. 1091) EN61000-6-2, EN61000-6-4 RoHS directive	
	UL/cUL	Non-conforming	UL61010-1, UL61010-2-201 (E313548) CAN/CSA-C22.2 No. 61010-1, CAN/CSA-C22.2 No. 61010-2-201	
	KC	Supported		
	Radio law	-		Japan: MIC USA: FCC Canada: ISED Europe: RE/UKCA South Korea: KC
Power supply	Permissible voltage range	AC100 - 240 V -15 % to +10 % (47 to 63 Hz)	24 VDC ± 10 %	
	Permissible momentary power failure	Within 20 ms (100 VAC or higher)	Within 1 ms	
	Power consumption (Max. rating)	53 VA or less	25 W or less	
	Rush current	48 A or less, 3 ms (ambient temperature at 25 °C)	23 A or less, 5 ms (ambient temperature at 25 °C)	
	Withstand voltage	AC external terminals to FG: 1500 VAC for 1 minute	DC external terminals to FG: 500 VAC for 1 minute	
Insulation resistance		AC external terminals to FG: At least 10 MΩ at 500 VDC	DC external terminals to FG: At least 10 MΩ at 500 VDC	
Physical environment	Operational ambient temperature	0 °C to +50 °C *1		
	Storage ambient temperature	-10 °C to +60 °C *1		
	Operational ambient humidity	85 % RH or less (without dew condensation) *1		
	Storage ambient humidity	85 % RH or less (without dew condensation) *1		
	Altitude	2000 m or less		
	Atmosphere	No corrosive gas, no excessive dust, and no conductive dust		
	Overvoltage category *2	Category II		
	Pollution degree *3	Pollution degree 2		
Mechanical working conditions	Vibration resistance	JIS B 3502 (IEC61131-2) compliant Vibration frequency: 5 to 9 Hz, Half-amplitude: 3.5 mm Vibration frequency: 9 to 150 Hz, Constant acceleration: 9.8 m/s ² (1 G) X, Y, and Z: 3 directions (10 times each)		
	Shock resistance	JIS B 3502 (IEC61131-2) compliant Peak acceleration: 147 m/s ² (15 G), X, Y, and Z: 3 directions, 3 times each (18 times in total)		
Electrical working conditions	Noise resistance	Noise voltage: 1500 Vp-p, Pulse width: 1 μs, Rising time: 1 ns (Measured using a noise simulator)		
	Static electricity discharge resistance	Compliant with IEC61000-4-2, Contact: 6 kV, Air: 8 kV		
Mounting specifications	Grounding		Less than 100 Ω, FG/SG separated	
	Protection structure	Front *4	Compliant with IP66 (when waterproof gasket is installed)	Compliant with IP66, Type 4X/13 (when waterproof gasket is installed)
		Back	Compliant with IP20	
	Cooling system		Natural cooling	
	Mounting method		Inserted in a mounting panel	
	Mounting panel thickness		1.5 to 4 mm *5	
Weight		Approx. 2.6 kg		

2. Specifications

Item		V1012iS / V1012iSB	V1012iSD / V1012iSBD V1012iSLD / V1012iSLBD	V1012iSRD / V1012iSRBD
Dimensions	Dimensions (W × H × D)	327.8 × 261.0 × 53.4 mm		
	Panel cut-out dimensions (W × H)	313.0 ^{+0.5} ₋₀ × 246.2 ^{+0.5} ₋₀ mm		
Unit color	Standard models	Front casing, surface sheet, rear casing: Light gray		
	Black models	Front casing, surface sheet: Black, Rear casing: Light gray		
Material	Casing	PBT+GF30 resin		
	Surface sheet	PET: 0.188 mm		

- *1 Use the unit in an environment where the wet-bulb temperature is 39 °C or less, otherwise the unit may be damaged.
- *2 This indicates the distribution section to which the unit is intended to be connected to within the path between the distribution of the public power network and machinery in the facility. "Category II" applies to devices supplied with power from mains sockets or similar points. The withstand surge voltage is 2,500 V for devices rated up to 300 V. The withstand surge voltage is 500 V for devices rated up to 50 V.
- *3 This is an index that expresses the degree of conductive pollution in the environment where the unit is used.
"Pollution degree 2" indicates the condition where only non-conductive pollution occurs. However, due to condensation, temporary conductive pollution may occur.
- *4 Protective structure for the front when the V10 series unit is mounted on a mounting panel.
While the protective structure has passed compliance testing, it is not guaranteed under all environments.
- *5 Even when the mounting panel thickness is within the specified range, the panel itself may warp depending on the material and size of the mounting panel.
Use a panel that can withstand the forces of mounting.

V1010iS Series

Item		V1010iS / V1010iSB		V1010iSD / V1010iSBD V1010iSLD / V1010iSLBD	V1010iSRD / V1010iSRBD
Conforming standards	CE	Non-conforming		EMC directive (2014/30/EU) EN61000-6-2, EN61000-6-4 RoHS directive	
	UKCA	Non-conforming		EMC directive (2016 No. 1091) EN61000-6-2, EN61000-6-4 RoHS directive	
	UL/cUL	Non-conforming		UL61010-1, UL61010-2-201 (E313548) CAN/CSA-C22.2 No. 61010-1, CAN/CSA-C22.2 No. 61010-2-201	
	KC	Supported			
	Radio law	-			Japan: MIC USA: FCC Canada: ISED Europe: RE/UKCA South Korea: KC
Power supply	Permissible voltage range	AC100 - 240 V -15 % to +10 % (47 to 63 Hz)		24 VDC ± 10 %	
	Permissible momentary power failure	Within 20 ms (100 VAC or higher)		Within 1 ms	
	Power consumption (Max. rating)	60 VA or less		27 W or less	
	Rush current	43 A or less, 3 ms (ambient temperature at 25 °C)		25 A or less, 5 ms (ambient temperature at 25 °C)	
	Withstand voltage	AC external terminals to FG: 1500 VAC for 1 minute		DC external terminals to FG: 500 VAC for 1 minute	
Insulation resistance		AC external terminals to FG: At least 10 MΩ at 500 VDC		DC external terminals to FG: At least 10 MΩ at 500 VDC	
Physical environment	Operational ambient temperature	0 °C to +50 °C *1			
	Storage ambient temperature	-10 °C to +60 °C *1			
	Operational ambient humidity	85 % RH or less (without dew condensation) *1			
	Storage ambient humidity	85 % RH or less (without dew condensation) *1			
	Altitude	2000 m or less			
	Atmosphere	No corrosive gas, no excessive dust, and no conductive dust			
	Overvoltage category *2	Category II			
	Pollution degree *3	Pollution degree 2			
Mechanical working conditions	Vibration resistance	JIS B 3502 (IEC61131-2) compliant Vibration frequency: 5 to 9 Hz, Half-amplitude: 3.5 mm Vibration frequency: 9 to 150 Hz, Constant acceleration: 9.8 m/s ² (1 G) X, Y, and Z: 3 directions (10 times each)			
	Shock resistance	JIS B 3502 (IEC61131-2) compliant Peak acceleration: 147 m/s ² (15 G), X, Y, and Z: 3 directions, 3 times each (18 times in total)			
Electrical working conditions	Noise resistance	Noise voltage: 1500 Vp-p, Pulse width: 1 μs, Rising time: 1 ns (Measured using a noise simulator)			
	Static electricity discharge resistance	Compliant with IEC61000-4-2, Contact: 6 kV, Air: 8 kV			
Mounting specifications	Grounding		Less than 100 Ω, FG/SG separated		
	Protection structure	Front *4	Compliant with IP66 (when waterproof gasket is installed)	Compliant with IP66, Type 4X/13 (when waterproof gasket is installed)	
		Back	Compliant with IP20		
	Cooling system		Natural cooling		
	Mounting method		Inserted in a mounting panel		
	Mounting panel thickness		1.5 to 4 mm *5		
Weight		Approx. 2.1 kg			

2. Specifications

Item		V1010iS / V1010iSB	V1010iSD / V1010iSBD V1010iSLD / V1010iSLBD	V1010iSRD / V1010iSRBD
Dimensions	Dimensions (W × H × D)	303.8 × 231.0 × 53.8 mm		
	Panel cut-out dimensions (W × H)	289.0 ^{+0.5} ₋₀ × 216.2 ^{+0.5} ₋₀ mm		
Unit color	Standard models	Front casing, surface sheet, rear casing: Light gray		
	Black models	Front casing, surface sheet: Black, Rear casing: Light gray		
Material	Casing	PBT+GF30 resin		
	Surface sheet	PET: 0.188 mm		

- *1 Use the unit in an environment where the wet-bulb temperature is 39 °C or less, otherwise the unit may be damaged.
- *2 This indicates the distribution section to which the unit is intended to be connected to within the path between the distribution of the public power network and machinery in the facility. "Category II" applies to devices supplied with power from mains sockets or similar points. The withstand surge voltage is 2,500 V for devices rated up to 300 V. The withstand surge voltage is 500 V for devices rated up to 50 V.
- *3 This is an index that expresses the degree of conductive pollution in the environment where the unit is used.
"Pollution degree 2" indicates the condition where only non-conductive pollution occurs. However, due to condensation, temporary conductive pollution may occur.
- *4 Protective structure for the front when the V10 series unit is mounted on a mounting panel.
While the protective structure has passed compliance testing, it is not guaranteed under all environments.
- *5 Even when the mounting panel thickness is within the specified range, the panel itself may warp depending on the material and size of the mounting panel.
Use a panel that can withstand the forces of mounting.

V1008iS Series

Item		V1008iSD / V1008iSBD V1008iSLD / V1008iSLBD	V1008iSRD / V1008iSRBD		
Conforming standards	CE	EMC directive (2014/30/EU) EN61000-6-2, EN61000-6-4 RoHS directive			
	UKCA	EMC directive (2016 No. 1091) EN61000-6-2, EN61000-6-4 RoHS directive			
	UL/cUL	UL61010-1, UL61010-2-201 (E313548) CAN/CSA-C22.2 No. 61010-1, CAN/CSA-C22.2 No. 61010-2-201			
	KC	Supported			
	Radio law	-		Japan: MIC USA: FCC Canada: ISED Europe: RE/UKCA South Korea: KC	
Power supply	Permissible voltage range	24 VDC ± 10 %			
	Permissible momentary power failure	Within 1 ms			
	Power consumption (Max. rating)	25 W or less			
	Rush current	21 A or less, 6 ms (ambient temperature at 25 °C)			
	Withstand voltage	DC external terminals to FG: 500 VAC for 1 minute			
Insulation resistance		DC external terminals to FG: At least 10 MΩ at 500 VDC			
Physical environment	Operational ambient temperature	0 °C to +50 °C *1			
	Storage ambient temperature	−10 °C to +60 °C *1			
	Operational ambient humidity	85 % RH or less (without dew condensation) *1			
	Storage ambient humidity	85 % RH or less (without dew condensation) *1			
	Altitude	2000 m or less			
	Atmosphere	No corrosive gas, no excessive dust, and no conductive dust			
	Overvoltage category *2	Category II			
	Pollution degree *3	Pollution degree 2			
Mechanical working conditions	Vibration resistance	JIS B 3502 (IEC61131-2) compliant Vibration frequency: 5 to 9 Hz, Half-amplitude: 3.5 mm Vibration frequency: 9 to 150 Hz, Constant acceleration: 9.8 m/s ² (1 G) X, Y, and Z: 3 directions (10 times each)			
	Shock resistance	JIS B 3502 (IEC61131-2) compliant Peak acceleration: 147 m/s ² (15 G), X, Y, and Z: 3 directions, 3 times each (18 times in total)			
Electrical working conditions	Noise resistance	Noise voltage: 1500 Vp-p, Pulse width: 1 μs, Rising time: 1 ns (Measured using a noise simulator)			
	Static electricity discharge resistance	Compliant with IEC61000-4-2, Contact: 6 kV, Air: 8 kV			
Mounting specifications	Grounding		Less than 100 Ω, FG/SG separated		
	Protection structure	Front *4	Compliant with IP66, Type 4X/13 (when waterproof gasket is installed)		
		Back	Compliant with IP20		
	Cooling system		Natural cooling		
	Mounting method		Inserted in a mounting panel		
Mounting panel thickness		1.5 to 4 mm *5			
Weight		Approx. 1.4 kg			
Dimensions	Dimensions (W × H × D)	235.0 × 180.0 × 48.7 mm			
	Panel cut-out dimensions (W × H)	220.5 ^{+0.5} _{−0} × 165.5 ^{+0.5} _{−0} mm			
Unit color	Standard models	Front casing, surface sheet, rear casing: Light gray			
	Black models	Front casing, surface sheet: Black, Rear casing: Light gray			

2. Specifications

Item		V1008iSD / V1008iSBD V1008iSLD / V1008iSLBD	V1008iSRD / V1008iSRBD
Material	Rear casing	PBT+GF30 resin	
	Surface sheet	PET: 0.188 mm	

- *1 Use the unit in an environment where the wet-bulb temperature is 39 °C or less, otherwise the unit may be damaged.
- *2 This indicates the distribution section to which the unit is intended to be connected to within the path between the distribution of the public power network and machinery in the facility. "Category II" applies to devices supplied with power from mains sockets or similar points. The withstand surge voltage is 500 V for devices rated up to 50 V.
- *3 This is an index that expresses the degree of conductive pollution in the environment where the unit is used.
"Pollution degree 2" indicates the condition where only non-conductive pollution occurs. However, due to condensation, temporary conductive pollution may occur.
- *4 Protective structure for the front when the V10 series unit is mounted on a mounting panel.
While the protective structure has passed compliance testing, it is not guaranteed under all environments.
- *5 Even when the mounting panel thickness is within the specified range, the panel itself may warp depending on the material and size of the mounting panel.
Use a panel that can withstand the forces of mounting.

2.1.2 Performance Specifications

	Item	V1015iS	V1012iS	V1010iS	V1008iS
Display specifications	Display device	TFT color			
	Screen size	15.0-inch	12.1-inch	10.4-inch	8.4-inch
	Dots (resolution)	1024 × 768 dots	800 × 600 dots		
	Dot pitch	0.297 × 0.297 mm	0.3075 × 0.3075 mm	0.264 × 0.264 mm	0.213 × 0.213 mm
	Actual display dimensions	304.1 × 228.1 mm	246.0 × 184.5 mm	211.2 × 158.4 mm	170.4 × 127.8 mm
	Colors	16.77 million colors *1			
	Backlight	LED			
	Backlight brightness halftime *2	Approx. 100,000 hours	Approx. 70,000 hours		
	Backlight auto OFF function	Always ON, custom setting			
	Brightness adjustment	System menu: 16 levels Macro: 128 levels			
	POWER lamp (green)	On: Normal Flashing: Backlight fault, circuit board failure, power supply failure			
Touch switch	Type	Analog resistive film type			
	Switch resolution	1024 × 1024			
	Mechanical life	One million activations or more			
	Surface treatment	Anti-glare treatment			
System/ function switches	Number of switches	8 pcs			
	Type	Membrane switch			
	Mechanical life	One million activations or more			
Clock and backup memory	Backup retention period	Approx. 5 years (ambient temperature at 25 °C)			
	Calendar accuracy *3	When powered: Monthly deviation of ±210 sec. (ambient temperature at 25 °C) When unpowered: Monthly deviation of ±90 sec. (ambient temperature at 25 °C, with battery backup)			
	Backup memory	SRAM, 900 KB			
	Replacement battery	Coin-type lithium primary cell (V9-BT manufactured by Hakko Electronics)			
	Battery voltage drop detection	Provided (allocated to internal device memory address \$s167)			

*1 Only for displaying "picture" images, 3D parts and video / RGB input images (excluding high-speed mode). All other content is displayed using 65,536 colors.

*2 Time until the surface brightness becomes 50 % of the initial value at an ambient temperature of 25 °C.

*3 When using the unit at an ambient temperature other than 25 °C, clock deviation may increase. Check and correct the clock periodically.

2.1.3 Interface Specifications

Item		V10xxiS / V10xxiSB / V10xxiSD / V10xxiSBD	V10xxiSLD / V10xxiSLBD	V10xxiSRD / V10xxiSRBD
CN1	Number of ports	1		
	Connector	D-sub 9-pin		
	Communication standard	RS-232C, RS-485 (2-wire connection), RS-422 (4-wire connection)		
	Synchronization	Asynchronous type		
	Data length	7 or 8 bits		
	Parity	None, even, odd		
	Stop bit	1 or 2 bits		
	Baud rate	4800, 9600, 19200, 38400, 57600, 76800, 115 kbps (For PPI/MPI connection with a Siemens PLC: 187.5 kbps ^{*1})		
	Applications	Connection with PLC, temperature controller, various controllers, barcode reader, etc.		
MJ1/MJ2	Number of ports	2		
	Connector	RJ-45		
	Communication standard	RS-232C, RS-485 (2-wire connection)		
	Baud rate	4800, 9600, 19200, 38400, 57600, 76800, 115 kbps		
	Applications	Screen program transfer (MJ1), connection with PLC, temperature controller, various controllers, barcode reader, printer, multi-link2, V-Link, etc.		
U-A	Number of ports	1		
	Connector	USB 3.0 Standard-A (Type-A)		
	Conforming standards	USB 3.0		
	Baud rate	Low speed: 1.5 Mbps, Full speed: 12 Mbps, High speed: 480 Mbps, Super speed: 5.0 Gbps		
	Cable length	Max.: 3 m		
	Applications	Connection with printer, USB flash drive, barcode reader, keyboard, mouse, USB camera, etc.		
U-B	Number of ports	1		
	Connector	USB 2.0 mini-B		
	Conforming standards	USB 2.0		
	Baud rate	Low speed: 1.5 Mbps, Full speed: 12 Mbps, High speed: 480 Mbps		
	Cable length	Max.: 5 m		
	Applications	Screen program transfer, PictBridge-compatible printer connection (under development)		
LAN/LAN2 (Ethernet)	Number of ports	1	2	1
	Connector	RJ-45		
	Conforming standards ^{*2}	IEEE802.3ab / IEEE802.3u / IEEE802.3		
	Baud rate	1000 Mbps, 100 Mbps, 10 Mbps		
	Protocol	TCP/IP, UDP/IP		
	Function	Auto-MDIX, Auto-Negotiation		
	Recommended cable ^{*3}	100 Ω STP (shielded twist-pair) cable, category 5e or above, max. 1000BASE-T: 30 m, 100BASE-TX/10BASE-T: 100 m long		
	Applications	Screen program transfer, connection with PLC, printer, etc.		
Wireless LAN	Number of ports	-	-	1
	Wireless standards			IEEE802.11b/g/n
	Frequency			2.4 GHz band
	Modulation method			DSSS / OFDM
	Baud rate			11 Mbps / 54 Mbps / 300 Mbps
	Operation mode			Access point / Station
	Applications			Screen program transfer, connection with VNC server function, printer, etc.

Item		V10xxiS / V10xxiSB / V10xxiSD / V10xxiSBD	V10xxiSLD / V10xxiSLBD	V10xxiSRD / V10xxiSRBD		
SD card interface	Number of ports	1				
	Supported card types	Card type		Card capacity	File system	Speed class
		SDXC card		Max. 2 TB	exFAT	Class 10, UHS-I
		SDHC card		Max. 32 GB	FAT32	Class 10, UHS-I
		SD card		Max. 2 GB	FAT16	Class10
AUDIO Audio output	Number of ports	1				
	Connector	φ3.5-mm stereo mini jack				
EXT1 Communication interface unit connector	Number of ports	1 (For connecting the communication unit "CUR-xx")				
	Supported Networks	SX bus, OPCN-1, T-Link, Ethernet, CC-Link, PROFIBUS-DP, DeviceNet, FL-net, EtherCAT Communication unit models CUR-00: OPCN-1 CUR-01: T-Link CUR-02: CC-Link (Ver. 2.00/1.10./1.00) CUR-03: Ethernet (UDP/IP) CUR-04: PROFIBUS-DP CUR-06: SX bus CUR-07: DeviceNet CUR-08: FL-net (Ver. 2.00) CUR-09: EtherCAT * * CUR-09 cannot be used at the same time with "TC-D9".				
EXT2 Connector for optional unit	Number of ports	1 (For connecting the optional unit (under development))				
	Supported functions	RGB input, RGB output, video input * The optional unit is under development.				

*1 For details, refer to the Connection Manual 1.

*2 Jumbo frames are not supported.

*3 Both straight and crossover cables are usable, irrespective of the presence or absence of a hub.

2.1.4 Screen Configuration Environment

Item		Specifications
Configuration method		Dedicated configuration software
Configuration tool	Dedicated software name	V-SFT-6 (V10 support: Version 6.2.0.0 and later)
	OS *1 *2	Windows Vista (32-bit, 64-bit) / 7 (32-bit, 64-bit) / 8 (32-bit, 64-bit) / 8.1 (32-bit, 64-bit) / 10 (32-bit, 64-bit) / 11 (64-bit)
	CPU	Pentium 4, 2.0 GHz or above recommended
	Memory	1.0 GB or above (2.0 GB or above recommended)
	Hard disk capacity	At installation: Approx. 4.0 GB or more
	Optical disc drive	DVD-ROM drive
	Display	Resolution of 1,024 × 768 dots or more
	Colors	High color (16-bit) or higher
	Others	Microsoft .NET Framework 4.0 or 4.5 If a PC does not have .NET Framework 4.0 or 4.5 installed, Framework 4.0 will be automatically installed on the PC.

*1 Administrator privileges are required for installation.

2.1.5 Display Function Specifications

Item		Specifications
Interface language *1		Japanese, English/Western Europe, Chinese (Traditional), Chinese (Simplified), Korean, Central Europe, Cyrillic, Greek, Turkish, Baltic
Font types		TrueType fonts, Bitmap fonts, Windows fonts, Gothic fonts, Stroke fonts
Character properties	Display properties	Normal, blink, bold, shadow, transparent, italic
	Color	65,536 colors (without blinking), 32,768 colors (with blinking)
Graphics	Lines	Line, continuous line, box, parallelogram, polygon
	Circles	Circle, arc, sector, ellipse, elliptical arc
	Others	Pattern, "picture" image, data display (graphics library, data sheets)
Graphic properties	Line type	6 types (thin, thick, dotted, chain, dashed, two-dot chain) Line thickness can be selected from 1 to 8 points (excluding thick lines).
	Tile	16 types (including 8 user-definable patterns)
	Display properties	Normal, blinking
	Colors	65,536 colors (without blinking), 32,768 colors (with blinking)
	Color selection	Foreground, background, boundary (line)

*1 For details, refer to the Reference Manual 1.

2.1.6 Function Performance Specifications

Item		Specifications
Screens		Max. 4,000
Screen memory		256 MB of flash memory
Switches		Max. 4,096 switches per screen ^{*1} (including slider switches and scroll bars)
Switch actions		Set, reset, momentary, alternate, illuminated It is possible to press a function switch and a switch on the display at the same time.
Lamps		Reverse, blinking, exchange of graphics Max. 4,096 per screen ^{*1}
Graphs		Pie, bar, panel meter and closed area graph: Max. 4,096 per screen ^{*1} Statistics and trend graphs: Max. 256 per layer ^{*2}
Data setting	Numerical data display	Max. 4,096 per screen ^{*1}
	Character display	Max. 4,096 per screen ^{*1}
	Message display	Max. 4,096 per screen ^{*1} Maximum number of characters per line: 100 one-byte characters
Messages		Max. 32,768 lines
Macro blocks		Max. 1,024
Graphics library		Max. 2,560
Overlap library		Max. 4,000
Screen library		Max. 4,000
Data blocks		Max. 1,024
Patterns		Max. 1,024
Data sheets		Max. 1,024
Tags		Max. 65,536 lines
Page blocks		Max. 2,048
Direct blocks		Max. 1,024
Screen blocks		Max. 1,024
Comments		Max. 32,767
Logging server		Fixed cycle, trigger
Alarm server		Real time, alarm, event
Recipes		Max. 256
Scheduler		Max. 64
MES setting		Max. 256
Device memory map		Max. 32 × 8 (PLC1 to PLC8)
Time display		Provided
Hard copy		Provided
Buzzer		Provided, 3 sounds (short beep, long beep, continuous beep)
Auto OFF function		Always ON, custom setting
Self-diagnostic function		Touch switch test function ^{*3} Confirmation function that uses the status bar ^{*3} Network diagnostic functions (network test, duplicate IP address test) ^{*3}

*1 The maximum number of parts that can be placed on one screen is 4,096.

For more information on limitations regarding part placement, refer to the Operation Manual.

*2 Layer: 11 layers per screen (base screen and 10 overlap displays)

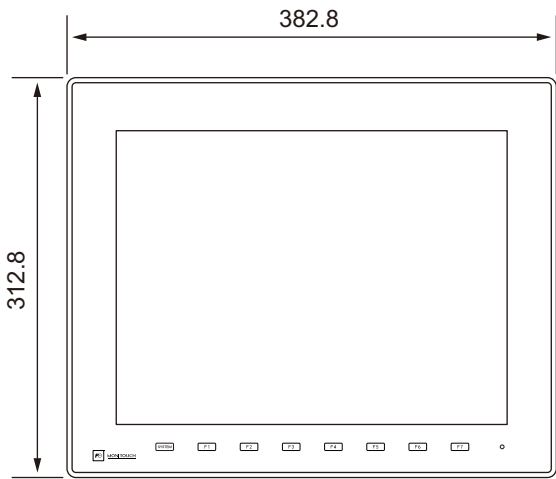
*3 For details, refer to the Unit Operation / Local Mode / Error Screen Manual provided separately.

2.2 External Dimensions and Panel Cut-out Dimensions

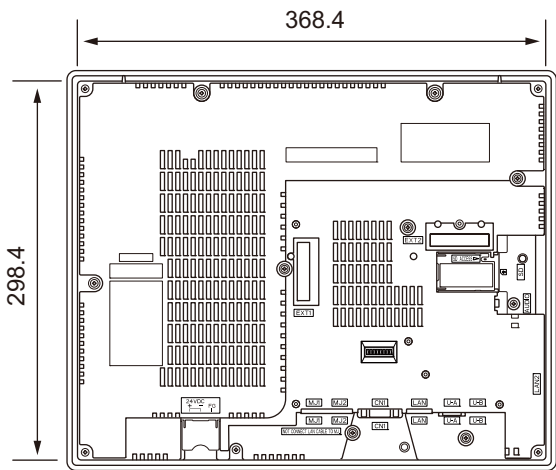
2.2.1 V1015iS

- Front view

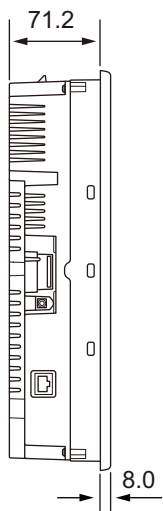
(Unit: mm)



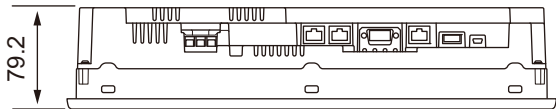
- Rear view



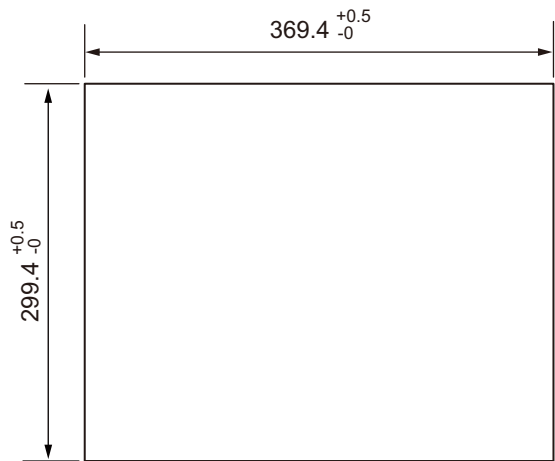
- Side view



- Bottom view



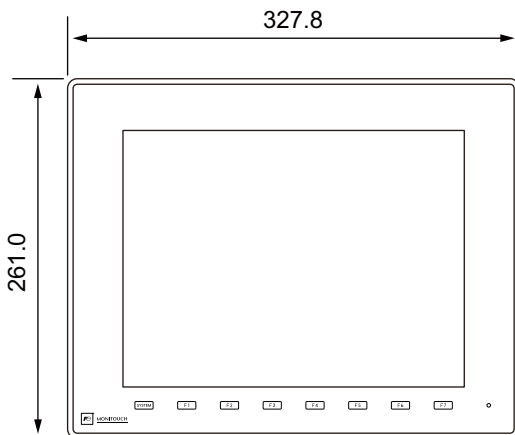
- Panel cut-out dimensions



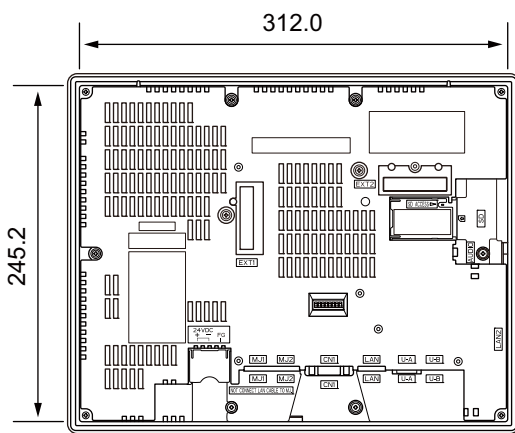
2.2.2 V1012iS

- Front view

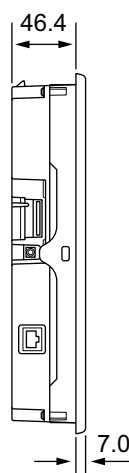
(Unit: mm)



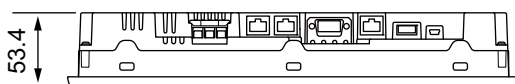
- Rear view



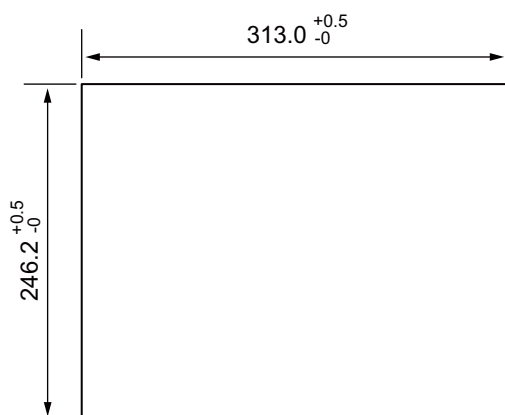
- Side view



- Bottom view



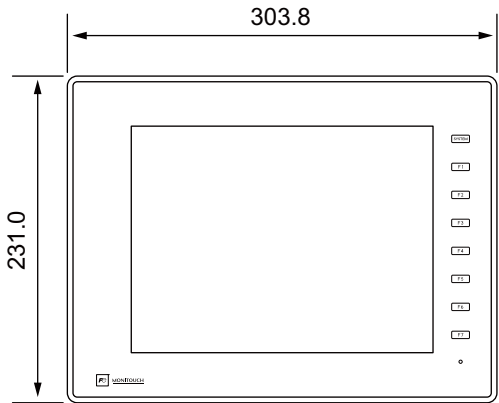
- Panel cut-out dimensions



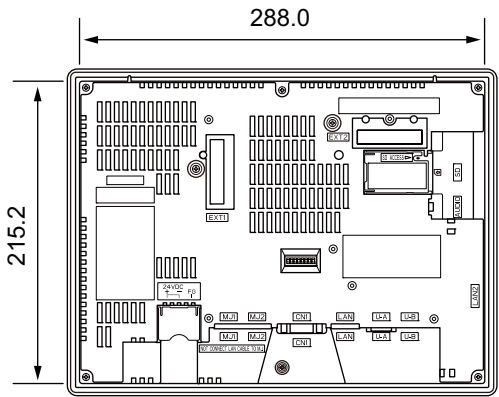
2.2.3 V1010iS

(Unit: mm)

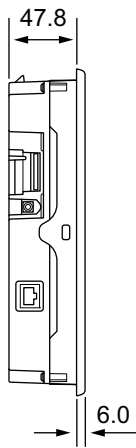
- Front view



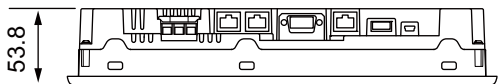
- Rear view



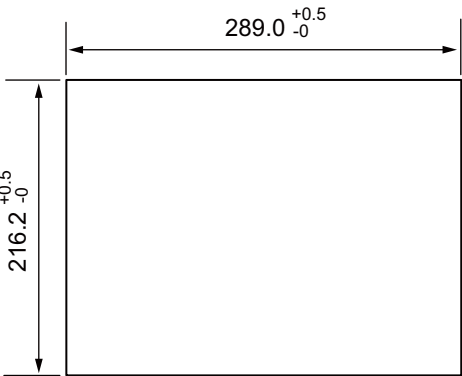
- Side view



- Bottom view

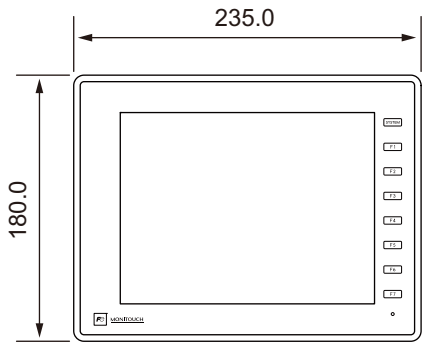


- Panel cut-out dimensions

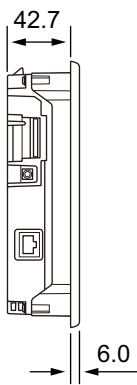
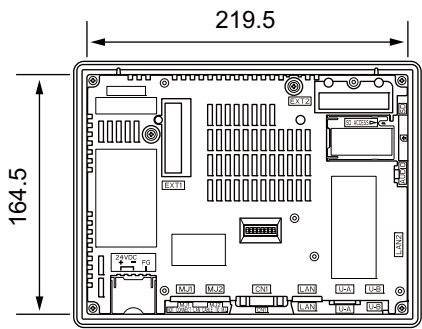


2.2.4 V1008iS

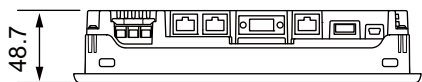
- Front view
- (Unit: mm)



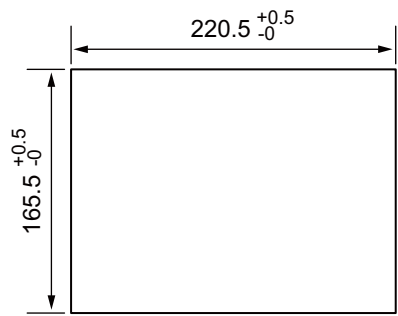
- Rear view
- Side view



- Bottom view



- Panel cut-out dimensions



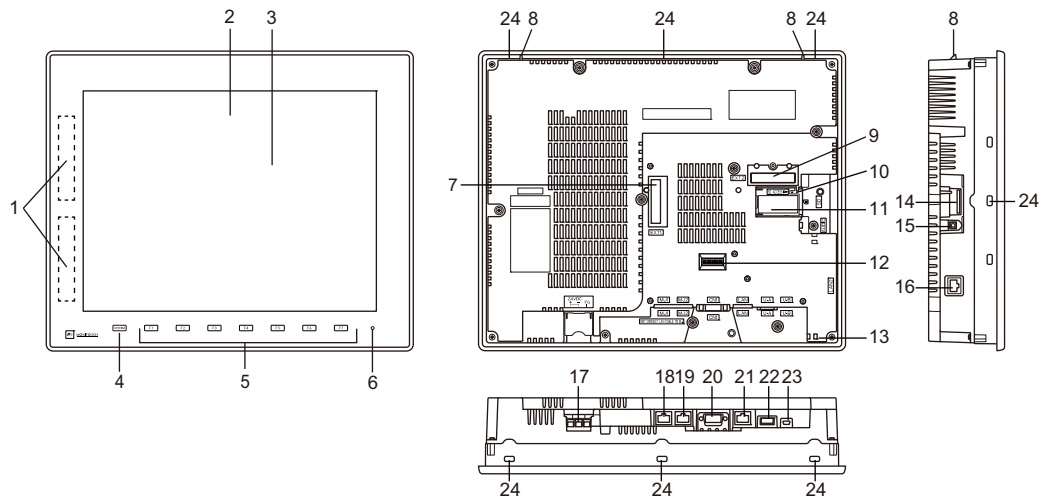
3 Names and Specifications of Components

3.1 Names and Functions of Components

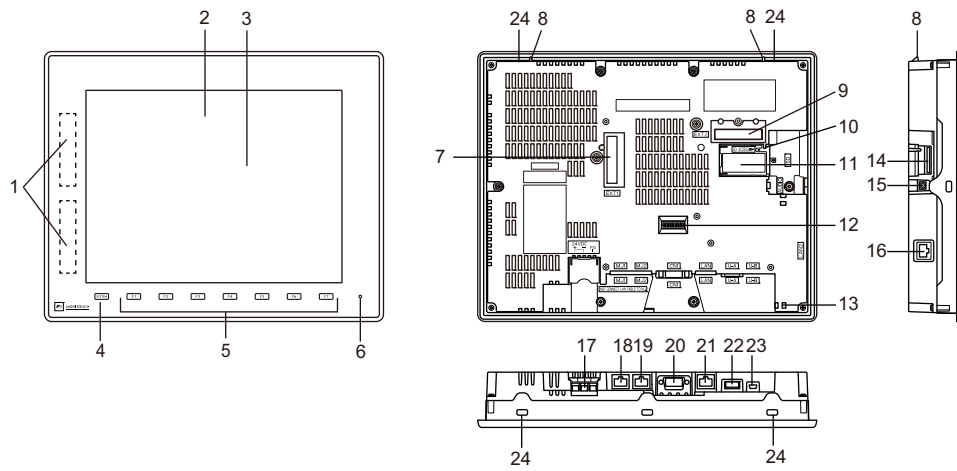
3.2 Specifications of Components

3.1 Names and Functions of Components

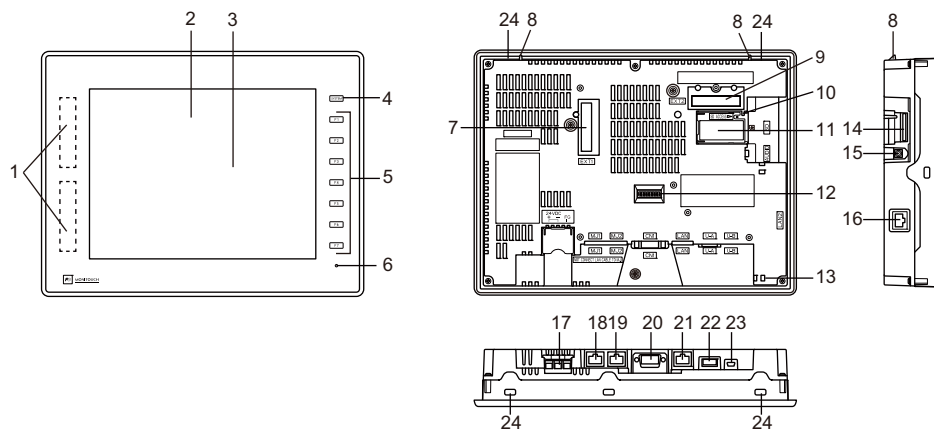
V1015



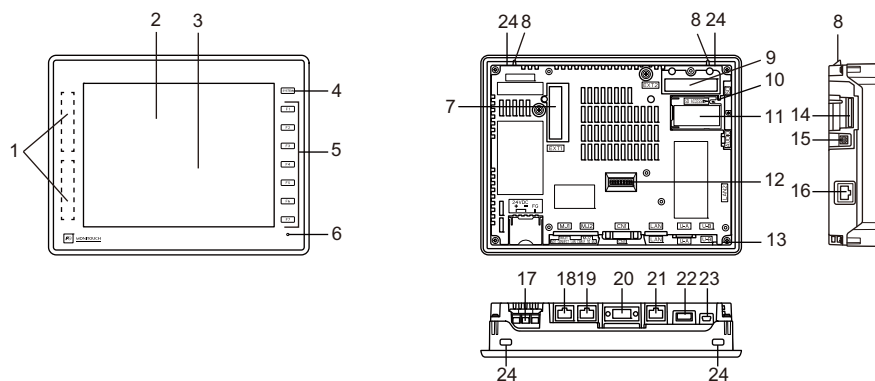
V1012



V1010



V1008



3. Names and Specifications of Components

No.	Name	Description	Refer to
1	Wireless communication antenna	Built-in antenna for wireless communication (only on models supporting wireless LAN)	page 3-12
2	Display	Display area	-
3	Touch switch	Analog resistive film type touch switch area	-
4	SYSTEM switch	For showing/hiding the system menu (RUN/Local mode switching, brightness adjustment, etc.)	Unit Operation / Local Mode / Error Screen Manual
5	Function switches	To be used as user switches in RUN mode	
6	POWER lamp	Normal: Lit green Abnormal (Backlight, circuit board or power supply failure): Flashing green	-
7	EXT1	Connector for communication interface unit "CUR-xx"	page 3-15
8	Fall prevention tabs	Projection to prevent the unit from falling when installed on a mounting panel	page 4-1
9	EXT2	Connector for video/RGB optional unit (under development)	page 3-16
10	SD card access LED	Flashes when reading/writing data from/to an SD card	page 3-17
11	Battery holder	For mounting a battery for SRAM/clock backup	page 4-8
12	DIP switches	Terminating resistance for serial communication, etc.	page 3-19
13	USB cable clamp hole	Hole for attaching a cable tie for clamping a USB cable	page 4-6
14	SD	SD card socket	page 3-17
15	AUDIO	Audio output connector, for external speaker connection	page 3-18
16	LAN2	Additional wired LAN port (only on models supporting additional wired LAN)	page 3-10
17	Power supply terminal block	Terminal block for power supply to the V10 unit	page 4-4
18	MJ1	Serial communication port (RS-232C/RS-485) Screen program transfer, connection with PLCs or other peripheral devices	page 3-4
19	MJ2	Serial communication port (RS-232C/RS-485) Connection with PLCs or other peripheral devices	
20	CN1	Serial communication port (RS-232C/RS-422/RS-485) Connection with PLCs or other peripheral devices	page 3-3
21	LAN	Wired LAN port	page 3-10
22	U-A	USB version 3.0 Type-A port	page 3-5
23	U-B	USB version 2.0 mini-B port	page 3-9
24	Mounting holes	Holes for inserting mounting fixtures	page 4-1

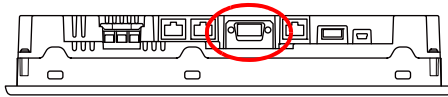
3.2 Specifications of Components

3.2.1 CN1

This connector is used for connecting a controller or barcode reader via RS-232C, or connecting a controller via RS-422/485.

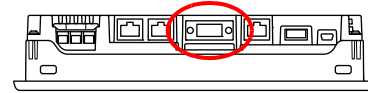
- V1010

Bottom view



- V1008

Bottom view



Specifications

Item	Specifications
Number of ports	1
Connector	D-sub 9-pin
Communication standard	RS-232C, RS-485 (2-wire connection), RS-422 (4-wire connection)
Synchronization	Asynchronous type
Data length	7 or 8 bits
Parity	None, even, odd
Stop bit	1 or 2 bits
Baud rate	4800, 9600, 19200, 38400, 57600, 76800, 115 kbps (For PPI/MPI connection with a Siemens PLC: 187.5 kbps ^{*1})

^{*1} For details, refer to the Connection Manual 1.

Pin Numbers and Signal Names

CN1 (D-sub 9-pin, female)	Pin No.	RS-232C ^{*1}		RS-422 / RS-485 ^{*1}	
	1	NC	Not used	+ RD	Receive data (+)
	2	RD	Receive data	– RD	Receive data (–)
	3	SD	Send data	– SD	Send data (–)
	4	NC	Not used	+ SD	Send data (+)
	5	SG	Signal ground	SG	Signal ground
	6	NC	Not used	+ RTS	Request to send (+)
	7	RTS	Request to send	– RTS	Request to send (–)
	8	CTS	Clear to send	NC	Not used
	9	NC	Not used	+ 5 V	Use prohibited ^{*2}

^{*1} The signal level can be changed between RS-232C and RS-422/485 in the configuration software or on the Local mode screen of the V10 series unit.

Set the DIP switches according to the signal level.

(For details on DIP switches, refer to "3.2.11 DIP Switches (DIPSW)" (page 3-19).)

^{*2} When RS-422/485 is selected, +5 V is output from pin No. 9.

This +5 V is used as the power supply for the external terminating resistance when performing RS-422/485 communication. It cannot be used as an external power supply.

Recommended Connector

Recommended connector	Specifications
DDK's 17JE-23090-02(D8C)-CG	D-sub 9-pin / male / inch screw thread (#4-40UNC) type / with hood / lead and cadmium free

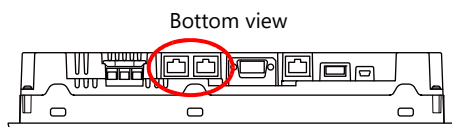
Applications

Application	V-SFT-6 setting	Refer to
PLC/temperature controller connection	Required	Connection Manual
Barcode reader connection	Required	
Multi-link/Multi-link2 communication	Required	

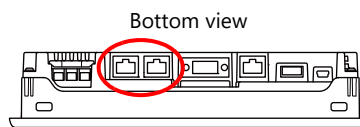
3.2.2 MJ1/MJ2

The modular jacks are used for serial connection of a screen program transfer cable (MJ1 only), temperature controller, barcode reader, and other devices.

- V1010



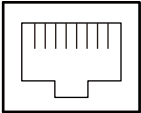
- V1008



Specifications

Item	Specifications
Number of ports	2
Connector	RJ-45
Communication standard	RS-232C, RS-485 (2-wire connection)
Baud rate	4800, 9600, 19200, 38400, 57600, 76800, 115 kbps
Applications	Screen program transfer (MJ1), PLC, temperature controller, various controllers, barcode reader, printer, multi-link2, V-Link connection, etc.

Pin Numbers and Signal Names

MJ1/2	Pin No.	Signal	Description
	1	+SD/RD	RS-485 + data
	2	–SD/RD	RS-485 – data
	3	+5 V	Externally supplied +5 V ^{*1}
	4	+5 V	
	5	SG	Signal ground
	6	SG	
	7	RD	RS-232C receive data
	8	SD	RS-232C send data

^{*1} Allowable current for the +5 V external power supply at MJ1/MJ2 of the V10 series unit
 For MJ1 and MJ2, the maximum allowable current is 150 mA in total.
 For the maximum allowable current for the CN1 and USB-A ports combined, refer to ["External Power Supply Current" page 4-3](#).



CAUTION

If a LAN cable is inserted into the MJ1 or MJ2 connector, the device on the other end may be damaged. Check the connector names on the unit and insert cables into the correct connectors.

Applications

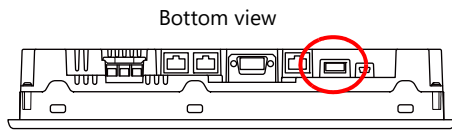
Application	V-SFT-6 setting	Refer to
PLC/temperature controller connection	Required	Connection Manual
Barcode reader connection	Required	
Multi-link/Multi-link2 communication	Required	
Ladder transfer function ^{*1}	Required	Reference Manual 2
Screen program transfer	Not required	Operation Manual
Printer connection	Required	Reference Manual 1

^{*1} The ladder transfer function cannot be used simultaneously with 1:n communication (multi-drop) or multi-link communication.

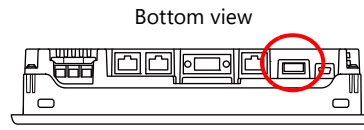
3.2.3 U-A

This is a USB-A connector that is used to connect a printer, USB flash drive, USB-CFREC unit, barcode reader, keyboard, mouse, USB hub, or USB camera. It complies with USB version 3.0.

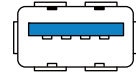
• V1010



• V1008



Enlarged view



Specifications

Item	Specifications
Number of ports	1
Connector	USB 3.0 Standard-A (Type-A)
Conforming standards	USB 3.0 *
Baud rate	Low speed: 1.5 Mbps, Full speed: 12 Mbps, High speed: 480 Mbps, Super speed: 5.0 Gbps
Cable length	Max.: 3 m

* The maximum allowable current is 900 mA. For the maximum allowable current for the CN1, MJ1, and MJ2 ports combined, refer to "External Power Supply Current" page 4-3.

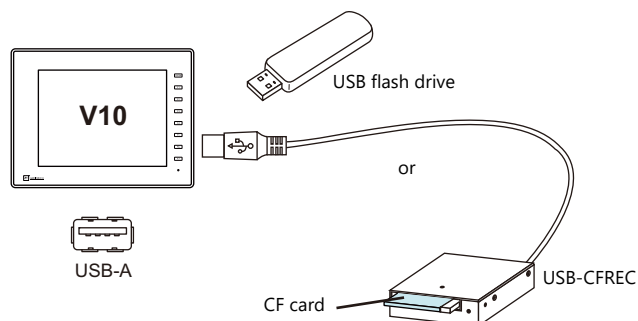
Applications

Application	V-SFT-6 setting	Refer to
Printer connection	Required	Reference Manual 1
USB flash drive or USB-CFREC connection	Required	Refer to page 3-5 .
Barcode reader connection	Required	Connection Manual 3
Keyboard/numeric keypad connection	Required	Refer to page 3-6 .
Mouse connection	Not required	Refer to page 3-7 .
USB hub connection	Not required	Refer to page 3-8 .
USB camera connection	Required	Reference Manual 2

USB Flash Drives and USB-CFREC

A USB flash drive or a USB-CFREC unit can be connected to the V10 series unit to perform operations including screen program transfer and saving of log data.

Connection Example



USB Flash Drive and CF Card Specifications

Storage	Capacity	File system
USB flash drive/CF card	Max. 32 GB	FAT, FAT32

V-SFT-6 Settings

Required settings vary according to the application. For details, refer to the Reference Manual 2.

Notes

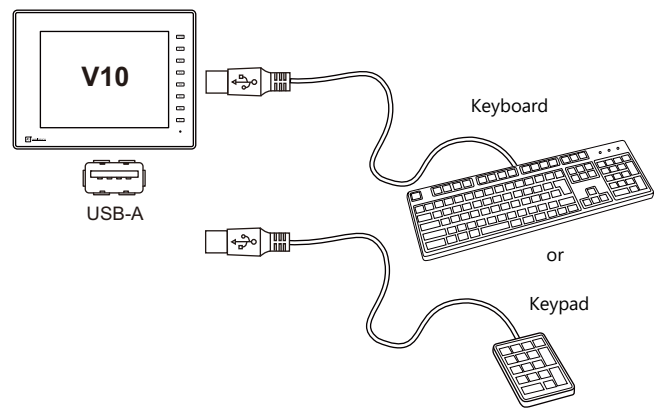


- USB flash drives that have a security function cannot be used.
- When removing a USB flash drive or CF card, select [Storage Removal] in the system menu, or press the [Storage Removal] switch.
- Do not turn off power to the unit when the USB flash drive or CF card is being accessed.
- Make a backup copy of the USB flash drive or CF card at regular intervals.
- If a disk error occurs and data read/write operation is disabled, execute ScanDisk on Windows and try to restore the disk. If the disk cannot be restored, format the storage device. Note that formatting will completely erase all stored data. (For information on executing ScanDisk on Windows, refer to the relevant Windows manual.)
- USB flash drives and CF cards have a limited number of write cycles. Consequently, frequent writing at short intervals may shorten the service life of the USB flash drive or CF card. When using a USB flash drive or CF card to save logging/alarm data, take the logging time/monitoring intervals into consideration. Also, avoid repeated writing using the CYCLE macro command.

Keyboard and Numeric Keypad

Numeric values and characters can be entered by connecting a keyboard or numeric keypad to the V10 series unit.

Connection Example



Compatible Keyboards

Type	Type
Japanese keyboard	106 keyboard, 109 keyboard, etc.
US standard keyboard	101 keyboard, 104 keyboard, etc.
Keypad	

V-SFT-6 Settings

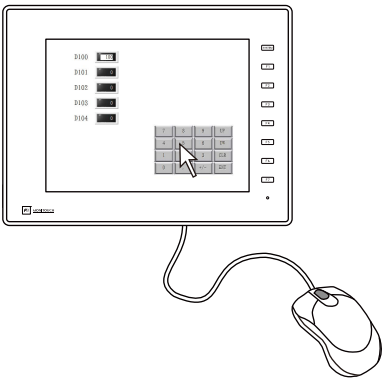
An [Entry] icon must be registered on the screen where the keyboard is to be used.
In addition, placement of numerical data or character display parts with [Entry Target] selected for [Function] is required.
For details, refer to the Reference Manual 1.

V10 Series Unit Settings

Select the type of keyboard to connect at [Language Setting] → [Keyboard] in the Local mode.
For details, refer to the Reference Manual 1.

Mouse

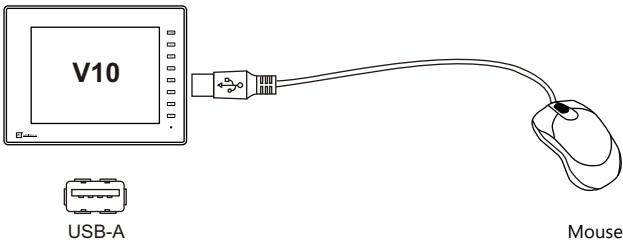
A mouse can be used to operate screens displayed on the V10 series unit by connecting a mouse to the unit.



The mouse pointer displayed on the unit is shown below.



Connection Example



Mouse Operation

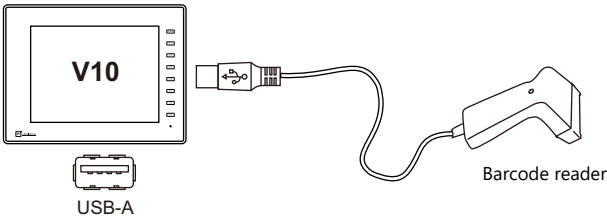
The mouse operations available on the unit are shown below.

Mouse operation	Action
Movement	Moving the mouse pointer
Left-click	Pressing a switch

Barcode Reader

Character string data can be read by connecting a barcode reader to the V10 series unit.

Connection Example



Connectable Barcode Readers

Use a USB barcode reader which is compliant with USB-HID.

V-SFT-6 Settings

For details, refer to the Reference Manual 1.

V10 Series Unit Settings

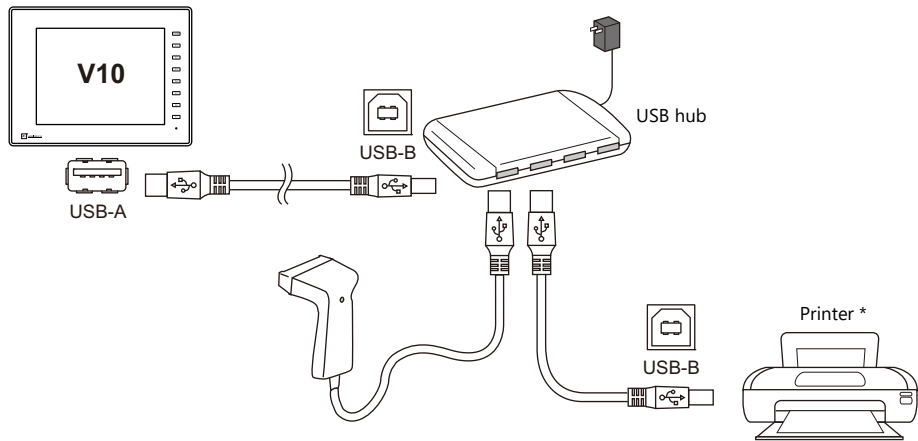
Select the type of barcode reader to connect at [Language Setting] → [Keyboard] in the Local mode.
For details, refer to the Reference Manual 1.

USB Hub

Devices like printers can be used at the same time by connecting a USB hub to the V10 series unit.

* When using a USB camera, always use a USB hub with an external power supply.

Connection Example



* A parallel printer can also be connected. (In this case, a parallel printer that is compatible with the V10 series and a commercially available parallel-to-USB cable must be used (recommended cable: UC-PGT manufactured by ELECOM). For more information on compatible printer models, visit our website (www.monitouch.com/).

Combinations of Connected Devices

Combination of devices usable at the same time: ○, Combination of devices not usable at the same time: × (Same equipment: -)

	Printer	USB flash drive USB-CFREC	USB barcode reader	Keyboard Keypad	USB mouse	USB camera
Printer	-	○	○	○	○	○
USB flash drive USB-CFREC	○	-	○	○	○	○
USB barcode reader	○	○	-	× *	○	○
Keyboard Keypad	○	○	× *	○	○	○
USB mouse	○	○	○	○	○	○
USB camera	○	○	○	○	○	-

* If these devices are connected at the same time, only the USB barcode reader will be recognized.

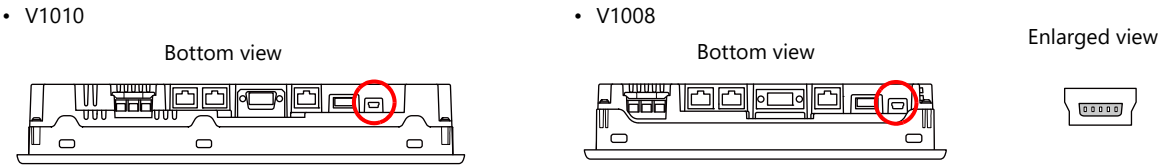
Notes



- A maximum of two USB hubs (cascaded) can be connected to the V10 series.
Note that, however, the system's performance may slow down when two hubs are used.
- When a USB hub is connected to a V10 series unit and is using the power adaptor provided with the USB hub, do not turn off the power adaptor or disconnect the connector between the power adaptor and the USB hub.
Doing so may prevent sufficient power supply to the V10 series unit resulting in faulty operation such as repeated restarting.
- When connecting two USB hubs to the V10 series unit, supply power to each USB hub using the adaptor provided with each hub. Even when connecting only one USB hub, use the provided power supply adaptor (if provided).

3.2.4 U-B

This is a USB mini-B connector used for screen program transfer or connection with a PictBridge-compatible printer (under development). It complies with USB version 2.0.



Specifications

Item	Specifications
Number of ports	1
Connector	USB 2.0 mini-B
Conforming standards	USB 2.0
Baud rate	Low speed: 1.5 Mbps, Full speed: 12 Mbps, High speed: 480 Mbps
Cable length	Max.: 5 m

Applications

Application	V-SFT-6 setting	Refer to
Ladder transfer function *1	Required	Reference Manual 2
PictBridge-compatible printer connection (under development)	Required	Reference Manual 1
Screen program transfer	Not required	Operation Manual

*1 The ladder transfer function cannot be used simultaneously with 1:n communication (multi-drop) or multi-link communication.

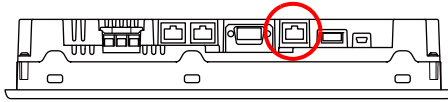
3.2.5 LAN/LAN2 (LAN2: Only on Models Supporting Additional LAN)

This connector is used for Ethernet communication with controllers.

- LAN

- V1010

Bottom view



- V1008

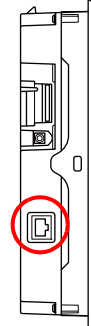
Bottom view



- LAN2 (only on models supporting additional LAN)

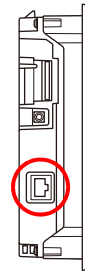
- V1010

Side view



- V1008

Side view



Specifications

Item	Specifications
Number of ports	No additional LAN: 1 Additional LAN available: 2
Connector	RJ-45
Conforming standards ^{*1}	IEEE802.3ab / IEEE802.3u / IEEE802.3
Baud rate	1000 Mbps, 100 Mbps, 10 Mbps
Protocol	TCP/IP, UDP/IP
Function	Auto-MDIX ^{*2} , Auto-Negotiation
Recommended cable	100 Ω STP (shielded twist-pair) cable, category 5e or above, max. 1000BASE-T: 30 m, 100BASE-TX/10BASE-T: 100 m long

^{*1} Jumbo frames not supported

^{*2} Both straight and crossover cables are usable, irrespective of the presence or absence of a hub.

Applications

Application	V-SFT-6 setting	Refer to
PLC/temperature controller connection	Required	Connection Manual
Multi-link2 (Ethernet) / 1:n Multi-link2 (Ethernet) communication	Required	
Ladder transfer function ^{*1}	Required	Reference Manual 2
Screen program transfer	Not required	Operation Manual
Ethernet communication function	Required	Reference Manual 2
Network printer connection	Required	Reference Manual 1
VPN remote access service Cloud data service	Not required	Web Machine Interface Manual

^{*1} The ladder transfer function cannot be used simultaneously with 1:n communication (multi-drop) or multi-link communication.

Pin Numbers and Signal Names

LAN	Pin No.	1000BASE-T		100BASE-TX / 10BASE-T	
	1	BI_DA +	Transmit/receive data A+	TX+	Transmit signal +
	2	BI_DA –	Transmit/receive data A–	TX–	Transmit signal –
	3	BI_DB +	Transmit/receive data B+	RX+	Receive signal +
	4	BI_DC +	Transmit/receive data C+	NC	Not used
	5	BI_DC –	Transmit/receive data C–	NC	Not used
	6	BI_DB –	Transmit/receive data B–	RX–	Receive signal –
	7	BI_DD +	Transmit/receive data D+	NC	Not used
	8	BI_DD –	Transmit/receive data D–	NC	Not used

Wiring



CAUTION

- The MJ1 (or MJ2) and LAN connectors are both 8-pin modular jacks. Check the connector names on the unit and insert cables into the correct connectors. Do not connect any peripheral device that will carry excess voltage to the LAN connector.
- Keep the LAN cable away from the power supply cable as much as possible.

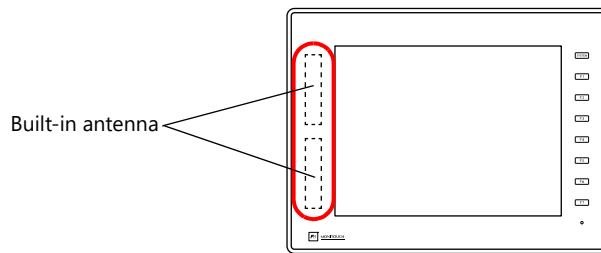
- Use a commercially available cable. Using a self-made cable may cause an error in network connection.

3.2.6 WLAN (Only on Models Supporting Wireless LAN)

This is used to connect to devices via wireless LAN.

- V1010, V1008

Front view



Specifications

Item	Specifications			
Number of ports	1			
Antenna	Two built-in antennas (2T2R)			
Wireless standards	Standard	Frequency *1 *2	Max. baud rate	Modulation method
	IEEE802.11b	2.4 GHz band	11 Mbps	DSSS (DBPSK, DQPSK, CCK)
	IEEE802.11g	2.4 GHz band	54 Mbps	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
	IEEE802.11n	2.4 GHz band	300 Mbps	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
	*1 2.4 GHz band: 2.412 GHz to 2.484 GHz *2 According to wireless standards, the 2.4 GHz communication frequency band can be used indoors and outdoors. However, if UL standard certification is required, installation conditions must conform to those designated by the UL standard.			
Channels	1 to 11 ch (for all countries) (Channel spacing: 5 MHz)			
Antenna power (output power)	Max. 10 mW/MHz			
Operation mode	Access point / station			
Authentication method	OPEN SYSTEM, WPA-PSK, WPA2-PSK, WPA3-SAE			
Encryption method	None, WEP, AES			
Clients	Max. 6 (when the V10 series unit is in access point mode)			
Conforming standards	Japan: MIC (Japanese Radio Law: Technical Regulations Conformity Certification, Article 2, clause 1-19) USA: FCC Part 15, Subpart C Canada: ICES-003, RSS-247, RSS-Gen Europe: CE/UKCA EN300328, EN301489-1, EN301489-17, EN62311, IEC62368-1 South Korea: KC * The V10 series unit will not conform to the above laws if using any antenna other than the built-in antenna for wireless LAN connection.			

* For details regarding radio law certifications, refer to the "V10 Series Notes on Wireless LAN" manual provided with the V10 series unit.

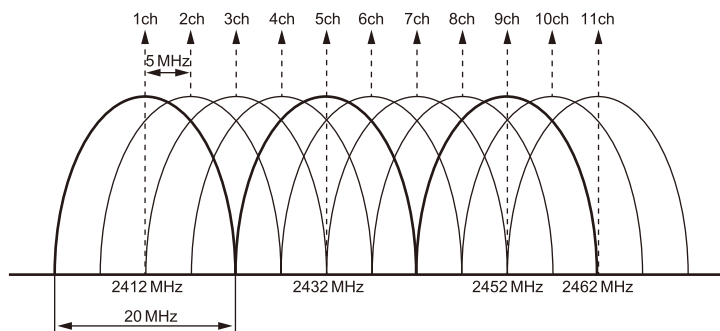
Applications

Application	V-SFT-6 setting	Refer to
Screen program transfer	Not required	Operation Manual
Ladder transfer	Required	Reference Manual 2
Ethernet communication function	Required	Reference Manual 2
Network printer connection	Required	Reference Manual 1
VPN remote access service Cloud data service	Not required	Web Machine Interface Manual

* Configurations in Local mode of the V10 series unit are required to use wireless LAN.
For details, refer to the Unit Operation / Local Mode / Error Screen Manual.

Notes on wireless LAN

- An antenna is built into the V10 series unit for use as a wireless communication antenna. (Wireless LAN communication is possible within 10 meters from the front face of the V10 series unit.)
Make sure to check that a stable wireless connection can be established beforehand if using the interface.
- Radio waves used by wireless LAN pass through wood and glass, and therefore communication is possible even if floors and walls are made of wooden or glass material. However, radio waves cannot penetrate reinforcing rods, metal, or concrete, so if these materials are used, communication is not possible.
Signal intensity can be checked using the Received Signal Strength Indication (RSSI) as a guideline. Placing the V10 series unit (access point) so that the RSSI value is higher will attain a more stable communication status.
A low RSSI value, which does not improve by moving the position of the V10 series unit (access point), indicates that the radio wave intensity is weakened due to a long communication distance or physical obstructions.
- The radio waves used for wireless LAN communication are divided into frequency bands called channels (ch). The V10 series spaces the 2.4 GHz band into 11 channels (1 to 11 ch) at 5 MHz intervals. However, if the same channel is used or neighboring channels interfere with each other, communication speed may be reduced.
We recommend selecting channels for access points so that the frequencies do not overlap, such as 1 ch, 5 ch and 9 ch. (When using MONITOUCH as an access point)



Notes on Radio Waves

- The wireless LAN function of the V10 series corresponds to "radio equipment for radio stations (antenna power: 10 mW/MHz or less) of low-power data communication systems" by the Japanese Radio Law, and therefore does not require a radio license.
- Depending on the peripheral environment or installation conditions, data transmission via wireless LAN may be unstable compared to wired connections and result in packet loss. Be sure to check the connection before actual use.
- Do not use the wireless LAN function in the following situations.
 - Near a person who uses a cardiac pacemaker: The function may cause electromagnetic interference in cardiac pacemakers, leading to malfunctions.
 - Near medical devices: The function may cause electromagnetic interference in medical devices, leading to malfunctions.
 - Near microwaves: Microwaves may cause electromagnetic interference in wireless communications of the V10 series unit.
- Radio equipment which use the 2.4 GHz frequency band
Models that support wireless LAN use the 2.4 GHz frequency band. This frequency band is used for industrial, scientific, and medical equipment; on-site radio stations (requiring a radio license) and certain low-power radio stations (no radio license required) for identifying moving objects in production lines; and amateur radio stations (requiring a radio license).
 - Before using the wireless LAN function, check that there are no on-site radio stations and certain low-power radio stations for identifying moving objects or amateur radio stations in use nearby.
 - If ever the V10 series unit causes wave interference to an on-site radio station for identifying moving objects, immediately stop wireless LAN communication and ensure that waves are no longer emitted. Then take necessary actions to resolve the interference (e.g. changing frequencies, relocating, installing partitions).
 - If the V10 series unit causes wave interference to a certain low-power radio station for identifying moving objects, or if any other problem occurs, contact your local sales representative.
- The V10 series unit will not conform to radio laws if using any antenna other than the built-in antenna of the V10 series unit.
- The wireless LAN function conforms to the wireless standards in the following countries.*
Never use the V10 series unit outside of these countries.
Australia, Belgium, Canada, Czech, Denmark, Finland, France, Germany, Great Britain, Greek, Hungary, Ireland, Italia, Japan, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, United States of America

Notes on Security

A wireless LAN transmits data between a computer and a wireless LAN access point without using a LAN cable. Therefore, as long as radio waves are transmitted, LAN connection can be established whenever desired.

On the other hand, within a certain range, radio waves will pass through all obstructions (such as walls) and reaches the entire area. If security settings are not made, the following problems may occur.

Transmission contents can be eavesdropped on

- A malicious third party can eavesdrop on communication contents and steal identity such as your ID, password, and credit card numbers, or eavesdrop on email contents.

Unauthorized intrusions

- A malicious third party may access personal or corporate networks without authorization and steal identity or confidential information (information leakage).
- An attacker can impersonate you and send out false information (impersonation).
- Communication contents can be intercepted and then manipulated before sending (manipulation).
- Data and systems can be destroyed using a computer virus (destruction).

etc.

Principally, models that support wireless LAN have security functions. If such functions are properly configured before use, any risks of sustaining the above attacks can be reduced.

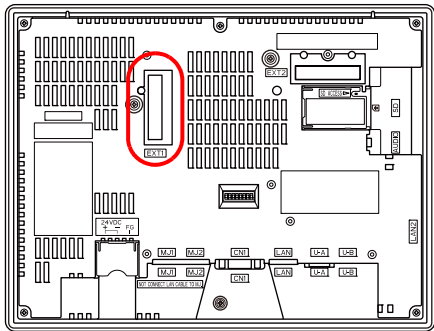
We recommend configuring security functions before use at your own judgment and responsibility, and fully understand the problems that may occur if the V10 series unit is used without configuring security functions.

3.2.7 EXT1

This is a connector for attaching the communication interface unit "CUR-xx".

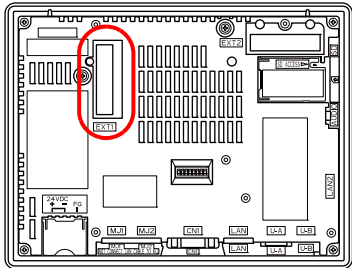
- V1010

Rear view



- V1008

Rear view



Specifications

Item	Specifications
Number of ports	1 (For connecting the communication unit "CUR-xx")
Supported networks	SX bus, OPCN-1, T-link, Ethernet, CC-Link, PROFIBUS-DP, DeviceNet, FL-net, EtherCAT

Communication Interface Unit Models

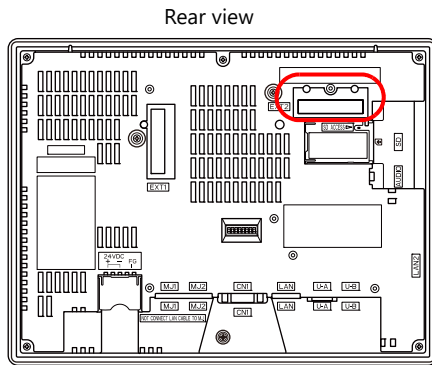
Model	Communication Specification	Remarks
CUR-00	OPCN-1	
CUR-01	T-Link	
CUR-02	CC-Link	Ver. 2.00/1.10/1.00
CUR-03	Ethernet	UDP/IP
CUR-04	PROFIBUS-DP	
CUR-06	SX bus	
CUR-07	DeviceNet	
CUR-08	FL-net	Ver. 2.00
CUR-09	EtherCAT	Simultaneous use with the terminal converter "TC-D9" is not possible.

* For details on specifications and how to attach a communication interface unit, refer to the respective Communication Unit Specifications.

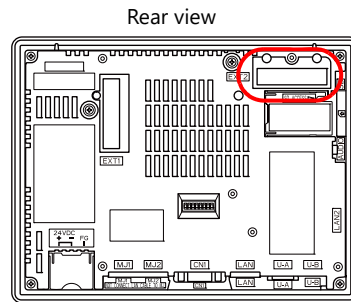
3.2.8 EXT2 * Under Development

This is a connector for attaching the optional unit (under development).

- V1010



- V1008

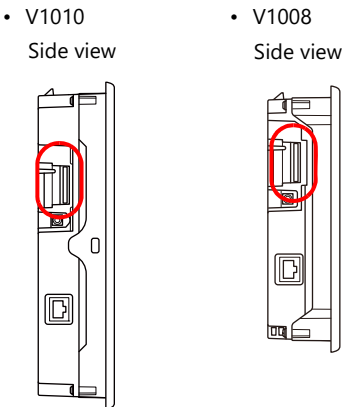


Specifications

Item	Specifications
Number of ports	1 (For connecting the optional unit (under development))
Supported functions	RGB input, RGB output, video input

3.2.9 SD

This is the interface used for inserting an SD card.
An SD card can be used to transfer screen programs and save log data and image data.



Specifications

Item	Specifications			
Number of ports	1			
Supported card types				
	Card type	Card capacity	File system	Speed class
	SDXC card	Max. 2 TB	exFAT	Class 10, UHS-I
	SDHC card	Max. 32 GB	FAT32	Class 10, UHS-I
	SD card	Max. 2 GB	FAT16	Class10

SD Card Access LED


The state of the SD card access LED is configured as shown below.

LED	Description
Off	The SD card is not being accessed. The SD card can be removed.
Flashing red	The SD card is being accessed. The LED turns off when access ends.

Applications

- For details on functions that use an SD card, refer to the Reference Manual 2.
- For details on reading and writing between an SD card and the V10 series unit, refer to the Unit Operation / Local Mode / Error Screen Manual.

Notes

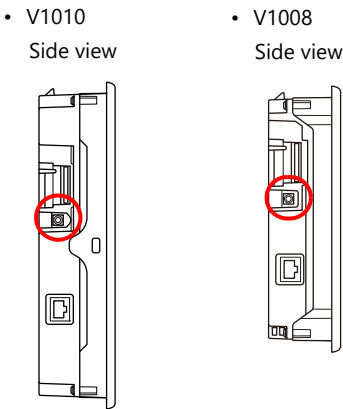


- The SD card access LED flashes red when the SD card is being accessed. Do not remove the SD card while the LED is flashing. Doing so may destroy data on the SD card.
- When removing the SD card, check that the SD card access LED has turned off, then select [Storage Removal] in the system menu, or press the [Storage Removal] switch.
- Do not turn off power to the unit when the SD card is being accessed.
- Make a backup copy of the SD card at regular intervals.
- If a disk error occurs and data read/write operation is disabled, execute ScanDisk on Windows and try to restore the disk.
- If the disk cannot be restored, format the storage device. Note that formatting will completely erase all stored data. (For information on executing ScanDisk on Windows, refer to the relevant Windows manual.)
- The number of write cycles for SD cards is limited. Consequently, frequent writing at short intervals may shorten the service life of SD cards. When using a USB flash drive or CF card to save logging/alarm data, take the logging time/monitoring intervals into consideration. Also, avoid repeated writing using the CYCLE macro command.

3.2.10 AUDIO

This connector is used for audio output.

* An external speaker with a built-in amplifier is required to play audio.



Specifications

Item	Specifications
Number of ports	1
Connector	φ3.5 mm stereo mini jack
Playable files	WAV (PCM)
Sampling frequency	8 / 16 / 32 / 44.1 / 48 / 96 / 192 kHz
Quantization bit	8 / 16 / 24 bits
Audio source	Monaural / Stereo
Volume control	8 levels (Macros can be used to change the volume in 3-dB steps from -21 dB to 0 dB.) Default: -6 dB
Max. output voltage	2.1 Vrms (0 dB)
Connected amplifier	Input impedance of 1 kΩ or more

Applications

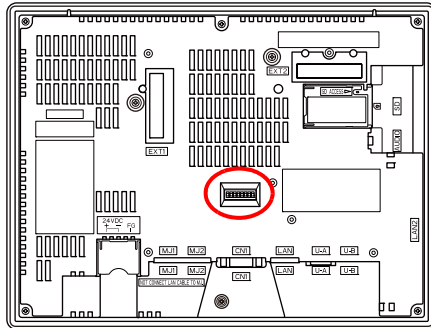
Application	V-SFT-6 setting	Refer to
Audio playback	Required	Reference Manual 2

3.2.11 DIP Switches (DIPSW)

The V10 series unit is equipped with DIP switches 1 to 8. Turn off power to the unit before changing any DIP switches. Upon delivery, all DIP switches are set to OFF.

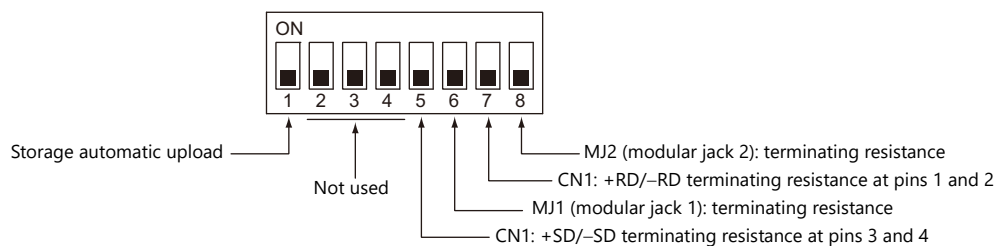
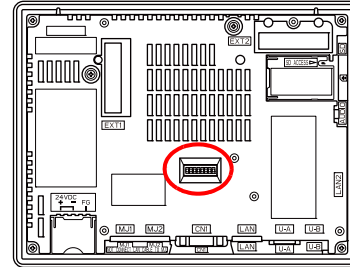
• V1010

Rear view



• V1008

Rear view



DIPSW1 (Storage Automatic Upload)

Set DIPSW1 to ON to automatically upload screen programs from a storage device such as an SD card or USB flash drive.

Procedure

1. Preparation of storage
Use the V-SFT-6 editor to load a screen program onto a storage device.
(For the loading procedure, refer to the Reference Manual 2.)
2. Connection of storage
Turn OFF power to the V10 series unit and insert an SD card or connect a storage device to the USB-A port.
3. DIP switch settings
Slide DIPSW1 upward to the ON position.
4. Automatic upload start
Turn ON power to the V10 series unit. The screen program is automatically loaded into the flash memory of the V10 series unit.

* When not using automatic upload, always set DIPSW 1 to OFF.

DIPSW5, 6, 7, 8 (Terminating Resistance Setting)



CAUTION Set the DIP switches according to the signal level.

- When connecting a controller to CN1 via RS-232C, set DIPSW5 and 7 to the OFF position.
- When connecting a controller to CN1 via RS-422/485 (4-wire connection), set DIPSW5 and 7 to the ON position.
- When connecting a controller to CN1 via RS-422/485 (2-wire connection), set DIPSW5 to the OFF position and DIPSW7 to the ON position.
- When connecting a controller to MJ1 via RS-422/485 (2-wire system), set DIPSW6 to the ON position.
- When connecting a controller to MJ2 via RS-422/485 (2-wire system), set DIPSW8 to the ON position.

4 Installation

- 4.1 Installation
- 4.2 Power Supply
- 4.3 Securing USB Cables
- 4.4 Inserting and Removing SD Cards
- 4.5 Battery

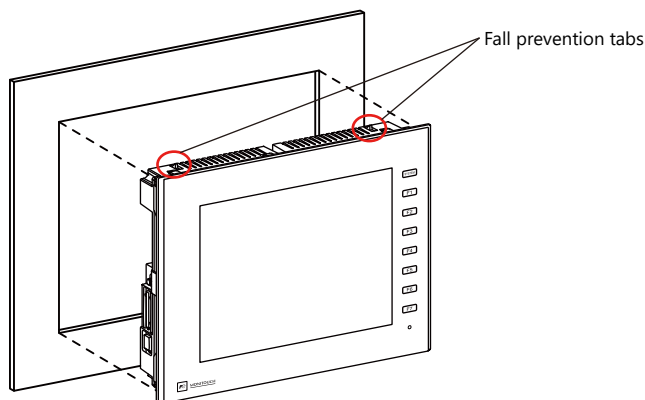
4.1 Installation

4.1.1 Installation Procedure

1. Place the V10 series unit on a flat surface with the display screen facing down and insert the provided waterproof gasket into the groove around the unit.

CAUTION The unit will not be waterproof if the waterproof gasket is not correctly inserted into the groove.

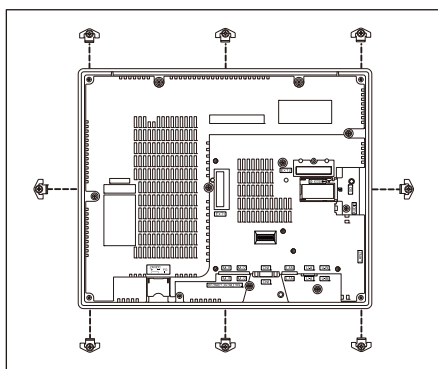
2. Mount the V10 series unit into the mounting panel (maximum thickness of 4.0 mm) while paying attention to the fall prevention tabs.



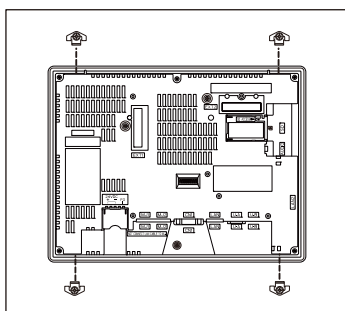
3. Insert the fixtures provided with the V10 series unit into the mounting holes at the locations shown in the figure below, and secure the V10 series unit with the tightening screws.

Series	Fixtures	Tightening torque
V1015	8	5.31 lbf-in (0.6 N·m)
V1012	4	7.97 lbf-in (0.9 N·m)
V1010		5.31 lbf-in (0.6 N·m)
V1008		

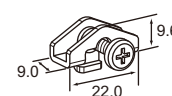
• V1015



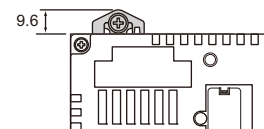
• V1012, V1010, V1008



- Fixture dimensions (unit: mm)



- Section that protrudes when the unit is secured (unit: mm)



- * If the screws are tightened to a torque higher than stated above or the torque at each location is not equal, the surface sheet may warp due to deformation in the mounting panel and unit.
- * When mounting the V10 series unit rotated 90° to the right or left, insert the fixtures in the same mounting holes shown in the figure above and secure.
- * Ground the mounting panel to prevent any buildup of static electricity.

DANGER

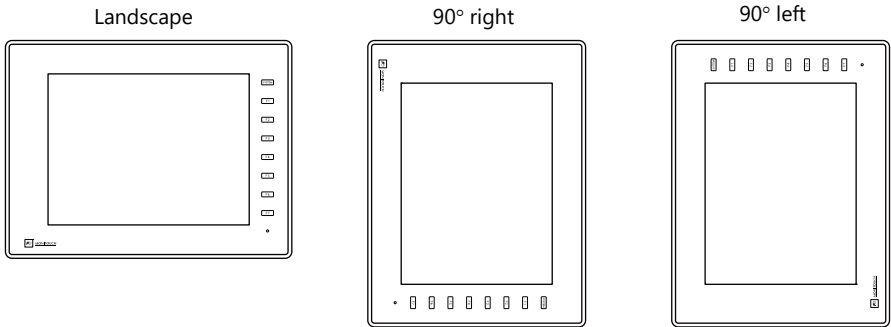
Failure to follow the above installation instructions and torque value may cause deformation, breakage, or malfunction of the touch switch, which may result in damage to the machine or an accident. Also loose mounting may cause dropping, short circuit, or malfunction.

4.1.2 Installation Conditions

Mounting Orientation

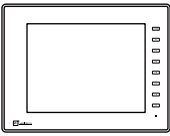
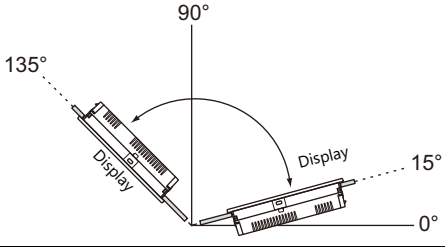
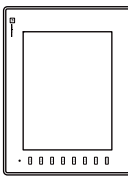
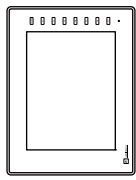
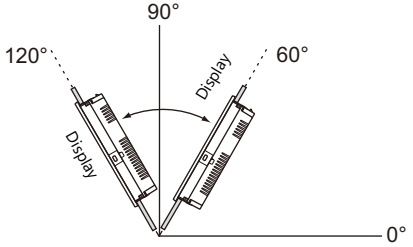
The V10 series can be mounted in the following orientations.

Example: V1010iS

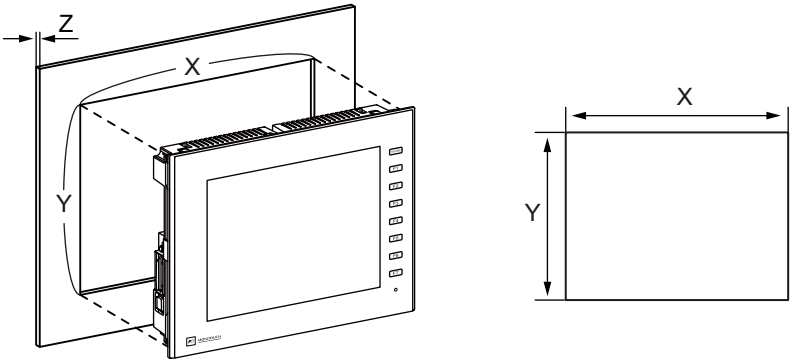


Mounting Angle

The mounting angle differs depending on the mounting orientation. Mount the unit within the angle ranges shown in the table below.

Mounting orientation	Mounting angle
<p>Landscape</p> 	 <p>Diagram showing the mounting angle for the Landscape orientation. The unit is shown at various angles relative to a vertical reference line. The angles are 135°, 90°, 15°, and 0°.</p>
<p>90° right 90° left</p>  or 	 <p>Diagram showing the mounting angle for the 90° right and 90° left orientations. The unit is shown at various angles relative to a vertical reference line. The angles are 120°, 90°, 60°, and 0°.</p>

Panel Cut-out Dimensions

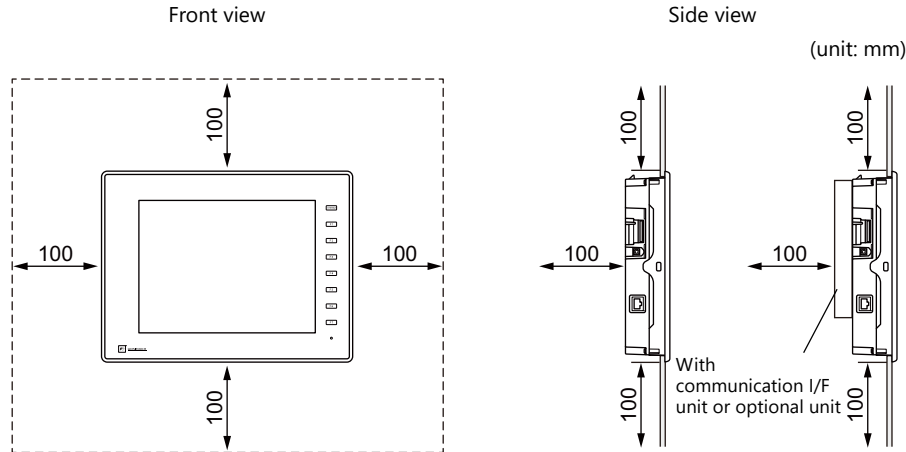


Unit: mm

Model	X	Y	Z (Panel thickness)
V1015iS	369.4 ^{+0.5} ₋₀	299.4 ^{+0.5} ₋₀	1.5 to 4.0
V1012iS	313.0 ^{+0.5} ₋₀	246.2 ^{+0.5} ₋₀	
V1010iS	289.0 ^{+0.5} ₋₀	216.2 ^{+0.5} ₋₀	
V1008iS	220.5 ^{+0.5} ₋₀	165.5 ^{+0.5} ₋₀	

Mounting Spatial Restrictions

Mount the V10 series unit with approximately 100 mm of space around the periphery of the unit.



Ambient Temperature

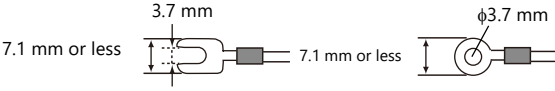
Model	Operational Ambient Temperature
V1015iS	0 °C to +40 °C (wet-bulb temperature of 39 °C or less)
V1012iS	
V1010iS	0 °C to +50 °C (wet-bulb temperature of 39 °C or less)
V1008iS	

External Power Supply Current

Port	Allowable current	Maximum allowable current of CN1, MJ1, MJ2, and USB-A combined
CN1	Terminating resistance, External power supply not possible	900 mA
MJ1	Total of 150 mA with MJ1 and MJ2	
MJ2		
USB-A	900 mA	

4.2 Power Supply

4.2.1 Power Supply Cable Specifications

Item	Specifications
Cable	AWG26 to AWG14
Terminal screw size	M3.5
Crimp-style terminal	
Tightening torque	7.1 lbf-in (0.8 N-m)

4.2.2 Power Supply Cable Connection



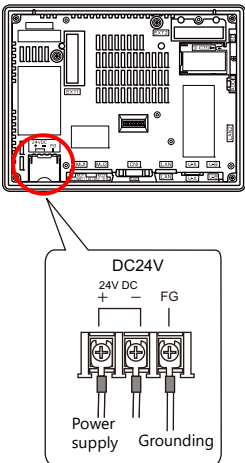
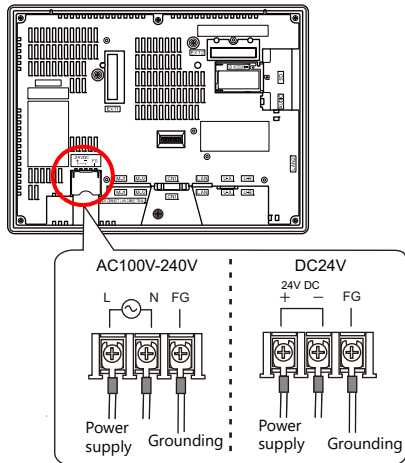
DANGER

There is a risk of electrical shock.
Shut the power off before connecting the power supply cable.

Connect the power supply cable to the terminal on the backside of the unit.

• V1015, V1012, V1010

• V1008



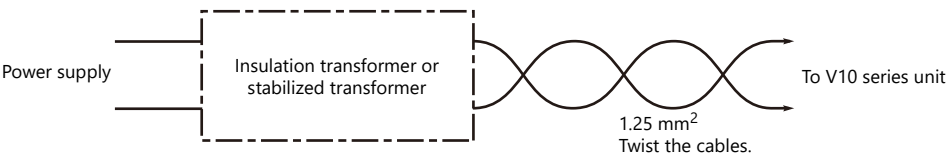
Tightening torque
7.1 lbf-in (0.8 N-m)

Notes on the Power Supply

- The power supply must be used within the allowable range of voltage fluctuation.
- Use a power supply with low noise between cables and between the ground and cables.
- In order to minimize drops in voltage, we recommend to use the thickest power supply cables possible and to twist the cables.
- Keep power supply cables away from high-voltage, large-current carrying cables.
- Always close the terminal covers.
- For use in compliance with UL standards, use a Class 2 power supply with a safety extra-low voltage (SELV) circuit, or a power supply with a SELV circuit and limited energy (LIM) circuit for 24 VDC power models.

Notes on Usage of the 100 to 240 VAC Specification

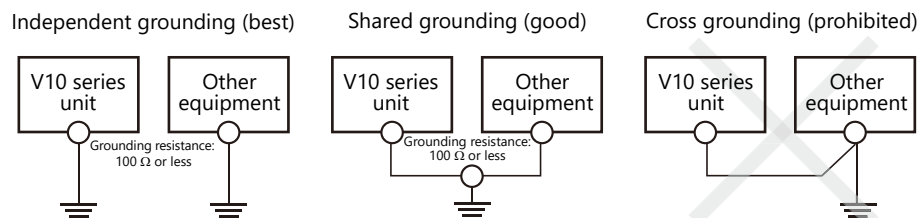
- The V10 series is an overvoltage category II product.
- While the use of an isolating transformer generally improves noise resistance, if the V10 series unit is a significant distance from the secondary port of the transformer or noise interference occurs easily, an isolating transformer is ineffective.
- If any power voltage fluctuation caused by noise is expected, the use of a voltage stabilizer (effective for noise resistance) is recommended.



4.2.3 Grounding

CAUTION Always ground the V10 series unit. (The level of grounding resistance should be 100 Ω or less.)

- Independent grounding must be used for the unit.
- Use a grounding cable with a nominal cross section of more than 2 mm².
- Set the grounding point near the unit to reduce the length of grounding cables.



4.3 Securing USB Cables

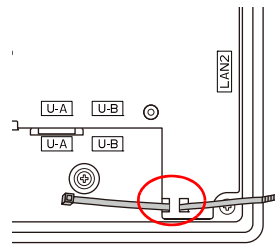
USB cables may disconnect from the V10 series unit depending on the mounting conditions.
Use the cable ties provided with the unit to prevent disconnection.

4.3.1 Securing Cables

1. Pass a cable tie through the hole as shown in the figure below.
For the V1015, V1012, and V1010, pass the cable tie through the hole from left to right.
For the V1008, pass the cable tie through the hole from right to left.

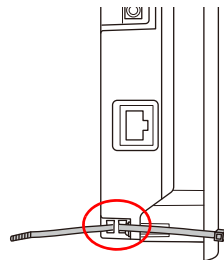
• V1015, V1012, V1010

Rear view



• V1008

Side view



2. Connect a USB cable and secure it using the cable tie.

Example:

When only USB-A is used	When only USB mini-B is used	When both USB-A and USB mini-B (two cables) are used
A line drawing showing the rear panel of a unit with two LAN ports, two USB-A ports, and two USB-B ports. A single USB-A cable is plugged into one of the USB-A ports. A cable tie is used to secure the cable to the unit's chassis, passing behind the ports. A red circle highlights the point where the cable tie enters the unit's chassis.	A line drawing showing the rear panel of a unit with two LAN ports, two USB-A ports, and two USB-B ports. A single USB mini-B cable is plugged into one of the USB-B ports. A cable tie is used to secure the cable to the unit's chassis, passing behind the ports. A red circle highlights the point where the cable tie enters the unit's chassis.	A line drawing showing the rear panel of a unit with two LAN ports, two USB-A ports, and two USB-B ports. Two cables are plugged in: one USB-A cable into a USB-A port and one USB mini-B cable into a USB-B port. Two cable ties are used to secure the cables to the unit's chassis, passing behind the ports. Red circles highlight the points where the cable ties enter the unit's chassis.

4.4 Inserting and Removing SD Cards

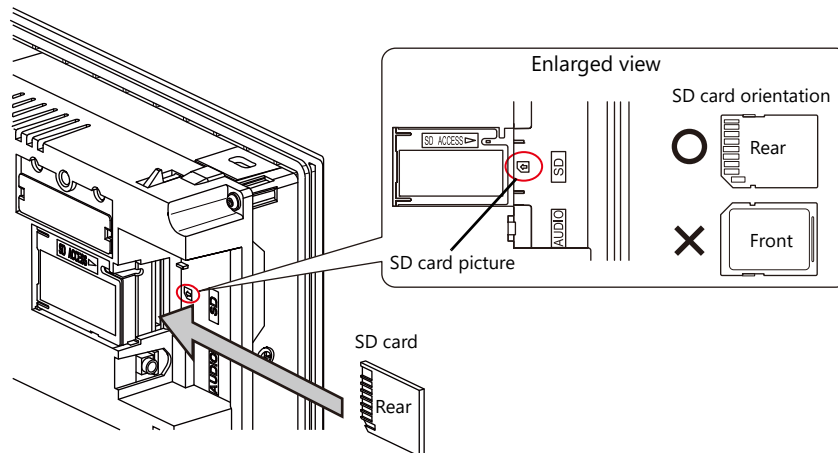
4.4.1 SD Card Insertion/Removal Procedure

1. Hold the SD card in the same orientation (SD card rear) as shown by the SD card pictured on the unit and then insert the SD card into the slot until it clicks.

CAUTION

- Insert the SD card into the V10 series unit in the correct orientation. Failure to do so may damage the SD card or the slot on the unit.
- When using a function for writing from the V10 series unit to an SD card, do not lock the SD card.

• V1010



2. Check that the SD card access LED is unlit before removing the SD card. Push the SD card until it clicks and then the SD card will come out. Pinch the SD card with your fingers and remove it from the slot.

* When removing the SD card, select [Storage Removal] in the system menu, or press the [Storage Removal] switch.

4.5 Battery



CAUTION A battery is already installed upon delivery.

4.5.1 Role of the Battery

The battery provides backup power to the user memory area in SRAM (non-volatile device memory \$L and \$LD, logging/alarm data) as well as the built-in clock.

4.5.2 Battery Replacement

Replacement batteries are available.

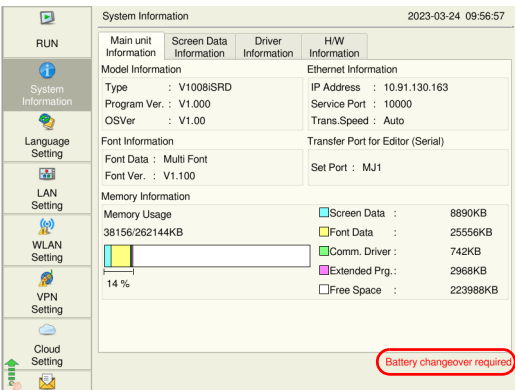
Name	Model	Configuration
Replacement battery	V9-BT	<ul style="list-style-type: none">Coin-type lithium primary cell 1 pceCaution sticker 1 pce

Battery Replacement Period

The service life of the battery is about 5 years from the date of manufacture.

When the battery voltage drops, the message "Battery changeover required" appears at the lower right in the Local mode on the V10 series unit.

* For information on the Local mode, refer to the Unit Operation / Local Mode / Error Screen Manual.

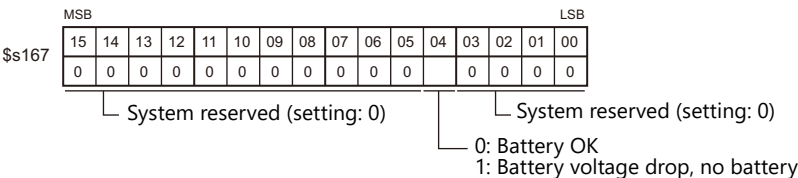


Battery Voltage Drop Detection

The battery status is output to the internal device memory address \$s167 of the V10 series unit.

When the battery voltage drops, the 4th bit of \$s167 turns ON.

If the battery voltage drops (4th bit turns ON) even within the expiration date (five years), replace the battery immediately.



Safety Instructions on Handling Batteries

Lithium batteries contain combustible material such as lithium and organic solvents. Mishandling may cause heat, explosion, or ignition resulting in fire or injury. To prevent accidents, pay attention to the following cautions when handling lithium batteries.



DANGER

- The battery has polarity. Make sure to insert the battery in the correct orientation. Inserting the battery in the wrong orientation may cause the battery to burst or ignite.
- Do not carry or store the replacement battery together with metal objects. Short-circuiting of the electrodes may reduce battery capacity or cause the battery to burst or ignite.
- Do not disassemble, incinerate, or heat the battery.
- Never recharge the battery.

- Be sure to turn off the V10 series unit power and then replace the battery.
- Only experts are authorized to perform battery replacement.
- Be sure to discharge static electricity from your body before performing battery replacement.
- Use the designated battery for replacement.
- Rough handling of the battery may cause fire or chemical burns.
- Observe local and governmental regulations when disposing of waste batteries.
- Keep batteries out of reach of children. (If swallowed, immediately consult a doctor.)
- If a battery leaks or smells, note that the leaking battery electrolyte is flammable. Keep away from heat or flame.
- Transportation of batteries containing lithium metal must observe the relevant transport regulations.

SRAM Area Backup Procedure Before Battery Replacement

Replace the "V9-BT" battery within three minutes after the unit is turned off.

If it is not possible to replace the battery within three minutes, use the V-SFT-6 editor or a storage device to make a backup copy of the data in SRAM.

Method Using the V-SFT-6 Editor

1. Connecting a cable
Connect the V10 series unit to a computer using a transfer cable (USB cable, Ethernet cable, or "V-CP").
2. Starting the V-SFT-6 editor
Start the V-SFT-6 editor on the computer.
3. Displaying the [Transfer] dialog
Click [Transfer] → [Upload]. The [Transfer] dialog is displayed.
4. Selecting data to be transferred
Select [SRAM Data] for [Transfer Data].
5. Starting SRAM data transfer
Click the [PC <-] button. Data transfer from the SRAM is started.
6. Saving the SRAM data
When the SRAM data has been transferred, the [Save As] dialog is displayed on the computer. Save the data as a backup copy. The file extension is "*.RAM".
* To transfer the "*.RAM" data, which was saved as a backup copy, back to the V10 series unit, click [Transfer] → [Download] in step 3, and click the [PC ->] button in step 5.

Method Using a Storage Device

For details on the method for making backups using a storage device such as an SD card or USB flash drive, refer to the separate Unit Operation / Local Mode / Error Screen Manual.

Battery Replacement Procedure

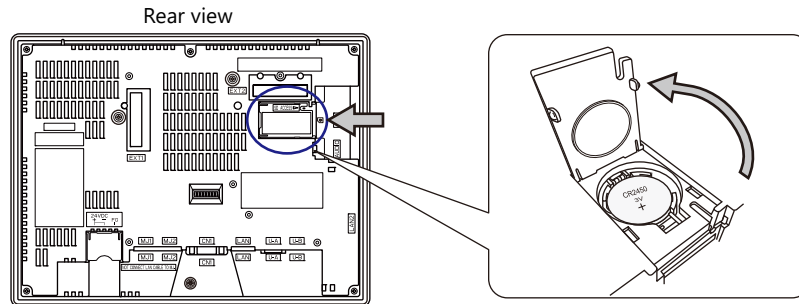


DANGER

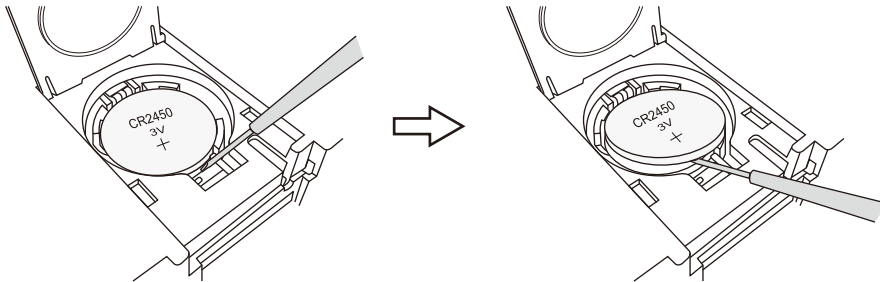
There is a risk of electrical shock. Be sure to turn off the V10 series unit power before starting the work.

1. Turn off the V10 series unit power.
2. Slide the battery holder cover in the direction of the arrow to open it.

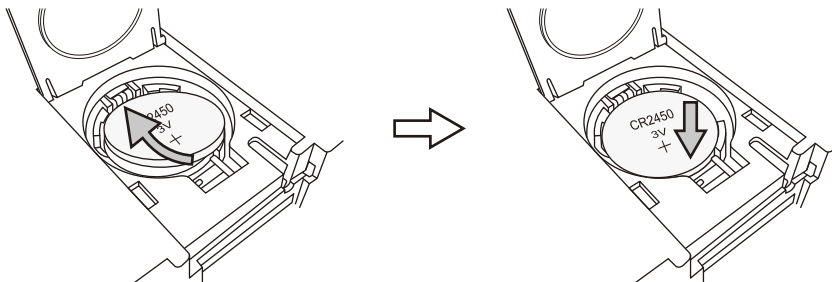
Example: V1010



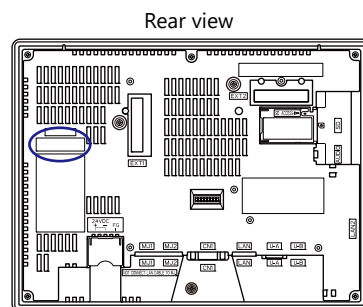
3. Insert a precision screwdriver into the gap on the right side of the battery and lift the battery out.



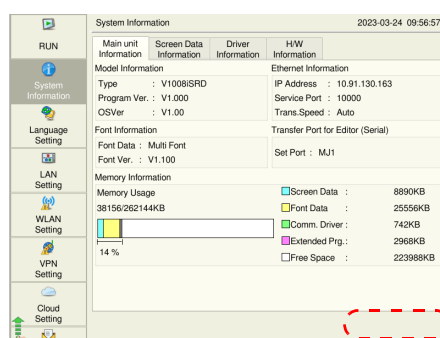
4. Remove the battery.
5. Slide a new battery left into the battery holder with the "+" side facing upward and then press the right side of the battery until it clicks.



6. Close the battery holder cover.
7. Remove the caution sticker on the rear face of the V10 series unit (circled below). Write a date five years from the present date for battery replacement on the new caution sticker and attach the sticker.



8. Turn power ON to the V10 series unit and check that the message "Battery changeover required" is cleared from the lower right of the screen in Local mode.



9. If a "*.RAM" backup file was saved, transfer it back to the V10 series unit.

4.5.3 Notes on the Battery: EU Directive 2006/66/EC

In accordance with EU directive 2006/66/EC effective in EU countries, the package box of the V10 series unit and the packaging of the replacement battery have the marking shown to the right.



CAUTION

- The marking shown above is effective only in EU countries.
- The details on the marking are designated in Article 20 "Information for end-users" and ANNEX II in EU directive 2006/66/EC.
- The marking indicates that the battery should be disposed of separately from general household waste.
- If element symbols are indicated below the marking, it means that the battery contains the specified heavy metal at a concentration exceeding the control value.
The concentration control values are given below.
Hg: mercury (0.0005 %), Cd: cadmium (0.002 %), Pb: lead (0.004 %)
- The EU has determined the separating program for used batteries.
Dispose of used batteries properly at your local waste-disposal/recycling center.

4.5.4 "Perchlorate Best Management Practices" Regulations of California State Law, USA

The V10 series is a product subject to the "Perchlorate Best Management Practices" regulations of California state law in the USA. The packaging of the V10 series unit indicates the statement shown below.

Perchlorate Material - special handling may apply.
See www.dtsc.ca.gov/hazardouswaste/perchlorate/.

If exporting a product with an embedded V10 series unit that contains a lithium primary battery to the State of California, the above statement must be indicated on the product's packaging.

4.5.5 Notes on Transport

- The "V9-BT" replacement battery is a lithium metal battery (not contained in or packed with equipment) and classified as non-dangerous goods.
- Transportation of batteries containing lithium metal must observe the relevant transport regulations. Hakko Electronics ships products packed in accordance with transport regulations. If there is a need to transport a product after it has been unpacked or its package is opened, transport the unit in accordance with the IATA Dangerous Goods Regulations, International Maritime Dangerous Goods (IMDG) Code, and transport regulations of the countries concerned. Ask your forwarding agent for details of transport regulations.

5 Inspection and Maintenance

5.1 Inspection and Maintenance

5.2 Warranty Policy

5.1 Inspection and Maintenance

**DANGER**

Always turn off the power before conducting inspection or maintenance. Failure to do so could cause an electric shock or damage to the unit.

5.1.1 Daily Inspection

- Check that the screws on the V10 series unit are tightened firmly.
- Check that the connectors and terminal screws used for connection with other devices are tightened firmly.
- If the display surface or frame is dirty, wipe it with a soft cloth soaked in commercially available alcohol.
- Conduct periodical inspection once or twice a year. The number of inspections may be increased as necessary if facilities are relocated or modified, or the environment is hot, humid, or dusty.

5.1.2 Periodical Inspection

Inspect the following points periodically.

- Are the ambient temperature and humidity appropriate?
0 to +50 °C (0 to +40 °C for the V1015 series), 85 %RH or less
- Are the environmental conditions appropriate?
No excessive dust and no conductive dust
- Is there corrosive gas in the atmosphere?
- Is the source voltage in the allowable range?
AC power supply: 100 to 240 VAC –15 % to +10%, DC power supply: 24 VDC ± 10%
- Are the V10 series mounting screws tightened firmly?
- Are the connectors and terminal screws used for connection with other devices tightened firmly?
- Has the coin-type lithium battery passed its replacement date?
Within about 5 years from the date of manufacture

5.2 Warranty Policy

5.2.1 Inquiries about Failure

Please direct inquiries about failure or repair to your local sales representative.

Please provide information including the MONITOUCH model, serial number, symptoms of the failure, error messages (if shown), etc.

An inquiry form is provided on the final page ([page 5-3](#)) of this chapter. This form may be used for inquiries.

5.2.2 Warranty Period

The product is under warranty for one year after the date of purchase or delivery to the specified place.

On the assumption that the maximum stock period of the product after manufacture is 6 months, the warranty period is limited to 18 months (checked by the serial number) after manufacture.

When a warranty period is specified in the contract, however, the period in the contract takes precedence.

5.2.3 Free-of-charge Repair

If the product fails before the expiry of the warranty, it will be repaired free of charge.

However, repair of any failure resulting from the causes below will be chargeable even within the warranty period.

- Breakage of or damage to the appearance (casing or surface sheet), touch switches, LCD, or other components due to dropping, impact, or mishandling
- End of service life of the LCD or backlight
- Fusion of a printed circuit board pattern associated with connection to external devices, or fusion of a pattern in the terminal block or connector section of a printed circuit board caused by short-circuiting of an external load circuit.
- Overvoltage or different voltage applied due to wiring mistakes (power supply terminal, external communication terminal, or other terminal blocks)
- Failure caused by a lightning surge
- Failure due to the entry of conductive substances, water, solvent, particles, etc. under inappropriate environmental conditions
- Failure due to inappropriate environmental conditions (e.g. corrosive gas or high humidity)
- Failure due to vibration or impact exceeding the specified level
- Disassembly and modification by the customer or failure obviously resulting from improper handling by the customer

5.2.4 Chargeable Repair

Any failure that occurs after the expiry of the warranty or that does not satisfy the requirements for free-of-charge repair will be repaired on a chargeable basis.

Inquiry Form

Your name			
Company name			
Contact	TEL		FAX
	Email		
Model code * ¹		Ser. No. * ¹	
MONITOUCH version * ²	Program version:	OS version:	
Driver information * ²	Manufacturer, model name:	Version:	
Purchased from (Distributor)			
Sales representative		Date of purchase	

Symptoms

(Please describe the symptoms of the failure and also include any displayed error messages.)

*¹ See the label on the back of the unit for the model code and serial number (nine digits plus one letter of the alphabet).

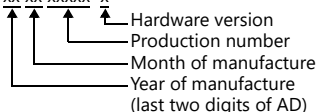
The serial number is labeled as shown in the figure on the right.

*² Enter the version if it can be verified.

The version is displayed by selecting [System Information] in the Local mode of the V10 series unit.

For information on the Local mode, refer to the separate Unit Operation / Local Mode / Error Screen Manual.

Ser. No. : xx xx xxxxx x



Hardware version
Production number
Month of manufacture
Year of manufacture
(last two digits of AD)

 **Hakko Electronics Co., Ltd.**
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