(English) 3514NB1

MONITOUCH X1 Series

X115x OPERATING INSTRUCTIONS

Thank you for selecting the MONITOUCH X115x.
Make sure that the delivered unit conforms to your requirements and check for any missing or damaged parts.
Before using the unit, be sure to thoroughly read this document and the X1 Series Hardware Specifications manual to ensure proper operation.

Accessories

X115x OPERATING INSTRUCTIONS (this manual):	1 copy
Fixtures:	8 pcs.
Cable ties for securing cables:	2 pcs.

Model

X 1 1 5 1 i S □ D
1 2 3 4 5 6

1	Display specifications	15	15.6-inch wide TFT color LCD (FHD, 16.77 million colors*)
2	Touch switch specifications	1	Capacitance type
3	Ethernet	i	Includes two built-in LAN port
4	Model	S	Standard model
5	Wireless LAN Bluetooth	None	No wireless LAN and Bluetooth
		R	Includes wireless LAN and Bluetooth
6	Power supply specifications	D	24 VDC type (CE/KC/UL/cUL approved)

* For the display of pictures and 3D parts only.
Other parts are displayed in 65,536 colors.

Notes on Safe Usage

This document describes various precautions categorized under the following two 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 even items indicated with ⚠ CAUTION may also result in a serious accident.

⚠ DANGER

- Never use the output function of MONITOUCH for operations that may threaten human life or cause damage to the system, such as switches to be used in case of emergency. Please design the system so that it can cope with touch switch malfunctions. A touch switch malfunction may result in machine accidents or damage.
- Turn off the power supply when setting up the unit, connecting new cables, or performing maintenance or inspections. Otherwise, you may receive an electrical shock or damage may occur.
- Never touch any terminals while the power is on. Otherwise, you may receive an electrical shock.
- 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, reverse the polarity of the lithium battery, nor dispose of the lithium battery in fire. Failure to follow these conditions may 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 may lead to explosion or ignition.
- Even if a screen display becomes dim, the touch switch function remains active. Please do not touch the dim screen, it may cause an accident or damage to your machine by malfunction.
- Tighten the fixtures on MONITOUCH to an equal torque of 7.08 lbf-in (0.8 N·m). Excessive tightening may cause deformation, breakage, or malfunction of the touch switch, which may result in damage to the machine or an accident. Loose mounting screws may cause the unit to fall down, malfunction, or short-circuit.

⚠ CAUTION

- Check the appearance of the unit after unpacking. 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) MONITOUCH under the conditions indicated in this document 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 locations where vibrations or physical shocks may be transmitted to the unit.
- Equipment must be correctly mounted so that the main terminal of MONITOUCH will not be touched inadvertently. Otherwise, you may receive an electric shock or an accident may occur.
- Periodically check that terminal screws on the power supply terminal block and fixtures are firmly tightened. Using the unit with loose screws or nuts may result in fire or malfunction.
- Tighten the terminal screws on the power supply terminal block to an equal torque of 4.43 to 5.31 lbf-in (0.5 to 0.6 N·m). Improper tightening of screws may result in fire, malfunction, or other serious trouble.
- MONITOUCH has a glass screen. Do not drop or impart any physical shock to the unit. Otherwise, the screen may be damaged.
- Correctly connect the cables to the terminals of MONITOUCH in accordance with the specified voltage and wattage. Overvoltage, overwattage, or incorrect cable connection may cause fire, malfunction, or damage to the unit.
- Always ground MONITOUCH. The FG terminal must be used exclusively for MONITOUCH with the level of grounding resistance less than 100 Ω. Otherwise, electric shock or a fire, touch switch failure or other malfunctions may occur.
- Prevent any conductive particles from entering into MONITOUCH. Failure to do so may lead to fire, damage, or malfunction.
- Do not attempt to repair, disassemble, or modify MONITOUCH yourself. Contact Hakko Electronics or the designated contractor for repairs. Otherwise, such action may cause a malfunction.
- Hakko Electronics Co., Ltd. is not responsible for any damages resulting from repair, overhaul, or modification of MONITOUCH that was performed by an unauthorized person.
- Do not use sharp-pointed tools to press touch switches.
- Only technicians are authorized to set up the unit, connect cables, and perform maintenance and inspection.
- Note that the lithium battery contains combustible material such as lithium and organic solvents. Mishandling may cause heat, explosion, or ignition resulting in fire or injury. Read related manuals carefully and handle the lithium battery correctly 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 a failure of MONITOUCH could lead to accidents threatening human life or other serious damage, make sure that such facilities are equipped with adequate safeguards.
- At the time of disposal, MONITOUCH must be treated as industrial waste.
- Before touching MONITOUCH, discharge static electricity from your body by touching grounded metal. Excessive static electricity may cause malfunction or trouble.
- If a LAN cable is inserted into the serial communication connector, the device on the other end may be damaged. Check the connector names on the unit and insert cables into the correct connectors.
- The X1 series has a heatsink on its back side. Do not touch the heatsink while the X1 series is working, because the heatsink is subjected to high temperature.
- A capacitive touch switch is adopted. Please the following points is noted.
  - Use a SELV power supply for the 24 VDC power unit. Using MONITOUCH with an unstable power supply may result in incorrect touch switch activation.
  - The capacitive touch switch is open to influence. Do not i) put any conductive material such as metal part close to the surface of the panel or ii) operate the panel when its surface is wet. Doing so causes malfunction.
  - The touch switch is calibrated at power-on. Do not touch to operate the screen for 10 seconds at power-on. It may cause a malfunction.

Notes on LCD

- Tiny spots (dark or luminescent) may appear on the display due to the liquid crystal characteristics. Please note that this is not a fault or malfunction of MONITOUCH.

Notes on OS

- The X1 series is based on a Windows 10 IoT Enterprise LTSC.
- Windows Update is not applicable. Cortana, Microsoft Edge, Microsoft Store, and UWP apps are not supported.
- Hakko Electronics Co., Ltd. is not responsible for any operation or performance of applications except our own products.
- Hakko Electronics Co., Ltd. is not responsible for any problems or damages caused by Microsoft products. For problems and specifications with Microsoft products, refer to the Microsoft product documentation or contact Microsoft Corporation.
  Refer to the following URL for contact information. https://support.microsoft.com/en-us/contactus/

Notes on Embedded SSD

- An SSD (C drive) is embedded. Do not change or split the partitions.
- The SSD is equipped with 3D NAND. The life span of the SSD must be considered to use.

Notes on Power Interruption

- The X1 series can respond to sudden power loss when the write filter function is enabled. For details of the write filter settings, refer to the X1 Series Hardware Specifications manual.
- If the write filter function is disabled, a shutdown operation is needed. The X1 screen becomes black after shut down operation. Turn the power off at least 15 seconds after the black screen appears.

UL/cUL Approval

The X1 series is a UL/cUL-approved product. This product complies with the following standards.
UL61010-1/UL61010-2-201 (E313548)

UL Listing Application for Systems Equipped with MONITOUCH

- The back panel of MONITOUCH is not an approved enclosure. For UL listing application, embed MONITOUCH in your system and configure an enclosure so that the entire system will be UL-approved.
- Use MONITOUCH indoors only.
- Use a bare cable for wiring the power supply.

Tightening torque	Power cable
4.43 to 5.31 lbf-in (0.5 to 0.6 N·m)	AWG22 to AWG14, Use copper conductor only.

- Always use a SELV power supply for the 24 VDC power unit.

CE Marking / UKCA

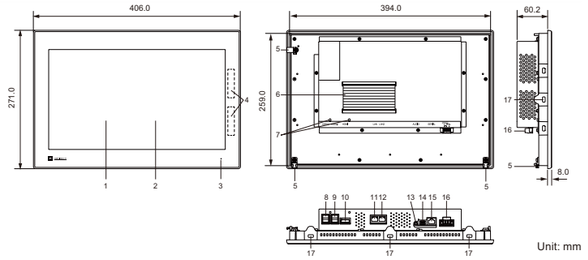
- The X1 series complies with the following EMC directives, RoHS directives and RE directives.
  For more information, refer to the separate X1 Series Hardware Specifications manual.
- The X1 series is identified as a class-A product in industrial environments. In the case of use in a domestic environment, the unit is likely to cause electromagnetic interference. Preventive measures should thereby be taken appropriately.

General Specifications

Item	X1151
Conformance Standards	CE, KC, UL/cUL *1, UKCA, Regarding Radio Act and wireless license (JPN: MIC, USA: FCC, CAN: ISED, EU: RED, KOR: KC, TWN: NCC) *2
Rated Voltage	24 VDC
Acceptable Voltage Range	24 VDC ±10 %
Acceptable Momentary Power Failure	Within 1 ms
Power Consumption (Maximum Rating)	51 W or less
Rush Current	24 A or less, 6 ms (surrounding air temperature at 25 °C)
Withstand Voltage	DC external terminals to FG: 500 VAC for 1 minute
Insulation Resistance	DC external terminals to FG: 500 VDC, 10 MΩ or higher
Surrounding Air Temperature	0 °C to +45 °C *3
Storage Surrounding Air Temperature	–10 °C to +60 °C *3
Operational Ambient Humidity	85 % RH or less (without dew condensation) *3
Storage Ambient Humidity	85 % RH or less (without dew condensation) *3
Altitude	2000 m or less
Atmosphere	No corrosive gas, no excessive dust, and no conductive dust
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/s² (1.0 G), X, Y, and Z: 3 directions (10 times each)
Shock Resistance	JIS B 3502 (IEC61131-2) compliant Peak acceleration: 147 m/s² (15 G), X, Y, and Z: 3 directions, 3 times each (18 times in total)
Noise Resistance	1000 Vp-p (pulse width 1 µs, rising time: 1 ns)
Static Electricity Discharge Resistance	Compliant with IEC61000-4-2, contact: 6 kV, air: 8 kV
Overvoltage Category *4	II
Pollution Degree *5	2
Grounding	Less than 100 Ω, FG/SG connected
Structure	Protection structure: front panel complies with IP66 (when using waterproof gasket) rear case complies with IP20 Form: in a body Mounting procedure: inserted into a mounting panel Sheet metal thickness: 1.5 to 4.0 mm *6
Cooling System	Natural cooling
Weight	Approx. 3.9 kg
Dimensions W × H × D	406.0 × 271.0 × 68.2 mm
Panel Cut-Out Dimensions	395.0 $^{+0.5}_{-0}$ × 260.0 $^{+0.5}_{-0}$ mm
Material	Front part: PBT + GF30 resin Rear part: sheet metal
Display Part	Touch panel (Glass)

*1 Refer to "UL/cUL Approval".
*2 Only for wireless LAN model.
Regarding Radio Act and wireless license, refer to "About Wireless LAN on X1 Series" instruction manual.
*3 Use MONITOUCH in an environment with a wet-bulb temperature of 39 °C or less. Otherwise, MONITOUCH may be damaged.
*4 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.
*5 This index indicates the degree to which conductive material is generated in the environment where the equipment is used.
In pollution degree 2, only non-conductive pollution occurs but temporary conductivity may be produced due to condensation.
*6 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.

Names of Components and Dimensions



1. Display
2. Touch switch
3. Power lamp
4. Wireless communication antenna (WLAN/Bluetooth) *1
5. Fall prevention tabs
6. Heatsink
7. USB cable clamp hole
8. USB-A port (USB2.0) 2CH
9. USB-A port (USB3.0) 2CH
10. HDMI connector
11. LAN connector (LAN)
12. LAN connector (LAN2)
13. Audio output connector (AUDIO)
14. DIP switches
15. Serial communication connecter (SERIAL)
16. Power supply terminal block
17. Mounting holes

*1 Available only with wireless LAN and Bluetooth model.

Serial Communication Connector (SERIAL)

The SERIAL connector is used for serial communication (RS-232C/RS-422/RS-485) with an external device.

SERIAL	Pin No.	RS-232C		RS-422 (4-wire)		RS-485 (2-wire)	
		Signal	Description	Signal	Description	Signal	Description
12345678	1 *1	RD	Receive data	+SD	Send data (+)	+RD/+SD	Send/receive data (+)
	2 *1	–	Not used	–SD	Send data (–)	–RD/–SD	Send/receive data (–)
	3			–	Not used	–	Not used
	4						
	5	SG	Signal ground	SG	Signal ground	SG	Signal ground
	6						
	7 *1	SD	Send data	+RD	Receive data (+)	–	Not used
	8	–	Not used	–RD	Receive data (–)		

*1 Set the signal level (RS-232C or RS-422/RS-485) using the screen configuration software or local mode on the X1 series unit. When setting the RS-232C signal level, always set DIP switches 3 and 4 to OFF (see below).
For more information, refer to the separate X1 Series Hardware Specifications manual.

LAN Connectors (LAN/LAN2)

The LAN connectors are used for Ethernet communication (1000BASE-T, 100BASE-TX, 10BASE-T).
Specification: IEEE802.3 (ab)-compliant', UDP/IP and TCP/IP support,
Auto-MDIX and Auto-Negotiation function support
* Jumbo frames not supported

⚠ CAUTION	• Serial communication connector and LAN connectors are 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 connectors.

For more information on the LAN connectors and cables, refer to the separate X1 Series Hardware Specifications manual.

Wireless Communication Antenna (WLAN/Bluetooth) X1151iSRD only

This is an antenna for connecting to wireless LAN and Bluetooth devices.
For details about wireless LAN and Bluetooth, refer to the separate X1 Series Hardware Specifications manual.

USB Ports (USB2.0/USB3.0)

These ports are used for connecting USB devices and a printer.
Specification: USB2.0: Compliant with USB version 2.0
USB3.0: Compliant with USB version 3.0

For more information on using USB ports and securing cables, refer to the separate X1 Series Hardware Specifications manual.

Audio Output Connector (AUDIO)

This terminal is used for audio output.
Specification: ϕ3.5 stereo mini jack

For more information on the specifications for audio playback, refer to the separate X1 Series Hardware Specifications manual.

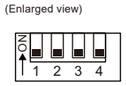
HDMI Connector (HDMI)

This connector is used for screen image output.
Output resolution is 1,920x1,080, which is the same as that of the X1 unit.

DIP Switches

The dip switch settings are as follows. (The following figure shows the DIP switch settings upon delivery.)
Turn the power off before changing any DIP switch settings.

(Enlarged view)



No.	Description	
1	Automatic storage upload	When both No.1 and 2 are ON: System configurator display
2	Touch switch test screen display	
3	SERIAL RS-422 (4-wire) transmit line terminal resistance and RS-485 (2-wire) termination resistance	
4	SERIAL RS-422 (4-wire) receive line terminal resistance	

For more information, refer to the separate X1 Series Hardware Specifications manual.

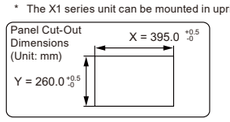
Mounting Procedure

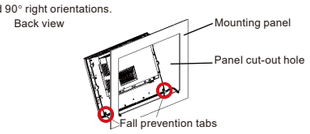
Mounting Procedure

1. Place the X1 series unit on a flat surface with the display facing down and insert the provided waterproof gasket into the groove around the unit.

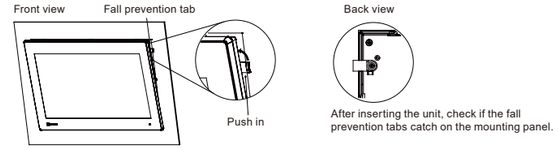
⚠ CAUTION	The unit will not be waterproof if the waterproof gasket is not correctly inserted into the groove.

2. Hook the fall prevention tabs on the underside of the X1 series on the bottom of the panel cut-out hole of the mounting panel (maximum thickness of 4.0 mm).
   * The X1 series unit can be mounted in upright and 90° right orientations.





3. Push in the upper right (in front view) fall prevention tab to the main unit and then mount the main unit to the mounting panel. Check the X1 unit not to fall from the mounting panel.



4. Insert the provided mounting fixtures into the X1 mounting holes, three at the top and three at the bottom, and one at the left and right, and fix the unit with the tightening screws. (Tightening torque: 7.08 lbf-in (0.8 N·m))
   * 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.

Mounting Angle

Install the unit within the angle range of 60 to 120 degrees.
For more information, refer to the separate X1 Series Hardware Specifications manual.

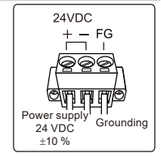
Electrical Wiring and Grounding

⚠ DANGER	Electrical shock hazard! Shut off the power before connecting the power supply cable.

Cable Specifications

⚠ CAUTION	• Do not solder the end sections of power cable wires. Soldering may result in bad electrical contacts. • When using stranded wire for the power cable, make sure the strands are sufficiently twisted. Failure to do so may cause shorting between stray strands or adjacent electrodes.

Tightening Torque	4.43 to 5.31 lbf-in (0.5 to 0.6 N·m)
Cable Size	AWG24 to AWG14 Stranded wire/solid wire (0.2 to 2.5 mm in diameter)*
Core wire length	7.0 mm



* Rod terminals can also be used.
For more information, refer to the separate X1 Series Hardware Specifications.

Power Supply Cable Connection

⚠ DANGER	Avoid applying excessive force to the power supply cable. This may lead to unintentional disconnection of the cable and cause serious accidents such as electric shock.

- The power supply must be used within allowable range of voltage fluctuation.
- Use a power supply with low noise between cables and between the ground and cables.
- Use the thickest power supply cable possible to minimize drops in voltage.
- Keep power supply cables away from high-voltage, large-current carrying cables.

Grounding

⚠ CAUTION	Be sure to establish a ground for MONITOUCH. (The level of grounding resistance should be less than 100 Ω.)

- An independent grounding must be used for the unit.
- Use AWG20 to AWG14 size wiring for the grounding cable.
- Set the grounding point near the unit to reduce the length of grounding cables.
- SG and FG are connected inside the unit.

Independent grounding (best) / Shared grounding (good) / Cross grounding (prohibited)

Notes on Usage of Lithium Battery

The battery provides backup power to the built-in clock and BIOS settings.
Replace the battery within three years of the date of purchase.

⚠ CAUTION	A battery is already installed upon delivery.

This product uses a battery that contains lithium metal. Transportation of batteries containing lithium must observe the relevant transport regulations. Shipping packing of the X1 series and the replacement battery complies with transport regulations. If the product is re-transported after unpacking, observe the IATA Dangerous Goods Regulations, the IMDG Code, and the relevant transport regulations of each country.

Replace battery with X1-BT made by Hakko Electronics Co.,Ltd. only.
Use of another battery may present a risk of fire or explosion.
Replacement of Battery shall be done by a technician only. For more information on battery specifications,replacement, and disposal,refer to the separate X1 Series Hardware Specifications manual.
To obtain replacement batteries, contact Hakko Electronics Co.,Ltd.
Dispose of used battery promptly. Keep away from Children.

Note on the Directive 2006/66/EC

- The symbol mark on the right is valid for countries in EU and UK.
- The symbol mark on the right is according to the Directive 2006/66/EC Article 20 Information for end-users and Annex II.
- The symbol mark on the right means that battery, at the end-of-life, should be disposed of separately from your household waste.
- If a chemical symbol is printed beneath the symbol on the right , this chemical symbol means that the battery contains a heavy metal at a certain concentration.
  This will be indicated as follows:
  Hg: mercury (0.0005 %), Cd: cadmium (0.002 %), Pb: lead (0.004 %)
- In the European Union, there are separate collection systems for used batteries.
  Please dispose of batteries correctly at your local community waste collection/recycling center.

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