

All-in-one touchscreen interface and logic controller

FT1A Touch



The FT1A SmartAXIS Touch combines operator interface and control in a single compact package, all programmable with IDEC's PC-based software. The FT1A Touch is available in 12 I/O and 14 I/O configurations with analog I/O expansion capability suitable for advanced analog monitoring and control.

KEY FEATURES

- 3.8" HMI+PLC
- Models with 12 or 14 I/O
- Embedded RJ45 Ethernet Port
- Modbus TCP or RTU
- Built-in 2 analog inputs
- Built-in 2 analog outputs
- Optional Analog Cartridges
- PID Controls
- USB Maintenance Port
- Seamless interface with other PLCs
- Class 1 Div. 2 Hazardous Locations
- -20 to 55 degree C operating temp.
- IP66f, Nema 4X (indoor), 13



General Specifications

| Part No. | FT1A-*12RA-* | FT1A-*14KA-* / FT1A-*14SA-* |
|--|---|--|
| Output | Relay output | Transistor output |
| Rated Power Voltage/ Power Supply Isolation | 24V DC/Not isolated | |
| Allowable Voltage Range | 20.4 to 28.8V DC (including ripple) | |
| Power Consumption | 9.2 W maximum | 11W maximum |
| Allowable Momentary Power Interruption | 10 ms maximum | |
| Dielectric Strength | Between power terminal and FE terminal: 500V AC, 5 mA, 1 minute Between power terminal and output terminal: 2,300V AC, 5 mA, 1 minute | Between power terminal and FE terminal: 500V AC, 5 mA, 1 minute Between power terminal and output terminal: 500V AC, 5 mA, 1 minute |
| EMC Immunity | IEC/EN 61131-2:2007 compliant | |
| Inrush Current | 50A maximum (5ms maximum) | |
| Operating Temperature | Color display: -20 to +55°C, Monochrome display: 0 to +55°C (Note 1) (Note 2) | |
| Storage Temperature | -20 to +60°C (no freezing) | |
| Relative Humidity | 10 to 95% RH (no condensation) | |
| Pollution Degree | 2 (IEC 60664-1) | |
| Corrosion Immunity | Atmosphere free from corrosive gases | |
| Degree of Protection | IP66F TYPE 4X TYPE 13 (Panel front) (Note 3), IP20 (Rear) | |
| Ground | Functional grounding | |
| Protective grounding conductor | UL1007 AWG16 | |
| Vibration Resistance | 5 to 8.4 Hz half amplitude 3.5 mm, 8.4 to 150 Hz, acceleration 9.8 m/s ² (1G), 2 hours per axis on each of three mutually perpendicular axis (IEC 61131-2) | |
| Shock Resistance | 147 m/s ² , 11 ms, X, Y, Z directions 3 times (IEC 61131-2) | |
| Mounting Structure | Panel mount | |
| Weight (approx.) | 300g | 250g |

Note 1: FT1A-*12RA-* hardware version V130 (indicated on hardware) and earlier is UL, c-UL listed at 50°C (maximum operating temperature).

Note 2: See SmartAXIS Touch User's Manual FT9Y-B1390(2) for I/O derating.

Note 3: Operation not guaranteed when used with certain types of oils.

Function Specifications

| Part Number | | FT1A-*12RA-* | FT1A-*14KA-* | FT1A-*14SA-* | |
|---------------------------------------|--|--|---|--------------|--|
| Control System | | Stored program system | | | |
| Ladder Program | Instruction Words | Basic Instructions | 42 types | | |
| | | Advanced Instructions | 98 types | 99 types | |
| | Program Capacity | | Program size: 47.4 kB, Configuration memory capacity: 5 MB | | |
| | Processing Time | Basic Instruction | 1850μs/1,000 steps | | |
| END Processing | | 5 msec minimum | | | |
| FBD | FB | | 37 types | | |
| | Program Capacity | | Program size: 38kB, Configuration memory capacity: 5MB | | |
| | No. of FB | FB (Note 1) | 1,000 | | |
| | | Timer (T) | 200 | | |
| | | Counter (C) | 200 | | |
| Processing Time | Basic Instruction | 4ms/100 | | | |
| | END Processing | 5ms minimum | | | |
| User Program Storage | | Flash ROM (100,000 times) | | | |
| I/O Points | Inputs | 8 (V3.90 or above: 90 max. can be added with remote I/O master function) | 8 (90 max. can be added with remote I/O master function) | | |
| | Outputs | 4 (V3.90 or above: 54 max. can be added with remote I/O master function) | 4 (54 max. can be added with remote I/O master function) | | |
| Analog Input | | 2 (V3.90 or above: 24 max. can be added with remote I/O master function) | 2 (4 max. can be added with analog cartridge, and 24 max. can be added with remote master function) | | |
| Analog Output | | — | 2 (4 max. can be added with analog cartridge) | | |
| Internal Relays | | 1,024 | | | |
| Shift Registers | | 128 | | | |
| Data Registers | | 2000 | | | |
| Special Data Registers | | 200 | | | |
| Counters | | 200 | | | |
| Timer (1ms, 10 ms, 100 ms, 1s) | | 200 | | | |
| Clock | | Precision: ±30 seconds/month (25°C, typical) | | | |
| RAM Backup | Backup Data | Internal relays, shift registers, counters, data registers, clock data | | | |
| | Backup Duration | Approximately 30 days (typical) at 25°C after backup battery is fully charged | | | |
| | Battery | Lithium secondary battery | | | |
| | Charging Time | Approximately 15 hours required to charge from 0 to 90% | | | |
| | Replaceability | Not possible | | | |
| Self-Diagnostic Functions | | Keep data check, power failure check, watchdog timer check, timer/counter preset value change error check, user program syntax check, user program execution check | | | |
| Input Filter | | No filter, 3 to 15 ms (selectable in increments of 1 ms) | | | |
| Catch Input/Interrupt Input | | 4/4 | | | |
| High-speed Counter | Maximum Counting Frequency and Points | Single/two-phase selectable | 1 (5 kHz, multiple 2/4, single-phase cannot be used) | | |
| | | Single-phase | 4 (x 10 kHz) | | |
| | Counting Range | | 0 to 4,294,967,295 (32 bits) | | |
| | Operation Mode | | Rotary encoder mode and adding counter mode | | |
| Analog Voltage Inputs | Built-in Points | | 2 | | |
| | Input Range | 0 to 10V DC | 0 to 10V DC (voltage input) / 4 to 20 mA (current input) | | |
| | Input Impedance | 78 kΩ | 78 kΩ (voltage input) / 250 Ω (current input) | | |
| | Digital Resolution | 0 to 1,000 (10 bits) | | | |
| Number of Relay Outputs | | 10A relay: 4 | | | |
| Number of Transistor Outputs | | — | 4 (sink) | 4 (source) | |
| Analog Output | Built-in Points | | 2 | | |
| | Output Range | | — | | |
| | Output Range | | 0 to 10V DC (voltage output) / 4 to 20 mA (current output) | | |
| | Digital Resolution | | — | | |
| USB-mini B (Note 2) | | × | | | |
| USB-A (Note 2) | | × | | | |
| RS232C (Note 2) | | × | | | |
| RS485/422 (Note 2) | | × | | | |
| Ethernet | | × | | | |
| Expansion Communication Ports | Port 2 | — | | | |
| | Port 3 | — | | | |
| Memory Cartridge | | — | | | |
| SD Memory Card | | — | | | |
| Analog Cartridge Interface | Number of Ports | — | 2 | | |
| | Connectable Cards | — | 4 (FC6A-PJ2A, FC6A-PK2AV, FC6A-PK2AW, FC6A-PJ2CP) | | |

Note 1: Except for timer, counter, input FB, and output FB.

Note 2: Not isolated from internal circuits.

Display Specifications

| Part No. | Touch | |
|-------------------------|--|--|
| Display Element | TFT color LCD | STN monochrome LCD |
| Colors/Shades | 65,536 colors | Monochrome 8 shades |
| Effective Display Area | 88.92 W x 37.05 H mm | 87.59 W x 35.49 H mm |
| Display Resolution | 240 W x 100 H pixels | |
| View Angle | Left/right 40°, top 20°, bottom 60° | Left/right/top/bottom: 45° |
| Contrast Adjustment | Not possible | 32 levels |
| Backlight | LED | LED (white, red, pink) |
| Backlight Life | 50,000 hours (Note 1) | |
| Brightness | 400 cd/m ² (Note 2) | 740 cd/m ² (Note 2) |
| Brightness Adjustment | 32 levels | |
| Backlight Control | Auto off function | |
| Backlight Replacement | Not possible | |
| Display Character Size | 1/4 Size | 8 x 8 pixels [JIS 8-bit code, ISO 8859-1 (Western European languages), ANSI 1250 (central Europe)], ANSI 1257 (Baltic), ANSI 1251 (Cyrillic) |
| | 1/2 Size | 8 x 16 pixels [JIS 8-bit code, ISO 8859-1 (Western European languages), ANSI 1250 (central Europe)], ANSI 1257 (Baltic), ANSI 1251 (Cyrillic) |
| | | 16 x 32 pixels, 24 x 48 pixels, 32 x 64 pixels (Western European languages: ISO 8859-1) |
| | Full Size | 16 x 16 pixels (Japanese JIS first and second level characters, simplified Chinese, traditional Chinese, Korean) |
| | Double Size | 32 x 32 pixels (Japanese JIS first level characters, Mincho font) |
| No. of Characters | 1/4 Size | 30 characters x 12 lines/screen |
| | 1/2 Size | 30 characters x 6 lines/screen |
| | Full Size | 15 characters x 6 lines/screen |
| | Double Size | 7 characters x 3 lines/screen |
| Character Magnification | 0.5x, 1x, 2x, 3x, 4x, 5x, 6x, 7x, 8x vertically and horizontally | |
| Character Attributes | Blink, reverse, bold, shadowed (blink is 1 sec or 0.5 sec) | |
| Graphics | Line, polyline, polygon, rectangle, circle, ellipse, arc, pie, equilateral polygons (3, 4, 5, 6, 8), fill, picture | |
| Window Display | 3 popup screens + 1 system screen | |

Note 1: The backlight life refers to the time until the brightness reduces by half after use at 25°C.

Note 2: Brightness of LCD only (monochrome LCD: when lit white).

Operation Specifications

| Part No. | Touch |
|----------------------|---|
| Switching Element | Analog resistive membrane (touch panel) |
| Operating Force | 0.2 to 2.5N |
| Mechanical Life | 1 million operations |
| Acknowledgment Sound | Electric Buzzer |
| Multiple Press | Not possible |

HMI Function Specifications

| | |
|-----------|---|
| Functions | Drawings, bit button, word button, goto screen button, key button, multi-button, keypad, selector switch, potentiometer, numerical input, character input, pilot lamp, picture display, message display, message switching display, alarm list display, alarm log display, numerical display, bar chart, line chart, pie chart, meter, calendar, bit write command, word write command, goto screen command, timer, script command, multi-command, system area, start time, Auto Backlight OFF, O/I Link, user communication, maintenance communication, DM Link Communication, PLC Link Communication (Note 1), alarm log, data log, operation log, data storage area, preventive maintenance, recipe, text group, global script, user account, project data transfer using external memory, downloading logged data in external memory, USB auto-run function |
|-----------|---|

Note 1: The up-to-date information on the connectable PLC can be obtained from <http://www.idec.com/language>.

Input Specifications

| Part Number | | *12RA-* | *14KA-* | *14SA-* | |
|-----------------------------|---------------------------------------|---|---|---|--|
| Digital Input | Input Points | 6 | | | |
| | Input Type | Sink | Source | Sink | |
| | Input Voltage Range | 0 to 28.8V DC | | | |
| | Rated Input Current | 4.4 mA | 5.2 mA | 4.4 mA | |
| | Input Impedance | 5.5 k Ω | 4.7 k Ω | 5.5 k Ω | |
| | Input Delay Time | OFF \rightarrow ON | 2.5 μ s + soft filter setting | | |
| | | ON \rightarrow OFF | 5 μ s + soft filter setting | | |
| | Isolation | Between input terminals | Not isolated | | |
| | | Internal circuit | Not isolated | | |
| | Input Type | Type 1 (IEC 61131-2) | | | |
| | External Load for I/O Interconnection | | Not needed | | |
| | Operating Level | OFF voltage | Sink type: 5V DC max. Source type: 15V DC min. | | |
| | | ON voltage | Sink type: 15V DC min. Source type: 5V DC max. | | |
| | | OFF current | Sink type: 0.9 mA max. Source type: -1.0 mA min. | | |
| ON current | | Sink type: 2.7 mA min. Source type: -3.0 mA max. | | | |
| Analog Input | Input Points | 2 | | | |
| | Input Type | Voltage input | Voltage/Current input | | |
| | Input Range | 0 to 10.0 VDC | 0 to 10.0 VDC / 4 to 20 mA | | |
| | Sampling Duration Time | | 2 ms maximum | | |
| | Total Input System Transfer Time | | 3 ms + sampling time + scan time | 3 ms + sampling time + scan time (voltage input) 12 ms + sampling time + scan time (current input) | |
| | Digital Resolution | | 0 to 1,000 (10 bits) | | |
| | Input Error | 25°C | \pm 3% of full scale | | |
| | | Total | \pm 5% of full scale | | |
| | Isolation | Between input terminals | Not isolated | | |
| | | Internal circuit | Not isolated | | |
| | When used as digital input | Digital I/O | Type 1 (not conforming to IEC 61131-2 digital I/O type) | | |
| | | Operation Level | OFF voltage: 5V maximum | | |
| | | | ON voltage: 15V minimum | | |
| | | | OFF current: 0.06 mA maximum | | |
| ON current: 0.20 mA minimum | | | | | |
| External Power for Input | Input Voltage Range | — | | | |
| | Output Current Capacity | — | | | |

Output Specifications

| Part Number | | | *12RA-* | *14KA-* | *14SA-* |
|--------------------------|--|--|--|---|---------|
| Transistor Output | Output Points | Transistor Sink Output | — | 4 | — |
| | | Transistor Source Output | | — | 4 |
| | Rated Load Voltage | | | 24V DC | |
| | Input Voltage Range | | | 20.4 to 28.8V DC | |
| | Maximum Load Current | 1 point | | 0.3A maximum | |
| | | 1 common | | 1A maximum | |
| | Voltage Drop (ON Voltage) | | | 1V maximum (voltage between COM and output terminals when output is ON) | |
| | Inrush Current | | | 1A | |
| | Leakage Current | | | 0.1 mA maximum | |
| | Clamping Voltage | | | 39V ± 1V | |
| | Maximum Lamp Load | | | 8 W maximum | |
| | Inductive Load | | | L/R = 10 ms (28.8V DC, 1 Hz) | |
| | External Current Draw | | | 100 mA maximum, 24V DC | |
| | Isolation | Between output terminal and internal circuit | | Photocoupler isolated | |
| Between output terminals | | Not isolated | | | |
| Output Delay | OFF ON | 100µS max. | | | |
| | ON OFF | 200µS max. | | | |
| Relay Output Common | Electrical Life | | 100,000 operations minimum (resistive load 1,800 operations/h) | — | — |
| | Mechanical Life | | 20 million operations minimum (no load 18,000 operations/h) | — | — |
| | Dielectric Strength | Between output terminal and internal circuit | 2,300V AC, 1 minute | — | — |
| | | Between output terminals (between COMs) | 2,300V AC, 1 minute | — | — |
| Analog Output | Output Points | | 2 | | |
| | Analog Output Signal Type | | Voltage/Current output (Selectable) | | |
| | Analog Output Range | | 0 to 10V DC / 4 to 20mA | | |
| | Load Impedance | | 2kΩ min (voltage input) / 500 Ω max (current input) | | |
| | Applicable Load Type | | Resistive Load | | |
| | Maximum Deviation at 25°C | | ±0.3% of full scale | | |
| | Temperature Coefficient | | ±0.02%/°C of full scale | | |
| | Repeatability After Stabilization Time | | ±0.4% of full scale | | |
| | Non-linearity | | ±0.01% of full scale | | |
| | Output Ripple | | 30mV max. (spike noise not included) | | |
| | Overshoot | | 0% (Note 2) | | |
| | Total Error | | ±1.0% of full scale including ripple | | |
| | Effect of Improper Output Connection | | No damage | | |
| | Digital Resolution | | 0 to 1,000 (10 bits) | | |
| | Output Value of LSB | | 10mV (0-10V) / 16µA (4-20mA) | | |
| Monotonicity | | Yes | | | |
| Current loop open | | Not detectable | | | |

Note 1: High-speed output terminal (100 kHz pulse output terminal): 5 µs max. Normal output terminal (including 5kHz pulse output terminal): 100 µs max.

Note 2: Overshoot may occur under light load conditions. Overshoot can be suppressed by inserting a damping resistor. Damping resistor value: approx. 150Ω including the input impedance.

Analog Expansion Cartridge Specifications (FC6A-P)

Specifications

| Part No. | FC6A-PJ2A | FC6A-PJ2CP | FC6A-PK2AV | FC6A-PK2AW |
|------------------------|--------------------------------------|-------------------|--------------------------|---------------------------|
| Type | Voltage/Current Input | Temperature Input | Voltage Output | Current Output |
| Number of Input/Output | 2 | 2 | 2 | 2 |
| Rated Voltage | 5.0V, 3.3V (supplied from the Touch) | | | |
| Consumption Current | 5.0V: – 3.3V: 30mA | | 5.0V: 70mA 3.3V: 30mA | 5.0V: 185mA 3.3V: 30mA |
| Weight | 15g | | | |

Output Specifications

| Part Number | FC6A-PK2AV | FC6A-PK2AW |
|--|---|-------------------------|
| Type | Voltage Output | Current Output |
| Output Type | Voltage Output | 0 to 10V DC |
| | Current Output | — |
| Load | Impedance | 2kΩ min. |
| | Load Type | Resistance Load |
| D/A Conversion | Cycle Time | 20ms |
| | Settling Time | 40ms max. |
| | Total Output System Transfer Type | 60ms+1 scan |
| Output error | Maximum Error at 25°C | ±0.3% of full scale |
| | Temperature Coefficient | ±0.02%/°C of full scale |
| | Reproducibility after Stabilization Time | ±0.4% of full scale |
| | Non-linearity | ±0.01% of full scale |
| | Output Ripple | 30mV max. |
| | Overshoot | 0% |
| | Maximum Error | ±1.0% of full scale |
| | Effect of Improper Output Terminal Connection | No damage |
| Data | Digital Resolution | 4096 (12 bits) |
| | LSB Output Value | 2.44mV (0 to 10V) |
| | Data Format in Application | 0 to 4095 (0 to 10V) |
| | Monotonicity | Yes |
| | Open Current Loop | — |
| Noise Resistance | Maximum Temporary Deviation during Electrical Noise Tests | ±4.0 of full scale |
| | Recommended Cable | Shielded twisted pair |
| | Crosstalk | 1 LSB max. |
| Isolation | None | |
| Calibration to Maintain Rated Accuracy | Impossible | |
| Selection of Output Signal Type | Voltage output only | Current output only |

Applicable Wire

| Cartridge Part No. | FC6A-PJ2A | FC6A-PJ2CP | FC6A-PK2AV | FC6A-PK2AW |
|--------------------|--------------------------------------|-----------------------------|--------------------------------------|------------|
| Applicable Wire | 0.3mm2 (AWG22) shielded twisted pair | 0.3mm2 (AWG22) twisted pair | 0.3mm2 (AWG22) shielded twisted pair | |

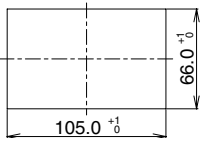
Input Specifications

| Part No. | FC6A-PJ2A | | FC6A-PJ2CP | | |
|---|---|---|--|---|--|
| Input Type | Voltage Input | Current Input | Resistance Thermometer | Thermocouple | |
| Input Range | 0 to 10V DC | 4 to 20mA DC 0 to 20mA DC | Pt100: -200 to +850°C Pt1000: -200 to +600°C Ni100: -60 to +180°C Ni1000: -60 to +180°C 3-wire RTD | K: -200 to 1300°C J: -200 to 1000°C R: 0 to 1760°C S: 0 to 1760°C B: 0 to 1820°C E: -200 to 800°C T: -200 to 400°C N: -200 to 1300°C C: 0 to 2315°C | |
| Input Impedance | 1MΩ min. | 250Ω max. | 1MΩ min. | | |
| Allowable Conductor Resistance | — | | 10Ω max. | — | |
| Input Detection Current | — | | Typ: 0.2mA, 1.0mA max. | — | |
| AD Conversion | Sample Duration Time | 10ms | | 250ms | |
| | Sample Interval | 20ms | | 500ms | |
| | Total Input System Transfer Time | 20ms + 1 scan | | 500ms + 1 scan | |
| | Type of Input | Single-ended input | | | |
| | Operating Mode | Self-scan | | | |
| Conversion Method | SAR | | | | |
| Input Error | Maximum Error at 25°C | ±0.1% of full scale | ±0.1% of full scale | ±0.1% of full scale Cold junction compensation accuracy ±4.0°C or less Exceptions R, S thermocouple error: ±6.0°C (0 to 200 °C range only) B thermocouple error: Not guaranteed (0 to 300 °C range only) K, J, E, T, N thermocouple error: ±0.4% of full scale (0°C or lower range only) | |
| | Temperature Coefficient | ±0.02%/°C of full scale | | | |
| | Reproducibility After Stabilization Time | ±0.5% of full scale | | | |
| | Non-linearity | ±0.01% of full scale | | | |
| | Maximum Error | ±1.0% of full scale | | | |
| Data | Digital Resolution | 4096 (12 bits) | Pt100: 10,500 (14 bits) Pt1000: 8000 (13 bits) Ni100: 2400 (12 bits) Ni1000: 2400 (12 bits) | K: 15,000 (14 bits) J: 12,000 (14 bits) R: 17,600 (15 bits) S: 17,600 (15 bits) B: 18,200 (15 bits) E: 10,000 (14 bits) T: 6,000 (13 bits) N: 15,000 (14 bits) C: 23,150 (15 bits) | |
| | LSB Input Value | 2.44mV (0 to 10V DC) | 4.88μA (DC0 to 20mA) 3.91μA (DC4 to 20mA) | 0.1°C 0.18°F | |
| | Data Format in Application | Can be arbitrarily set for each channel in the range of -32,768 to 32,773 | | | |
| | Monotonicity | Yes | | | |
| Noise Resistance | Maximum Temporary Deviation during Electrical Noise Tests | ±4.0% of full scale | | | |
| | Recommended Cable | Shielded twisted pair | Twisted pair | | |
| | Crosstalk | 1LSB max. | | | |
| Isolation | None | | | | |
| Effect When Input is Incorrectly Wired | No damage | | | | |
| Maximum Allowable Constant Load (non-destructive) | 13V DC | 40mA | 13V DC | | |
| Input Type Modification | Software programming | | | | |
| Calibration to Maintain Rated Accuracy | Impossible | | | | |

Mounting Hole Layout

FT1A-*12RA-*

FT1A-*14*A-*



Note: Waterproof characteristic may not be obtained depending on the panel material and size.

LCD Active Area

| LCD Type | X | Y |
|----------|-------|-------|
| TFT | 88.92 | 37.05 |
| STN | 87.59 | 35.49 |

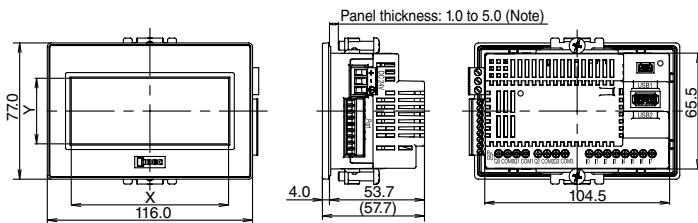
All dimensions in mm.

Dimensions

Relay Output Model (FT1A-12RA-*)

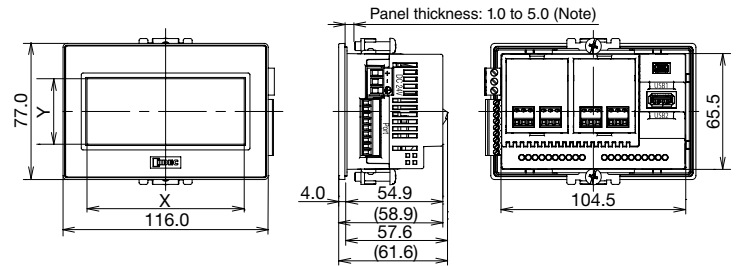
When using mounting bracket (HG9Z-4K2PN04)

All dimensions in mm.

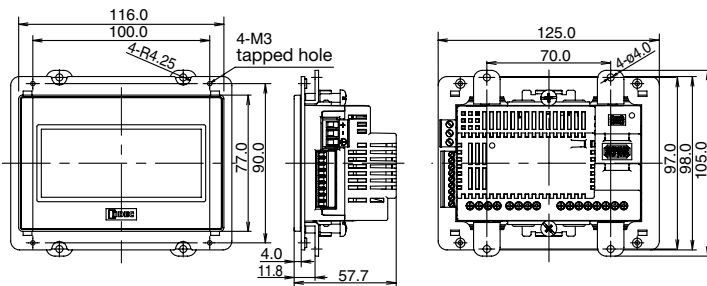


Transistor Output Model (FT1A-14KA-* / FT1A-14SA-*)

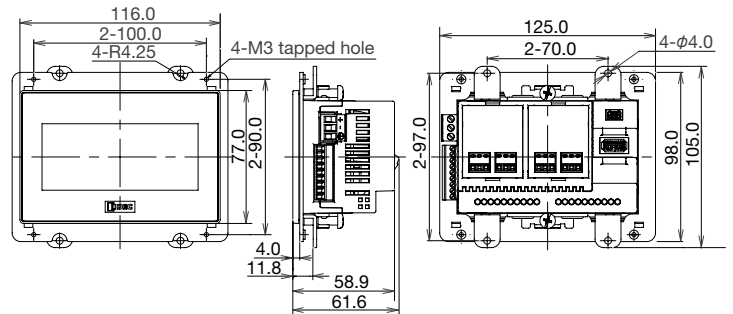
When using mounting bracket (HG9Z-4K2PN04)



When using rear mount adapter (FT9Z-1A01)



When using rear mount adapter (FT9Z-1A01)

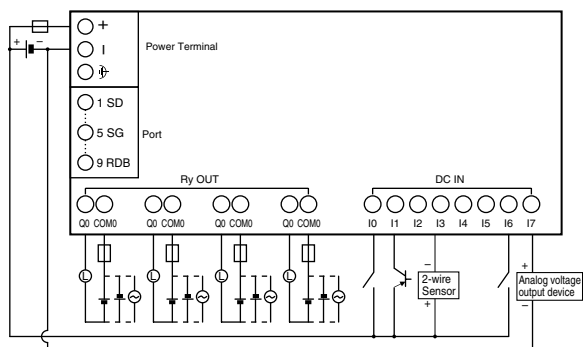


Terminal Arrangement and I/O Wiring Diagram Examples

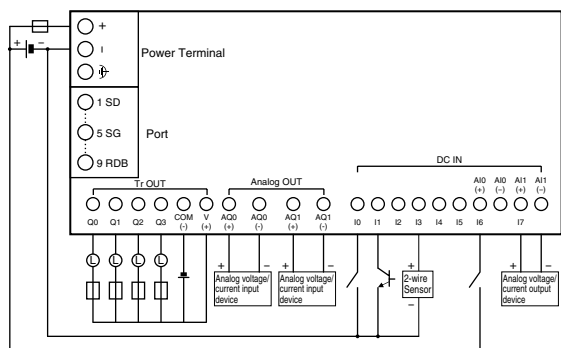
Touch (Display Model)

FT1A-*12RA-*

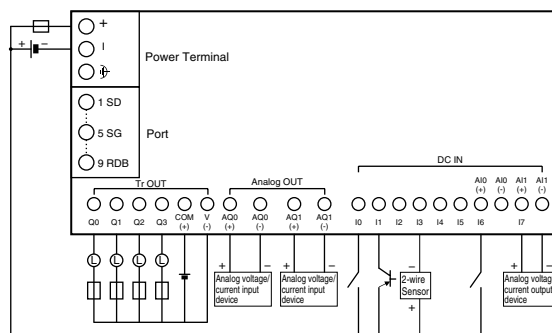
For terminal arrangement and I/O wiring diagram, see User's Manual.



FT1A-*14KA-*



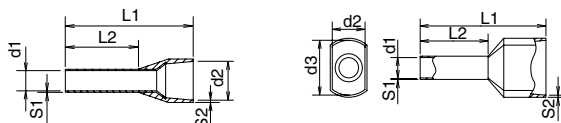
FT1A-*14SA-*



Recommended Ferrules for Touch/Pro/Lite Terminals

For 1-wire connection

For 2-wire connection



| | Cross Section (mm ²) | AWG | Phoenix Contact Part No. | Touch | | | | Pro/Lite | | L1 | L2 | d1 | S1 | d2 | d3 | S2 |
|-------------------|----------------------------------|------------|--------------------------|--------------|------------------|------------------------|-----------------------------|--------------|------|------|------|------|-----|-----|------|----|
| | | | | Power Supply | Serial Interface | I/O Relay Output Model | I/O Transistor Output Model | Power Supply | I/O | | | | | | | |
| 1-wire connection | 0.25 | 24 | AI0.25-8YE | | | — | | × | 12.5 | 8.0 | 0.8 | 0.15 | 1.8 | | 0.25 | |
| | 0.34 | 22 | AI0.34-8TQ | × | × | × | × | | 12.5 | 8.0 | 0.8 | 0.15 | 2.0 | | 0.25 | |
| | 0.5 | 20 | AI0.5-8WH | × | × | × | × | — | 14.0 | 8.0 | 1.1 | 0.15 | 2.5 | | 0.25 | |
| | 0.75 | 18 | AI0.75-8GY | × | | × | | | 14.0 | 8.0 | 1.3 | 0.15 | 2.8 | | 0.25 | |
| | 1.0 | | AI1-8RD | × | | — | | × | 14.0 | 8.0 | 1.5 | 0.15 | 3.0 | — | 0.3 | |
| | | | AI1-10RD | — | — | × | — | — | 16.0 | 10.0 | 1.5 | 0.15 | 3.0 | | 0.3 | |
| | 1.5 | 16 | AI1.5-8BK | × | | — | | × | 14.0 | 8.0 | 1.8 | 0.15 | 3.4 | | 0.3 | |
| | | AI1.5-10BK | — | | × | | — | 18.0 | 10.0 | 1.8 | 0.15 | 3.4 | | 0.3 | | |
| 2-wire connection | 0.5 | 20 | AI-TWIN2×0.5-8WH | × | × | — | × | — | 15.0 | 8.0 | 1.5 | 0.15 | 2.5 | 4.6 | 0.25 | |
| | 0.75 | 18 | AI-TWIN2×0.75-8GY | × | — | — | — | × | 15.0 | 8.0 | 1.8 | 0.15 | 2.8 | 5.2 | 0.25 | |
| | | | AI-TWIN2×0.75-10GY | — | — | × | — | — | 17.0 | 10.0 | 1.8 | 0.15 | 2.8 | 5.2 | 0.25 | |
| Screwdriver | | | SZS 0.6×3.5 | × | — | × | — | × | | | | | | | | |
| | | | SZS 0.4×2.5 | — | × | — | × | — | | | | | | | | |

Note: Crimping pliers - Phoenix Contact part number CRIMPFOX ZA3 (12101882)

