Programmable Operator Interface

MONITOUCH

Edge-computing accelerates the transition to smart production sites

X1 Series
The X1 series features the broad FA and IT connectivity and flexibility to digitize your factory.

Integration with IT systems

In addition to the HMI functions for operating and monitoring production machines, the X1 achieves data linkage between FA and higher level IT or cloud systems via OPC UA and MQTT connections.

By connecting with MES and ERP systems, data visualization, improvement of productivity and optimization of production management can be conducted.

Utilization of User Applications

Since Windows is installed, Windows applications and user applications can be used at production sites. Applications can be run by switches on the HMI display and used freely at production sites.

Data collection, processing and analysis can be conducted between production sites and host systems, contributing to the digitization of your factory.

Inheritance of V-series Screen Assets

Screen assets created for the V-series can be converted for use in the X1 series. The configuration software V-SFT Ver.6 can be used as well.

MONITOUCH’s highly-developed communication drivers can be used for connection with various equipment without programming.

Visibility and User-friendliness

A high speed CPU, high resolution LCD and PCAP touchscreen improve visibility and operability.

A vectorized rendering engine allows for high quality scaling. Beautiful high quality screens can be created regardless of the display resolution.

Positioning

X1 series applicable area

V9 series applicable area

Smart factory realization factors

• Various communication functions
• Linkage with cloud servers

• Windows installed
• User applications are fully utilized at production sites

In addition to the communication and display functions of the MONITOUCH HMI, data processing and analysis are available through connecting with user applications and the host system.

Operation Scheme

Production site

Manufacturing equipment

Ethernet/Serial

Production data can be used easily

Communication drivers of MONITOUCH can be used.

Office

MQTT

Cloud (Microsoft Azure)

OPC UA

Production data linked with the host system

Database connection

Data upload

Remote access

Display and operation of a HMI display

Data sharing with user applications (e.g. SCADA, data processing and analysis)

X1 Series

Data sharing with user applications

Producing data linked with the host system

Host system

PC

MONITOUCH X1カタログ P2 MONITOUCH X1カタログ P3
The X1 series facilitates the implementation of smart factories that effectively utilize data.

Compatible with OPC UA Server and Client

- The X1 series is equipped with OPC UA server and client, so data can be collected by connecting to both offices and production sites.
- Even if devices at the production site are incompatible with OPC UA, the X1 series can fulfill the role of a gateway to OPC UA in order to transfer data to OPC UA clients in the host system.
- OPC UA enables data sharing between production sites and the host system, and facilitates the standardization of equipment.

Application example

Workpiece conveyor

The X1 series collects data from multiple machines at production sites and shares it with the host system via OPC UA. This helps to improve productivity and product quality, and it facilitates the standardization of equipment. Adoption of the X1 series for devices equipped with industrial robots adds further value to the robots that contribute to factory automation.

Cloud (MQTT) Compatible

- Operation data, production data, status data, etc., are sent to the cloud system via MQTT for collection and storage. It contributes to the visualization and improvement of the factory.
- Since the system is linked with the Microsoft Azure platform, various tools and frameworks of the cloud service can be used.
- Increased efficiency and improvement of the production system is realized by connecting to the cloud and analyzing, visualizing and identifying trends of the collected data. Besides, it contributes to ensuring the security in pharmaceutical manufacturing by installing the X1 series on pharmaceutical equipment that requires high-level security management.

Application example

Pharmaceutical equipment

Increased efficiency and improvement of the production system is realized by connecting to the cloud and analyzing, visualizing and identifying trends of the collected data. Besides, it contributes to ensuring the security in pharmaceutical manufacturing by installing the X1 series on pharmaceutical equipment that requires high-level security management.
Succeeding broad connectivity of MONITOUCH HMI

Access to the DB and files using Windows functions*1

Activate Windows applications from the HMI screen

Print out by Windows compatible printer

The screen returns to the HMI screen after closing Windows applications by clicking the [x]

Operation

Microsoft SQL Server

Host system server

PC

PLC

Printer

HMI screen

Power-on

Boot screen

When you turn on the power, the HMI screen appears and you can use the screen functions without being aware of any Windows application.

Dedicated serial/Ethernet protocol

Print out by Windows compatible printer

Activation of Windows applications from the HMI screen

The screen returns to the HMI screen after closing Windows applications by clicking the [x]

Utilization of User Applications

Windows applications can be freely operated at production sites. Once engineering tools of production machines are installed on the X1 series, it is possible to edit and monitor the program through the X1 series without bringing a PC to the production site.

In addition, it is possible to reduce maintenance tasks and the space required for PCs at the production site by integrating PCs with the X1 series.

The X1 series with Windows applications improve versatility and expandability, as well as functioning of HMIs.

System Configurator

“System Configurator” in the X1 series is for the installation of applications and Windows configuration.

Thanks to System Configurator, Windows applications can be started and switched between easily by the buttons on the HMI screen without displaying the Windows screen.

The X1 combines the power of a Windows IPC (industrial PC) with the in-depth control of a HMI.

Application Alignment

Active applications can be aligned by pressing the button without using the keyboard or the mouse. This function helps you to switch multiple application windows easily and improves operability.

Standardized Web Browser

Since the X1 series is equipped with a web browser as standard, it is possible to use the browser function in applications and IT systems.

When combined with a monitoring system or network cameras, it is possible to monitor different machines on the network, and to check each status easily.

Vector Graphics

Vector graphics enable high quality and tailored screen creation as it allows the enlargement/reduction of parts while maintaining a clear image.

Raster Image (Conventional Method)

Color and density are specified for each pixel

Publisher!

*3 V-Server (our data collection software) is necessary.

*2 Engineering tools of the connected devices are necessary.

Vector Image (New Method)

Images are defined by mathematical equations

Images remain sharp and smooth in all sizes by changing the parameters

Draw a circle by specifying the reference point and radius

Jagged edges become visible when scaling

Indicate "white, white, black, black, black, white, white, white ..."

You can create your own customized screen freely!

It is possible to maintain clear edges even after scaling to any size.

Vector Images enable high quality and tailored screen creation as it allows the enlargement/reduction of parts while maintaining a clear image.
The X1 series with Windows performs as a gateway from the production sites to the IT systems. It contributes to efficient communication between the factory and management office or cloud system.

### General Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>X1121iSD / X1121iSRD</th>
<th>X1151iSD / X1151iSRD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display size</td>
<td>12.1” wide screen</td>
<td>15.6” wide screen</td>
</tr>
<tr>
<td>Functions</td>
<td>R: with WLAN and Bluetooth</td>
<td>N/A: without WLAN and Bluetooth</td>
</tr>
</tbody>
</table>

### Interface

- USB2.0×2
- USB3.0×2
- HDMI output
- Sound output
- Ethernet×2
- Sound output
- Serial Interface
- Power input terminal block

### Dimensions and Panel Cutout

- X1121iSD / X1121iSRD
- Panel cutout: 309 mm × 230 mm

- X1151iSD / X1151iSRD
- Panel cutout: 365 mm × 260 mm

### Performance Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>X1121iSD / X1121iSRD</th>
<th>X1151iSD / X1151iSRD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel Atom® ×5-E3940</td>
<td>Intel Atom® ×5-E3940</td>
</tr>
<tr>
<td>Main Memory</td>
<td>4GB</td>
<td>4GB</td>
</tr>
<tr>
<td>Internal Storage</td>
<td>64GB (free space 30GB)</td>
<td>64GB (free space 30GB)</td>
</tr>
<tr>
<td>Software</td>
<td>Windows 10 IoT Enterprise 2019 LTSC</td>
<td>Windows 10 IoT Enterprise 2019 LTSC</td>
</tr>
<tr>
<td>Hardware</td>
<td>10BASE-T/100BASE-TX/1000BASE-T</td>
<td>10BASE-T/100BASE-TX/1000BASE-T</td>
</tr>
<tr>
<td>Backup Period</td>
<td>Approx. 50,000 hours</td>
<td>Approx. 50,000 hours</td>
</tr>
<tr>
<td>Hardware Interface</td>
<td>Ethernet (RJ-45) × 2</td>
<td>Ethernet (RJ-45) × 2</td>
</tr>
<tr>
<td></td>
<td>USB-A Ver. 3.0 × 2</td>
<td>USB-A Ver. 3.0 × 2</td>
</tr>
<tr>
<td></td>
<td>USB-A Ver. 2.0 × 2</td>
<td>USB-A Ver. 2.0 × 2</td>
</tr>
<tr>
<td></td>
<td>HDMI</td>
<td>HDMI</td>
</tr>
<tr>
<td>Ethernet port</td>
<td>1 × Bluetooth</td>
<td>1 × Bluetooth</td>
</tr>
<tr>
<td>Wireless interface</td>
<td>1 × WLAN</td>
<td>1 × WLAN</td>
</tr>
<tr>
<td></td>
<td>1 × Bluetooth</td>
<td>1 × Bluetooth</td>
</tr>
<tr>
<td></td>
<td>1 × Bluetooth</td>
<td>1 × Bluetooth</td>
</tr>
<tr>
<td></td>
<td>1 × Bluetooth</td>
<td>1 × Bluetooth</td>
</tr>
</tbody>
</table>

### Physical Environment

- Ambient Temperature: 0 to 50°C
- Operating Altitude: 2,000m or less
- Storage Ambient Temperature: -10 to 80°C
- Operating Humidity: 85%RH or less (without dew condensation, max. wet-bulb temperature: 39°C or lower)
- Storage Ambient Humidity: 85%RH or less (without dew condensation, max. wet-bulb temperature: 39°C or lower)
- Contamination Level: 3 (by noise simulator)

### Mechanical Operating Conditions

- Vibration frequency: 5 to 55 Hz, Half amplitude: 3.5 mm, 9 to 150 Hz, Constant acceleration 9.8 m/s² (1G)
- Peak acceleration: 147 m/s² (15G), X, Y, Z: 3 directions, 3 times each (3 times in total)

### Mechanical Static Discharge

- Test voltage: 1.5kV, Pulse width: 1µs, Pulse rise time: 1µs (by noise simulator)

### Electric Operating Conditions

- Grounding: F0/G5/G8 in internally connected in the X1 series.
- Protection Structure: Front case: IP65 (when water-proof gasket is used), Rear case: IP66 (when water-proof gasket is used)

### Installation Conditions

- Dimensions W×H×D (mm): 320 × 241 × 66.7 mm
- Panel Cutout (mm): 309 × 230 mm
- Weight: Approx. 3.2 kg
- Color: Black
- Material: PBT and GF30 resin (front part)
### Configuration Software

**Achieve Sleeker Screens with Simple, Easy-to-Understand Operations**

**V-SFT Ver. 6**

- **Computer**: PC/AT compatible computer running Windows
  - Windows XP/XP 64 Edition/Windows Vista (32bit, 64bit)/Windows 7 (32bit, 64bit)/Windows 8 (32bit, 64bit)/Windows 10 (32bit, 64bit)
- **CPU**: Pentium 4 2.0 GHz or higher
- **Memory**: 1.0 GB or higher (2.0 GB or higher is recommended)
- **Hard disk**: When installed: 4.0 GB or higher
- **Display**: 1024 × 768 (XGA) resolution or higher
- **Display colors**: High color (16 bits) or higher
- **Others**: Microsoft .NET Framework 4.0 or 4.5
  - (Microsoft .NET Framework 4.0 is installed automatically on computers that do not have either Microsoft .NET Framework 4.0 or 4.5 installed.)

**Vector format SVG parts are installed as standard**

Since vector format SVG parts are provided with the unit, image quality is maintained regardless of scaling. Beautiful high quality screens can be created.

### System Configuration

**X1**

- **Screen configuration software**: V-SFT-6
- **Screen program editing**
- **Screen transfer**

**Product List**

<table>
<thead>
<tr>
<th>Model</th>
<th>Display Size</th>
<th>Resolution</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>X11215BD</td>
<td>12.1&quot; wide screen</td>
<td>1,280 x 800</td>
<td>PCAP (Capacitive type)</td>
</tr>
<tr>
<td>X11515BD</td>
<td>15.6&quot; wide screen</td>
<td>1,600 x 1,080</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Optional Accessories List**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-SFT</td>
<td>Configuration software for MONITOUCH Ver. 6</td>
</tr>
<tr>
<td>X1-BT</td>
<td>Replacement lithium battery for X1 series</td>
</tr>
<tr>
<td>X1-SS</td>
<td>Security software for X1 series</td>
</tr>
</tbody>
</table>
### PLC Connection

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Connectable Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitachi</td>
<td>KV-1000, KV-700 (Ethernet TCP/IP)</td>
</tr>
<tr>
<td>JTEKT</td>
<td>KZ/KV series CPU, TOYOPUC-Nano (Ethernet), TOYOPUC-Plus (Ethernet)</td>
</tr>
<tr>
<td>HYUNDAI</td>
<td>MICRO Smart, Hi4 Robot (MODBUS RTU), Hi5 Robot (MODBUS RTU)</td>
</tr>
<tr>
<td>FANUC</td>
<td>HIDIC-EHV (Ethernet), HIDIC-S10V (Ethernet), HIDIC-S10/4alpha</td>
</tr>
<tr>
<td>Beckhoff</td>
<td>90 series (Ethernet TCP/IP)</td>
</tr>
<tr>
<td>Baumuller</td>
<td>Micro800 Controllers (Ethernet TCP/IP)</td>
</tr>
<tr>
<td>Automationdirect</td>
<td>Control Logix (Ethernet)</td>
</tr>
<tr>
<td>Automationdirect</td>
<td>Direct LOGIC (Modbus RTU)</td>
</tr>
<tr>
<td>Automationdirect</td>
<td>Micro800 Controllers (Ethernet)</td>
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<td>Automationdirect</td>
<td>Control Logix (Ethernet)</td>
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### Temperature controller / Servo / Inverter Connection

<table>
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<tr>
<th>Equipment</th>
<th>Connectable Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitachi</td>
<td>APC Series Controller, FE Series, SLC500, MICREX-SX (Ethernet)</td>
</tr>
<tr>
<td>Hitachi</td>
<td>ECS Series (Built-in Ethernet)</td>
</tr>
<tr>
<td>JTEKT</td>
<td>MICRO Smart, Hi4 Robot (MODBUS RTU), Hi5 Robot (MODBUS RTU)</td>
</tr>
<tr>
<td>FANUC</td>
<td>HIDIC-EHV (Ethernet), HIDIC-S10V (Ethernet), HIDIC-S10/4alpha</td>
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<td>Beckhoff</td>
<td>Micro800 Controllers (Ethernet)</td>
</tr>
</tbody>
</table>

### Other

- **Notable connections:** The industry-leading number of connectable equipment allows for outstanding connectivity with multiple devices for simultaneous communication and data transfer.
- **As of the product release date:**

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**For more detailed information, consult the official product and connection documentation.**
Worldwide service network for trouble-free operations

To the purchasers:

The warranty of this product is as follows, unless there are special instructions that state otherwise in the quote, contract, catalog, or specifications at the time of the quote or order. The purpose or area of use may be limited, and a routine checkup may be required depending on the product. Please contact the distributor from which you purchased the product, or Fuji Electric/Hakko Electronics for further information. Please conduct inspection of the product promptly upon purchase or delivery. Also, please give sufficient consideration to management and maintenance of the product prior to accepting it.

1 Period and Coverage of the Warranty

1-1 Period

(1) The period of the warranty is effective until twenty-four (24) months from the date of manufacture printed on the plate.

(2) The above period may not be applicable if the particular environment, conditions or frequency of use affects the lifetime of the product.

1-2 Coverage

(1) If malfunction occurs due to negligence on the part of Fuji Electric/Hakko Electronics, the malfunctioning parts are repaired or replaced free of charge at the point of purchase or delivery. However, the warranty does not apply to the following cases:

1-1 The warranty is only applicable to the single purchased and delivered product.

1-2 The warranty is only valid for the conditions stated in (1) above. Any damage induced by the malfunction of the purchased or delivered product, including damage or loss to a device or machine and passive damage, is not covered by the warranty.

2 Liability for Opportunity Loss

Regardless of the time of occurrence, Fuji Electric/Hakko Electronics are not liable for damage caused by factors that Fuji Electric/Hakko Electronics are not responsible for, opportunity loss on the part of the purchaser caused by the malfunction of a Fuji Electric/Hakko Electronics product, passive damage, damage due to a special situation regardless of whether it was foreseeable or not, or secondary damage, accident compensation, damage to products that were not manufactured by Fuji Electric/Hakko Electronics, or compensation towards other operations.

3 Period for Repair and Provision of Spare Parts after Production is Discontinued (Maintenance Period)

Discontinued models/products can be repaired for seven (7) years from the date of discontinuation. Also, most spare parts used for repair are provided for seven (7) years from the date of discontinuation. However, some electric parts may not be available due to their short life cycle. In this case, it may be difficult to repair or provide the parts during the seven-year period. Please contact Fuji Electric/Hakko Electronics or our service provider for further information.

4 Delivery

Standard products that do not entail application setting or adjustment are regarded as received by the purchaser upon delivery. Fuji Electric/Hakko Electronics are not responsible for local adjustments and test runs.

5 Service

The price of the delivered or purchased products does not include the service fee for the technician. Please contact Fuji Electric/Hakko Electronics or our service providers for further information.

6 Scope of Application

The above contents shall be assumed to apply to transactions and product use in the country where a Fuji Electric/Hakko Electronics product is purchased. Please consult your local supplier or Fuji Electric/Hakko Electronics for details.

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ToFuji Electric/Hakko Electronics or our delegated service provider with due charge upon the request of the purchaser. The charge is to be paid by the purchaser at the rate stipulated in the rate schedule of Fuji Electric/Hakko Electronics.

The initial diagnosis of malfunction is to be made by the purchaser. The diagnosis can be conducted by Fuji Electric/Hakko Electronics or our delegated service provider with due charge upon the request of the purchaser. The charge is to be paid by the purchaser at the rate stipulated in the rate schedule of Fuji Electric/Hakko Electronics.

Malfunction Diagnosis

1-3 Malfunction Diagnosis

The above contents shall be assumed to apply to transactions and product use in the country where a Fuji Electric/Hakko Electronics product is purchased. Please consult your local supplier or Fuji Electric/Hakko Electronics for details.

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Operating system and performance guarantee

The X1 series is equipped with Microsoft’s Windows 10 IoT Enterprise 2019 LTSC. Fuji Electric/Hakko Electronics shall not be held responsible for any damages resulting from problems caused by Microsoft products. For problems and specifications of Microsoft products, refer to Microsoft’s user manual or contact Microsoft support in your country.

You can operate your own Windows applications on the X1 series. However, we will not guarantee the performance of applications installed by the customer. Please use them after verifying the performance.
Safety Considerations

- For safe operation, read the instruction manual or user manual that comes with the product carefully or consult the distributor from which you purchased the product, before using the product.
- Products introduced in this catalog have not been designed or manufactured for such applications in a system or equipment that will affect human bodies or lives.
- Customers, who want to use the products introduced in this catalog for special systems or devices such as for atomic-energy control, aerospace use, medical use, passenger vehicle, and traffic control, are requested to consult the Hakko Overseas Sales Section.
- Customers are requested to prepare safety measures when they apply the products introduced in this catalog to such systems or facilities that will affect human lives or cause severe damage to property if the products become faulty.
- For safe operation, wiring should be conducted only by qualified engineers who have sufficient technical knowledge about electrical work or wiring.

Notes to consider before purchasing

- Appearance and specifications are subject to modification without prior notice due to technical improvements.
- Colors in the catalog may differ from the actual colors due to printing inaccuracies.
- Consult your distributor or us for further information about products in this catalog.

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