

# General Specifications

GS 04L53B00-01EN

GX60  
I/O Base Unit (Expandable I/O)  
GX90EX  
Expansion Module

**SMARTDAC+**<sup>TM</sup>

## OVERVIEW

### GX60 I/O Base Unit (Expandable I/O)

The GX60 provides a function to expand an I/O module for recording and controlling, when it is connected to the expansion module that is connected to the GX10/GX20/GP10/GP20/GM using a LAN cable via a private communication network.

- One GX60 can install up to six I/O modules.
- Up to six units can be additionally connected to the GX/GP/GM.
- The communication distance between the GX/GP/GM and GX60 or between GX60s can be extended by up to 100 m using a LAN cable.
- \* When the measurement mode on the GX/GP/GM is High speed, expandable I/O units cannot be installed in the GX/GP/GM.

### GX90EX Expansion Module

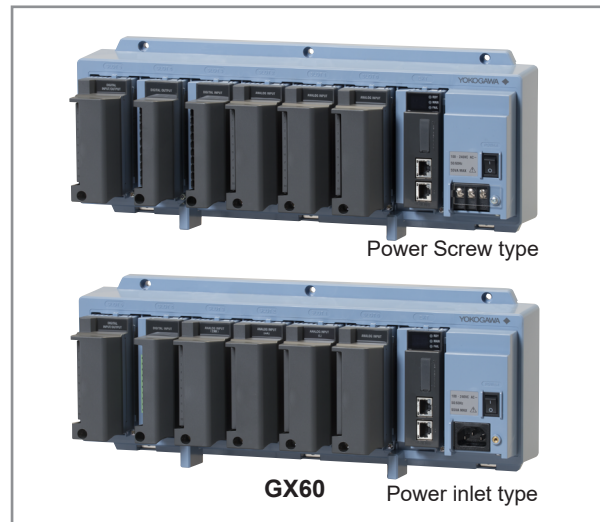
The expansion module is installed in the GX10/GX20/GP10/GP20, GX60, GM main unit, and GM sub unit.

[If GX90EX expansion module is installed in the GX/GP or I/O base unit]

- The expansion module, which is supported by the GX/GP and GX60, enables a connection between GX/GP and GX60 or a communication between GX60s.
- A distributed arrangement with the data time synchronization secured is provided by connecting Expansion modules installed in the GX/GP main unit and GX60 using a LAN cable.
- Data is transferred to the high-order GX/GP via the expansion module.

[If GX90EX expansion module is installed in the GM main unit/sub unit]

- The expansion module, which is supported by the GM main unit and sub unit, enables a connection between GM main unit and sub unit or a communication between sub units.
- A distributed arrangement with the data time synchronization secured is provided by connecting Expansion modules installed in the GM main unit and sub unit using a LAN cable.
- Data is transferred to the high-order GM10 via the expansion module.



## ■ GX60 SPECIFICATIONS

### Module Installation

- I/O module: Max. 6 modules (Slots 0 to 5)

Modules that can be installed  
Please refer to the General Specifications of the GX90XA/GX90XD/GX90YD/GX90WD/GX90XP/GX90YA I/O Modules (GS 04L53B01-01EN) and GX90UT PID cControl Module (GS 04L53B01-31EN).

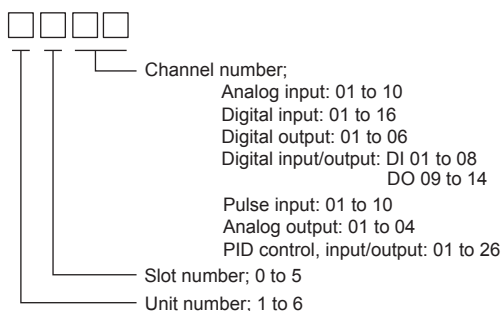
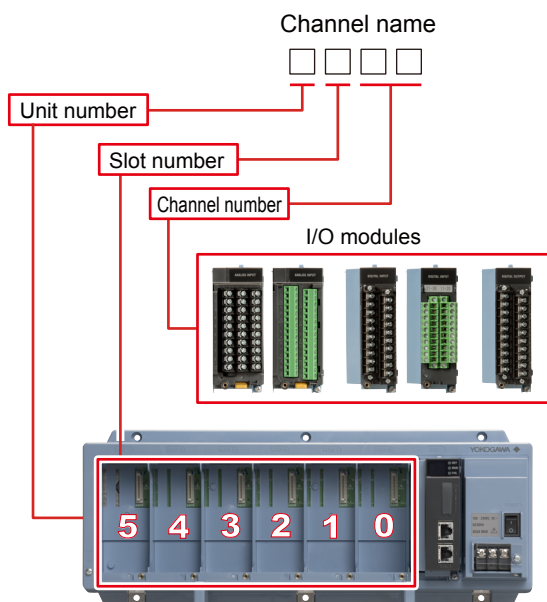
Restrictions:

Expansion module: 1 module (expansion module slot "EXT")

For other limitations, see the GX10/GX20 Paperless Recorder (Panel Mount Type) General Specifications (GS 04L51B01-01EN).

### Names of Channels

- The module installed in the GX60 has a channel name that consists of the unit number, slot number, and channel number.



### Safety and EMC Standards

- CSA:
  - CSA C22.2 No. 61010-1,
  - CSA-C22.2 No. 61010-2-030,
  - CAN/CSA-C22.2 No.61010-2-201<sup>\*4</sup>,
  - Overvoltage Category II<sup>\*1</sup>, Pollution Degree 2<sup>\*2</sup>,
  - Measurement Category<sup>\*3</sup>
- UL:
  - UL 61010-1, UL Std. No. 61010-2-030,
  - UL 61010-2-201<sup>\*4</sup> (CSA NRTL/C),
  - Overvoltage Category II<sup>\*1</sup>, Pollution Degree 2<sup>\*2</sup>,
  - Measurement Category<sup>\*3</sup>
- CE, UKCA/EMC directive:
  - EN 61326-1 Class A Table 2 (For use in industrial locations) compliant
  - EN 61000-3-2 compliant
  - EN IEC 61000-3-2 compliant
  - EN 61000-3-3 compliant
  - EN 55011 Class A Group 1 compliant
- CE, UKCA/Low voltage directive:
  - EN 61010-1, EN IEC 61010-2-030,
  - EN IEC 61010-2-201<sup>\*4</sup> compliant
  - Overvoltage Category II<sup>\*1</sup>, Pollution Degree 2<sup>\*2</sup>,
  - Measurement Category<sup>\*3</sup>
- CE, UKCA/EU RoHS directive: EN IEC 63000
- WEEE Directive: Compliant
- EMC Regulatory Arrangement in Australia and New Zealand (RCM): EN 55011 Class A Group 1 compliant
- KC marking: KS C9811, KS C9610-6-2 compliant

\*1 Overvoltage Category II:

Describes a number which defines a transient overvoltage condition. Implies the regulation for impulse withstand voltage.

"II" applies to electrical equipment which is supplied from the fixed installation like a distribution board.

\*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 Measurement Category:

Depends on the specification of each modules.

\*4 This product is designed as open equipment

under the relevant standard, install it as follows:

- Install the GX60 in a panel with a door.
- The instrumentation panel or panel used for support must comply with CSA/UL/EN/IEC 61010-2-201 or must be at least IP1X (degrees of protection) and at least IK09.

**Construction**

- Front panel (terminal): Water and dust-proof, Complies with IEC529-IP20
- Material: Polycarbonate, aluminum alloy
- Color;  
Bezel: Smoke blue (Munsell 4.1PB6.0/4.5 equivalent)
- Dimensions: 412.5 mm(W) x 164.7 mm(H) x 127.8 mm(D)
- Weight: Approx. 3.2 kg (installing 6 modules)

**Power Supply**

- Rated supply voltage: 100 to 240 VAC
- Allowable power supply voltage range: 90 to 132, 180 to 264 VAC
- Rated power supply frequency: 50/60 Hz
- Power consumption:

Supply voltage	Normal operation *	Maximum
100 V AC	20 VA	40 VA
240 V AC	30 VA	55 VA

- \* When using 6 analog input modules.
- Allowable interruption time: Less than 1 cycle of the power supply frequency

**Isolation**

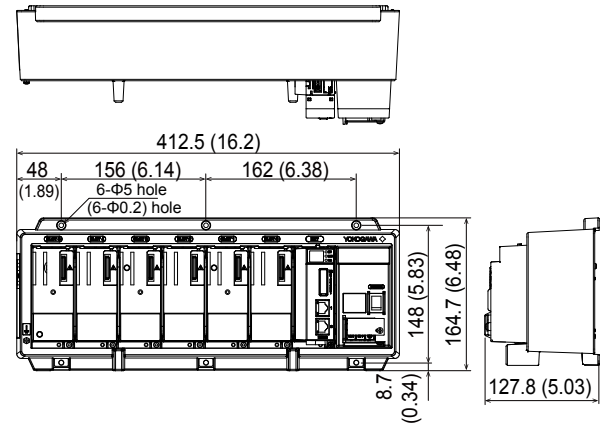
- Insulation resistance: Between each insulation terminals, and earth: 20 MΩ or greater at 500 VDC
- Withstand voltage:  
Between the power terminal and earth: 3000 V AC at 50/60 Hz for one minute  
Between the input/output modules and earth: Depends on the specification of I/O module.
- Grounding: Be sure to set a low grounding resistance.
- Isolation:

Power terminal	Input and output module terminal	
	Input and output module internal circuit	Internal circuit
	Earth (PE) terminal	

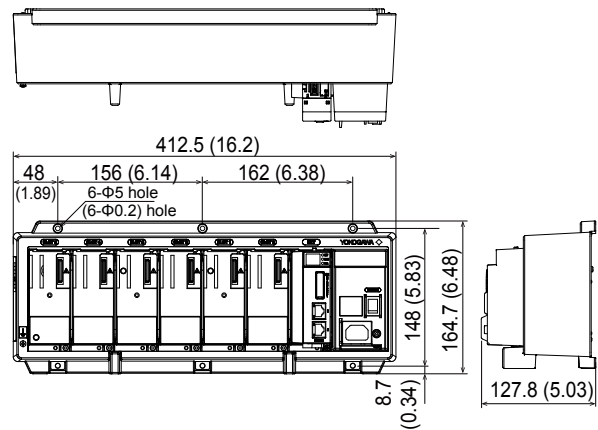
The circuits divided by lines are insulated mutually.

**External Dimensions**

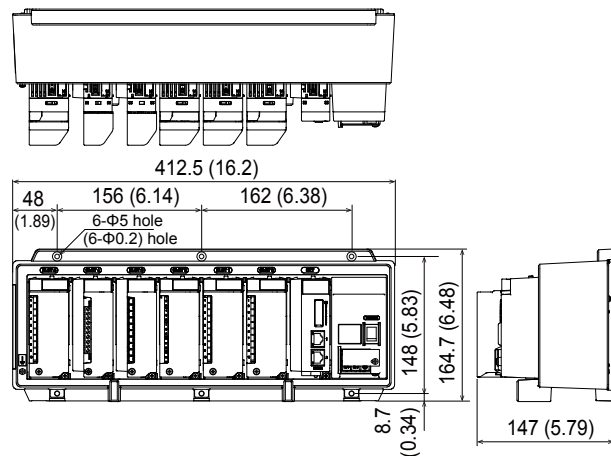
Power screw terminal type



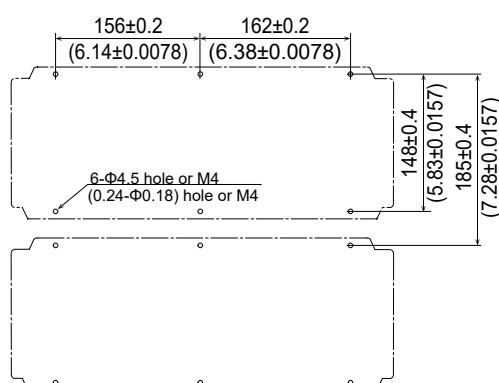
Power inlet type



With modules



Dimensions of fixing hole



Unit: mm (approx. inch)

Unless otherwise specified, tolerance is  $\pm 3\%$  (however, tolerance is  $\pm 0.3$  mm when below 10 mm).

### Normal Operating Conditions

- Power supply voltage: 100 to 240 V AC  $\pm 10\%$
- Power supply frequency: 50/60 Hz  $\pm 2\%$
- Ambient temperature: 0 to 50 °C
- Ambient humidity: 20 to 80 %RH (However, less than moisture content of 40°C 80% RH at 40°C or more), No condensation
- Magnetic field: 400 A/m or less (DC and 50/60 Hz)
- Vibration:
  - 5 ≤ f < 8.4 Hz amplitude 3.5 mm (peak)
  - 8.4 ≤ f ≤ 160 Hz acceleration 9.8 m/s<sup>2</sup> or less
- Shock (IEC-60068-2-27):
  - Non-energization, 500 m/s<sup>2</sup> or less, approximate 10 ms, 6 directions ( $\pm X$ ,  $\pm Y$ ,  $\pm Z$ )
- Mounting position: Can be inclined up to 30 degrees backward. Left and right horizontal when installing the panel mount and wall mount.
- Altitude: 2000 m or less
- Installation location: Indoors
- Warm-up time: At least 30 minutes after power on

### Transport and Storage Conditions

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

### Effects of Operating Conditions

- Power supply variation: Shall satisfy the accuracy specification in the range of 90 to 132 VAC or 180 to 250 VAC (frequency: 50/60 Hz). Power supply frequency fluctuation: Shall satisfy the accuracy specification in the range of rated supply frequency  $\pm 2$  Hz (power-supply voltage: 100 VAC).

## ■ GX90EX SPECIFICATIONS

### Communication Functions

Communication between GX/GP and GX60, between GX60s, between GM main unit and sub unit, between GM sub units via dedicated communication network.

- Baud rate: 10Base-T/100Base-TX (Auto) \*1
- Number of ports: 2
- Connection cable: STP cable, CAT5 or greater
- Inter-module connection: Cascade connection (Ring connection is disabled.)
- Maximum communication distance: 100 m \*2
- Connector: RJ-45

\*1 Can be fixed to 10Base-T by DIP switch settings.

\*2 Distance extension through HUB connection or LAN repeaters is not possible.

### Display Functions

- System status LED indicators:
  - RDY (green): Lights up when the CPU is running normally.
  - MAIN (green): Turns on in master mode and off in slave mode.
  - FAIL (red): Lights up when a system error occurs.
- 7-segment LED indicator: Indicates a unit number or operation error.
- Ethernet status indicator LED: LINK ACT (green), SPEED (orange)

### Address Setting Functions

Switch settings:

Switch No.	Descriptions
1	For unit number setting
2	
3	
4	
5	-
6	-
7	10 Mbps/100 Mbps switching
8	MASTER/SLAVE switching

### Master / Slave Functions

Can be set to master mode (when installed in the GX/GP or GM main unit), or slave mode (when installed in the GX60 or GM sub unit) using the DIP switches.

### 10 Mbps Fixed Mode

Can be set to the 10 Mbps fixed mode using the DIP switches.

### Mounting

Can be mounted in the GX/GP, GX60, GM main unit, and GM sub unit.

- Mounting position:
  - GX10/GP10: Slot 2
  - GX20/GP20: Slot 9
  - GX60: EXT slot
  - GM main unit: Leftmost position
  - GM sub unit: Next to the power supply module

## Safety and EMC Standards

- CSA:  
CSA C22.2 No. 61010-1,  
Overvoltage Category II or I<sup>\*1</sup>, Pollution Degree 2<sup>\*2</sup>
- UL:  
UL 61010-1 (CSA NRTL/C),  
Overvoltage Category II or I<sup>\*1</sup>, Pollution Degree 2<sup>\*2</sup>
- CE, UKCA/EMC directive<sup>\*3</sup>:  
EN 61326-1 Class A Table 2 (For use in  
industrial locations) compliant  
EN 61000-3-2 compliant  
EN IEC 61000-3-2 compliant  
EN 61000-3-3 compliant  
EN 55011 Class A Group 1 compliant
- CE, UKCA/Low voltage directive<sup>\*3</sup>:  
EN 61010-1 compliant,  
Overvoltage Category II or I<sup>\*1</sup>, Pollution Degree 2<sup>\*2</sup>
- CE, UKCA/EU RoHS directive<sup>\*3</sup>: EN IEC 63000
- WEEE Directive: Compliant
- EMC Regulatory Arrangement in Australia and  
New Zealand (RCM): EN 55011 Class A Group 1  
compliant
- KC marking: KS C9811, KS C9610-6-2 compliant

- \*1 Overvoltage Category:  
Describes a number which defines a transient  
overvoltage condition.  
Implies the regulation for impulse withstand  
voltage.  
II or I depends on the power supply specification  
of the GX/GP main unit, GM main unit or sub 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, UKCA standards for modules represent  
standards that are met when the module is  
installed in the main unit.

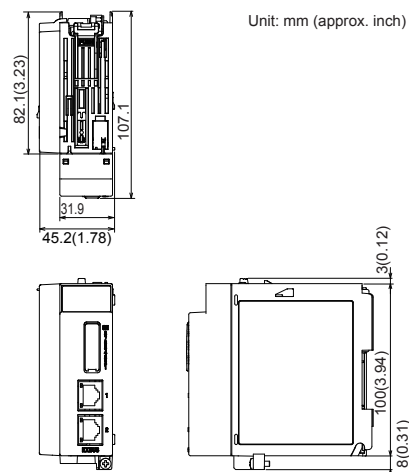
## Construction

- 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 107.1  
mm(D) (D: including terminal cover)
- Weight: Approx. 0.18 kg

## Power Supply

- Supply from GX/GP, GX60 expandable I/O, or  
GM90PS power supply module.
- Power consumption: 1.8W or less

## External Dimensions



## 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): This General  
Specifications

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<sup>2</sup> maximum
- Shock: 392 m/s<sup>2</sup> maximum (in packaged  
condition)

## Effects of Operating Conditions

None

## ■ MODEL AND SUFFIX CODES

### MODEL and SUFFIX Code (GX60)

Model	Suffix Code			Description
<b>GX60</b>				I/O Base Unit
Type	<b>-EX</b>			I/O Expansion
Area		<b>N</b>		General
Power supply			<b>1</b>	100 V AC, 240 V AC
Power cord			<b>D</b>	Power cord UL/CSA standard
			<b>F</b>	Power cord VDE standard
			<b>R</b>	Power cord AS standard
			<b>Q</b>	Power cord BS standard
			<b>H</b>	Power cord GB standard
			<b>N</b>	Power cord NBR standard
			<b>W</b>	Screw terminal (M3)

\* One GX90EX (I/O expansion module) is provided.

### MODEL and SUFFIX Code (GX90EX)

Model	Suffix Code			Description
<b>GX90EX</b>				I/O Expansion Module
Port	<b>-02</b>			2 ports
Type		<b>-TP1</b>		Twisted Pair Cable
-			<b>N</b>	Always N
Area			<b>-N</b>	General

## ■ Standard Accessories

Product	Qty
Power cord	1*
Stopper (Antiskid rubber) (A9088ZM)	2

\* Except GX60 power cord suffix code: W

## ■ Optional Accessories (Sold Separately)

The dummy cover is for empty slots on GX/GP and GX60. The dummy cover is not attached to the GX60 when shipped from the factory. If you need the dummy cover, please purchase it separately.

Product	Part no.
Dummy cover	<b>B8740CZ</b>

### Test certificate (QIC, sold separately)

When ordering the GX60, GX90EX gets its own QIC (one QIC per unit).

When ordering the expansion modules separately, 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/](http://www.smartdacplus.com/manual/en/)

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## ■ Basic Conditions and Individual Contracts at the Time of Purchase

The warranty for this product is defined in the basic conditions and individual contracts at the time of purchase.

The individual conditions are as follows.

- **Validation**  
Yokogawa does not guarantee the final outcome of validation work even if there is a defect in the product.  
For the warranty of validation services, please contact the company that performed the validation work.
- **Warranty period of the firmware**  
The firmware warranty period is one year.  
Please refer to the following URL for the procedure to update the firmware and the method to download the firmware.  
<https://myportal.yokogawa.com/>

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