General Specifications

GX90XA/GX90XD/GX90YD/
GX90WD/GX90XP/GX90YA
I/O Modules

SMARTDAC+™

GS 04L53B01-01EN

■ OVERVIEW

I/O modules are connected to the GX/GP, Expandable I/O unit, GM main unit, and GM sub unit.

- A module type is seven types, an analog input, a analog output, a digital input, a digital output, a digital input/output and a pluse input PID control*.
  * For the GX90UT PID Control Module, please see GX90UT PID Control Module General Specifications (GS 04L53B01-31EN.)
- Input and output have module structure and it can extend them easily.
- The GX90XA analog input module has the following types; (1) universal type that allows the measurement input for DCV (direct voltage), TC (thermocouple), RTD (resistance temperature detector), and DI (contact or TTL level voltage), (2) current input type with the built-in shunt resistor to directly input a standard signal of 4-20mA DC, (3) electromagnetic relay scanner type insusceptible to noises that allows the measurement input for DCV, TC, and DI, (4) low withstand voltage relay type that offers a low cost, (5) high withstand voltage type that 600 V withstand voltage between input terminal and ground.
  The GX90XA-04-H0 high-speed analog input module can measure DCV (DC voltage), TC (thermocouple), RTD (resistance temperature detector), DI (contact or TTL level voltage) inputs at the shortest interval of 1 ms. It has an A/D converter for each input channel and employs a scannerless method, which is less susceptible to high frequency noise.
  The GX90XA-06-R1 4-wire RTD/resistance input module can receive input from 4-wire RTDs or 4-wire resistors.
  In each system, a measurement input signal can be assigned to each channel.
- The GX90YA analog output module is capable of retransmission output of various types of channels and also manual output. It provides current output with channels that are isolated.
- The GX90XD digital input module, which allows up to 16 digital inputs or pulse inputs, can be used as a multipoint digital input or pluse input. This module can also be used as a remote control input.
- The GX90YD digital output module is assigned as a relay output (contact C) and is used when an alarm activates. It can also be used to turn the output on and off manually using the touch panel.
- The GX90WD digital input/output module provides eight digital inputs or pulse inputs and six relay outputs. When there are small amounts of digital inputs and digital outputs, you do not need to mount two modules. This enables efficient channel configuration.
- GX90XP pulse input module can receive up to 10 pulse inputs. The maximum input frequency is 20 kHz. The module can be used to integrate pulse signals from flowmeters or the like.*
  * Integration requires the math function (/MT option).

- Each module provides a M3 screw terminal and clamp terminal*. Also, the input terminal can be removed and mounted. This enables wiring work to be carried out efficiently.
  * GX90YD and GX90WD are only M3 screw terminal.
- The measuring accuracies noted in the general specifications have a margin of error that takes into account the product's components and the equipment used for adjustment and testing. However, the actual values calculated from the accuracy testing data upon shipment of the instrument from the factory are as follows.

Input Type		Measuring accuracy*1 (typical value*2)
DCV	20 mV	± (0.01% of rdg +5 µV)
	60 mV	± (0.01% of rdg +5 µV)
	6V (1-5V)	± (0.01% of rdg +2 mV)
TC*3	R, S	±1.1°C
	B	±1.5°C
	K (−200.0 to 1370.0°C)	± (0.01% of rdg +0.2°C for 0.0 to 1370.0°C; ± (0.15% of rdg +0.2°C) for -200.0 to 0.0°C
	K (−200.0 to 500.0°C)	±0.2°C for 0.0 to 500.0°C; ± (0.15% of rdg +0.2°C) for -200.0 to 0.0°C
	J	± 0.2°C for 0.0 to 1100.0 °C; ± (0.10% of rdg + 0.2 °C) for -200.0 to 0.0 °C
	T	± 0.2°C for 0.0 to 400.0°C; ± (0.10% of rdg + 0.2 °C) for -200.0 to 0.0 °C
	N	± (0.01% of rdg + 0.2°C) for 0.0 to 1300.0 °C; ± (0.22% of rdg + 0.2°C) for -200.0 to 0.0 °C
RTD	Pt100 (-200.0 to 850.0°C)	± (0.02% of rdg + 0.2°C)
	Pt100 (high resolution) (-150.00 to 150.00°C)	± (0.02% of rdg + 0.16°C)

rdg: Reading value

*1 Applies to GX90XA-10-U2, A/D integration time 16.67 ms or more, General operating conditions: 23±2 ºC, 55±10% RH, supply voltage 90–132, 180–264 V AC, power frequency within 50/60 Hz ±1%, warm-up of 30 minutes or more, no vibrations or other hindrances to performance.

*2 For the measuring accuracy (guaranteed), see page 3 to 4.

*3 These values do not include the reference junction compensation accuracy.

10th Edition April 1, 2020

■ INPUT/OUTPUT MODULE SPECIFICATIONS

ANALOG INPUT MODULE (Model GX90XA or GX/GP main unit options /Uxx0)

GX90XA

The following notations are used to distinguish the various types.

Type Suffix Code	Notation
-U2	Universal
-C1	Current (mA) input
-L1	Low withstand voltage relay
-T1	Electromagnetic relay
-H0	High-speed universal
-R1	4-wire RTD/resistance
-V1	High withstand voltage

- Input Type:

Suffix Code	Input Type	Number of inputs	Description (Type)
-U2	DC voltage, standard signal, thermocouple (TC), resistance temperature detector (RTD), DI (voltage, contact), and DC current (by adding an external shunt resistor)	10	Universal
-C1	DC current (mA), DC current standard signal (4-20 mA)	10	Current (mA) input
-L1	DC voltage, standard signal, thermocouple (TC), DI (voltage, contact), and DC current (by adding an external shunt resistor)	10	Low withstand voltage relay
-T1	DC voltage, standard signal, thermocouple (TC), DI (voltage, contact), and DC current (by adding an external shunt resistor)	10	Electromagnetic relay
-H0	DC voltage, standard signal, thermocouple (TC), resistance temperature detector (RTD), DI (voltage, contact), and DC current (by adding an external shunt resistor)	4*1	High-speed universal
-R1	4-wire RTD, 4-wire resistance	6	4-wire RTD/resistance
-V1	DC voltage, standard signal, thermocouple (TC), DI (voltage, contact), and DC current (by adding an external shunt resistor)	10	High withstand voltage

*1 However, 1 point when the scan interval is 1 ms and 2 points when it is 2 ms.

- Input format: Floating unbalanced, isolation between channels (excluding the b terminal on universal and low withstand voltage relay type)
- Measurement interval: 1, 2, 5, 10, 20, 50, 100 , 200 , 500 ms, 1, 2, 5 s (See the table below.)
  Scan interval by module

Suffix Code	Scan interval											
	1 ms	2 ms	5 ms	10 ms	20 ms	50 ms	100 ms	200 ms	500 ms	1 s	2 s	5 s
-U2	–	–	–	–	–	–	✓	✓	✓	✓	✓	✓
-C1	–	–	–	–	–	–	✓	✓	✓	✓	✓	✓
-L1	–	–	–	–	–	–	–	–	✓	✓	✓	✓
-T1	–	–	–	–	–	–	–	–	–	✓	✓	✓
-H0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
-R1	–	–	–	–	–	–	✓	✓	✓	✓	✓	✓
-V1	–	–	–	–	–	–	✓	✓	✓	✓	✓	✓

- Input range: -5% or more and 105% or less (accuracy is guaranteed in the range from 0% to 100% inclusive)
- Operation mode
  It is possible to switch to a mode that makes measurements by reducing the supply frequency noise.

Suffix Code	Operation mode
-U2	2 ch Only, Low noise mode or 10 ch Normal mode
-C1	2 ch Only, Low noise mode or 10 ch Normal mode
-L1	–
-T1	–
-H0	–
-R1	2 ch Only, Low noise mode or 6 ch Normal mode
-V1	2 ch Only, Low noise mode or 10 ch Normal mode

- Measurement ranges and accuracies[*2] (However, the number of display digits can be increased by scaling.)

*2 The following specifications apply to operation of the recorder under standard operation conditions.
Temperature: 23 ± 2 °C, Humidity: 55% ± 10% RH, Power supply voltage: 90 to 132 or 180 to 264 VAC, Power supply frequency: 50/60 Hz ± 1%, Warm-up time: At least 30 min. Other ambient conditions such as vibration should not adversely affect recorder operation.
Reference junction compensation accuracy is not included for thermocouples.

Universal, Current (mA) input, Low withstand voltage relay, Electromagnetic relay, 4-wire RTD/resister, High withstand voltage type

Input Type	Range	Measurement range	Measurement accuracy (digital display)		Max. resolution of digital display
			A/D integration time: 16.7ms or more [*22]	A/D integration time: 1.67ms [*23]	
DCV	20 mV	-20.000 to 20.000 mV	±(0.05 % of rdg + 12 µV)	±(0.1 % of rdg + 40 µV)	1 µV
	60 mV	-60.00 to 60.00 mV	±(0.05 % of rdg + 0.03 mV)	±(0.1 % of rdg + 0.15 mV)	10 µV
	200 mV	-200.00 to 200.00 mV	±(0.05 % of rdg + 0.03 mV)	±(0.1 % of rdg + 0.4 mV)	10 µV
	1 V	-1.0000 to 1.0000 V	±(0.05 % of rdg + 1.2 mV)	±(0.1 % of rdg + 4 mV)	100 µV
	2 V	-2.0000 to 2.0000 V	±(0.05 % of rdg + 1.2 mV)	±(0.1 % of rdg + 4 mV)	100 µV
	6 V	-6.000 to 6.000 V	±(0.05 % of rdg + 3 mV)	±(0.1 % of rdg + 15 mV)	1 mV
	20 V	-20.000 to 20.000 V	±(0.05 % of rdg + 3 mV)	±(0.1 % of rdg + 40 mV)	1 mV
	50 V	-50.00 to 50.00 V	±(0.05 % of rdg + 0.03 V)	±(0.1 % of rdg + 0.15 V)	10 mV
Standard signal	0.4-2 V	0.3200 to 2.0800 V	±(0.05 % of rdg + 1.2 mV)	±(0.1 % of rdg + 4 mV)	100 µV
	1-5 V	0.800 to 5.200 V	±(0.05 % of rdg + 3 mV)	±(0.1 % of rdg + 15 mV)	1 mV
DC current	0-20 mA	0.000 to 20.000 mA	±(0.3 % of rdg + 5 µA)	±(0.3 % of rdg + 90 µA)	1 µV
DC current (standard signal	4-20 mA	3.200 to 20.800 mA			
TC (Excluding RJC accuracy)	R [*3]	0.0 to 1760.0 °C	±(0.15 % of rdg + 1.0°C) However, R, S; 0.0 to 800.0°C: ±2.2°C, B; 400.0 to 800.0°C: ±3.0°C Accuracy at less than 400.0°C is not guaranteed.	±(0.2 % of rdg + 6.0°C) However, R, S; 0.0 to 800.0°C: ±7.6°C, B; 400.0 to 800.0°C: ±11.0°C Accuracy at less than 400.0°C is not guaranteed.	0.1°C
	S [*3]	0.0 to 1760.0 °C			
	B [*3]	0.0 to 1820.0 °C			
	K [*3]	-270.0 to 1370.0 °C -200.0 to 500.0 °C	±(0.15 % of rdg + 0.7°C) However, -200.0 to 0.0°C: ±(0.35 % of rdg + 0.7°C) Accuracy at less than -200.0°C is not guaranteed	±(0.2 % of rdg + 5.0°C) However, -200.0 to 0.0°C: ±(3 % of rdg + 5.0°C) Accuracy at less than -200.0°C is not guaranteed	0.1°C
	E [*3]	-270.0 to 800.0 °C	±(0.15 % of rdg + 0.5°C) However, -200.0 to 0.0°C: ±(0.35 % of rdg + 0.5°C) Accuracy at less than -200.0°C is not guaranteed	±(0.2 % of rdg + 4.0°C) However, -200.0 to 0.0°C: ±(2 % of rdg + 4.0°C) Accuracy at less than -200.0°C is not guaranteed	0.1°C
	J [*3]	-200.0 to 1100.0 °C			
	T [*3]	-270.0 to 400.0 °C	±(0.15 % of rdg + 0.5°C) However, -200.0 to 0.0°C: ±(0.35 % of rdg + 0.5°C) Accuracy at less than -200.0°C is not guaranteed	±(0.2 % of rdg + 2.5°C) However, -200.0 to 0.0°C: ±(2 % of rdg + 2.5°C) Accuracy at less than -200.0°C is not guaranteed	0.1°C
	N [*3]	-270.0 to 1300.0 °C	±(0.15 % of rdg + 0.7°C) However, -200.0 to 0.0°C: ±(0.7 % of rdg + 0.7°C) Accuracy at less than -200.0°C is not guaranteed	±(0.3 % of rdg + 6.0°C) However, -200.0 to 0.0°C: ±(5 % of rdg + 6.0°C) Accuracy at less than -200.0°C is not guaranteed	0.1°C
	W [*4]	0.0 to 2315.0 °C	±(0.15 % of rdg + 1.5°C)	±(0.3 % of rdg + 14.0°C) However, more than 1000.0°C: ±(0.8 % of rdg + 9.0°C)	0.1°C
	L [*5]	-200.0 to 900.0 °C	±(0.15 % of rdg + 0.5°C) Less than 0.0°C: ±(0.5 % of rdg + 0.5°C)	±(0.2 % of rdg + 4.0°C) Less than 0.0°C: ±(3 % of rdg + 4.0°C)	0.1°C
	U [*5]	-200.0 to 400.0 °C	±(0.15 % of rdg + 0.5°C) Less than 0.0°C: ±(0.7 % of rdg + 0.5°C)	±(0.2 % of rdg + 2.5°C) Less than 0.0°C: ±(3 % of rdg + 2.5°C)	0.1°C
	WRe3-25 [*6]	0.0 to 2320.0 °C	±(0.2 % of rdg + 2.5°C)	±18.0°C More than 2000.0°C: ±0.9 % of rdg	0.1°C
	KpvsAu7Fe [*7]	0.0 to 300.0 K	±(0.15 % of rdg + 2.0 K)	±(0.2 % of rdg + 7.0 K)	0.1 K
	PLATINEL II [*7]	0.0 to 1395.0 °C	±(0.25 % of rdg + 2.3°C)	±(0.25% of rdg + 8.0°C)	0.1°C
	PR20-40 [*8]	0.0 to 1900.0°C	±(0.7 % of rdg + 0.4°C) However, accuracy at less than 800.0°C is not guaranteed.	±20.0°C However, accuracy at less than 800.0°C is not guaranteed.	0.1°C
	NiNiMo [*7]	0.0 to 1310.0°C	±(0.25 % of rdg + 0.7°C)	±(0.5% of rdg + 5.0°C)	0.1°C
	W/WRe26 [*9]	0.0 to 2320.0°C	±(0.2 % of rdg + 2.0°C) However, accuracy at less than 300.0°C is not guaranteed.	±(0.4 % of rdg + 12.0°C) However, accuracy at less than 300.0°C is not guaranteed.	0.1°C
	N(AWG14) [*10]	0.0 to 1300.0°C	±(0.2 % of rdg + 1.3°C)	±(0.5% of rdg + 7.0°C)	0.1°C
	XK GOST [*11]	-200.0 to 600.0°C	±(0.25 % of rdg + 0.8°C)	±(0.5% of rdg + 4.0°C)	0.1°C
RTD (Measured current: 1 mA)	Pt100 [*12]	-200.0 to 850.0°C	±(0.15 % of rdg + 0.3°C)	±(0.3 % of rdg + 1.5°C)	0.1°C
		-150.00 to 150.00°C			0.01°C
	JPt100 [*12]	-200.00 to 550.00°C			0.1°C
		-150.00 to 150.00°C			0.01°C
	Cu10 GE	-200.0 to 300.0°C	±(0.2 % of rdg + 2.0°C) guaranteed range Cu10 GE: -70.0 to 170.0°C Cu10 L&N: -75.0 to 150.0°C Cu10 WEED: -200.0 to 260.0°C Other range: -200.0 to 300.0°C	±(0.4 % of rdg + 6.0°C) guaranteed range Cu10 GE: -70.0 to 170.0°C Cu10 L&N: -75.0 to 150.0°C Cu10 WEED: -200.0 to 260.0°C Other range: -200.0 to 300.0°C	0.1°C
	Cu10 L&N	-200.0 to 300.0°C			
	Cu10 WEED	-200.0 to 300.0°C			
	Cu10 BAILEY	-200.0 to 300.0°C			
	Cu10 at 20°C α=0.00392	-200.0 to 300.0°C			
	Cu10 at 20°C α=0.00393	-200.0 to 300.0°C			
	Cu25 at 0°C α=0.00425	-200.0 to 300.0°C	±(0.3 % of rdg + 0.8°C)	±(0.5 % of rdg + 3.0°C)	0.1°C
	Cu53 at 0°C α=0.00426035	-50.0 to 150.0°C	±(0.15 % of rdg + 0.8°C)	±(0.3 % of rdg + 4.0°C)	0.1°C
	Cu100 at 0°C α=0.00425	-50.0 to 150.0°C	±(0.2 % of rdg + 1.0°C)	±(0.4 % of rdg + 5.0°C)	0.1°C

Continued

Input Type	Range	Measurement range	Measurement accuracy (digital display)		Max. resolution of digital display
			A/D integration time: 16.7ms or more *22	A/D integration time: 1.67ms *23	
RTD (Measured current: 1 mA)	J263B *13	0.0 to 300.0 K	±1.0 K Less than 40.0 K: ±3.0 K	±3.0 K Less than 40.0 K: ±9.0 K	0.1 K
	Ni100 (SAMA)	-200.0 to 250.0°C	±(0.15 % of rdg + 0.4°C)	±(0.3 % of rdg + 2.0°C)	0.1°C
	Ni100 (DIN) *14	-60.0 to 180.0°C			
	Ni120 *15	-70.0 to 200.0°C			
	Pt25 *16	-200.0 to 550.0°C	±(0.15 % of rdg + 0.8°C)	±(0.3 % of rdg + 4.0°C)	0.1°C
	Pt50 *17	-200.0 to 550.0°C	±(0.3 % of rdg + 0.6°C)	±(0.6 % of rdg + 3.0°C)	0.1°C
	Pt200 WEED	-100.0 to 250.0°C	±(0.3 % of rdg + 1.0°C)		
	Cu10 GOST *18	-200.0 to 200.0°C	±(0.2 % of rdg + 2.0°C)	±(0.4 % of rdg + 6.0°C)	0.1°C
	Cu50 GOST *19	-200.0 to 200.0°C	±(0.15 % of rdg + 0.6°C)	±(0.3 % of rdg + 4.0°C)	0.1°C
	Cu100 GOST *20	-200.0 to 200.0°C	±(0.15 % of rdg + 0.3°C)	±(0.3 % of rdg + 1.5°C)	0.1°C
	Pt46 GOST *19	-200.0 to 550.0°C	±(0.3 % of rdg + 0.8°C)	±(0.6 % of rdg + 4.0°C)	0.1°C
	Pt100 GOST *20	-200.0 to 600.0°C	±(0.15 % of rdg + 0.3°C)	±(0.3 % of rdg + 2.0°C)	0.1°C
4-wire RTD (Measured current: 1 mA)	Pt100*12	-200.0 to 850.0°C	±(0.05 % of rdg + 0.3°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
		-150.00 to 150.00°C			0.01°C
	JPt100*12	-200.0 to 550.0°C			0.1°C
		-150.00 to 150.00°C			0.01°C
	Cu10 GE	-200.0 to 300.0°C	±(0.1 % of rdg + 2.0°C) guaranteed range Cu10 GE: -70.0 to 170.0°C Cu10 L&N: -75.0 to 150.0°C Cu10 WEED: -200.0 to 260.0°C Other range: -200.0 to 300.0°C	±(0.2 % of rdg + 5.0°C) guaranteed range Cu10 GE: -70.0 to 170.0°C Cu10 L&N: -75.0 to 150.0°C Cu10 WEED: -200.0 to 260.0°C Other range: -200.0 to 300.0°C	0.1°C
	Cu10 L&N	-200.0 to 300.0°C			
	Cu10 WEED	-200.0 to 300.0°C			
	Cu10 BAILEY	-200.0 to 300.0°C			
	Cu10 at 20°C α =0.00392	-200.0 to 300.0°C			
	Cu10 at 20°C α =0.00393	-200.0 to 300.0°C			
	Cu25 at 0°C α =0.00425	-200.0 to 300.0°C	±(0.1 % of rdg + 0.8°C)	±(0.2 % of rdg + 2.0°C)	0.1°C
	Cu53 at 0°C α =0.00426035	-50.0 to 150.0°C	±(0.05 % of rdg + 0.6°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Cu100 at 0°C α =0.00425	-50.0 to 150.0°C	±(0.05 % of rdg + 0.3°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	J263B*13	0.0 to 300.0K	±0.4 K Less than 40.0 K: ±0.8 K	±1.5 K Less than 40.0 K: ±3.0 K	0.1K
	Ni100 (SAMA)	-200.0 to 250.0°C	±(0.05 % of rdg + 0.3°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Ni100 (DIN)*14	-60.0 to 180.0°C			0.1°C
	Ni120*15	-70.0 to 200.0°C			0.1°C
	Pt25*16	-200.0 to 550.0°C	±(0.1 % of rdg + 0.8°C)	±(0.2 % of rdg + 2.0°C)	0.1°C
	Pt50*17	-200.0 to 550.0°C	±(0.05 % of rdg + 0.6°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Pt200 WEED	-100.0 to 250.0°C	±(0.05 % of rdg + 1.0°C)	±(0.1 % of rdg + 3.0°C)	0.1°C
	Cu10 GOST*18	-200.0 to 200.0°C	±(0.1 % of rdg + 2.0°C)	±(0.2 % of rdg + 5.0°C)	0.1°C
	Cu50 GOST*19	-200.0 to 200.0°C	±(0.05 % of rdg + 0.6°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Cu100 GOST*20	-200.0 to 200.0°C	±(0.05 % of rdg + 0.3°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Pt46 GOST*19	-200.0 to 550.0°C	±(0.05 % of rdg + 0.6°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Pt100 GOST*20	-200.0 to 600.0°C	±(0.05 % of rdg + 0.3°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
4-wire RTD (Measured current: 0.25 mA)	Pt500	-200.0 to 850.0°C	±(0.05 % of rdg + 0.3°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Pt1000	-200.0 to 850.0°C			
Resistance (4-wire)	20 Ω (Measured current: 1 mA)	0.0 to 20.000 Ω	±(0.05 % of rdg + 0.007Ω)	±(0.1 % of rdg + 0.025Ω)	0.001Ω
	200 Ω (Measured current: 1 mA)	0.0 to 200.00 Ω	±(0.05 % of rdg + 0.03Ω)	±(0.1 % of rdg + 0.15Ω)	0.01Ω
	2000 Ω(Measured current: 0.25 mA)	0.0 to 2000.0 Ω	±(0.05 % of rdg + 0.3Ω)	±(0.1 % of rdg + 1.0Ω)	0.1Ω
DI	Level		Threshold level (Vth=2.4 V) Accuracy: ±0.1 V		-
	Contact *21		Less than 1 kΩ: 1(ON), More than 100 kΩ: 0(OFF) (parallel capacitance of 0.01 μF or less)		-

rdg: Reading value

High-speed universal type

Input Type	Range	Measurement range	Measurement accuracy (digital display)		Max. resolution of digital display
			Scan interval: 50 ms or more (Only the Values in [ ] apply when the scan interval is 50/100/200 ms)	Scan interval: 20 ms or less (Only the Values in [ ] apply when the scan interval is 1/2/5 ms)	
DCV	20 mV	-20.000 to 20.000 mV	±(0.05 % of rdg + 5 [12] µV)	±(0.1 % of rdg + 25 [40] µV)	1 µV
	60 mV	-60.00 to 60.00 mV	±(0.05 % of rdg + 0.02 mV)	±(0.1 % of rdg + 0.1 mV)	10 µV
	200 mV	-200.00 to 200.00 mV	±(0.05 % of rdg + 0.02 [0.03] mV)	±(0.1 % of rdg + 0.1 [0.4] mV)	10 µV
	1 V	-1.0000 to 1.0000 V	±(0.05 % of rdg + 0.2 mV)	±(0.1 % of rdg + 1.0 mV)	100 µV
	2 V	-2.0000 to 2.0000 V	±(0.05 % of rdg + 0.5 [1.2] mV)	±(0.1 % of rdg + 1.0 [4.0] mV)	100 µV
	6 V	-6.000 to 6.000 V	±(0.05 % of rdg + 2 mV)	±(0.1 % of rdg + 10 mV)	1 mV
	20 V	-20.000 to 20.000 V	±(0.05 % of rdg + 2 [3] mV)	±(0.1 % of rdg + 10 [40] mV)	1 mV
	50 V	-50.00 to 50.00 V	±(0.05 % of rdg + 0.02 V)	±(0.1 % of rdg + 0.10 V)	10 mV
	100 V	-100.00 to 100.00 V	±(0.05 % of rdg + 0.02 V)	±(0.1 % of rdg + 0.10 V)	10 mV
Standard signal	0.4-2 V	0.3200 to 2.0800 V	±(0.05 % of rdg + 0.5 [1.2] mV)	±(0.1 % of rdg + 1.0 [4.0] mV)	100 µV
	1-5 V	0.800 to 5.200 V	±(0.05 % of rdg + 2 mV)	±(0.1 % of rdg + 10 mV)	1 mV
TC (Excluding RJC accuracy)	R *3	0.0 to 1760.0 °C	±(0.05 % of rdg + 1.0°C) However, R, S; 0.0 to 800.0°C: ±1.4°C, B; 400.0 to 800.0°C: ±1.5 [3.0] °C Accuracy at less than 400.0°C is not guaranteed.	±(0.1 % of rdg + 4.0 [6.0]°C) However, R, S; 0.0 to 800.0°C: ±4.8 [7.6] °C, B; 400.0 to 800.0°C: ±7.0 [11.0]°C Accuracy at less than 400.0°C is not guaranteed.	0.1°C
	S *3	0.0 to 1760.0 °C			
	B *3	0.0 to 1820.0 °C			
	K *3	-270.0 to 1370.0 °C -200.0 to 500.0 °C	±(0.05 % of rdg + 0.7°C) However, -200.0 to 0.0°C: ±(0.2 % of rdg + 0.7°C) Accuracy at less than -200.0°C is not guaranteed	±(0.1 % of rdg + 3.5°C) However, -200.0 to 0.0°C: ±(2 % of rdg + 3.5°C) Accuracy at less than -200.0°C is not guaranteed	0.1°C
	E *3	-270.0 to 800.0 °C	±(0.05 % of rdg + 0.5°C) However, -200.0 to 0.0°C: ±(0.2 % of rdg + 0.5°C) Accuracy at less than -200.0°C is not guaranteed	±(0.1 % of rdg + 2.5°C) However, -200.0 to 0.0°C: ±(2 % of rdg + 2.5°C) Accuracy at less than -200.0°C is not guaranteed	0.1°C
	J *3	-200.0 to 1100.0 °C			
	T *3	-270.0 to 400.0 °C	±(0.05 % of rdg + 0.5°C) However, -200.0 to 0.0°C: ±(0.2 % of rdg + 0.5°C) Accuracy at less than -200.0°C is not guaranteed	±(0.1 % of rdg + 2.5°C) However, -200.0 to 0.0°C: ±(2 % of rdg + 2.5°C) Accuracy at less than -200.0°C is not guaranteed	0.1°C
	N *3	-270.0 to 1300.0 °C	±(0.05 % of rdg + 0.7°C) However, -200.0 to 0.0°C: ±(0.5 % of rdg + 0.7°C) Accuracy at less than -200.0°C is not guaranteed	±(0.1 % of rdg + 4.0°C) However, -200.0 to 0.0°C: ±(3.5 % of rdg + 4.0°C) Accuracy at less than -200.0°C is not guaranteed	0.1°C
	W *4	0.0 to 2315.0 °C	±(0.05 % of rdg + 1.0°C) More than 1000.0°C: ±(0.15 % of rdg)	±(0.1 % of rdg + 7.0°C) However, more than 1000.0°C: ±(0.8 % of rdg)	0.1°C
	L *5	-200.0 to 900.0 °C	±(0.05 % of rdg + 0.5°C) Less than 0.0°C: ±(0.25 % of rdg + 0.5°C)	±(0.1 % of rdg + 2.5°C) Less than 0.0°C: ±(3 % of rdg + 4.0°C)	0.1°C
	U *5	-200.0 to 400.0 °C	±(0.05 % of rdg + 0.5°C) Less than 0.0°C: ±(0.5 % of rdg + 0.5°C)	±(0.1 % of rdg + 2.5°C) Less than 0.0°C: ±(2 % of rdg + 2.5°C)	0.1°C
	WRe3-25 *6	0.0 to 2320.0 °C	±(0.05 % of rdg + 2.0°C) More than 2000.0°C: ±(0.15 % of rdg)	±(0.1 % of rdg + 8.0°C) Less than 200.0°C: 12.0°C More than 2000.0°C: ±(0.1 % of rdg + 13.0°C)	0.1°C
	KpvsAu7Fe *7	0.0 to 300.0 K	±(0.05 % of rdg + 0.7 [2.0] K)	±(0.1 % of rdg + 3.5 [7.0] K)	0.1 K
	PLATINEL II *7	0.0 to 1395.0 °C	±(0.05 % of rdg + 1.0°C)	±(0.1% of rdg + 4.0°C)	0.1°C
	PR20-40 *8	0.0 to 1900.0°C	±(0.05 % of rdg + 2.5 [5.5]°C) However, accuracy at less than 800.0°C is not guaranteed.	±(0.1 % of rdg + 12.0 [18.0]°C) However, accuracy at less than 800.0°C is not guaranteed.	0.1°C
	NiNiMo *7	0.0 to 1310.0°C	±(0.05 % of rdg + 0.7°C)	±(0.1% of rdg + 2.7°C)	0.1°C
	W/WRe26 *9	0.0 to 2320.0°C	±(0.05 % of rdg + 2.0°C) However, accuracy at less than 300.0°C is not guaranteed.	±(0.1 % of rdg + 10.0°C) However, accuracy at less than 300.0°C is not guaranteed.	0.1°C
	N(AWG14) *10	0.0 to 1300.0°C	±(0.05 % of rdg + 0.7°C)	±(1.0% of rdg + 4.0°C)	0.1°C
	XK GOST *11	-200.0 to 600.0°C	±(0.05 % of rdg + 0.5°C) Less than 0.0°C: ±(0.2 % of rdg + 0.5°C)	±(0.1% of rdg + 2.5°C) Less than 0.0°C: ±(1% of rdg + 2.5°C)	0.1°C

Continued

Input Type	Range	Measurement range	Measurement accuracy (digital display)		Max. resolution of digital display
			Scan interval: 50 ms or more (Only the Values in [ ] apply when the scan interval is 50/100/200 ms)	Scan interval: 20 ms or less (Only the Values in [ ] apply when the scan interval is 1/2/5 ms)	
RTD (Measured current: 1 mA)	Pt100 *13	-200.0 to 850.0°C	±(0.05 % of rdg + 0.3°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
		-150.00 to 150.00°C			0.01°C
	JPt100 *13	-200.0 to 550.0°C			0.1°C
		-150.00 to 150.00°C			0.01°C
	Cu25 at 0°C α=0.00425	-200.0 to 300.0°C	±(0.1 % of rdg + 0.8°C)	±(0.2 % of rdg + 2.0°C)	0.1°C
	Cu53 at 0°C α=0.00426035	-50.0 to 150.0°C	±(0.05 % of rdg + 0.6°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Cu100 at 0°C α=0.00425	-50.0 to 150.0°C	±(0.05 % of rdg + 0.3°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	J263B *14	0.0 to 300.0 K	±4.0 K Less than 40.0 K: ±0.8 K	±1.5 K Less than 40.0 K: ±3.0 K	0.1 K
	Ni100 (SAMA)	-200.0 to 250.0°C	±(0.05 % of rdg + 0.3°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Ni100 (DIN) *15	-60.0 to 180.0°C			
	Ni120 *16	-70.0 to 200.0°C			
	Pt25 *17	-200.0 to 550.0°C	±(0.1 % of rdg + 0.8°C)	±(0.2 % of rdg + 2.0°C)	0.1°C
	Pt50 *18	-200.0 to 550.0°C	±(0.05 % of rdg + 0.6°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Pt200 WEED	-100.0 to 250.0°C	±(0.05 % of rdg + 1.0°C)	±(0.1 % of rdg + 3.0°C)	0.1°C
	Cu50 GOST *20	-200.0 to 200.0°C	±(0.05 % of rdg + 0.6°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Cu100 GOST *21	-200.0 to 200.0°C	±(0.05 % of rdg + 0.3°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Pt46 GOST *20	-200.0 to 550.0°C	±(0.05 % of rdg + 0.6°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
	Pt100 GOST *21	-200.0 to 600.0°C	±(0.05 % of rdg + 0.3°C)	±(0.1 % of rdg + 1.5°C)	0.1°C
RTD (Measured current: 1. 6 mA)	Cu10 GE	-200.0 to 300.0°C	±(0.1 % of rdg + 0.7 [2.0]°C) guaranteed range Cu10 GE: -70.0 to 170.0°C Cu10 L&N: -75.0 to 150.0°C Cu10 WEED: -200.0 to 260.0°C Other range: -200.0 to 300.0°C	±(0.2 % of rdg + 2.5 [5.0]°C) guaranteed range Cu10 GE: -70.0 to 170.0°C Cu10 L&N: -75.0 to 150.0°C Cu10 WEED: -200.0 to 260.0°C Other range: -200.0 to 300.0°C	0.1°C
	Cu10 L&N	-200.0 to 300.0°C			
	Cu10 WEED	-200.0 to 300.0°C			
	Cu10 BAILEY	-200.0 to 300.0°C			
	Cu10 at 20°C α=0.00392	-200.0 to 300.0°C			
	Cu10 at 20°C α=0.00393	-200.0 to 300.0°C			
	Cu10 GOST *19	-200.0 to 200.0°C	±(0.1 % of rdg + 0.7 [2.0]°C)	±(0.2 % of rdg + 2.5 [5.0]°C)	0.1°C
DI	Level		Threshold level (Vth=2.4 V) Accuracy: ±0.1 V		-
	Contact *22		Less than 100 Ω: 1(ON), More than 10 kΩ: 0(OFF)		-

rdg: Reading value

*3 R, S, B, K, E, J, T, N: IEC60584-1, DIN EN60584, JIS C1602, ASTM E230
*4 W: W-5%Re/W-26%Re(Hoskins Mfg.Co.) ASTM E988-96
(Type C equivalent of OMEGA Engineering Inc.)
*5 L: Fe-CuNi, DIN43710, U: Cu-CuNi, DIN43710
*6 WRe3-25: W-3%Re/W-25%Re(Hoskins Mfg.Co.) ASTM E988-96
(Type D equivalent of OMEGA Engineering Inc.)
*7 KpvsAu7Fe, PLATINEL II, NiNiMo: ASTM E1751
*8 PR20-40: PtRH20%-PtRh40%(Johnson Matthey Plc) ASTM E1751
*9 W/WRe26: W/W-26%Re(Hoskins Mfg.Co.) ASTM E1751
(Type G equivalent of OMEGA Engineering Inc.)
*10 N(AWG14): NBS
*11 XK GOST: Type L (GOST R 8.525-2001)
*12 Pt100: JIS C1604, IEC60751, DIN EN60751
JPt100: JIS C1604, JIS C1606
*13 J263B: Yokogawa Electric Corporation J263*B
*14 Ni100 (DIN): DIN 43760
*15 Ni120: McGRAW EDISON COMPANY
*16 Pt25: One-fourth of JPt100 resistance value
*17 Pt50: JIS C1604, JIS C1606
*18 Cu10 GOST: One-tenth of Cu100 GOST resistance value
*20 Cu50 GOST, Pt46 GOST: GOST 6651-94
*20 Cu100 GOST, Pt100 GOST: GOST 6651-2009
*21 The detected current value is approx. 10 μA.
*22 10 channel mode with scan interval set to 500 ms or higher, or 2 channel mode
*23 10 channel mode with scan interval set to 100 ms or 200 ms

Measurement accuracy at scaling: measurement accuracy at scaling (digits) = measurement accuracy (digits) × scaling span (digits)/measurement span (digits) + 1 digit

* Rounding up decimal places

- Burnout detection*1 *2: Burnout upscale, downscale, or OFF selectable (for each channel).
  Available input: TC, RTD, Standard signal
  Detection condition;
  TC;
  Universal, Low withstand voltage relay, Electromagnetic relay, High withstand voltage type
  Normal: 2 kΩ or less., Burnout: 200 kΩ or more (parallel capacitance of 0.01 μF or less)
  Detection current: Approx. 10 μA
  High-speed universal type
  Detection current: Approx. 50 nA, Superposed electric current system
  RTD;
  Universal type
  Normal: wiring resistance or less, Burnout: 200 kΩ or more
  parallel capacitance of less than 0.01 μF or less
  Detection current: Approx. 10 μA
  High-speed universal type
  Detection current: Approx. 100 nA, Superposed electric current system
  Standard signal:
  Normal: Within measuring range
  Burnout: Depends on the setting of the burnout judgment value. The burnout judgment value shall be set with the percentage of the specified span width.
  Lower limit: -20.0 to -5.0 %
  Upper limit: 105 to 120 %
  *1 None for the 4-wire RTD/resistance type
  *2 If the scan interval on the high speed AI module is 1 to 20 ms, burnout detection will not work correctly.
- Input external resistance:
  DC voltage, thermocouple input: 2 kΩ or below
  Resistance temperature detector input: 10 Ω or below in each wire (Same resistance in three wires)
- Input bias current: ±10 nA or less (when burnout function does not work)
- Measured current (for RTD):
  universal type: Approx. 1 mA
  High-speed universal type: Approx. 1 mA/1.6 mA (depends on the range)
  4-wire RTD/resistance: Approx. 1 mA/0.25 mA (depends on the range)
- Input resistance:
  10 MΩ or more for TC/DC voltage (1 V range or less) input
  Approx. 1 MΩ for DC voltage (2 V range or more)/standard signal input/DI voltage (High-speed universal type)/while measurement is stopped (High-speed universal type)
  250 Ω (249.5 Ω typ) for DC mA
  * typ: Typical value (Typical)
- Allowable signal source resistance: 2 kΩ or less for TC/DC voltage (1 V range or less) input
- Effect of signal source resistance:
  ±10 μV/1kΩ or less for TC/DC voltage (1 V range or less) input
  ±0.15 % of rdg/1kΩ or less for DC voltage (2 V range or more)/standard signal input
- Allowable wiring resistance: Max. 10 Ω per line for RTD input (conductor resistance between the three lines shall be equal)
- Effect of wiring resistance: ±0.1°C/10 Ω for RTD input (conductor resistance between the three lines shall be equal), ±1°C/10 Ω (50Ω system or less, High-speed universal type)
  4-wire RTD/resistance type
  4-wire RTD100 Ω system or more: ±0.1°C/10 Ω
  4-wire RTD50 Ω system or less: ±1°C/10 Ω
  Resistance 20 Ω: ± 0.001 Ω or less
  Resistance 200 Ω: ± 0.01 Ω or less
  Resistance 2000 Ω: ± 0.1 Ω or less
- Allowable input voltage:
  Universal, Low withstand voltage relay, Electromagnetic relay, High withstand voltage type:
  ±10 V DC for TC/DC voltage (1 V range or less)/ RTD/DI (contact) input, DC mA
  ±60 V DC for DC voltage (2 V range or more) input/ DI (level) input
  High-speed universal type:
  ±120 V DC
- Allowable input current (current (mA) input type): 24 mA, 50/60 Hz, peak value including signal
- Noise reduction ratio
  Universal, Low withstand voltage relay, current (mA) input, Electromagnetic relay, 4-wire RTD/ resistance, High withstand voltage type:

Integration time *1	Normal mode	Common mode
1.67 ms	50/60 Hz, no noise reduction	More than 80 dB *2 *4
More than 16.67 ms	More than 40 dB *2 *3	More than 120 dB *2 *4

  High-speed universal type:

Scan interval *1	Normal mode	Common mode
20 ms or less	50/60 Hz, no noise reduction	More than 80 dB *2 *4
More than 50 ms	More than 40 dB *2 *3	More than 120 dB *2 *4

  *1 A frequency discrimination setting is made in the main unit.
  *2 A resistance temperature detector range is a converted value of voltage when a measured current flows.
  *3 50/60 Hz ± 0.1 %
  *4 50/60 Hz ± 0.1%, 500 Ω imbalance, between minus measuring terminal and ground
- Normal mode voltage for TC/ DC voltage (1 V range or less)/DI (voltage): 1.2 times or less of rated range
  Standard signal 0.4 to 2 V range: 2.4 V
  Standard signal 1-5 V range: 6 V
  RTD (100 Ω system or more) : 50 mV peak
  RTD (50 Ω system or less) : 10 mV peak
  * 50/60Hz, The peak value including the signal.
  4-wire RTD/resistance
  Resistance (2000 Ω), RTD (100 Ω, 500 Ω 1000 Ω system): 50 mV peak
  Resistance (200 Ω), RTD (10 Ω, 25 Ω 50 Ω system): 10 mV peak
  Resistance (20 Ω): 4 mV peak
- Normal mode current (current (mA) input type): 24 mA DC (Value converted to voltage: 6V)
  * 50/60 Hz, The peak value including the signal.

- Common mode voltage for measuring input:
  30 V ACrms (50/60Hz) or ±60 V DC (Maximum common mode noise voltage for measuring input: 250 V ACrms)
  High-speed universal type only
  300 V ACrms (50/60Hz), Double insulation
  High withstand voltage type only
  600 V ACrms (50/60Hz) or 600 V DC, Double insulation
  1000 V DC, Basic insulation*
  * When the module is used under basic insulation conditions, external supplementary insulation is required for safe use. When the system is used in a common mode voltage environment that exceeds 600 V, to add supplementary insulation, you need to install the system in a panel, add an overcurrent protection device, and add an insulation device. Refer to the First Step Guide (IM 04L51B01-02EN, IM 04L55B01-02EN), and take the appropriate measures.
- Maximum voltage between measuring input channels: 30 V ACrms (50/60 Hz) or ±60 V DC (Maximum common mode noise voltage between measuring input channels: 250 V ACrms (60 V ACrms for low-voltage relay type))
  High-speed universal type
  300 V ACrms (50/60Hz), Double insulation
- Reference junction compensation accuracy:
  When measuring temperature greater than or equal to 0 °C and when Integral time 16.6 ms or more or scan interval 50 ms or more (for the high-speed universal type) and when input terminal temperature is balanced
  Type K, E, J, T, N, XK GOST: ±0.5 °C (23 °C ± 2 °C), ±0.7 °C (0 to 50 °C), ±1.0 °C (-20 to 60 °C)
  Type R, S, W, L, U, W97Re3-W75Re25, Platinel2, NiNiMo, W/WRe26, N(AWG14): ±1.0 °C (23 °C ± 2 °C), ±1.4 °C (0 to 50 °C), ±2.0 °C (-20 to 60 °C)
  Type KpvsAu7Fe: ±1.0 K (23 °C ±2 °C), ±1.4 K (0 to 50 °C), ±2.0 K (-20 to 60 °C)
  Type B, PR20-40: Internal reference compensation is fixed to 0°C
- Scan interval/A/D integration time:
  10 ch. mode, 6 ch mode[*3]

Universal [*1] , Current (mA) input [*1] , 4-wire RTD/ resistance, High withstand voltage [*1] type

Scan interval	Integration time
100 ms/200 ms	1.67 ms
500 ms or more	16.67 ms/20 ms
1 s	36.67 ms
2 s or more	100 ms

Electromagnetic relay scanner type

Scan interval	Integration time
1 s or more	16.67 ms/20 ms
2 s	36.67 ms
5 s	100 ms

Low withstand voltage relay type

Scan interval	Integration time
500 ms or more	16.67 ms/20 ms
2 s	36.67 ms
5 s	100 ms

2 ch. mode[*2]

Scan interval	Integration time
100 ms or more	16.67 ms/20 ms
1 s	36.67 ms
2 s or more	100 ms

*1 In 10ch mode, when the scan interval is set to 100 ms or 200 ms, the A/D integration time is fixed at 1.67 ms. This prevents power frequency noise from being eliminated, causing measured values to wobble.
*2 Cannot be specified for the electromagnetic relay type, Low withstand voltage relay type, High-speed universal type.
*3 For the 4-wire RTD/resistance type.

- Scan interval/filter type:
  High-speed universal type

Scan interval	Filter
20 ms or less	Non*
50 ms/100 ms/200 ms	50 Hz/60 Hz Simultaneous removal of 50 Hz and 60 Hz
500 ms or more	50 Hz/60 Hz/10 Hz

* With the high-speed universal type, when the scan interval is 20 ms or less, supply frequency noise is not removed. As such, the measured values may fluctuate especially in temperature measurement using thermocouples.

- Calibration correction:
  Mode: Linearizer Approximation, Linearizer Bias
  Number of correcting points: 12
- Moving average function:
  Can be switched On/Off (Settable for each channel)
  Moving average number can be selected from 2 to 100 times
  Select from 2 to 500 for the high-speed universal type.
- First-order lag input filter (high-speed universal type): Can be turned on/off for each channel
  Time constant: Scan interval × N where N is between 3 and 300)
- Reference junction compensation:
  Mode: Can be switch internal or external (Settable for each channel)
  (Set the value of the compensation temperature at external)
- Input calculation:
  Linear scaling, square root*, differential calculations (Settable for each channel)
  * Not available for the 4-wire RTD/resistance type
- Bias function:
  Can be set the bias value to be added to the input value (Settable for each channel)
- Terminal type: M3 screw terminal or Clamp terminal
- Withstand voltage
  Universal, Electromagnetic relay, 4-wire RTD/ resistance type;
  Between the input terminals and the internal circuit: 3000 V AC for one minute
  Between the analog input channels: 1000VAC for one minute (excluding b-terminal)
  Current (mA) input type;
  Between the input terminals and the internal circuit: 1500 V AC for one minute
  Between the analog input channels: 1000 V AC for one minute (excluding b-terminal)

Low withstand voltage type;
Between the input terminals and the internal circuit: 1500 V AC for one minute
Between the analog input channels: 400 V AC for one minute (excluding b-terminal)
High-speed universal type;
Between the input terminals and the internal circuit: 3000 V AC for one minute
Between the analog input channels: 3000 V AC for one minute
High withstand voltage
Between the input terminals and the internal circuit: 3700 V AC for one minute
Between the analog input channels: 1000 V AC for one minute

- Insulation resistance:
  Between the input terminals and the internal circuit: 20 MΩ or greater at 500 V DC
  Between the analog input channels*: 20 MΩ or greater at 500 V DC

* Excludes the b terminal of the universal type

- Recommended replacement period of electromagnetic relay scanner type modules:
  Electromagnetic relay scanner type modules make measurements by switching mechanical contact relays on and off.
  To ensure that the modules continue to operate reliably and correctly, replace them
  Continuous use at measurement interval 1 s: 1 year
  Continuous use at measurement interval 2 s: 2 years
  Continuous use at measurement interval 5 s: 5 years

Safety and EMC Standards

- CSA:
  CAN/CSA-C22.2 No.61010-1, CAN/CSA-C22.2 No.61010-2-030, Overvoltage Category II or I *1, Pollution Degree 2 *2, Measurement Category II *4
- UL:
  UL61010-1, UL 61010-2-030 (CSA NRTL/C), Overvoltage Category II or I *1, Pollution Degree 2 *2, Measurement Category II *4
- CE/EMC directive *3:
  EN61326-1, Class A Table 2 (For use in industrial locations) compliance
  EN61000-3-2 compliance
  EN61000-3-3 compliance
  EN55011 Class A Group 1 compliance
- CE/Low voltage directive*3:
  EN61010-1, EN 61010-2-030, Overvoltage Category II or I *1, Pollution degree 2 *2, Measurement category II *3
- CE/RoHS directive:
  “2011/65/EU+(EU)2015/863” (10-Substances) Compliant
- EMC Regulatory Arrangement in Australia and New Zealand (RCM): EN55011 Class A Group 1 compliance
- KC marking: KN11, KN61000-6-2 compliance

*1 Overvoltage category: Describes a number which defines a transient overvoltage condition. Implies the regulation for impulse withstand voltage. Applies to electrical equipment which is supplied from the fixed installation like a distribution board. II or I depends on the power supply specification of the main unit.

*2 Pollution degree 2:
Describes the degree to which a solid, liquid, or gas which deteriorates dielectric strength or surface resistivity is adhering.
“2” applies to normal indoor atmosphere. Normally, only non-conductive pollution occurs.

*3 The CE standards for modules represent standards that are met when the module is installed in the main unit.

*4 Measurement category II (CAT II):
Applies to measuring circuits connected to low voltage installation, and electrical instruments supplied with power from fixed equipment such as electric switchboards.

- WEEE Directive: Compliant

Construction

- Front panel (terminal): Water and dust-proof, Complies with IEC529-IP20
- Material: Polycarbonate
- Color;
  Front: Charcoal grey light (Munsell 10B3.6/0.3 equivalent)
  Bezel: Smoke blue (Munsell 4.1PB6.0/4.5 equivalent)
- Dimensions: 45.2 mm(W) x 111 mm(H) x 133.1 mm(D) (D: including terminal cover)
- Weight: Approx. 0.3 kg

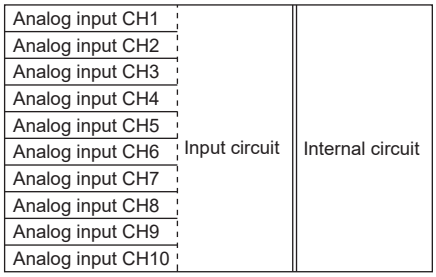
Power Supply

Suppy from GX/GP, GX60 expandable I/O, GM90PS power supply module.

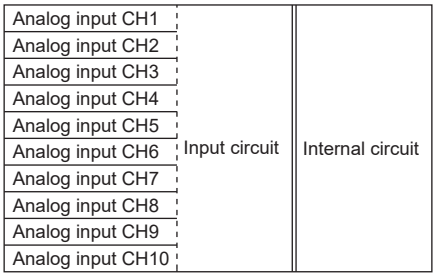
- Power consumption:
  GX90XA-10-U2: 0.7 W or less
  GX90XA-10-T1: 0.9 W or less
  GX90XA-10-C1: 0.7 W or less
  GX90XA-10-L1: 0.7 W or less
  GX90XA-04-H0: 2.0 W or less
  GX90XA-06-R1: 0.7 W or less
  GX90XA-10-V1: 1.0 W or less

Isolation

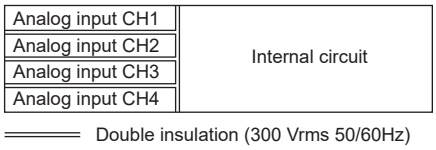
Universal, Low withstand voltage relay, Electromagnetic relay, Current (mA) input type



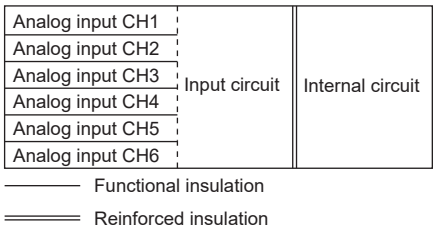
High withstand voltage type



High-speed universal type



4-wire RTD/resistance type



Terminal arrangements

M3 screw terminal

Universal, Low withstand voltage relay, Electromagnetic relay, Current (mA) input, High withstand voltage type

No.	Symbol	No.	Symbol	No.	Symbol
301	CH1(/b)*1	201	CH1(-/B)	101	CH1(+/A)
302	CH2(/b)*1	202	CH2(-/B)	102	CH2(+/A)
303	CH3(/b)*1	203	CH3(-/B)	103	CH3(+/A)
304	CH4(/b)*1	204	CH4(-/B)	104	CH4(+/A)
305	CH5(/b)*1	205	CH5(-/B)	105	CH5(+/A)
306	CH6(/b)*1	206	CH6(-/B)	106	CH6(+/A)
307	CH7(/b)*1	207	CH7(-/B)	107	CH7(+/A)
308	CH8(/b)*1	208	CH8(-/B)	108	CH8(+/A)
309	CH9(/b)*1	209	CH9(-/B)	109	CH9(+/A)
310	CH10(/b)*1	210	CH10(-/B)	110	CH10(+/A)

*1 There are no symbol indications for the electromagnetic relay type, current (mA) input type, low withstand voltage relay type, or high withstand voltage type.

* RTD input terminal b is shorted internally across all channels.

High-speed universal type

No.	Symbol	No.	Symbol	No.	Symbol
301	CH1(/A)	201	CH1(-/b)	101	CH1(+/B)
304	CH2(/A)	204	CH2(-/b)	104	CH2(+/B)
307	CH3(/A)	207	CH3(-/b)	107	CH3(+/B)
310	CH4(/A)	210	CH4(-/b)	110	CH4(+/B)

4 wire RTD/resistance type

No.	Symbol	No.	Symbol	No.	Symbol
301	CH1(B)	201	CH1(A)	101	CH1(I)
302	CH1(C)	202	Not Used	102	CH2(C)
303	CH2(B)	203	CH2(A)	103	CH2(I)
304	CH3(B)	204	CH3(A)	104	CH3(I)
305	CH3(C)	205	Not Used	105	CH4(C)
306	CH4(B)	206	CH4(A)	106	CH4(I)
307	CH5(B)	207	CH5(A)	107	CH5(I)
308	CH5(C)	208	Not Used	108	CH6(C)
309	CH6(B)	209	CH6(A)	109	CH6(I)
310	Not Used	210	Not Used	110	Not Used

Clamp terminal

Universal, Low withstand voltage relay, Electromagnetic relay, Current (mA) input type, High withstand voltage type

No.	Symbol	No.	Symbol
201	CH2(+/A)	101	CH1(+/A)
202	CH2(-/B)	102	CH1(-/B)
203	CH2(/b) *1	103	CH1(/b) *1
204	CH4(+/A)	104	CH3(+/A)
205	CH4(-/B)	105	CH3(-/B)
206	CH4(/b) *1	106	CH3(/b) *1
207	CH6(+/A)	107	CH5(+/A)
208	CH6(-/B)	108	CH5(-/B)
209	CH6(/b) *1	109	CH5(/b) *1
210	CH8(+/A)	110	CH7(+/A)
211	CH8(-/B)	111	CH7(-/B)
212	CH8(/b) *1	112	CH7(/b) *1
213	CH10(+/A)	113	CH9(+/A)
214	CH10(-/B)	114	CH9(-/B)
215	CH10(/b) *1	115	CH9(/b) *1

*1 There are no symbol indications for the electromagnetic relay type, current (mA) input type, low withstand voltage relay type, or high withstand voltage type.

* RTD input terminal b is shorted internally across all channels.

High-speed universal type

No.	Symbol	No.	Symbol
201	CH1(+/B)	101	Not Used
202	CH1(-/b)	102	Not Used
203	CH1(/A)	103	Not Used
204	Not Used	104	Not Used
205	CH2(+/B)	105	Not Used
206	CH2(-/b)	106	Not Used
207	CH2(/A)	107	Not Used
208	Not Used	108	Not Used
209	CH3(+/B)	109	Not Used
210	CH3(-/b)	110	Not Used
211	CH3(/A)	111	Not Used
212	Not Used	112	Not Used
213	CH4(+/B)	113	Not Used
214	CH4(-/b)	114	Not Used
215	CH4(/A)	115	Not Used

4-wire RTD/resistance

No.	Symbol	No.	Symbol
201	CH2(I)	101	CH1(I)
202	CH2(A)	102	CH1(A)
203	CH2(B)	103	CH1(B)
204	CH2(C)	104	CH1(C)
205	Not Used	105	Not Used
206	CH4(I)	106	CH3(I)
207	CH4(A)	107	CH3(A)
208	CH4(B)	108	CH3(B)
209	CH4(C)	109	CH3(C)
210	Not Used	110	Not Used
211	CH6(I)	111	CH5(I)
212	CH6(A)	112	CH5(A)
213	CH6(B)	113	CH5(B)
214	CH6(C)	114	CH5(C)
215	Not Used	115	Not Used

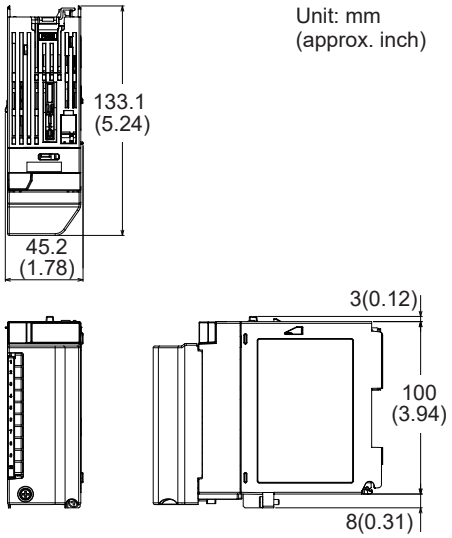
A/D Calibration Value

Two types of A/D calibration values (factory shipment setting and user setting) can be saved. If the user setting is not proper, it can be restored to the calibration value at factory shipment.

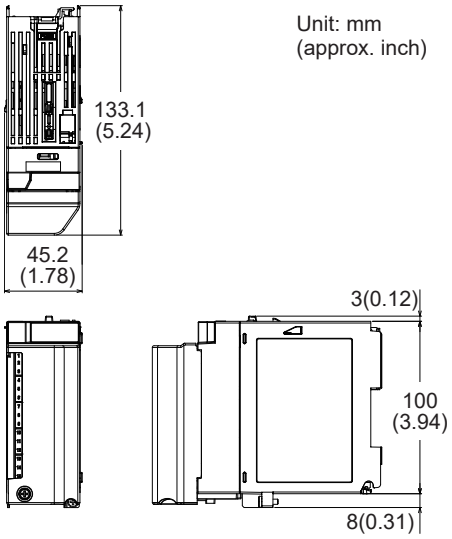
External Dimensions

- **Except high speed universal type and high withstand voltage type**

M3 screw terminal

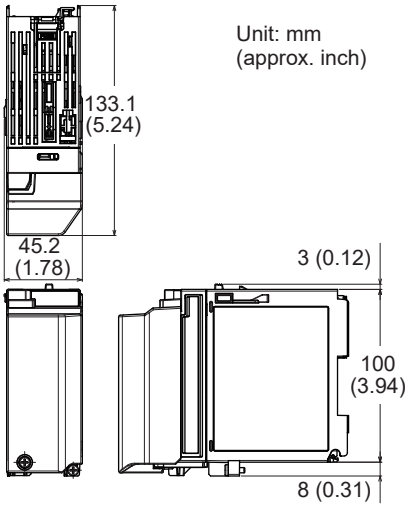


Clamp terminal

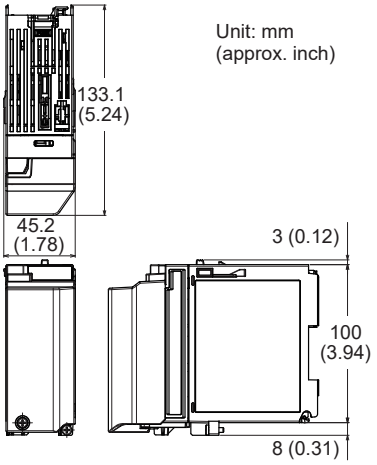


- **High speed universal type and high withstand voltage type**

M3 screw terminal



Clamp terminal



Normal Operating Conditions

For normal operating conditions of this module, please refer to the General Specifications of the device (GX/GP, I/O Base Unit, or GM) that this module is mounted.
GX Specifications: GS 04L51B01-01EN
GP Specifications; GS 04L52B01-01EN
I/O Base Unit (Expandable I/O) Specifications: GS 04L53B00-01EN
GM Specifications: GS 04L55B01-01EN

Transport and Storage Conditions

- Ambient temperature: –25 to 70°C
- Ambient humidity: 5 to 95 %RH (no condensation)
- Vibration: 10 to 60 Hz, 4.9 m/s^2 maximum
- Shock: 392 m/s^2 maximum (in packaged condition)

Effects of Operating Conditions

Integral time 16.67 ms or more or scan interval 50 ms or more (for the high-speed universal type)

- Influence of ambient temperature: variation against a change of 10 °C at an accumulation time of 16.67 ms or more ± (0.05% of rdg + 0.05% of range) or below.
  (In case of current (mA) input type, ± (0.075% of rdg + 0.05% of range) or below.)
  KpvsAu7Fe, PR20-40: ±(0.05% of rdg + 0.1% of range) or below, Cu10Ω system or less: ±(0.2% of rdg + 0.1 °C) or below
  No reference contact accuracy is guaranteed.
- Influence of power supply voltage variation: Accuracy is satisfied in the range of rated power supply voltage.
- Influence of external magnetic field: Variations against an AC external magnetic field (50/60 Hz, 400 A/m) are ±(0.1% of rdg+ 0 .1% of range) or below.

Installation limitations

If you want to use the electromagnetic relay type or high-speed universal type modules on a GM10 single unit, up to eight modules can be installed.

DIGITAL INPUT MODULE (Model GX90XD or GX/GP main unit options /CRx1)

GX90XD

- Application: Remote control input, pulse input*1, etc
- Number of inputs: 16
- input type: DI, pulse*1
- Measurement interval: 100 ms (shortest)
- Input type: Open collector or Voltage-free contact
- Insulation type: Photocoupler, Trance (power supply)
- Contact rating: 12 V DC, 20 mA or more
- Input resistance: Approx. 1 kΩ
- Allowable input voltage: +10 V
- ON/OFF detection
  Open collector contact input:
  Voltage in ON state: 0.5 V DC or less
  Leakage current in OFF state: 0.5 mA or less
  Voltage-free contact input:
  Contact resistance in ON state: 200 Ω or less
  Contact resistance in OFF state: 50 kΩ or more
- Number of common: 2 (1 point/8 channels)
- Terminal type: M3 screw terminal or Clamp terminal
  (In case of Options /CRx1, a digital input module has M3 screw terminals.)
- Withstand voltage
  Between the input terminals and the internal circuit: 1500 V AC for one minute
- Insulation resistance:
  Between the input terminals and the internal circuit: 20 MΩ or greater at 500 VDC

[Pulse input specifications]*1

- Counting system: The rising edge of the pulse is counted.
  Open collector: The signal level at the input terminal changes from high to low.
  Voltage-free contact: The contact changes from open to close.
- Max. pulse period:
  250Hz (The chattering filter: Off)
  125Hz (The chattering filter: On)
- Min. detection pulse width: Low (close), High (open), both is 2 ms or more
- Pulse detection period: 1 ms
- Pulse measuring accuracy: ±1 pulse
- Pulse count interval: mesurement interval
- Filter: The chattering filter can be switched On/Off *.

  * When the chattering filter is off, connect GX/GP/GM so that it is not affected by the noise.

*1 MATH function (optional code /MT) is required.

Safety and EMC Standards

- CSA:
  CAN/CSA-C22.2 No.61010-1, Overvoltage Category II or I *1, Pollution Degree 2 *2
- UL:
  UL61010-1 (CSA NRTL/C), Overvoltage Category II or I *1, Pollution Degree 2 *2
- CE/EMC directive *3:
  EN61326-1 compliance, Class A Table 2
  EN61000-3-2 compliance
  EN61000-3-3 compliance
  EN55011 Class A Group 1 compliance
- CE/Low voltage directive *3:
  EN61010-1, Overvoltage Category II or I *1, Pollution degree 2 *2
- CE/RoHS directive:
  “2011/65/EU+(EU)2015/863” (10-Substances) Compliant
- EMC Regulatory Arrangement in Australia and New Zealand (RCM): EN55011 Class A Group 1 compliance
- KC marking: KN11, KN61000-6-2 compliance

*1 Overvoltage category: Describes a number which defines a transient overvoltage condition. Implies the regulation for impulse withstand voltage. Applies to electrical equipment which is supplied from the fixed installation like a distribution board. II or I depends on the power supply specification of the main unit.

*2 Pollution degree 2:
Describes the degree to which a solid, liquid, or gas which deteriorates dielectric strength or surface resistivity is adhering.
“2” applies to normal indoor atmosphere. Normally, only non-conductive pollution occurs.

*3 The CE standards for modules represent standards that are met when the module is installed in the main unit.

- WEEE Directive: Compliant

Construction

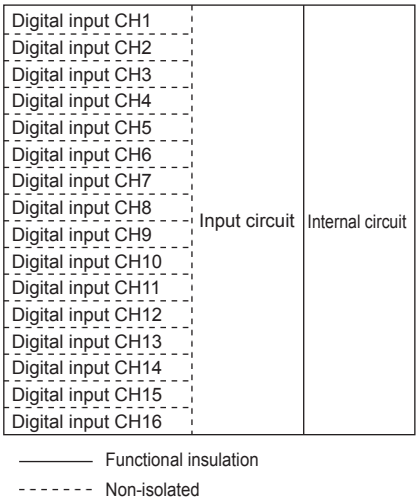
- Front panel (terminal): Water and dust-proof, Complies with IEC529-IP20
- Material: Polycarbonate
- Color;
  Front: Charcoal grey light (Munsell 10B3.6/0.3 equivalent)
  Bezel: Smoke blue (Munsell 4.1PB6.0/4.5 equivalent)
- Dimensions: 45.2 mm(W) x 111 mm(H) x 133.1 mm(D) (D: including terminal cover)
- Weight: Approx. 0.3 kg

Power Supply

Suppy from GX/GP, GX60 expandable I/O, GM90PS power supply module.

- Power consumption: 0.7 W or less

Isolation



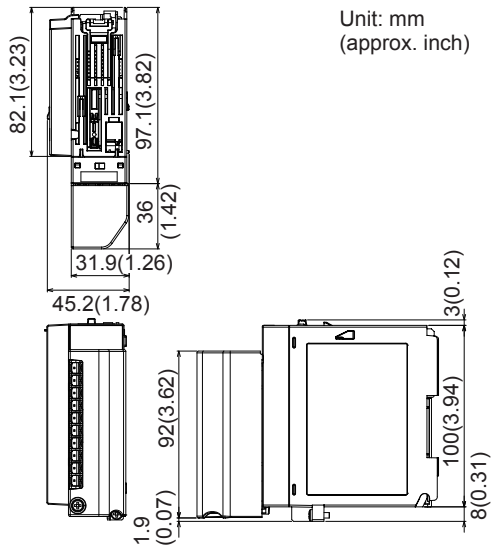
Terminal arrangements

M3 screw terminal/Clamp terminal

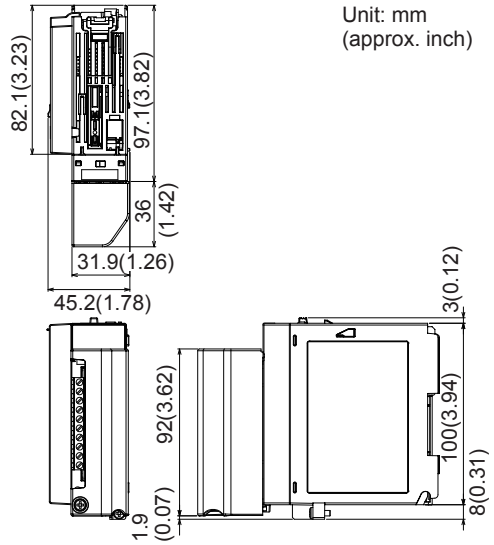
No.	Symbol	No.	Symbol
21	DI9	11	DI1
22	DI10	12	DI2
23	DI11	13	DI3
24	DI12	14	DI4
25	DI13	15	DI5
26	DI14	16	DI6
27	DI15	17	DI7
28	DI16	18	DI8
29	COM2	19	COM1
30	-	20	-

External Dimensions

M3 screw terminal



Clamp terminal



Normal Operating Conditions

For normal operating conditions of this module, please refer to the General Specifications of the device (GX/GP, I/O Base Unit, or GM) that this module is mounted.
GX Specifications: GS 04L51B01-01EN
GP Specifications; GS 04L52B01-01EN
I/O Base Unit (Expandable I/O): GS 04L53B00-01EN
GM Specifications: GS 04L55B01-01EN

Transport and Storage Conditions

Same as the GX90XA.

Installation limitations

When the measurement mode is High speed, a single module, either this module or the GX90WD, can be installed. DI input is fixed to remote mode. Measurement and recording are not possible.

DIGITAL OUTPUT MODULE (Model GX90YD, or GX/GP main unit options /CR1x, /CR2x, /CR4x)

GX90YD

- Application: Alarm output, etc
- Number of outputs: 6
- Output update interval: 100 ms (shortest)
- Output type: Relay contact output, SPDT (NO-C-NC)
- Insulation type: Mechanical
- Rated load voltage: 30 V DC or 250 V AC or less
- Max. load current: 3 A (DC)/3 A (AC), resistance load, each channel
- Min. load voltage/current: 5 V DC/10mA
- Recommended replacement periods of contact:
  Mechanical 5,000,000 more ON-OFF operations
  Electrical 30,000 more ON-OFF operations (250 V AC 3 A or 30 V DC 3 A, resistance load)
- Number of common: 6
- Terminal type: M3 screw terminal
- Withstand voltage
  Between the output terminals and the internal circuit: 3000 V AC for one minute
  Between the output terminals: 3000 V AC for one minute
- Insulation resistance:
  Between the output terminals and the internal circuit: 20 MΩ or greater at 500 VDC
  Between the output terminals: 20 MΩ or greater at 500 VDC

Safety and EMC Standards

- CSA:
  CAN/CSA-C22.2 No.61010-1, Overvoltage Category II or I *1, Pollution Degree 2 *2
- UL:
  UL61010-1(CSA NRTL/C), Overvoltage Category II or I *1, Pollution Degree 2 *2
- CE/EMC directive *3:
  EN61326-1 Class A Table 2(For use in industrial locations) compliance
  EN61000-3-2 compliance
  EN61000-3-3 compliance
  EN55011 Class A Group 1 compliance
- CE/Low voltage directive *3:
  EN61010-1, Overvoltage Category II or I *1, Pollution degree 2 *2
- CE/RoHS directive:
  “2011/65/EU+(EU)2015/863” (10-Substances) Compliant
- EMC Regulatory Arrangement in Australia and New Zealand (RCM): EN55011 Class A Group 1 compliance
- KC marking: KN11, KN61000-6-2 compliance

*1 Overvoltage category: Describes a number which defines a transient overvoltage condition. Implies the regulation for impulse withstand voltage. Applies to electrical equipment which is supplied from the fixed installation like a distribution board. II or I depends on the power supply specification of the main unit.

*2 Pollution degree 2:
Describes the degree to which a solid, liquid, or gas which deteriorates dielectric strength or surface resistivity is adhering.
“2” applies to normal indoor atmosphere.
Normally, only non-conductive pollution occurs.

*3 The CE standards for modules represent standards that are met when the module is installed in the main unit.

- WEEE Directive: Compliant

Construction

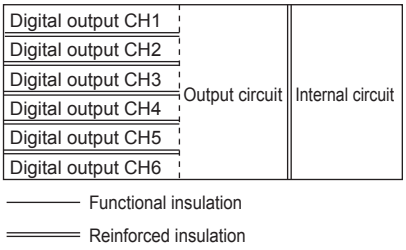
- Front panel (terminal): Water and dust-proof, Complies with IEC529-IP20
- Material: Polycarbonate
- Color;
  Front: Charcoal grey light (Munsell 10B3.6/0.3 equivalent)
  Bezel: Smoke blue (Munsell 4.1PB6.0/4.5 equivalent)
- Dimensions: 45.2 mm(W) x 111 mm(H) x 133.1 mm(D) (D: including terminal cover)
- Weight: Approx. 0.3 kg

Power Supply

Suppy from GX/GP, GX60 expandable I/O, GM90PS power supply module.

- Power consumption: 1.4 W or less

Isolation



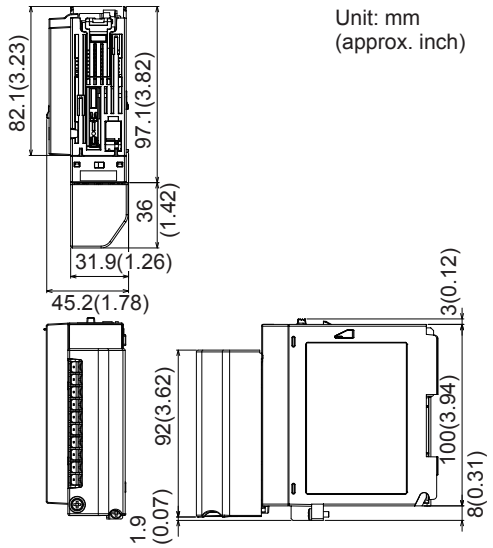
Terminal arrangements

M3 screw terminal

No.	Symbol	No.	Symbol
21	DO4 N.C.	11	DO1 N.C.
22	DO4 COM	12	DO1 COM
23	DO4 N.O.	13	DO1 N.O.
24	DO5 N.C.	14	DO2 N.C.
25	DO5 COM	15	DO2 COM
26	DO5 N.O.	16	DO2 N.O.
27	DO6 N.C.	17	DO3 N.C.
28	DO6 COM	18	DO3 COM
29	DO6 N.O.	19	DO3 N.O.
30	Not Used	20	Not Used

External Dimensions

M3 screw terminal



Normal Operating Conditions

For normal operating conditions of this module, please refer to the General Specifications of the device (GX/GP, I/O Base Unit, or GM) that this module is mounted. However, excluding the shock at energization.
GX Specifications: GS 04L51B01-01EN
GP Specifications; GS 04L52B01-01EN
I/O Base Unit (Expandable I/O): This General Specifications
GM Specifications: GS 04L55B01-01EN

Transport and Storage Conditions

Same as the GX90XA.

Installation limitations

When using the GX90WD digital input/output modules and GX90UT PID control modules together, up to a total of 10 modules can be installed.

DIGITAL INPUT/OUTPUT MODULE (Model GX90WD)

GX90WD

Digital input/output module can be used one module on GX/GP main unit, Expandable I/O, GM main unit, and GM sub unit.

Digital Input Specifications

- Application: Remote control input, pulse input*1, etc
- Number of inputs: 8
- input type: DI, pulse*1
- Measurement interval: 100 ms (shortest)
- Input type: Open collector or Voltage-free contact
- Insulation type: Photocoupler, Trance (power supply)
- Contact rating: Use an external contact of 12 VDC and 20 mA or more.
- Input resistance: Approx. 2.4 kΩ
- Allowable input voltage: +10 V
- ON/OFF detection
  Open collector contact input:
  Voltage in ON state: 0.5 V DC or less
  Leakage current in OFF state: 0.5 mA or less
  Voltage-free contact input:
  Contact resistance in ON state: 200 Ω or less
  Contact resistance in OFF state: 50 kΩ or more
- Number of common: 1 (1 point/8 channels)
- Terminal type: M3 screw terminal
- Withstand voltage
  Between the input terminals and the internal circuit: 1500 V AC for one minute
- Insulation resistance:
  Between the input terminals and the internal circuit: 20 MΩ or greater at 500 VDC

[Pulse input specifications]*1

- Counting system: The rising edge of the pulse is counted.
  Open collector: The signal level at the input terminal changes from high to low.
  Voltage-free contact: The contact changes from open to close.
- Max. pulse period:
  250 Hz (The chattering filter: Off)
  125 Hz (The chattering filter: On)
- Min. detection pulse width: Low (close), High (open), both is 2 ms or more
- Pulse detection period: 1 ms
- Pulse measuring accuracy: ±1 pulse
- Pulse count interval: mesurement interval
- Filter: The chattering filter can be switched On/Off *.

* When the chattering filter is off, connect GX/GP/GM so that it is not affected by the noise.

*1 MATH function (optional code /MT) is required.

Digital Output Specifications

- Application: Alarm output, etc
- Number of outputs: 6
- Output update interval: 100 ms (shortest)
- Output type: Relay contact output, SPDT (NO-C-NC)
- Insulation type: Mechanical
- Rated load voltage:
  Max. 150 VAC when connected to the mains circuit (primary power source).
  Max. 250 VAC when connected to a circuit (secondary power source) derived from the mains circuit (primary power source) of up to 300V AC, or Max. 30 V DC.
- Maximum voltage between output terminal channels: 250 V AC, Basic insulation
- Max. load current: 2 A (DC)/2 A (AC), resistance load, each channel
- Min. load voltage/current: 5 V DC/10 mA
- Recommended replacement periods of contact:
  Mechanical 5,000,000 more ON-OFF operations
  Electrical 30,000 more ON-OFF operations (250 V AC 2 A or 30 V DC 2 A, resistance load)
- Number of common: 6 (All-contact independent)
- Terminal type: M3 screw terminal
- Withstand voltage
  Between the output terminals and the internal circuit: 2700 V AC for one minute
  Between the output terminals: 1350 V AC for one minute
- Insulation resistance:
  Between the output terminals and the internal circuit: 20 MΩ or greater at 500 VDC
  Between the output terminals: 20 MΩ or greater at 500 VDC

Safety and EMC Standards

- CSA:
  CAN/CSA-C22.2 No.61010-1, Overvoltage Category II or I *1, Pollution Degree 2 *2
- UL:
  UL61010-1(CSA NRTL/C), Overvoltage Category II or I *1, Pollution Degree 2 *2
- CE/EMC directive *3:
  EN61326-1 Class A Table 2(For use in industrial locations) compliance
  EN61000-3-2 compliance
  EN61000-3-3 compliance
  EN55011 Class A Group 1 compliance
- CE/Low voltage directive *3:
  EN61010-1, Overvoltage Category II or I *1, Pollution degree 2 *2
- CE/RoHS directive:
  “2011/65/EU+(EU)2015/863” (10-Substances) Compliant
- EMC Regulatory Arrangement in Australia and New Zealand (RCM): EN55011 Class A Group 1 compliance
- KC marking: KN11, KN61000-6-2 compliance

*1 Overvoltage category: Describes a number which defines a transient overvoltage condition. Implies the regulation for impulse withstand voltage. Applies to electrical equipment which is supplied from the fixed installation like a distribution board. II or I depends on the power supply specification of the main unit.

*2 Pollution degree 2: Describes the degree to which a solid, liquid, or gas which deteriorates dielectric strength or surface resistivity is adhering. “2” applies to normal indoor atmosphere. Normally, only non-conductive pollution occurs.

*3 The CE standards for modules represent standards that are met when the module is installed in the main unit.

- WEEE Directive: Compliant

Construction

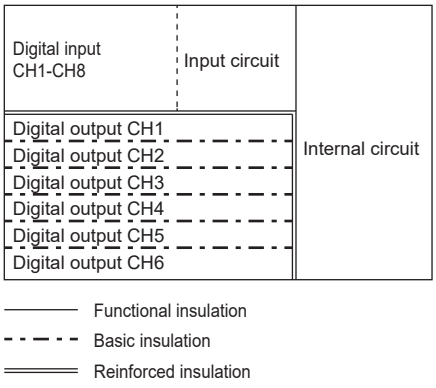
- Front panel (terminal): Water and dust-proof, Complies with IEC529-IP20
- Material: Polycarbonate
- Color;
  Front: Charcoal grey light (Munsell 10B3.6/0.3 equivalent)
  Bezel: Smoke blue (Munsell 4.1PB6.0/4.5 equivalent)
- Dimensions: 45.2 mm(W) x 111 mm(H) x 133.1 mm(D) (D: including terminal cover)
- Weight: Approx. 0.3 kg

Power Supply

Suppy from GX/GP, GX60 expandable I/O, GM90PS power supply module.

- Power consumption: 1.6 W or less

Isolation



Note: Since the insulation specification between output terminal channels is basic insulation, connect so that the potential difference between adjacent channels does not exceed 30 V AC or 60 V DC. If the potential difference from adjacent channel exceeds 30 V AC or 60 V DC, insert an unconnected channel between the two channels.

Terminal arrangements

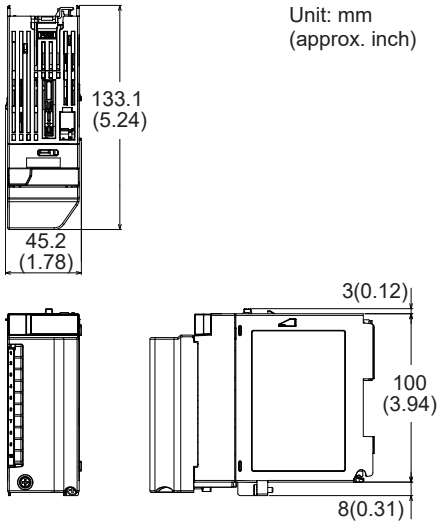
M3 screw terminal

No.	Symbol	No.	Symbol	No.	Symbol
301	DI3	201	DI2	101	DI1
302	DI6	202	DI5	102	DI4
303	DI COM	203	DI8	103	DI7
304	Not Used	204	Not Used	104	Not Used
305	DO1 N.O.	205	DO1 COM	105	DO1 N.C.
306	DO2 N.O.	206	DO2 COM	106	DO2 N.C.
307	DO3 N.O.	207	DO2 COM	107	DO3 N.C.
308	DO4 N.O.	208	DO4 COM	108	DO4 N.C.
309	DO5 N.O.	209	DO5 COM	109	DO5 N.C.
310	DO6 N.O.	210	DO6 COM	110	DO6 N.C.

External Dimensions

M3 screw terminal

Unit: mm
(approx. inch)



Normal Operating Conditions

For normal operating conditions of this module, please refer to the General Specifications of the device (GX/GP, I/O Base Unit, or GM) that this module is mounted. However, excluding the shock at energization.
GX Specifications: GS 04L51B01-01EN
GP Specifications; GS 04L52B01-01EN
I/O Base Unit (Expandable I/O): This General Specifications
GM Specifications: GS 04L55B01-01EN

Transport and Storage Conditions

Same as the GX90XA.

Installation limitations

- A single module can be installed in each unit.
- When using the GX90YD digital output modules and GX90UT PID control modules together, up to a total of 10 modules can be installed.
- When the measurement mode is High speed, a single module, either this module or the GX90XD, can be installed. DI input is fixed to remote mode. Measurement and recording are not possible.
  The DO function cannot be used.

PULSE INPUT MODULE (Model GX90XP)

GX90XP

- Application: Pulse input (flow sum and the like)
- Number of inputs: 10
- Measurement interval: 100 ms (shortest)
- Input type: Contact (open collector, voltage-free contact), level (5 V logic)
- Input format: Pulled up to approx. 5 V through 5 kΩ, common potential shared within the same module
- Input range: Up to 20 kHz*
  * 30 Hz when the chattering filter is in use (On)
- Minimum detection pulse width: 25 µs*
  * 15 ms when the chattering filter is in use (On)
- Measurement accuracy: Count ± 1 pulse
  For integration computation *, the following accuracies are added.
  Computation start: +1 scan interval
  Computation stop: −1 scan interval
  * Integration requires the math function (/MT option).
- Chattering filter: Removes chattering up to 5 ms (can be turned on/off on each channel)
  * When the chattering filter is off, connect GX/GP/GM so that it is not affected by the noise.
- Input threshold level:
  Contact (open collector, voltage-free contact):
  Counted when a change from 100 kΩ or higher to 200 Ω or lower is detected
  Level (5 V logic):
  Counted when a change from 1 V or lower to 3 V or higher is detected
- Hysteresis width: Approx. 0.2 V
- Contact, transistor rating:
  Contact: 15 V DC or higher and 30 mA or higher rating. Minimum applicable load current 1 mA or less.
  Transistor: With the following ratings: Vce > 15 V DC, Ic > 30 mA
- Allowable input voltage: ±10 V DC
- Insulation type: Photocoupler isolation, transformer isolation
- Terminal type: M3 screw terminal or clamp terminal
- Withstand voltage:
  Between the input terminals and the internal circuit: 1500 V AC for 1 minute
- Insulation resistance:
  Between the input terminals and the internal circuit: 20 MΩ or greater at 500 V DC

Safety and EMC Standards

- CSA:
  CAN/CSA-C22.2 No.61010-1, Overvoltage Category II or I *1, Pollution Degree 2 *2
- UL:
  UL61010-1(CSA NRTL/C), Overvoltage Category II or I *1, Pollution Degree 2 *2
- CE/EMC directive *3:
  EN61326-1 Class A Table 2(For use in industrial locations) compliance
  EN61000-3-2 compliance
  EN61000-3-3 compliance
  EN55011 Class A Group 1 compliance
- CE/Low voltage directive*3:
  EN61010-1, Overvoltage Category II or I *1,
  Pollution degree 2 *2
  Measurement category II *3
- CE/RoHS directive:
  “2011/65/EU+(EU)2015/863” (10-Substances) Compliant
- EMC Regulatory Arrangement in Australia and New Zealand (RCM): EN55011 Class A Group 1 compliance
- KC marking: KN11, KN61000-6-2 compliance

*1 Overvoltage category: Describes a number which defines a transient overvoltage condition. Implies the regulation for impulse withstand voltage. Applies to electrical equipment which is supplied from the fixed installation like a distribution board. II or I depends on the power supply specification of the main unit.

*2 Pollution degree 2:
Describes the degree to which a solid, liquid, or gas which deteriorates dielectric strength or surface resistivity is adhering.
“2” applies to normal indoor atmosphere.
Normally, only non-conductive pollution occurs.

*3 The CE standards for modules represent standards that are met when the module is installed in the main unit.

- WEEE Directive: Compliant

Construction

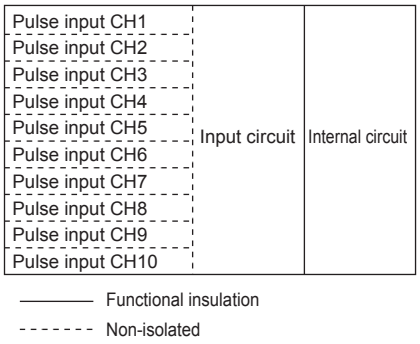
- Front panel (terminal): Water and dust-proof, Complies with IEC529-IP20
- Material: Polycarbonate
- Color;
  Front: Charcoal grey light (Munsell 10B3.6/0.3 equivalent)
  Bezel: Smoke blue (Munsell 4.1PB6.0/4.5 equivalent)
- Dimensions: 45.2 mm(W) x 111 mm(H) x 133.1 mm(D) (D: including terminal cover)
- Weight: Approx. 0.3 kg

Power Supply

Suppy from GX/GP, GX60 expandable I/O, GM90PS power supply module.

- Power consumption: 0.9 W or less

Isolation



Terminal arrangements

M3 screw terminal/Clamp terminal

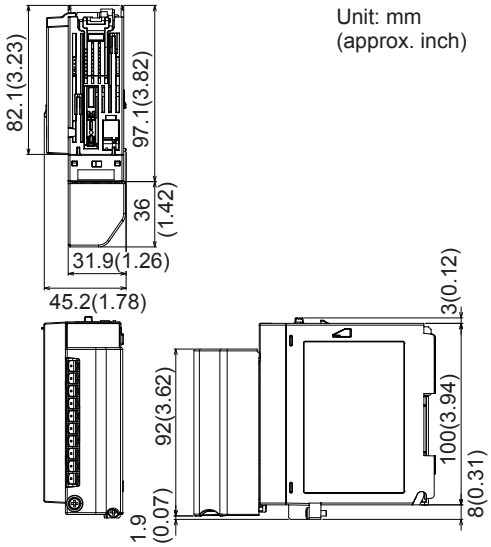
No.	Symbol		No.	Symbol	
21	CH6	+	11	CH1	+
22		−	12		−
23	CH7	+	13	CH2	+
24		−	14		−
25	CH8	+	15	CH3	+
26		−	16		−
27	CH9	+	17	CH4	+
28		−	18		−
29	CH10	+	19	CH5	+
30		−	20		−

* Negative terminal (common) potential shared

External Dimensions

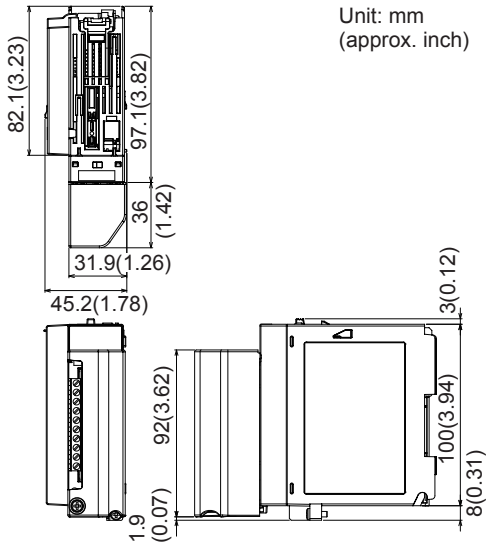
M3 screw terminal

Unit: mm
(approx. inch)



Clamp terminal

Unit: mm
(approx. inch)



Normal Operating Conditions

For normal operating conditions of this module, please refer to the General Specifications of the device (GX/GP, I/O Base Unit, or GM) that this module is mounted.
GX Specifications: GS 04L51B01-01EN
GP Specifications: GS 04L52B01-01EN
I/O Base Unit (Expandable I/O):
GS 04L53B00-01EN
GM Specifications: GS 04L55B01-01EN

Transport and Storage Conditions

Same as the GX90XA.

ANALOG OUTPUT MODULE (Model GX90YA)

GX90YA

- Application: Retransmission output, Manual output
- Number of outputs: 4 (isolated between channels)
- Output type: 4 to 20mA or 0 to 20mA
- Output update interval: 100 ms (shortest)
- Load resistance: 600Ω or less
- Output range: 0 to 22mA
- Output accuracy: ± 0.1% of F.S. (1mA or more) (F.S.=20mA)
- Resolution: 0.002%
- Operating temperature range: −20 to 50°C
- Terminal type: M3 screw terminal or Clamp terminal
- Withstand voltage
  Between the output terminals and the internal circuit: 1500 V AC for one minute
  Between the output terminals and the output terminals: 500 V AC for one minute
- Insulation resistance:
  Between the output terminals and the internal circuit: 20 MΩ or greater at 500 VDC
  Between the output terminals and the output terminal: 20 MΩ or greater at 500 VDC

Safety and EMC Standards

- CSA:
  CAN/CSA-C22.2 No.61010-1, Overvoltage Category II or I *1, Pollution Degree 2 *2
- UL:
  UL61010-1(CSA NRTL/C), Overvoltage Category II or I *1, Pollution Degree 2 *2
- CE/EMC directive *3:
  EN61326-1 Class A Table 2(For use in industrial locations) compliance
  EN61000-3-2 compliance
  EN61000-3-3 compliance
  EN55011 Class A Group 1 compliance
- CE/Low voltage directive *3
  EN61010-1, Overvoltage Category II or I *1, Pollution degree 2 *2
- CE/RoHS directive:
  “2011/65/EU+(EU)2015/863” (10-Substances) Compliant
- EMC Regulatory Arrangement in Australia and New Zealand (RCM): EN55011 Class A Group 1 compliance
- KC marking: KN11, KN61000-6-2 compliance

*1 Overvoltage category: Describes a number which defines a transient overvoltage condition. Implies the regulation for impulse withstand voltage. Applies to electrical equipment which is supplied from the fixed installation like a distribution board. II or I depends on the power supply specification of the main unit.

*2 Pollution degree 2:
Describes the degree to which a solid, liquid, or gas which deteriorates dielectric strength or surface resistivity is adhering.
“2” applies to normal indoor atmosphere. Normally, only non-conductive pollution occurs.

*3 The CE standards for modules represent standards that are met when the module is installed in the main unit.

- WEEE Directive: Compliant

Construction

- Front panel (terminal): Water and dust-proof, Complies with IEC529-IP20
- Material: Polycarbonate
- Color;
  Front: Charcoal grey light (Munsell 10B3.6/0.3 equivalent)
  Bezel: Smoke blue (Munsell 4.1PB6.0/4.5 equivalent)
- Dimensions: 45.2 mm(W) x 111 mm(H) x 133.1mm(D)
  (D: including terminal cover)
- Weight: Approx. 0.2 kg

Power Supply

Suppy from GX/GP, GX60 expandable I/O, GM90PS power supply module.

- Power consumption: 3 W or less

Isolation

Analog output CH1	Internal circuit
Analog output CH2	
Analog output CH3	
Analog output CH4	

Functional insulation

Terminal arrangements

M3 screw terminal/Clamp terminal

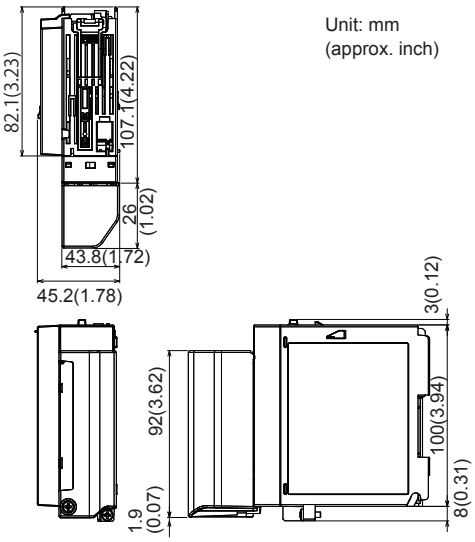
Term. No.	Symbol	
11	CH1	+
12		−
13	CH2	+
14		−
15	CH3	+
16		−
17	CH4	+
18		−
19	Not Used	
20	Not Used	

D/A Calibration Value

Two types of D/A calibration values (factory shipment setting and user setting) can be saved. If the user setting is not proper, it can be restored to the calibration value at factory shipment.

External Dimensions

M3 screw terminal/Clamp terminal



Normal Operating Conditions

For normal operating conditions of this module, please refer to the General Specifications of the device (GX/GP, I/O Base Unit, or GM) that this module is mounted.
GX Specifications: GS 04L51B01-01EN
GP Specifications; GS 04L52B01-01EN
I/O Base Unit (Expandable I/O): GS 04L53B00-01EN
GM Specifications: GS 04L55B01-01EN

Transport and Storage Conditions

Same as the GX90XA.

Effects of Operating Conditions

- Influence of power supply voltage variation: Accuracy is satisfied in the range of rated power supply voltage.
- emperature influence: ±200 ppm of F.S./°C or less

Installation Conditions

- Installation limitations by unit
  GX10/GP10: Up to 1 module
  GX20/GP20: Up to 2 module
  GM10/GX60: Up to 2 modules per unit
- System limitations
  GX10/GX20-1: Up to 10 module
  GX20-2: Up to 12 module
- If you want to use this module simultaneously with the GX90XA-04-H0 (high-speed universal type) module, the following limitation applies to the number of modules (including expansion modules) that can be used.

Model	Number of modules
GP10 (12 V DC)	Up to two modules total
GX20/GP20	Up to nine modules total
GX60	No limit
GM10 Single unit	Up to seven modules total
GM10 Multi unit (main unit/ Sub unit)	No limit

- Performing thermocouple measurement on a slot left of this module (above, below, left, and right for the GX20/GP20) may increase RJC errors on that module.

■ MODEL AND SUFFIX CODES

Analog input module, Digital I/O module (sold separately):

MODEL and SUFFIX Code (GX90XA)

Model	Suffix Code					Description
GX90XA						Analog Input Module
Number of channels	**-04**					4 channels (Type -H0 only)
	-06					6 channels (Type -R1 only)
	-10					10 channels (Type -C1, -L1, -U2, -T1, -V1)
Type		**-C1**				Current, scanner type (isolated between channels)
		-L1				DCV/TC/DI, low withstand voltage scanner type (isolated between channels)
		-U2				Universal, Solid state relay scanner type (3-wire RTD b-terminal common)
		-T1				DCV/TC/DI, Electromagnetic relay scanner type (isolated between channels)
		-H0				High-speed universal, individual A/D type (isolated between channels)
		-R1				4-wire RTD/resistance, scanner type (isolated between channels)
		-V1				DCV/TC/DI, high withstand voltage scanner type (isolated between channels)
-			**N**			Always N
Terminal form				**-3**		Screw terminal (M3)
				-C		Clamp terminal
Area					**N**	General

MODEL and SUFFIX Code (GX90XD)

Model	Suffix Code					Description
GX90XD						Digital Input Module*
Number of channels	**-16**					16 channels
Type		**-11**				Open collector/Non-voltage, contact (shared common), Rated 5 VDC
-			**N**			Always N
Terminal form				**-3**		Screw terminal (M3)
				-C		Clamp terminal
Area					**N**	General

* If you want to integrate pulse input, a math function (/MT option) is required in the GX/GP/GM main unit.

MODEL and SUFFIX Code (GX90YD)

Model	Suffix Code					Description
GX90YD						Digital Output Module
Number of channels	**-06**					6 channels
Type		**-11**				Relay, SPDT(NO-C-NC)
-			**N**			Always N
Terminal form				**-3**		Screw terminal (M3)
Area					**N**	General

MODEL and SUFFIX Code (GX90WD)

Model	Suffix Code					Description
GX90WD						Digital Iutput/Output Module*
Number of channels	**-0806**					8 channel DIs, 6 channel DOs
Type		**-01**				Open collector/non-voltage contact (shared common), rated 5 VDC; Relay, SPDT (NO-C-NC)
-			**N**			Always N
Terminal form				**-3**		Screw terminal (M3)
Area					**N**	General

* If you want to integrate pulse input, a math function (/MT option) is required in the GX/GP/GM main unit.

MODEL and SUFFIX Code (GX90XP)

Model	Suffix Code					Description
GX90XP						Pulse Iutput Module*
Number of channels	**-10**					10 channels
Type		**-11**				DC voltage/open collector/non-voltage contact (shared common), rated 5 VDC
-			**N**			Always N
Terminal form				**-3**		Screw terminal (M3)
				-C		Clamp terminal
Area					**N**	General

* If you want to integrate pulse input, a math function (/MT option) is required in the GX/GP/GM main unit.

MODEL and SUFFIX Code (GX90YA)

Model	Suffix Code					Description
GX90YA						Analog Output Module
Number of channels	**-04**					4 channels
Type		**-C1**				Current (isolated between channels)
-			**N**			Always N
Terminal form				**-3**		Screw terminal (M3)
				-C		Clamp terminal
Area					**N**	General

■ Optional Accessories (Sold Separately)

Product	Model/part no.
Shunt resister for M3 terminal (250 Ω ± 0.1 %)	415940
Shunt resister for M3 terminal (100 Ω ± 0.1 %)	415941
Shunt resister for M3 terminal (10 Ω ± 0.1 %)	415942
Shunt resister for Clamp terminal (250 Ω ± 0.1 %)	438920
Shunt resister for Clamp terminal (100 Ω ± 0.1 %)	438921
Shunt resister for Clamp terminal (10 Ω ± 0.1 %)	438922

Calibration certificate (sold separately)
When ordering the GX10/GX20/GP10/GP20 with options (analog input), the calibration certificate for the modules is included in and shipped with the calibration certificate of the main unit.

When ordering an analog input module, each module gets its own calibration certificate (one certificate per module).

Test certificate (QIC, sold separately)
When ordering the GX10/GX20/GP10/GP20 with options (analog/digial I/O), the QIC for each module is included in and shipped with the QIC of the main unit.

When ordering analog input modules and digital I/O modules, each module gets its own QIC (one QIC per module).

User's Manual
Product user's manuals can be downloaded or viewed at the following URL. To view the user's manual, you need to use Adobe Reader 7 or later by Adobe Systems.

URL: www.smartdacplus.com/manual/en/

Product Purchase Specifications

- The GX10/GX20/GP10/GP20 is composed of the main unit, I/O modules, the expandable I/O, and the expansion module.
  There are two ways to purchase I/O modules.
  One way is to purchase them individually by specifying models GX90XA, GX90XD, GX90YD, GX90WD, GX90XP, and GX90YA, .
  The other way is to purchase them as an option (/UCxx or /USxx). Purchasing them as an option is convenient, but this places limitations on the number of analog inputs that you can obtain.
  If you want to use more than 51 channels, please purchase the I/O modules individually.
- The GM is composed of the data aquisition module, the power supply module, the module base, the I/O module, and the expansion module.
  Please purchase the modules and module base individually.

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