

I/O Interface Specifications

A1 **A2** **B+**

Input

	Type A1/A2	Type B+
Rated Voltage	DC24V	DC24V
Max. Allowable Voltage	DC24V	DC24V
Input Type	Sink/Source	Source/Sink input
Rated Current	5mA (24V)	5.7mA (24V)
Input Resistance	4.7k Ω	4.7k Ω
Standby	ON voltage: 2V or more, OFF voltage: 2V or less	ON voltage: 15V or more, OFF voltage: 15V or less
Operating Range	ON \rightarrow ON: 10ms or less, OFF \rightarrow OFF: 10ms or less	ON \rightarrow ON: 1.5ms or less, OFF \rightarrow OFF: 1.5ms or less
Input Delay	ON \rightarrow OFF: 10ms or less	ON \rightarrow OFF: 1.5ms or less
Common		
Common Structure	16 points / 1 common line	16 points / 1 common line
External Connection	40-pin connector (also used for output)	40-pin connector (also used for input)
Input Points	16	16
Input Signal Indication	LED lights for each point (ON/digital side)	Photocoupler indicator
Isolation Method	Photocoupler isolation	Photocoupler isolation
External Power Supply	For Signal: DC24V	

Output

	Type A1/A2	Type B+
Rated Voltage	DC24V	DC24V
Rated Voltage Range	DC24V \pm 15%	DC24V \pm 15%
Output Type	Type A1: Sink output, Type A2: Source output	Sink output
Max. Load Current	0.3A/point, 1.6A/common	0.3A/point, 1.6A/common
Output Voltage Drop	2.5V or less	1.2V or less
Output Delay	OFF \rightarrow ON: 2ms or less, ON \rightarrow OFF: 2ms or less	OFF \rightarrow ON: 1ms or less, ON \rightarrow OFF: 1ms or less
Leakage Current when OFF	0.4mA or less	0.1mA or less
Output Classification	Transmission output	Transmission output
Common		
Common Structure	16 points / 1 common line	16 points / 1 common line
External Connection	40-pin connector (also used for input)	40-pin connector (also used for input)
Output Protection Classification	No protection	No protection
Internal Fuse	3.5A 125V chip fuse (not replaceable)	3.5A 125V chip fuse (not replaceable)
Surge Suppression Circuit	Diode	Diode
Output Points	16	16
Output Signal Indication	LED lights for each point (ON/digital side)	Photocoupler indicator
Isolation Method	Photocoupler isolation	Photocoupler isolation
External Power Supply	DC24V	

I/O Interface Connector Specifications, I/O Circuit Diagrams

The sink/source type DIO integrates 16 input/output points into a compact unit. The Type A1/A2/B+ LT supports up to 16-point inputs and 16-point outputs, ideal for connecting peripheral I/O devices.

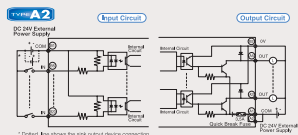
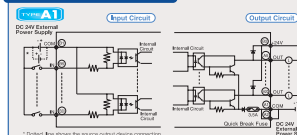
I/O Connectors (Type A1/B+: Sink Output)

Pin	Signal	Pin	Signal
A1	COM (DC24V)	B1	COM (DC24V)
A2	COM (DC24V)	B2	COM (DC24V)
A3	NC	B3	NC
A4	DOU116	B4	DOU116
A5	DOU114	B5	DOU114
A6	DOU113	B6	DOU113
A7	DOU112	B7	DOU112
A8	DOU111	B8	DOU111
A9	DOU110	B9	DOU110
A10	DOU109	B10	DOU109
A11	DOU108	B11	DOU108
A12	DOU107	B12	DOU107
A13	DOU106	B13	DOU106
A14	DOU105	B14	DOU105
A15	DOU104	B15	DOU104
A16	DOU103	B16	DOU103
A17	DOU102	B17	DOU102
A18	DOU101	B18	DOU101
A19	DOU100	B19	DOU100
A20	DOU099	B20	DOU099

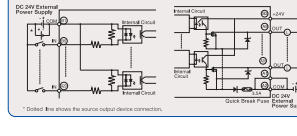
I/O Connectors (Type A2: Source Output)

Pin	Signal	Pin	Signal
A1	COM (DC24V)	B1	COM (DC24V)
A2	COM (DC24V)	B2	COM (DC24V)
A3	NC	B3	NC
A4	DOU116	B4	DOU116
A5	DOU114	B5	DOU114
A6	DOU113	B6	DOU113
A7	DOU112	B7	DOU112
A8	DOU111	B8	DOU111
A9	DOU110	B9	DOU110
A10	DOU109	B10	DOU109
A11	DOU108	B11	DOU108
A12	DOU107	B12	DOU107
A13	DOU106	B13	DOU106
A14	DOU105	B14	DOU105
A15	DOU104	B15	DOU104
A16	DOU103	B16	DOU103
A17	DOU102	B17	DOU102
A18	DOU101	B18	DOU101
A19	DOU100	B19	DOU100
A20	DOU099	B20	DOU099

I/O Circuit Diagram



Power Supply



DIO Connector

Connection Method	Model Name	
Subsidiary*	GLC100-90C0003	
*Set includes FCN-361J045-AU (connector) and FCN-360C004-B (cover)		
Manufacturer	Type	Connector
Fujitsu Takemura Components	Sidder type	FCN-361J045-AU (Connector) FCN-360C004-B (Cover)
	Crimp type	FCN-360J045 (Connector) FCN-360C004-B (Cover)
	Press-fit type	FCN-362J045JUF (Connector)

Remote I/O (Flex Network) Specifications

B+ **C**

This IF unit's high-speed remote I/O (8Mbps/12Mbps) is so fast, you won't think you are using a remote connection. Up to 1000 I/O points can be connected, with a communication delay of only 0.94ms (for 512 points at 12Mbps). The network can be extended up to 400 meters (2 channels at 6Mbps).

Communication Configuration	1: N
Connection Method	Multi-Drpp Connection
Max. Distance	200m/channel at 6Mbps, 100m/channel at 12Mbps
Communication Method	During cyclic period, distributed transmission, full duplex
Communication Speed	6Mbps/12Mbps (selectable)
Communication IF	Differential Method, pulse transfer resistance
Error Check	Format, bit, or CRC-12 verification
Max. Number of Nodes	63 (max.), 1024 I/O points (depending on type of units used.)

I/F Connector

Pin No.	Condition	Signal Name
6	Channel 2 shield line	SLD
5	Channel 2 communication data	TR-
4	Channel 2 communication data	TR+
3	Channel 1 shield line	SLD
2	Channel 1 communication data	TR-
1	Channel 1 communication data	TR+

Serial I/F (SIO) Specifications

C

Serial I/F	Asynchronous, RS-232C/RS-422, data length: 7 or 8 bits, stop bit: 1 or 2 bits, parity: none, Transmission rate: 2400bps to 115.2kbps
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Recommended Connector: D-sub 25-pin plug XM2A-2501 (Omron)
Recommended Cover: D-sub 25-pin cover XM2S-2511 (Omron)
 Jack Screw XM2Z-0071 (Omron)
 * Use M2.6 x 0.45 coarse thread screws to mount.
Recommended Cable: CO-MA-VV-S2SP-28AWG (Hitachi Cable Ltd)

Refer to the GP-PRO/PB II External Device Connection Manual (included with this GP-PRO/PB II C-Package) for external controller connection information, or visit our website.

I/O Connector Specifications

Pin	Code	Signal Name	Front View
1	FG	Frame Ground	
2	SD	Send Data (RS-232C)	
3	RD	Receive Data (RS-232C)	
4	RB	Request Send (RS-232C)	
6	NC	No Connection	
7	SG	Signal Ground	
8	CD	Carrier Detect (RS-232C)	
9	TRM	Termination (RS-422)	
10	RDA	Receive Data A (RS-422)	
11	SDA	Send Data A (RS-422)	
12*	RESERVE	Reserved	
13*	RESERVE	Reserved	
14	VCC	5V 25% Output (RS-422)	
15	SSB	Send Data B (RS-422)	
16	RDB	Receive Data B (RS-422)	
17*	NC	No Connection	
18	CSB	Clear Send B (RS-422)	
19	ERB	Enable Receive B (RS-422)	
20	ER	Enable Receive (RS-232C)	
21	CSA	Clear Send A (RS-422)	
22	ERA	Enable Receive A (RS-422)	
23	NC	No Connection	
24	NC	No Connection	
25	NC	No Connection	

*Pins 12 and 13 are reserved and are not available for connection.

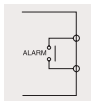
Common I/F Specifications

A1 **A2** **B+** **C** **H1** **H2**

Alarm Output

Contact Rating	AC125V at 0.15A (resistive load), DC24V at 0.6A (resistive load)
Set Time (at 20°C)	4ms or less
Reset Time (at 20°C)	4ms or less
Min. Switching Load	1mA/DC5V
Initial Contact Resistance	100m Ω or less

When the LT unit's power is turned ON, the Alarm Output is turned OFF for approximately 1 second. Be sure to design your circuits to interguard at 1 second Alarm Output stop after the LT unit's power is turned ON.



Tool Connector

Tool Connector	Asynchronous, TTL level non-procedural command I/O During Screen File Development: Connect data transfer cable for transferring data from GP-PRO/PB II C-Package. During Operation: Connect a variety of devices including a bar-code reader.
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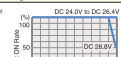
I/O Interface Specifications



Input

Item	Specification
Rated Voltage	DC 24V
Max. Allowable Voltage	DC 26.5V
Input Method	Source/Sink Input
Rated Current	5 mA (DC Input) (Max. 10 mA) 5 mA (DC Input) (Other Input)
Input Impedance	Approx. 2 kΩ (DC Input) (Max. 10 kΩ) Approx. 4.7 kΩ (Other Input)
Input Sensitivity	ON Voltage: DC 15V or more OFF Voltage: DC 5V or less
Operation Range	ON to OFF: 0.5 to 20 ms or less ¹⁾ OFF to ON: 0.5 to 20 ms or less ²⁾
Input Delay Time	0.5 to 20 ms or less ²⁾
Common Lines	1 each
Common Line Allocation	8 potential common lines
Input Point	16
Input Signal Display	LED lights when each point turns ON (Input only)
Isolation Method	Photo-coupler Isolation
Isolation	None
External Power Supply	For Input: DC 24V

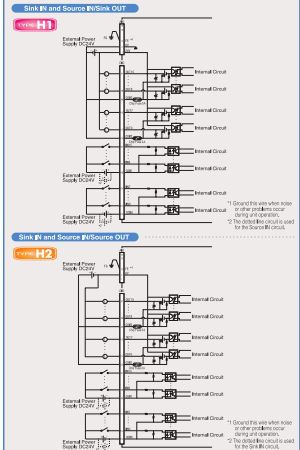
¹⁾ Exceeding the LT unit's input rated voltage may affect the input. (On voltage, off voltage, or ambient operating temperature).
²⁾ On voltage, off voltage, or ambient operating temperature. Resistor load carrying will be limited by the resistor load. To prevent unit malfunction, 100 Ω resistor can be used as a minimum of 10 ms.



Output

Item	LC Low Current (OUT1 to OUT7) / HC High Current (OUT8 to OUT16)
Rated Voltage	DC 24V
Rated Voltage Range	DC 20.0V to DC 26.5V
Output Method	Type HT Sink Output
Output Point	Type HC Source Output
Maximum Load Current	0.2 A (LC) / 0.5 A (HC) / 0.5 A (LC) / 2 A (HC)
Output Voltage Drop	0.5V or less
Output Delay Time	OFF to ON: 0.5 ms or less, ON to OFF: 0.5 ms or less
Current Leakage (when OFF)	0.1 mA or less
Type of Output	Transistor Output
Common Lines	1 each
Common Design	3 potential common lines
Output Point	16 (8 potential common lines)
Output Protection Type	Output is unprotected
Internal Fuse	2A Chip Fuse (non-reloadable) / 2A Chip Fuse (non-reloadable)
Surge Control Circuit	Over-Current Protection
Output Signal Display	LED lights when each point turns ON (Input only)
Isolation Method	Photo-coupler Isolation
External Power Supply	For Output: AC 100V

I/O Circuit Connection



DIO Connector

Pin No.	Signal Name	Pin No.	Signal Name	Pin Assignments
A1	OUT10	B1	IN10	
A2	OUT11	B2	IN11	
A3	OUT12	B3	IN12	
A4	OUT13	B4	IN13	
A5	OUT14	B5	IN14	
A6	OUT15	B6	IN15	
A7	OUT16	B7	IN16	
A8	OUT17	B8	IN17	
A9	COM10	B9	COM10	
A10	OUT18	B10	IN18	
A11	OUT19	B11	IN19 (CT1)	
A12	OUT20	B12	IN20	
A13	OUT21	B13	IN21 (CT2)	
A14	OUT22 (PULSE PWM)	B14	IN22	
A15	OUT23 (PULSE PWM)	B15	IN23 (CT3)	
A16	OUT24 (PULSE PWM)	B16	IN24	
A17	OUT25 (PULSE PWM)	B17	IN25 (CT5)	
A18	COM11	B18	COM11	

Using GP-PROFIB (3-Portage 03), you can set the standard DIO for use as high-speed counter input. (Refer to the manual.)
¹⁾ Pulse-modified signal names (Indicates when Pulse output (PLS), PWM output (PWM), or Counter Input (CT) are used.)
²⁾ CT1, CT2, CT3, CT4, CT5 are used as a pair (CT1 to PLS, PLS, PWM to PWM).
³⁾ The terminals for DIO power supply are located on the analog input/output connector.

About COM

Pin No.	Signal Name	Function
B10	COM10	Input Common (for IN10 to IN18) and Output Common (for OUT10 to OUT18)
B9	COM9	Input Common (for IN9) and Output Common (for OUT9)
A18	COM12	Output Common (for OUT19 to OUT25)
A9	COM3	Output Common (for OUT10 to OUT18)

High-Speed Counter Input

Item	Specification
Counter Input ¹⁾	DC 24V (Open Collector)
Counter Input Points	3 phase (One point) CT1 (IN1), CT2 (IN2), CT3 (IN3) are used as a pair (CT1 to PLS, PLS, PWM to PWM).
Input Voltage	ON Voltage: DC 15V or more / OFF Voltage: DC 5V or less
Input Impedance	Approx. 2 kΩ
Minimum Pulse Width (Pulse Input)	10 ns or more
Calculated Speed (Rise and Fall Time)	1 to 10 μs or less (100ps)
Phase	3 phase
Max. Count Frequency	100ps
Count Edge Assignment	Available
Count Register	16-bit Up/Down Counter
Counter Mode Switch	Depending on terminal settings
Upper/Lower Limit Setting	Not available
Photo-coupler Isolation	Not available
Reset Input (Counter Value Reset)	None

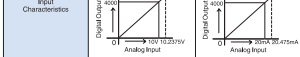
¹⁾ Select one from the types listed.

Analog Input/Output



Input

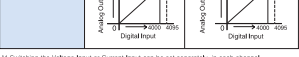
Item	Specifications
No. of Input Channels	8 Channels
Input Range	0V to 10V (0.25V/step max.) ¹⁾
Resolution	12 Bit (0.4096V/step max.) (at 20.475V/step) 10 Bit (0.4096V/step max.) (at 20.475V/step)
Linearity	±1.5% (at 10V/step) (DC to 50°C) ±1LSB max.
Input Impedance	100 kΩ
Input Delay Time	Scan time + 20 ms + Input Channel(s)
Power Supply	DC24V External Power Supply
Insulation	Each channel: Internal Isolation Between each channel: No Isolation Each channel: Analog Power: Insulation



¹⁾ Switching the Voltage Input or Current Input can be set separately, in each channel.

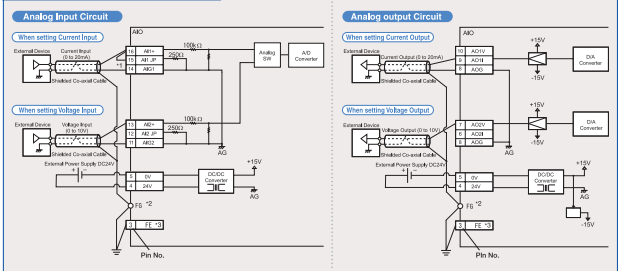
Output

Item	Specifications
No. of Output Channels	AN: 1 Channel ADP: 2 Channels ADT: 2 Channels
Output Range	AN: 0V to 10V (0.25V/step max.) ¹⁾ ADP: 0V to 10V (0.25V/step max.) ¹⁾ ADT: 0V to 10V (0.25V/step max.) ¹⁾
Resolution	AN: 12 Bit (0.4096V/step max.) (at 20.475V/step) ADP: 10 Bit (0.4096V/step max.) (at 20.475V/step) ADT: 10 Bit (0.4096V/step max.) (at 20.475V/step)
Linearity	±1.5% (at 10V/step) (DC to 50°C) ±1LSB max.
Input Impedance	100 kΩ or more
Power Supply	DC24V External Power Supply
Insulation	Each channel: Internal Isolation Between each channel: No Isolation Each Analog Power Channel: Insulation
Output Characteristics	Output Voltage vs Output Current



¹⁾ Switching the Voltage Input or Current Input can be set separately, in each channel.

Analog I/O Circuit Connection



¹⁾ When the Current Input is selected, ground AF and AF'.
²⁾ Connect to the FG terminal in the main unit, or connect directly to frame ground (FG).
³⁾ Ground this wire when noise or other problems occur during unit operation.

Input/Output Connector¹⁾

Pin No.	Signal Name	Condition	Pin Assignments ²⁾
1	24V	DC Power 24V	
2	0V	DC Power 0V	
3	0V	Terminal for Expansion Ground ³⁾	
4	24V	Analog Power 24V	
5	0V	Analog Power 0V	
6	AD10	AD Analog Output (Current)	
7	AD0V	AD Analog Output (Voltage)	
8	AD0V	AD Analog Output (Ground)	
9	AD18	AD Analog Output (Current)	
10	AD0V	AD Analog Output (Ground)	
11	AN0V	Analog Input Ground	
12	AN0V	CH2 Analog Input	
13	AN0V	CH2 Analog Input	
14	AN0V	Analog Input Ground	
15	AN0V	CH1 Analog Input	
16	AN0V	CH1 Analog Input	

¹⁾ A connector terminal block is included with the unit, and is also available separately as an alternative option.
²⁾ Recommended Connector and Wire.
³⁾ It is recommended to use a terminal block type connector (Wakum-Block). Terminal block screw fastening torque: 0.3 to 0.4 N·m.
 Maximum wire size: 1.6mm (0.064in) (Applicable to UL 1015 or UL 1007 Wire strip length: 4.5 to 6.0 mm (0.18 to 0.24 in).
⁴⁾ Ground this wire when noise or other problems occur during unit operation.

Temperature Input

H1 ADP/ADT H2 ADP/ADT

Pt100 Input

Item	Specifications
Supported Resistance Temperature Sensor	Pt100
Measurable Temperature Range	Celsius: -50°C to +400°C Fahrenheit: -58°F to +752°F
Accuracy	±1.0% (Pt 100, Pt 500)
No. of Input Channels	1 Channel
Temp. Conversion Data ¹⁾	Celsius: -50 to +400 Fahrenheit: -58 to +752
External Wiring Length	Each Channel: 50m max.
Conversion Time	Approx. 50ms (at frequency 1 Hz to 64 Hz)
Insulation	Channel - Channel: No insulation
Input Part - Internal Part	Photocoupler Insulated
Insulation Resistance	Power for analog (DC24V) 1st side and 2nd side (AC200V): 10 ¹⁰ Ω min.
Additional Function	Linearization function
Error Detection	Temperature conversion data when exceeding measured temperature range Exceeding the upper limit: 32767 (Exceeding the lower limit: -32768)
Disconnected Processing	Temperature conversion data is 32767 3-digits method
Wiring	Cable: 2C 2W (Shielded FT)
Input Characteristics	

¹⁾ Temperature conversion data is indicated as the measured value ±1.0.
²⁾ Except for delay time, depending on the LT unit's scan time.

Thermocouple Input

Item	Specifications
Supported Resistance Temperature Sensor	Thermocouple (J,K Type)
Measurable Temperature Range	J Type Celsius: -100°C to +700°C Fahrenheit: -148°F to +1292°F K Type Celsius: -100°C to +1000°C Fahrenheit: -148°F to +1812°F
Accuracy	±1.0% (Pt 100, Pt 500)
Number of Input Channels	1 Channel
Temperature Conversion Data ¹⁾	J Type Celsius: -100 to +700 Fahrenheit: -148 to +1292 K Type Celsius: -100 to +1000 Fahrenheit: -148 to +1812
External Wiring Length	Each Channel: 50m max. (by compensating conductor)
Conversion Time	Approx. 100ms (at frequency 1 Hz to 64 Hz) ²⁾
Insulation	Channel - Channel: No insulation
Input Part - Internal Part	Photocoupler Insulated
Insulation Resistance	Power for analog (DC24V) 1st side and 2nd side (AC200V): 10 ¹⁰ Ω min.
Additional Function	Linearization function
Error Detection	Temperature conversion data when exceeding measured temperature range Exceeding the upper limit: 32767 (Exceeding the lower limit: -32768)
Disconnected Processing	Temperature conversion data is 32767 3-digits method
Wiring	Cable: 2C 2W (Shielded FT)
Input Characteristics	

¹⁾ Temperature conversion data is indicated as the measured value ±1.0.
²⁾ Except for delay time, depending on the LT unit's scan time.

Temperature Input Connector¹⁾ (Type H*ADP)

Pin No.	Terminal Name	Condition	Pin Assignments ²⁾
1	FT1	Pt100 Input CH1	1
2	FT1B	Pt100 Input CH1	2
3	FT1B	Pt100 Input CH2	3
4	FT1A	Pt100 Input CH2	4
5	FT1B	Pt100 Input CH2	5
6	FT1B	Pt100 Input CH2	6

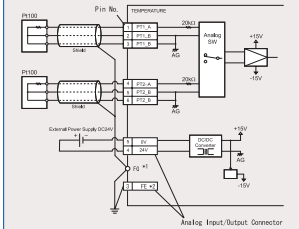
¹⁾ A connector terminal block is included with the unit, and is also available separately as a replacement option.
²⁾ Applicable connector: Hirose Co. BLS356U (6-terminal screw-locks, Max. connectable wire size: 1.6 mm (AWG#14))

Temperature Input Connector¹⁾ (Type H*ADT)

Pin No.	Terminal Name	Condition	Pin Assignments ²⁾
1	TC1	Thermocouple Input CH1	1
2	TC1	Thermocouple Input CH1	2
3	TC1A	Thermocouple Input CH2	3
4	TC1	Thermocouple Input CH2	4
5	TC1	Thermocouple Input CH2	5
6	TC1	Thermocouple Input CH2	6

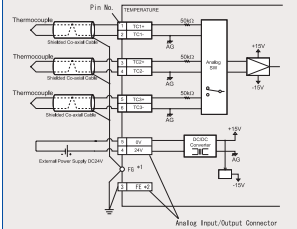
¹⁾ A connector terminal block is included with the unit, and is also available separately as a replacement option.
²⁾ Applicable connector: Hirose Co. BLS356U (6-terminal screw-locks, Max. connectable wire size: 1.6 mm (AWG#14))

Pt100 Input Circuit Connection



¹⁾ Connect to the FG terminal in the main unit, or connect directly to frame ground (FG).
²⁾ Shielded three wires when noise or other problems occur during unit operation.

Thermocouple Input Circuit Connection



¹⁾ Connect to the FG terminal in the main unit, or connect directly to frame ground (FG).
²⁾ Shielded three wires when noise or other problems occur during unit operation.

Important:
 • When extending the Pt100 input wire, make sure that the three conductors have exactly the same resistance and length. Do not route the wire near high-voltage, high-current, high-frequency cables (such as those for inverters) or power cables. Also, do not bundle it with any of these cables. Place them in separate wiring ducts.
 • Pt100 input uses three conductors to eliminate wiring resistance and provide consistently precise measurement.
 • When wiring external power to the Analog Input connector, connect 24V to No. 4 pin, and 0V to No. 5 pin.

Important:
 • Do not use thermocouple input wiring near high-voltage, high-current, high-frequency cables (such as those for inverters) or power cables. Also, do not bundle it with any of these cables. Place them in separate wiring ducts.
 • When using thermocouple input, use the specified (J type, K type) compensating lead wire. Because long compensating lead wires are subject to noise, the length should be kept as short as possible.
 • Make sure the compensating lead wire is connected with the correct polarity. If the polarity is reversed, temperature measurements will be incorrect.
 • There is no insulation between thermocouple channels. Use insulated (non-grounded) thermocouples.
 • When wiring external power to the Analog Input connector, connect 24V to No. 4 pin, and 0V to No. 5 pin.

Connectable Controllers

Temperature Controllers¹⁾

Manufacturer	Series Name	Model
Yokogawa M&C	UT100	UT150
		UT152
		UT155
	UT200	UT200-1
		UT200-2
		UT200-3
	GREEN SERIES	UT580-1
		UT580-2
		UT580-3
		UT580-4
Yamatake SDC	SDC30	
	SDC30, SDC31	
	SDC48A, SDC48B	
DMC	DMC10	
	DMC10-Z-1021H1	
CB	CB400-Z-1021H1	
	CB200-Z-1021H1	
	CB700-Z-1021H1	
SR-Mini	SR-Mini	SRM100-1
		SRM100-2
		SRM100-3
		SRM100-4
		SRM100-5
		SRM100-6
		SRM100-7
		SRM100-8
		SRM100-9
		SRM100-10
SR-Mini HG	SR-Mini HG	SRM100-11
		SRM100-12
		SRM100-13
		SRM100-14
		SRM100-15
		SRM100-16
		SRM100-17
		SRM100-18
		SRM100-19
		SRM100-20
SRX	SRX	SRX100-1
		SRX100-2
		SRX100-3
		SRX100-4
		SRX100-5
		SRX100-6
		SRX100-7
		SRX100-8
		SRX100-9
		SRX100-10
REX-F	REX-F	REX-F100-1
		REX-F100-2
		REX-F100-3
		REX-F100-4
		REX-F100-5
		REX-F100-6
		REX-F100-7
		REX-F100-8
		REX-F100-9
		REX-F100-10
RAC Instrument	RAC Instrument	LE100
		SRV
		MA500
		HA900
		HA400
		HA400
		HA400
		HA400
		HA400
		HA400
OMRON	E5CJ	E5CJ1
		E5CJ2
		E5CJ3
		E5CJ4
		E5CJ5
		E5CJ6
		E5CJ7
		E5CJ8
		E5CJ9
		E5CJ10
OMRON	E5CJ	E5CJ11
		E5CJ12
		E5CJ13
		E5CJ14
		E5CJ15
		E5CJ16
		E5CJ17
		E5CJ18
		E5CJ19
		E5CJ20
OMRON	E5CJ	E5CJ21
		E5CJ22
		E5CJ23
		E5CJ24
		E5CJ25
		E5CJ26
		E5CJ27
		E5CJ28
		E5CJ29
		E5CJ30
OMRON	E5CJ	E5CJ31
		E5CJ32
		E5CJ33
		E5CJ34
		E5CJ35
		E5CJ36
		E5CJ37
		E5CJ38
		E5CJ39
		E5CJ40
OMRON	E5CJ	E5CJ41
		E5CJ42
		E5CJ43
		E5CJ44
		E5CJ45
		E5CJ46
		E5CJ47
		E5CJ48
		E5CJ49
		E5CJ50
OMRON	E5CJ	E5CJ51
		E5CJ52
		E5CJ53
		E5CJ54
		E5CJ55
		E5CJ56
		E5CJ57
		E5CJ58
		E5CJ59
		E5CJ60
OMRON	E5CJ	E5CJ61
		E5CJ62
		E5CJ63
		E5CJ64
		E5CJ65
		E5CJ66
		E5CJ67
		E5CJ68
		E5CJ69
		E5CJ70
OMRON	E5CJ	E5CJ71
		E5CJ72
		E5CJ73
		E5CJ74
		E5CJ75
		E5CJ76
		E5CJ77
		E5CJ78
		E5CJ79
		E5CJ80
OMRON	E5CJ	E5CJ81
		E5CJ82
		E5CJ83
		E5CJ84
		E5CJ85
		E5CJ86
		E5CJ87
		E5CJ88
		E5CJ89
		E5CJ90
OMRON	E5CJ	E5CJ91
		E5CJ92
		E5CJ93
		E5CJ94
		E5CJ95
		E5CJ96
		E5CJ97
		E5CJ98
		E5CJ99
		E5CJ100
OMRON	E5CJ	E5CJ101
		E5CJ102
		E5CJ103
		E5CJ104
		E5CJ105
		E5CJ106
		E5CJ107
		E5CJ108
		E5CJ109
		E5CJ110
OMRON	E5CJ	E5CJ111
		E5CJ112
		E5CJ113
		E5CJ114
		E5CJ115
		E5CJ116
		E5CJ117
		E5CJ118
		E5CJ119
		E5CJ120
OMRON	E5CJ	E5CJ121
		E5CJ122
		E5CJ123
		E5CJ124
		E5CJ125
		E5CJ126
		E5CJ127
		E5CJ128
		E5CJ129
		E5CJ130
OMRON	E5CJ	E5CJ131
		E5CJ132
		E5CJ133
		E5CJ134
		E5CJ135
		E5CJ136
		E5CJ137
		E5CJ138
		E5CJ139
		E5CJ140
OMRON	E5CJ	E5CJ141
		E5CJ142
		E5CJ143
		E5CJ144
		E5CJ145
		E5CJ146
		E5CJ147
		E5CJ148
		E5CJ149
		E5CJ150
OMRON	E5CJ	E5CJ151
		E5CJ152
		E5CJ153
		E5CJ154
		E5CJ155
		E5CJ156
		E5CJ157
		E5CJ158
		E5CJ159
		E5CJ160
OMRON	E5CJ	E5CJ161
		E5CJ162
		E5CJ163
		E5CJ164
		E5CJ165
		E5CJ166
		E5CJ167
		E5CJ168
		E5CJ169
		E5CJ170
OMRON	E5CJ	E5CJ171
		E5CJ172
		E5CJ173
		E5CJ174
		E5CJ175
		E5CJ176
		E5CJ177
		E5CJ178
		E5CJ179
		E5CJ180
OMRON	E5CJ	E5CJ181
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		E5CJ184
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		E5CJ200
OMRON	E5CJ	E5CJ201
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		E5CJ204
		E5CJ205
		E5CJ206
		E5CJ207
		E5CJ208
		E5CJ209
		E5CJ210
OMRON	E5CJ	E5CJ211
		E5CJ212
		E5CJ213
		E5CJ214
		E5CJ215
		E5CJ216
		E5CJ217
		E5CJ218
		E5CJ219
		E5CJ220
OMRON	E5CJ	E5CJ221
		E5CJ222
		E5CJ223
		E5CJ224
		E5CJ225
		E5CJ226
		E5CJ227
		E5CJ228
		E5CJ229
		E5CJ230
OMRON	E5CJ	E5CJ231
		E5CJ232
		E5CJ233
		E5CJ234
		E5CJ235
		E5CJ236
		E5CJ237
		E5CJ238
		E5CJ239
		E5CJ240
OMRON	E5CJ	E5CJ241
		E5CJ242
		E5CJ243
		E5CJ244
		E5CJ245
		E5CJ246
		E5CJ247
		E5CJ248
		E5CJ249
		E5CJ250
OMRON	E5CJ	E5CJ251
		E5CJ252
		E5CJ253
		E5CJ254
		E5CJ255
		E5CJ256
		E5CJ257
		E5CJ258
		E5CJ259
		E5CJ260
OMRON	E5CJ	E5CJ261
		E5CJ262
		E5CJ263
		E5CJ264
		E5CJ265
		E5CJ266
		E5CJ267
		E5CJ268
		E5CJ269
		E5CJ270
OMRON	E5CJ	E5CJ271
		E5CJ272
		E5CJ273
		E5CJ274
		E5CJ275
		E5CJ276
		E5CJ277
		E5CJ278
		E5CJ279
		E5CJ280
OMRON	E5CJ	E5CJ281
		E5CJ282
		E5CJ283
		E5CJ284
		E5CJ285
		E5CJ286
		E5CJ287
		E5CJ288
		E5CJ289
		E5CJ290
OMRON	E5CJ	E5CJ291
		E5CJ292
		E5CJ293
		E5CJ294
		E5CJ295
		E5CJ296
		E5CJ297
		E5CJ298
		E5CJ299
		E5CJ300
OMRON	E5CJ	E5CJ301
		E5CJ302
		E5CJ303
		E5CJ304
		E5CJ305
		E5CJ306
		E5CJ307
		E5CJ308
		E5CJ309
		E5CJ310
OMRON	E5CJ	E5CJ311
		E5CJ312
		E5CJ313
		E5CJ314
		E5CJ315
		E5CJ316
		E5CJ317
		E5CJ318
		E5CJ319
		E5CJ320
OMRON	E5CJ	E5CJ321
		E5CJ322
		E5CJ323
		E5CJ324
		E5CJ325
		E5CJ326
		E5CJ327
		E5CJ328
		E5CJ329
		E5C

GP-PRO/PBIII C-Package03

Screen Editor and Logic Program Development Software

Easy Screen Creation + Easy Logic Programming

Software that integrates screen creation and logic programming in a single, easy-to-use package. Creates effective GUI screens with easy steps and even provides new users reliable basic programming.

Data previously created with LT Editor can also be used.

Conforms to IEC61131-3 International Standard

The GP-PRO/PBIII C-Package03 logic program conforms to IEC61131-3, the de facto international standard for controller programming languages. As open architecture systems grow in popularity, there is now a strong need to standardize control program development languages.

STEP 1 Set up your logic program

Programming that is as easy as drag & drop!
Form ladder circuits by combining ladder commands from 71 categories. Allows the user to program by simply dragging and dropping.
* Also allows importing of circuits from other files.

Easy for beginning programmers. I/O setting by simple operations.
Just drag & drop the combined variable name to the desired I/O terminal diagram. Even beginning programmers can create structures, easily and with confidence.

STEP 2 Set the logic program and screen

Drag & drop ladder commands onto the screen.
Create a screen with push buttons and meters just by using the mouse to drag & drop logic program ladder commands onto the screen being developed.

STEP 2 Create your screens

Choose from a total of 1,840 pre-made parts.
Simply select the switches, lamps, meters, and other parts you want, and place them as desired on the screen. These full featured, easy-to-use parts make it easy to create the screens you want.

Add original graphics and text.
Use drawing tools to create shapes and lines, and add text with the same ease as a word processor.
* Also allows importing screen content from other files.

STEP 3 Check operations

Easy maintenance, too!
Quickly give remote support! Boost performance!

Before connecting to line equipment, check operations by connecting LT to a personal computer.

STEP 4 Operation

Simply connect to the equipment. You will be able to control the equipment using touch screen operations on LT.

GP-PRO/PBIII C-Package03 Software Environment Specifications

Product No.	PC	Screen Resolution	Hard Disc Space	Memory	Drive Type	OS
GP-PRO-CMT03W-P03	Windows compatible PC with Intel Pentium 1.5GHz or faster	800x600 (800x600 or higher)	Minimum 2GBs * Please be sure that installation will occur in a minimum free space area.	Minimum 2GBs Recommended 64MB or more	CD-ROM Drive	Windows 95/98/2000/XP/Windows VISTA or later (Windows XP & Vista pack 2 & later)

* Requires a COM port or USB port Ethernet port on the PC for transferring screen data.

New Easy-to-use Features

GP-PRO/PBIII C-Package03

Supports Ladder Monitor

Provides control in emergency situations, when you want to see equipment programs on location. Allows LT ladder monitoring on the touch panel without disrupting control or PLC communication and scrolls easily through monitor screens. Variable monitoring (device) and decimal or hexadecimal display are also possible.



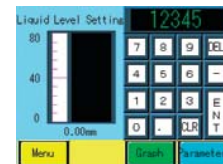
Wide Range of Ladder Commands

Altogether, 71 different ladder commands are available. Easy programming makes GP-PRO/PBIII C-Package03 ideal for a small PLC.

Command extensions	Type
SUM	Sum (Returns total value of input array)
AVE	Average (Returns average value of input array)
RCL	Left Rotation with Carry
RGR	Right Rotation with Carry
SAL	Arithmetic Shift Left
SAR	Arithmetic Shift Right
BCNT	Bit Count
ASIN	Arc sine
ACOS	Arc cosine
ATAN	Arc tangent
COI	Cotangent
EXP	Exponent e(x)-y
LN	Natural logarithm log(x)-y
DEG	Degree Conversion (Radians ->Degrees)
SQRT	Square Root
RAD	Radian Conversion (Degrees ->Radians)

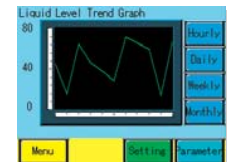
Better Input Functionality with Pop-up Keyboards

When using the touch panel to enter values in a settings display, the pop-up keyboard is launched by simply touching the settings display.



Supports Many Kinds of Graphs

Freely choose among line graphs, pie charts, and other kinds of graphs by simply dragging and dropping from the library. Also supports selection of graph background color, making graphs easier to see and use. In addition, the background color for each part can be adjusted to provide easily recognizable screens.



Improved Alarm History Functions

An "Alarm Acknowledge Time/Recovery Time" display has been added to the information presented during an emergency. History function improvements result in better support during emergencies.

Date	Occur	Alarm Message	Check	Recover
04/04/04	10:00:25	Tank5: Low Level	11:05:46	15:03:02
04/04/04	11:20:30	Subst4: Closed	12:40:22	16:42:21
04/05/04	12:45:30	Tank4: Low Pressure	14:51:32	16:13:41
04/05/04	15:25:34	Mixer4: Stopped	15:40:21	17:23:04

Ladder Logic Instruction List

Class	Type	Inst.	Symbol	Class	Type	Inst.	Symbol	Class	Type	Inst.	Symbol	Class	Type	Inst.	Symbol			
Discrete Instructions	Normally Open	NO		Shift Instructions	Rotate Right	ROR		Comparison Instructions	Greater Than (>)	GT		Convert Instructions	Degree Conversion (Radians ->Degrees)	DEG				
	Normally Closed	NC			Shift Left	SHL			Greater Than or Equal To (>=)	GE			Radian Conversion (Degrees ->Radians)	RAD				
	Positive Transition	PT			Shift Right	SHR			Less Than (<)	LT			sine function	SIN				
	Negative Transition	NT			Left Rotation with Carry	RCL			Less Than or Equal To (<=)	LE			cosine function	COS				
	Output Coil	OUT			Right Rotation with Carry	RCR			Not Equal (≠)	NE			tangent function	TAN				
	Retraction Coil	M			Arithmetic Shift Left	SAL			PIZ Calculation	PIZ			Arc sine	ASIN				
	Negated Coil	NEG			Arithmetic Shift Right	SAR			On Delay Timer	TON			Arc cosine	ACOS				
	Unlatch Coil	RST			Add	ADD			Off Delay Timer	TOF			Arc tangent	ATAN				
	Unlatch Retraction Coil	RM			Subtract	SUB			Timer Pulse	TP			Cotangent	COT				
	Latch Coil	SET			Multiply	MUL			Up Counter	CTU			Exponent	EXP				
Latch Retraction Coil	SM		Divide	DIV		Down Counter	CTD		Natural Logarithm	LN								
Arithmetic Operation Instructions	Logical Multiply	AND		Mathematical Instructions	Residual Processing	MOD		Timer and Counter Instructions	BCD Conversion	BCD		Function Control Instructions	Jump	JMP				
	Bit Negation	NOT			Decrement	DEC			Encode	ENCO			Jump to Subroutine	JSR		Return from Subroutine	RET	
	Logical Add	OR			Increment	INC			Decode	DECO			Repeat	FOR				
	Exclusive Logical Add	XOR			Square Root	SQRT			Binary Conversion	BIN								
	Block Transfer	BMOV			Equal To (=)	EQ												
	File Transfer	FMOV																
	Transfer	MOV																
	Sum	SUM																
	Average	AVE																
	Bit Count	BCNT																
Shift Instructions	Rotate Left	ROL																

Remote I/O (Flex Network) Specifications

Model	FX-16TS41	FX-Y08TS41	FX-Y08RL41	FX-Y16SK41	FX-Y16SC41
	Unit Rated Voltage	DC24V	DC24V	DC24V	DC24V
Allowable Voltage Range	DC20.4V to DC28.8V				
Allowable Voltage Drop	10mA or less (for DC24V power supply)				
Internal Power Consumption	1.5W or less	1.5W or less	1.5W or less	1.5W or less	1.5W or less
Voltage Endurance	AC1500V at 10mA for 1 minute (between power/Output and Output, and FG terminals)				
Insulation Resistance	Above 10MΩ at DC50V (Between power/Output and Output, and FG terminals)				
Operating Temperature	0°C to 55°C				
Storage Temperature	-25°C to +70°C				
Operating Humidity	5% RH to 95% RH (non-condensing) wet bulb temperature: less than 30°C				
Storage Humidity	5% RH to 95% RH (non-condensing) wet bulb temperature: less than 30°C				
Air Purity	0.1mg/m ³ or less (non-conductive levels)				
Pollution Degree	Pollution degree 2				
Corrosive Gases	Free of corrosive gases				
Vibration Resistance	5Hz to 500Hz, 0.05mm/s ² r.m.s. Z direction for 2 hours each				
Noise Immunity (w/ noise simulator)	Noise voltage: 1000Vpp, Pulse Duration: 1μs, Area: time: 1ms				
Electrostatic Discharge Immunity	Contact discharge of 6kV (IEC 61000-4-2 Level 3)				
Installation Method	Using 35mm DIN rail or screws				
Cooling Method	Natural air circulation				
Weight	0.15kg (0.33lb) or less				
External Dimensions	W108mm (4.25in) x H45mm (1.77in) x D48mm (1.90in)				
Rating	IP30 ¹⁾				
Rated Input Voltage	DC24V	DC24V	DC24V	DC24V	DC24V
Max. Input Voltage	DC28.8V	DC28.8V	DC28.8V	DC28.8V	DC28.8V
Input Points	16 points (common for sink/source types)	8 points (common for sink/source types)	8 points (common for sink/source types)	16 points (open drain sink output)	16 points (open drain sink output)
Input Type	Types 1 ¹⁾	Types 1 ¹⁾	Types 1 ¹⁾	Types 1 ¹⁾	Types 1 ¹⁾
Input ON Voltage	DC15V or more	DC15V or more	DC15V or more	DC15V or more	DC15V or more
Input OFF Voltage	DC5V or less	DC5V or less	DC5V or less	DC5V or less	DC5V or less
Input Impedance	4.1kΩ	4.1kΩ	4.1kΩ	4.1kΩ	4.1kΩ
Input Delay	ON - OFF: 1.5ms or less	ON - OFF: 1.5ms or less	ON - OFF: 1.5ms or less	ON - OFF: 1.5ms or less	ON - OFF: 1.5ms or less
Rated Output Voltage (from V _L to V ₁)	—	1.5mA or less	—	—	—
Voltage Range (from V _L to V ₁)	—	—	DC20.4V to DC28.8V	—	—
No. of Output Points	—	8 points (open drain sink output)	8 points (open drain sink output)	16 points (open drain sink output)	16 points (open drain sink output)
Max. Load Voltage	—	0.2Apoint (8 points common, max. common current: 1.6A)	1.0Apoint (8 points common, max. common current: 4.0A)	0.2Apoint (16 points common, max. common current: 3.2A)	0.2Apoint (16 points common, max. common current: 3.2A)
Short-circuit Protection	—	None	None	None	None
Voltage Drop (ON Voltage)	—	DC1.5V or less	—	DC1.5V or less	DC1.5V or less
Surge Voltage	—	DC39V±1V	—	DC39V±1V	DC39V±1V
Leakage Current	—	0.1mA or less	—	0.1mA	0.1mA
Output OFF - ON	—	1ms or less	10ms or less	1ms or less	1ms or less
Output Delay	—	1ms or less	1ms or less	1ms or less	1ms or less
Contact Rating	—	1A at AC240V (resistive load, inductive load)	1A at AC240V (resistive load, inductive load)	—	—
Min. Driving Load	—	1mA/DC24V	—	—	—
Initial Contact Resistance	—	50mΩ or less	—	—	—
Electrical Lifetime	—	100,000 operations or more	—	—	—
Mechanical Lifetime	—	30,000,000 operations or more	—	—	—
Number of Occupied Modules	1				

¹⁾ 1 when terminal is open.
²⁾ Digital input for detecting signal from relay contact points, push buttons, switches or other mechanical contact point devices.

Remote I/O (Flex Network) Specifications



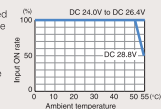
DIO Terminals

Model	FN-X32TS41	FN-XY16SK41	FN-XY16SC41	FN-XY32SK541
Unit Rated Voltage	DC24V			
Allowable Voltage Range	DC20.4V to DC28.8V			
Allowable Voltage Drop	10ms or less (for DC24V power supply)			
Internal Power Consumption	2.5W or less			3.5W or less
Voltage Endurance	AC200V at 10mA for 1 minute (between power input and Output, and FG terminals)			
Insulation Resistance	Above 10MΩ at DC200V (between power input and Output, and FG terminals)			
Operating Temperature	0°C to 55°C			
Storage Temperature	-20°C to +70°C			
Operating Humidity	5% RH to 95% RH (non-condensing) wet bulb temperature: less than 30°C			
Storage Humidity	5% RH to 95% RH (non-condensing) wet bulb temperature: less than 30°C			
Air Purity (Dust)	0.1mg/m ³ or less (non-conductive levels)			
Pollution Degree	Pollution Degree 2			
Corrosive Gases	Free of corrosive gases			
Vibration Resistance	+/-			
Noise Immunity (via noise simulator)	Noise voltage: 1000Vp-p, Pulse Duration: typ. Arise time: 1ms			
Electrostatic Discharge Immunity	Contact discharge: 6kV (IEC 61000-4-2 Level 3)			
Installation Method	Using 30mm DIN rail or screws			
Cooling Method	Natural air circulation			
Weight	300g or less		350g or less	
External Dimensions (W x H x D)	110mm (4.33in) x 95mm (3.74in) x 57mm (2.24in)		135mm (5.31in) x 95mm (3.74in) x 45mm (1.81in)	
Rating	IP20**		IP20 (Without terminal block)	
Rated Input Voltage	DC24V			
Max. Input Voltage	DC28.8V			
No. of Input Points	32 points (common for sink/source types-dual use)	16 points (common for sink/source types-dual use)	16 points (common for sink/source types-dual use)	32 points (common for sink/source types-dual use)
Input Type	Type 1**			
Input ON Voltage	DC15V or more			
Input OFF Voltage	DC5V or less			
Input Impedance	4.2kΩ			
Input OFF - ON Delay	1.5ms or less			
Input ON - OFF Delay	1.5ms or less			
Rated Output Voltage (from V _{cc} to V _e)	DC24V			
Rated Output Voltage Range (from V _{cc} to V _e)	DC20.4V to DC28.8V			
Output Points	16 points (open drain sink output)	16 points (open drain source output)	16 points (open drain sink output)	32 points (open drain sink output)
Max. Load Voltage	0.2A/point (16 points) common, max. common current 1.6A			
Short-circuit Protection	none			
Voltage Drop (ON Voltage)	DC1.5V or less			
Clamp Voltage	DC39V±1V			
Current Leakage	0.1mA or less			
Output OFF - ON Delay (ms)	1ms or less			
Output ON - OFF Delay (ms)	1ms or less			
Number of Occupied Nodes	2	1	1	4

*1: At 20°C, 50% RH (10°C condenser & 60 minutes duration, 10 to 15Hz, 0.05G rms, 57 to 150Hz, 8.9ms). Continuous vibration: 10 to 57Hz, 0.05G rms, 57 to 150Hz, 4.9ms. For 10 to 60 minutes each in X, Y, Z directions.
 ** With terminal block attached.
 † Digital input for detecting signals from mechanical switching devices such as relay contacts, push buttons, switches, etc.

Input derating for the FN-XY32SK541

If this unit is used at a voltage that exceeds the rated input ON voltage, a combination of factors, including the input ON voltage, the number of input points, and the ambient temperature may lead to malfunction due to excessive heat in the input section. To prevent this kind of malfunction, use the table at the right to ensure that the input derating is within the range shown.



* The FN-X32TS41 uses a spring-plate type terminal block.

Analog Units



Model	FN-A04AH11	FN-A04AO11
Unit Rated Voltage	DC24V	
Allowable Voltage Range	DC20.4V to DC28.8V	
Allowable Voltage Drop	10ms or less (for DC24V power supply)	
Internal Power Consumption	4.8W or less	7.2W or less
Voltage Endurance	AC100V 10mA 1 min. (between input/output and FG terminals)	
Insulation Resistance	AC200V 1min. (between power supply and FG terminal)	
Operating Temperature	0°C to 55°C	
Ambient Operating Temperature	0°C to 55°C	
Storage Temperature	-20°C to +70°C	
Ambient Humidity	30% RH to 95% RH (non-condensing) Level RH-1	
Storage Humidity	30% RH to 95% RH (non-condensing) Level RH-1	
Dust	0.1mg/m ³ or less (non-conductive levels)	
Atmosphere	Free of corrosive gases	
Vibration Resistance	+/-	
Noise Immunity (via noise simulator)	Noise voltage: 1000Vp-p, Pulse Duration: 1µs, Arise time: 1µs	
Electrostatic Discharge Immunity	Contact discharge of 6kV (IEC 61000-4-2 Level 3)	
Installation Method	Using 30mm DIN rail or screws	
Cooling Method	Natural air circulation	
Weight	0.35kg (0.77lb) or less	
External Dimensions	W165mm (6.5in) x H60mm (2.4in) x D50mm (1.96in)	
Rating	IP30	
Resolution	12bit	
Output/Input Channels	4 (lines)	
Conversion Time	2ms or less	0 to 5V (impedance 1kΩ)
Input/Output Range	0 to 5V (impedance 1MΩ)	1 to 5V (impedance 1kΩ)
	0 to 10V (impedance 1MΩ)	0 to 10V (impedance 1kΩ)
	-5 to 5V (impedance 1MΩ)	-5 to 5V (impedance 1kΩ)
	-10 to 10V (impedance 1MΩ)	-10 to 10V (impedance 1kΩ)
	0 to 20mA (impedance 250Ω)	0 to 20mA (impedance 400Ω)
4 to 20mA (impedance 200Ω)	4 to 20mA (impedance 400Ω)	
Input/Output Range Switch	Depends on rotary switch settings	
Calibration Function	OFFSET, GAIN Setting (Setting for user limit)	
Accuracy	0.3% / FS (0.3% ± FS/20°C to 55°C)	
Insulation Method	Photocoupler insulation (between input terminals and internal circuits)	
Processing (after conversion)	Simple Average, Running Average, Excludes Max./Min. values, Sample size values	
Conversion Timing	Continual conversion of all channels (not selectable)	
Number of Occupied Nodes	4	

*1: At 20°C, 50% RH (10°C condenser & 60 minutes duration, 10 to 15Hz, 0.05G rms, 57 to 150Hz, 8.9ms). Continuous vibration: 10 to 57Hz, 0.05G rms, 57 to 150Hz, 4.9ms. For 10 to 60 minutes each in X, Y, Z directions, 10 times for 60 minutes.

