OMRON

Model FH-MT12
Touch Panel Monitor

INSTRUCTION SHEET

Thank you for selecting OMRON product.
This sheet primarily describes precautions required in installing and operating the product.
Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product.
For your convenience, keep the sheet at your disposal.

The following notice applies only to products that carry the CE mark:
Notice:
This is a class A product. In residential areas it may cause radio interference, in which case the user may be required to take adequate measures to reduce interference.

5359165-0A

Meanings of Signal Words

● Symbols and the meanings for safety precautions described in this manual.
In order for the product to be used safely, the following indications are used in this book to draw your attention to the cautions. The cautions with the indications describe the important contents for safety.

| ⚠ WARNING | Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage. |

Meanings of Alert Symbols

The following alert symbols are used in this manual.

| ⚡ | Indicates the possibility of electric shock under specific conditions. |
| ⚡ | Indicates the possibility of explosion under specific conditions. |

Alert statements in this Manual

The following alert statements apply to the products in this manual. Each alert statement also appears at the locations needed in this manual to attract your attention.

⚠ WARNING

This product must be used according to the instruction manual. Failure to observe this may result in impairment of functions and performance of the product.

Never connect the AC power supply with this product. When the AC power supply is connected, it causes the electric shock and a fire.

Do not touch the terminals while the power supply is ON. Doing so may result in electrical shock.

Never disassemble, apply pressure that would deform, or incinerate the Touch panel monitor.

Be sure to dispose of the product as industrial waste.

Precautions for Safe Use

● Installation
· Make sure to tighten all installation screws securely.
· Please tighten by the specified torque.
· Use only the cables designed specifically for the product. Use of other products may result in malfunction or damage of the product.
· Do not install the product close to high-voltage devices and power devices in order to secure the safety of operation and maintenance.
● Orientation of Product
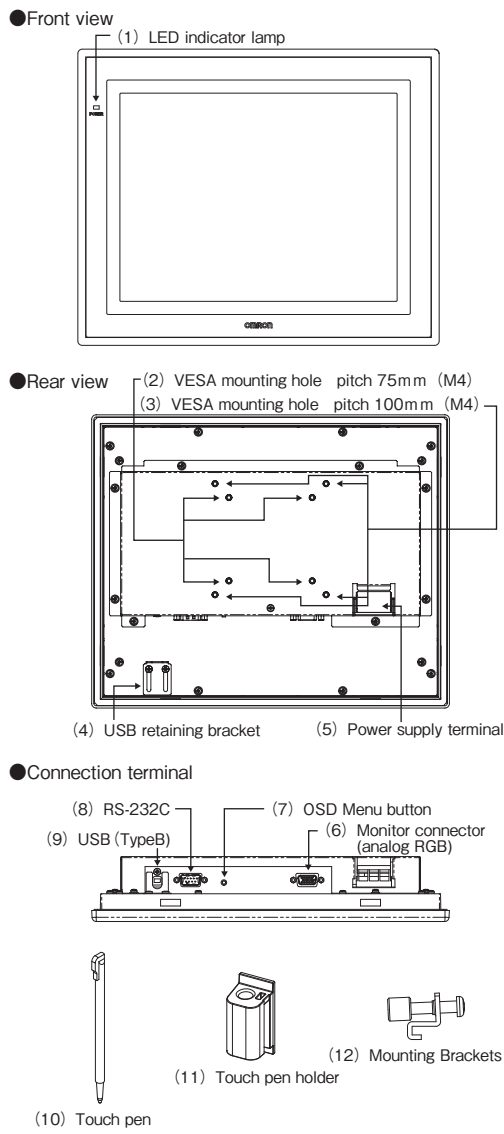· To keep proper ventilation, please set up the product in the direction shown in the figure below.
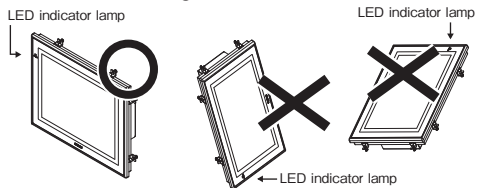
● Power supply and Wiring
· Make sure to use the product with the power supply voltage specified by this manual.
· Use only the cables designed specifically for the product.
· Use crimping terminals with the specified dimensions.
· Do not directly connect an electric wire that is simply twisted to the terminal block.
· Use a DC power supply with safety measures against high-voltage spikes(safety extra low-voltage circuits on the secondary side).
● Handling
· Always turn OFF the product's power before connecting or disconnecting a cable.
· Do not drop, impose excessive vibration or shock on the product. Doing so may result in malfunction or burning.
· Be careful not to drop while handling because of the heavy product.
● Regulations and Standards
· The controller complies with the following standards.
  EC Directives   2004/108/EC
  EN Standards (European standard)   EN61326-1
● Regulations of KC marking
· A급 기기 (업무용 방송통신기자재)
  이 기기는 업무용(A급 전자파적합기기)로 판매자
  또는 사용자는 이 점을 주의하시기 바라며,가정외의
  지역에서 사용하는 것을 목적으로 합니다.
● Other
· The liquid crystal panel contains stimulant inside. If an LCD panel is damaged and the liquid substance inside comes in contact with human skin or get into an eye, immediately wash with owing water and consult a physician.
· The LCD panel is a glass product. Do not hit or drop it or it may break and cause a dangerous situation. Handle it with care.
· Do not attempt to dismantle, repair, or modify the product.
· Should you notice any abnormalities, immediately stop use, turn OFF the power supply, and contact your OMRON representative.

Precautions for Correct Use

● Power supply, Wiring and Ground
· Keep the power supply wires as short as possible (Max.2m).
· Ground the FH-MT12 independently. If sharing the ground line with other devices or connecting it with a building beam, the product might be adversely effected.
· Perform Class D-class grounding (with a grounding resistance of 100Ω or less).
· Keep the ground line as short as possible by setting the grounding point as close as possible.
· Do the following confirmations again before turning on the power supply.
  · Is the voltage and polarity of the power supply correct? (24VDC)
  · Is not the mistake found in wiring?
● Installation and Storage Sites
· Install and store the product in a location that meets the following conditions:
  · Surrounding temperature of 0 to 50°C (-20 to +65°C in storage)
  · No rapid changes in temperature (place where dew does not form)
  · Relative humidity of between 20 to 85 %
  · No presence of corrosive or flammable gases
  · Place free of dust, salts and iron particles
  · Place free of vibration and shock
  · Place out of direct sunlight
  · Place where it will not come into contact with water, oils or chemicals
● Operation
· When you operate the touch panel monitor, please go at a single point touch operation. If you touch at the same time two or more points, the product will not be able to correctly recognize the touch position.
● About FH controller
· Please use the FH software version Ver.5.32 or later in the connection between FH-MT12 and FH controller.
● Other
· Please peel off the touch panel protection sheet before using FH-MT12.
· Although the LCD panel is manufactured with precision technology, there are cases where some products are shipped with traces of pixel defects. This is due to the structural reason of LCD and is not a failure.


■ Component names

● Front view

(1) LED indicator lamp

● Rear view

(2) VESA mounting hole   pitch 75mm (M4)
(3) VESA mounting hole   pitch 100mm (M4)
(4) USB retaining bracket
(5) Power supply terminal

● Connection terminal

(8) RS-232C
(9) USB (TypeB)
(7) OSD Menu button
(6) Monitor connector (analog RGB)

(10) Touch pen
(11) Touch pen holder
(12) Mounting Brackets

	Name	Description
(1)	LED indicator lamp	Lit up green when power is ON. Lit up orange when video signal is no input. Unlit when power is OFF.
(2)	VESA mounting hole	Mounting hole for VESA 75mm × 75mm.
(3)	VESA mounting hole	Mounting hole for VESA 100mm x 100mm.
(4)	USB retaining bracket	Retaining bracket for USB cable.
(5)	Power supply terminal	Connect a 24VDC power supply.
(6)	Monitor connector (analog RGB)	Connect a monitor cable for analog RGB.
(7)	OSD Menu button	The button to activate the OSD menu.
(8)	RS-232C	Connect a serial communication port for touch panel communication.
(9)	USB (TypeB)	Connect a USB port (Type B) for touch panel communication.
(10)	Touch pen	Use for operation of touch panel.
(11)	Touch pen holder	Put touch pen in it when not using. Paste it on the monitor by double-sided tape.
(12)	Mounting Brackets	Use them to mount the panel.

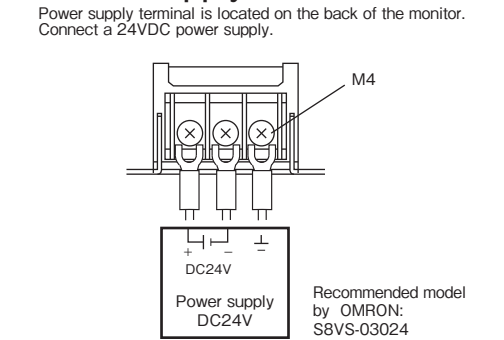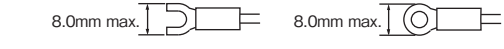Please refer "■OSD adjust function" for OSD operation.
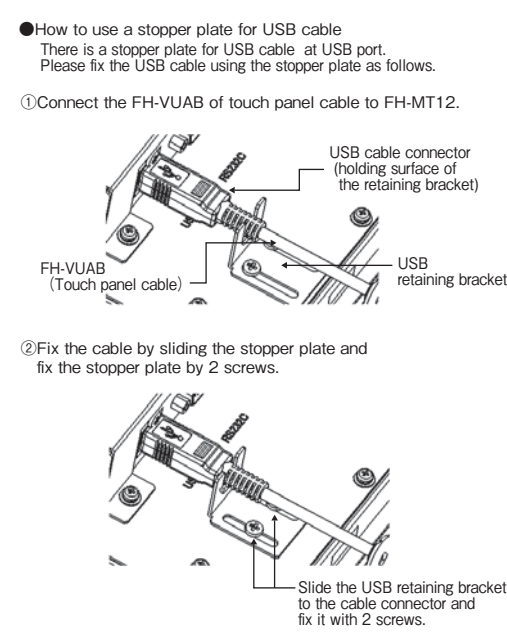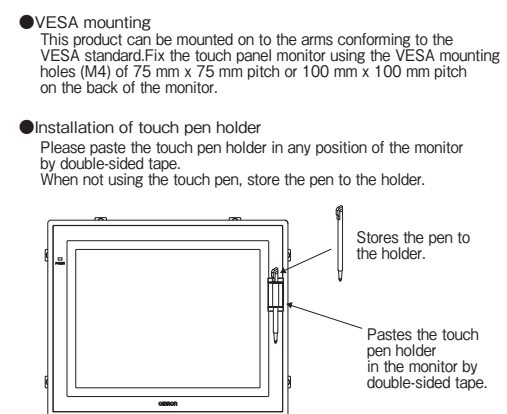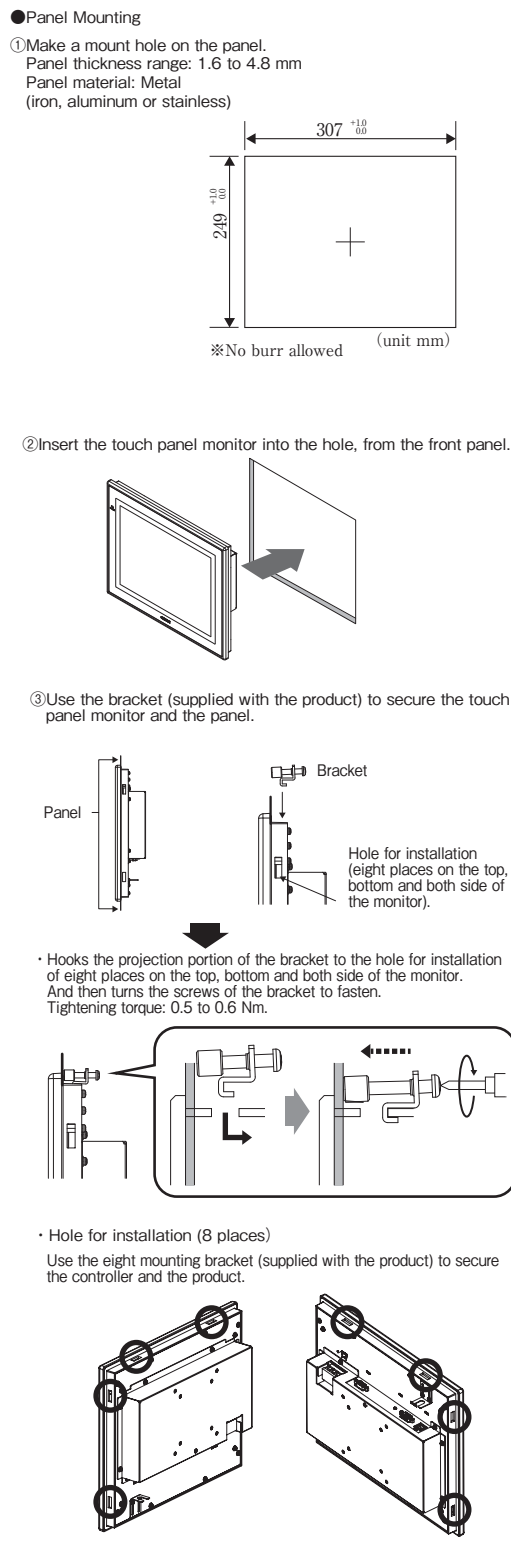
■ Confirming Package Contents

Check that the following items are included in the package.
· Touch Panel Monitor········Qty.:1
· Instruction Sheet(this paper)········Qty.:1
· Mounting Brackets········Qty.:8
· Touch Pen········Qty.:1
· Touch Pen Holder········Qty.:1
If any item is missing or damaged, please contact your dealer or any of nearby branch office of OMRON corporation.

■ Power supply terminal

Power supply terminal is located on the back of the monitor.
Connect a 24VDC power supply.

M4
DC24V
Power supply DC24V

Recommended model by OMRON:
S8VS-03024

· Keep the power supply wires as short as possible. (Max.2m)
· If UL's certification is required, use a UL Class II power supply.
· Use the cables and crimping terminals with the specified dimensions.
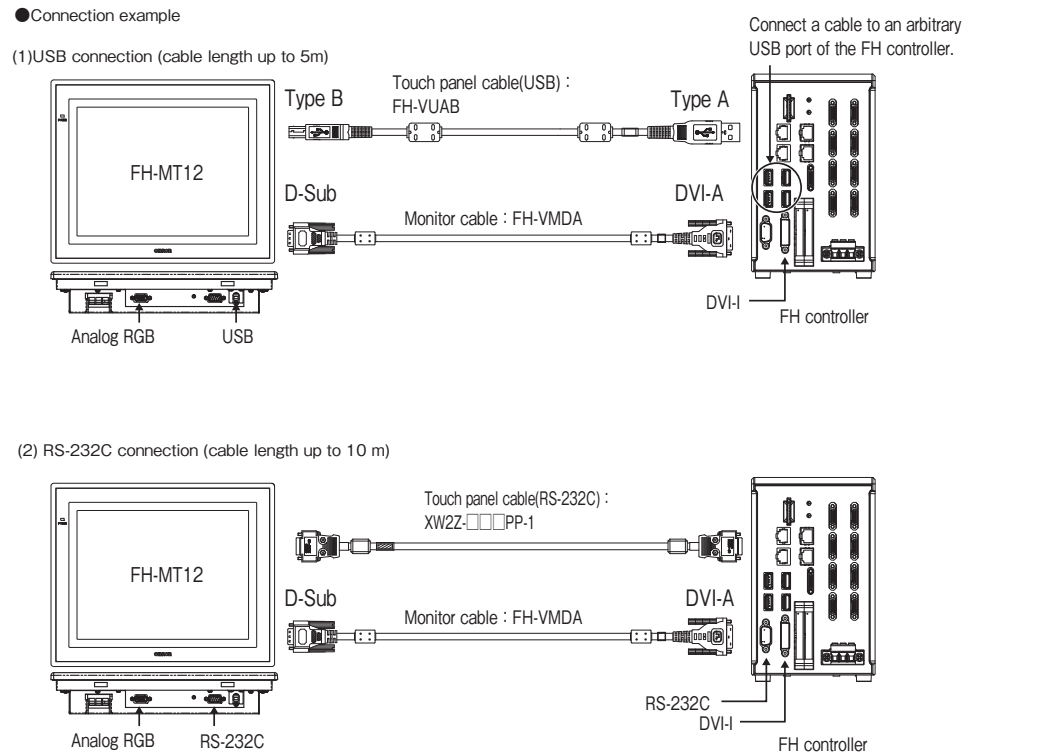Do not directly connect an electric wire that is simply twisted to the terminal block.
 ―Recommended wire size: AWG 13 to 22(0.326~2.62mm^2)
 ―Terminal screw: M4 (Tightening torque: 1.0N·m)
 ―Crimping Terminal

8.0mm max.   8.0mm max.

■ Mounting

● Panel Mounting
①Make a mount hole on the panel.
 Panel thickness range: 1.6 to 4.8 mm
 Panel material: Metal (iron, aluminum or stainless)

307 $^{+1.0}_{0.0}$
249 $^{+1.0}_{0.0}$
※No burr allowed
(unit mm)

②Insert the touch panel monitor into the hole, from the front panel.

③Use the bracket (supplied with the product) to secure the touch panel monitor and the panel.

Panel
Bracket
Hole for installation (eight places on the top, bottom and both side of the monitor).

· Hooks the projection portion of the bracket to the hole for installation of eight places on the top, bottom and both side of the monitor. And then turns the screws of the bracket to fasten. Tightening torque: 0.5 to 0.6 Nm.

· Hole for installation (8 places)
Use the eight mounting bracket (supplied with the product) to secure the controller and the product.

■ Cable

There are one connectors for video input and two connectors for touch panel communication on the touch panel monitor.Depending on the cable length and the usage of communication cable on the FH controller, please select the connection cable.
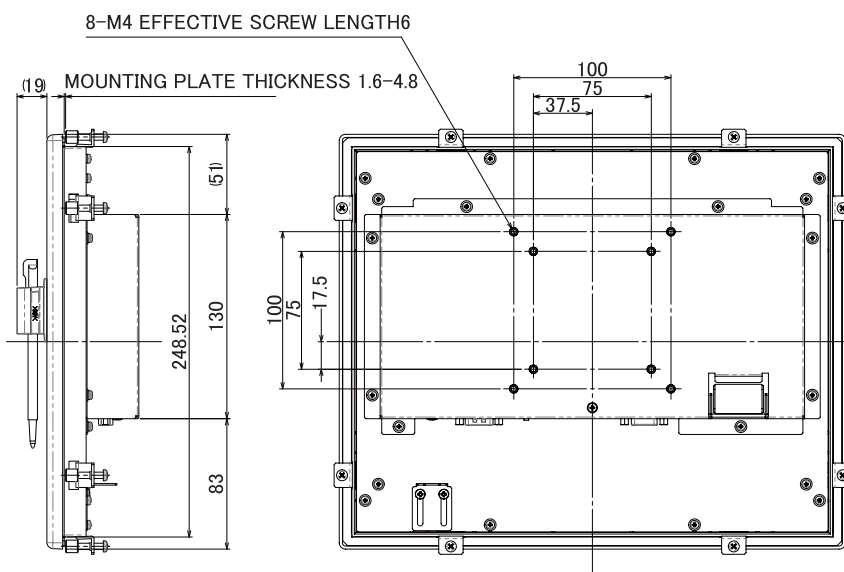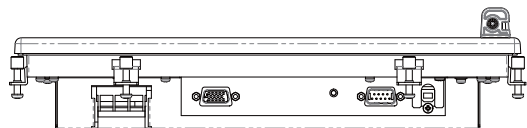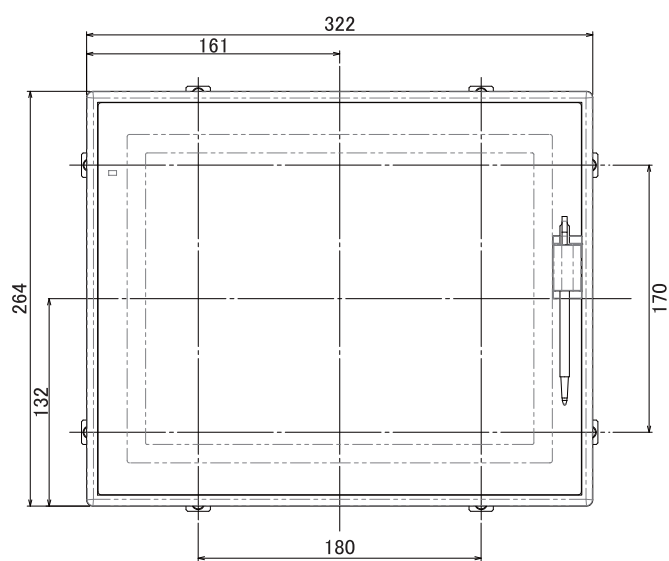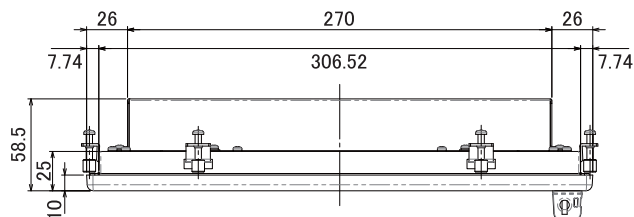
※Caution
· When using the USB and RS-232C for touch panel communication at same time, USB will be used on a priority basis.

● Cable for FH-MT12

Cable name	Interface	Cable length	Type	Minimum bending radius
Monitor cable	DVI to RGB conversion	2m	FH-VMDA 2M	36mm
		5m	FH-VMDA 5M	
		10m	FH-VMDA 10M	
Touch panel cable	USB	2m	FH-VUAB 2M	25mm
		5m	FH-VUAB 5M	
	RS-232C	2m	XW2Z-200PP-1	59mm
		5m	XW2Z-500PP-1	
		10m	XW2Z-010PP-1	

● Connection example

(1)USB connection (cable length up to 5m)

FH-MT12
Type B
Touch panel cable(USB) : FH-VUAB
Type A
D-Sub
Monitor cable : FH-VMDA
DVI-A
Analog RGB
USB
DVI-I
FH controller
Connect a cable to an arbitrary USB port of the FH controller.

(2) RS-232C connection (cable length up to 10 m)

FH-MT12
Touch panel cable(RS-232C) : XW2Z-□□□PP-1
D-Sub
Monitor cable : FH-VMDA
DVI-A
Analog RGB
RS-232C
RS-232C
DVI-I
FH controller

● VESA mounting
This product can be mounted on to the arms conforming to the VESA standard.Fix the touch panel monitor using the VESA mounting holes (M4) of 75 mm x 75 mm pitch or 100 mm x 100 mm pitch on the back of the monitor.

● Installation of touch pen holder
Please paste the touch pen holder in any position of the monitor by double-sided tape.
When not using the touch pen, store the pen to the holder.

Stores the pen to the holder.
Pastes the touch pen holder in the monitor by double-sided tape.

● How to use a stopper plate for USB cable
There is a stopper plate for USB cable at USB port.
Please fix the USB cable using the stopper plate as follows.
①Connect the FH-VUAB of touch panel cable to FH-MT12.

USB cable connector (holding surface of the retaining bracket)
FH-VUAB (Touch panel cable)
USB retaining bracket

②Fix the cable by sliding the stopper plate and fix the stopper plate by 2 screws.

Slide the USB retaining bracket to the cable connector and fix it with 2 screws.

■ Dimensions (Unit:mm)

8-M4 EFFECTIVE SCREW LENGTH6
MOUNTING PLATE THICKNESS 1.6~4.8

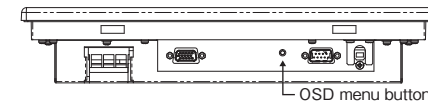## ■ OSD(On-Screen Display)adjust function

Adjust the display condition of this monitor by operating the adjustment menu indicated by OSD.Press the OSD menu button on the back of the monitor, and then the OSD menu on the display is activated.Please tap the OSD menu to adjust the display condition. Unless a video signal is input, OSD menu will not start up.

OSD menu button

Functional description of the OSD menu

PROC	: Begin the operation of adjusting the display condition and exit it after setting the values.
UP	: Upward shift of the OSD menu item.
DOWN	: Downward shift of the OSD menu item.
+	: Increment adjustment of set value.
−	: Decrement adjustment of set value.
EXIT	: Exit the OSD menu.

Example of OSD operation

When selecting the OSD menu item, you press the [UP] or [DOWN] button. The outline characters of the OSD menu item moves upward or downward by [UP] or [DOWN] button. After selecting [AutoAdjust] or [AutoColor] on the OSD menu, press [PROC] button. And then automatic adjustment starts. When exiting the OSD menu, you press [EXIT] button. And then the setting data isn't saved.

Example of OSD screen.

■ Port settings of RS-232C

When connecting the touch panel monitor by USB, at the connection, the USB port settings of FH controller is set automatically.
When connecting the touch panel monitor by RS-232C, you need to set the RS-232C port settings of FH controller.
Please perform the following procedure of the RS-232C port settings.

① In the Main Window, select [System Settings] from the [Tool] menu.
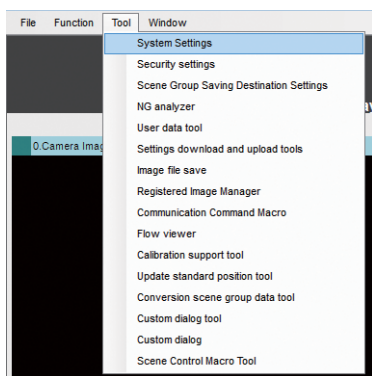
② Select [System Settings] - [Startup] - [Startup settings] on the Multiview Explorer on the left and then click [Communication]. Select Touch panel monitor(FH-MT12) from Serial(RS-232C/422) of the Communication module select.
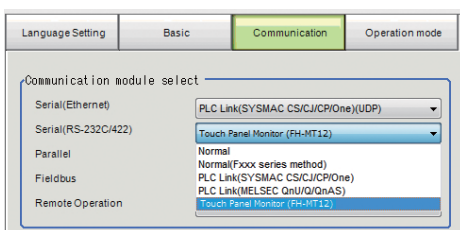
■ Ratings / Characteristics

● Touch Panel Monitor

Type		Touch Panel Monitor
Model		FH-MT12
Major functions	Display area	12.1 inch
	Resolution	1024(V) × 768(H)
	Number of color	16,700,000 colors (8 bit/color)
	Brightness	500cd/m² (Typ)
	Contrast Ratio	600 : 1 (Typ)
	Viewing angle	Left and right: each 80°, upward: 80°, downward: 60°
	Backlight Unit	LED, edge-light
	Backlight lifetime	About 100,000hour
	Touch panel	4wire resistive touch screen
External interface	Video input	analog RGB
	Touch panel signal	USB
		RS-232C
Ratings	Power supply voltage	24 VDC (21.6 to 26.4 VDC)
	Current consumption	0.5A
	Insulation resistance	Between DC power supply and touch panel monitor FG: 20 MΩ or higher (rated voltage 250 V)
Operating environment	Ambient temperature range	Operating: 0 to 50 ℃ Storage: -20 to +65 ℃ (with no icing or condensation)
	Ambient humidity range	Operating and Storage: 20 to 85 %RH (with no icing or condensation)
	Ambient environment	No corrosive gas
	Vibration resistance	10 to 150 Hz, one-side amplitude 0.1 mm(Max. acceleration 15 m/s²) 10 times for 8 minutes for each three direction
	Degree of protection	Panel mounting: IP65 on the front
Operation		Touch pen
Structure	Mounting	Panel mounting, VESA mounting
	Weight	About 2.6kg
	Material	Front case: PC/PBT, Front sheet: PET, Rear case: SUS

〈Setting item of OSM menu〉

Page	Setting item	Description	Range	Default
1	Contrast	Adjusts the contrast for RGB all color.	0 to 255	55
	HPosition	Adjusts screen display position in horizontal direction.	28 to 228	128
	VPosition	Adjusts screen display position in vertical direction.	105 to 151※1	128
	HTotal(Clock)	Adjusts the horizontal total number.	64 to 192	128
	Phase	Adjusts the phase for flicker.	0 to 63	0
	Contrast Red	Adjusts the contrast for Red color (by digital).	0 to 255	50
	Contrast Green	Adjusts the contrast for Green color (by digital).	0 to 255	50
	Contrast Blue	Adjusts the contrast for Blue color (by digital).	0 to 255	50
	Back Light	Adjusts brightness of the screen.	0 to 31	31
	Auto Adjust	Automatically adjusts screen display position. ※2	—	—
	Auto Color	Automatically adjusts the contrast. ※2	—	—
	TP Calib	Executes touch panel calibration.	—	—
	Save Data	Saves the setting data.	—	—
	Cancel	Exits the OSD menu.	—	—
	Option	Displays the page 2 screen.	—	—
	Status	Displays the status screen.	—	—
2	Red Gain	Adjusts ADC gain setting for Red color (by analog).	0 to 255	128
	Green Gain	Adjusts ADC gain setting for Green color (by analog).	0 to 255	128
	Blue Gain	Adjusts ADC gain setting for Blue color (by analog).	0 to 255	128
	Red Offset	Adjusts ADC offset setting for Red color (by analog).	0 to 255	128
	Green Offset	Adjusts ADC offset setting for Green color (by analog).	0 to 255	128
	Blue Offset	Adjusts ADC offset setting for Blue color (by analog).	0 to 255	128
	Filter	Sets filter.	Non,0 to 4	Non
	Gamma	Sets gamma value.	0.1 to 3.0	1.0
	OSD HPosition	Adjusts the OSD menu position in horizontal direction (not in use).	—	Non
	OSD VPosition	Adjusts the OSD menu position in vertical direction (not in use).	—	Non
	OSD Effect	Adjusts transparency of the OSD menu.	0 to 7	0
	OSD TimeOut	Sets the display time from on to OFF of the OSD menu.	※4	10
	Default	Sets the all default data.	—	—
	Save Data	Saves the setting data.	—	—
	Cancel	Displays the page 1 screen.	—	—

※1. The value of range is the case of XGA 60 Hz input. This value is changed by resolution or vertical frequency of video input.
※2. After Setting the screen to white, please execute the setting item.
※3. In XGA video input, the value is fixed "Non".
※4. Non、5～10、15、20、30、40、50、60