SMARTDAC+
Data Acquisition & Control
Data Acquisition System GM
Your business environment is complex and rapidly changing. You need smart and powerful systems that can adapt to your process. SMARTDAC+™ is a fresh approach to data acquisition and control, with smart and simple touch operation as a design priority. Measure, display and record process data with greater levels of clarity, intelligence and accessibility.

The SMARTDAC+™ concept started with the GX/GP, an integrated I/O and recording system with a familiar touch operator interface.

Building upon the SMARTDAC+™ product family is the highly adaptable, scalable and easy to operate GM data logger.

Now that’s SMART.

Precise, Reliable & Adaptable

Decades of Yokogawa's innovative measuring technology has resulted in a flexible data logger that offers both reliability and ease of use.

- **Scalability**
  Up to 420 ch per system / Plug and lock modules

- **Ease of Use**
  Web-based configuration / Live Web-based data viewing

- **Mobile Connectivity**
  Bluetooth / Mobile Application

- **Open Network**
  Modbus, EtherNet/IP, SLMP, and OPC-UA server

- **Reliability**
  Secure data storage / High accuracy measurement

- **Noise Tolerance**
  Electromagnetic relay module

- **Smart Architecture**
  Navigate with ease

- **Smart User Interface**
  Data analysis made simple and mobile

- **Smart Functionality**
  ■ 600V high withstand voltage (GX90XA-10-V1 High Withstand Voltage AI Module)
  ■ PID control (GX90UT PID Control Module)
  ■ Program control (/PG option)
  ■ Dual interval measurement
  ■ High speed (1 ms) measurement (GX90XA-04-H0 High Speed AI Module)
  ■ 4-wire RTD input, resistance measurement (GX90XA-06-R1 4-Wire RTD Module)
  ■ Retransmission/manual mA output (GX90YA Analog Output Module)
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**What’s New**
- 600V high withstand voltage (GX90XA-10-V1 High Withstand Voltage AI Module)
- PID control (GX90UT PID Control Module)
- Program control (/PG option)
- Dual interval measurement
- High speed (1 ms) measurement (GX90XA-04-H0 High Speed AI Module)
- 4-wire RTD input, resistance measurement (GX90XA-06-R1 4-Wire RTD Module)
- Retransmission/manual mA output (GX90YA Analog Output Module)

**Ready for the future when you are**

**Smart Architecture**

**Navigate with ease**

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**Smart Functionality**
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**Smart Architecture**

**Increase channels by adding additional block modules**

YOKOGAWA proprietary block architecture [Patent technology]
- Expand one, or multiple module at a time
- Unique design houses modules in linked module bases
- Module base ensures linkage (slide locks and mounting screws also available)
- Modules can be inserted and removed from the front panel for easy maintenance

**Names of data acquisition module parts**

- 7 segment LED (x2) — Displays operation mode, system number, and other information
- USER key — Executes specified actions
- SD memory card slot
- Ethernet port — A 10Base-T/100Base-TX port.
- Status display — Displays system status
- START/STOP key — Starts/stops recording and computation
- USB port (USB2.0 compliant port for hardware settings and the GA10, or customer created communication programs)
- Serial communications port (Optional code, /C3)

**Comes standard with support for up to 100 ch of measurement (single-unit configuration)**

Up to 10 I/O modules can be linked to a single data acquisition module (GM10)

**Installs anywhere**

For the desktop, DIN rails, or wall-mounting. No special attachments required.

- Desktop
- Mounted on DIN rails
- Wall-mounted

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3 Data Acquisition System GM
Select from a wide range of I/O modules

Select modules according to your application. Noise-resistant, magnetic relay types also available. All modules have removable terminal blocks for easy wiring. The same modules used in the SMARTDAC+ series.

<table>
<thead>
<tr>
<th>Model</th>
<th>Name</th>
<th>Measurement/Application</th>
<th>Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>GX90A10-U2</td>
<td>Analog input module</td>
<td>DC voltage, DC current (with external shunt resistor connected), thermocouple, RTD, contact (solid state relay scanner type)</td>
<td>10</td>
</tr>
<tr>
<td>GX90A10-L1</td>
<td></td>
<td>DC voltage, DC current (with external shunt resistor connected), thermocouple, contact (Low withstand voltage solid state relay scanner type)</td>
<td>10</td>
</tr>
<tr>
<td>GX90A10-T1</td>
<td></td>
<td>DC voltage, DC current (with external shunt resistor connected), thermocouple, contact (Electromagnetic relay scanner type)</td>
<td>10</td>
</tr>
<tr>
<td>GX90A10-C1</td>
<td></td>
<td>DC current (mA) (solid state relay scanner type)</td>
<td>10</td>
</tr>
<tr>
<td>GX90A10-V1</td>
<td></td>
<td>DC voltage, DC current (with external shunt resistor connected), thermocouple, contact (Solid state relay scanner type)</td>
<td>10</td>
</tr>
<tr>
<td>GM10-2</td>
<td></td>
<td>DC voltage, DC current (with external shunt resistor connected), thermocouple, RTD, contact (individual A/D type)</td>
<td>4</td>
</tr>
</tbody>
</table>

You can also connect a GX60 expansion unit.

**Analog input module scan interval and measurement type**

<table>
<thead>
<tr>
<th>Type</th>
<th>Channels can integral shortest</th>
<th>Scanning CT</th>
<th>RTD</th>
<th>DCV</th>
<th>DI</th>
<th>mA Range</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal (U2)</td>
<td>10</td>
<td>100ms</td>
<td>SSR</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>Universal</td>
</tr>
<tr>
<td>Low withstand voltage relay (L1)</td>
<td>100ms SSR</td>
<td>100ms</td>
<td>SSR</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>Mid-price</td>
</tr>
<tr>
<td>Electromagnetic relay (T1)</td>
<td>10</td>
<td>1s</td>
<td>Relay</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>Noise-resistance</td>
</tr>
<tr>
<td>DC current input (C1)</td>
<td>10</td>
<td>100ms</td>
<td>SSR</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>mA only</td>
</tr>
<tr>
<td>High withstand voltage (V1)</td>
<td>10</td>
<td>100ms</td>
<td>SSR</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>High withstand voltage</td>
</tr>
<tr>
<td>High speed universal (H0)</td>
<td>4</td>
<td>1ms</td>
<td>—</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>High speed measurement</td>
</tr>
<tr>
<td>4-wire RTD/resistance (R1)</td>
<td>6</td>
<td>100ms</td>
<td>SSR</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>4-wire RTD</td>
</tr>
</tbody>
</table>

**Actual values support high precision measurement**

<table>
<thead>
<tr>
<th>Input type</th>
<th>Measuring accuracy * (typical value *)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCV</td>
<td>±(0.01% of rdg + 5 μV)</td>
</tr>
<tr>
<td>60V(1-5V)</td>
<td>±(0.01% of rdg + 5 μV)</td>
</tr>
<tr>
<td>R, S</td>
<td>±(0.01% of rdg + 2 mV)</td>
</tr>
<tr>
<td>B</td>
<td>±1.7°C</td>
</tr>
<tr>
<td>K(-200.0 to 1370.0°C)</td>
<td>±(0.01% of rdg +0.2°C for 0 to 1370.0°C, ±(0.15% of rdg +0.2°C) for -200.0 to 0.0°C</td>
</tr>
<tr>
<td>K(-200.0 to 500.0°C)</td>
<td>±(0.00% of rdg +0.2°C for 0 to 500.0°C, ±(0.1% of rdg +0.2°C) for -200.0 to 0.0°C</td>
</tr>
<tr>
<td>I</td>
<td>±0.2°C for 0.0 to 400.0°C, ±0.1% of rdg + 0.2°C for 0.0 to 1000.0°C, ±0.05% of rdg + 0.2°C for 0.0 to 0.0°C</td>
</tr>
<tr>
<td>N</td>
<td>±0.02% of rdg + 0.2°C for 0.0 to 1300.0°C, ±0.05% of rdg + 0.2°C for 0.0 to 0.0°C</td>
</tr>
<tr>
<td>R100 (-500.0 to 850.0°C)</td>
<td>±0.02% of rdg + 0.2°C for 0.0 to 850.0°C, ±0.05% of rdg + 0.2°C for 0.0 to 0.0°C</td>
</tr>
</tbody>
</table>

**Support measurement of up to 420 ch (actual input) by expanding channels across multiple units (multi-unit configuration)**

Expand up to 420 ch by using the GX90EX expansion module. (GM10-2)

On the GM10-2 large capacity type, up to 1000 ch are available for recording when including MATH and communication channels.

Connect units with LAN cables for dispersed installations.

**Internal memory and max. I/O channels**

<table>
<thead>
<tr>
<th>Type</th>
<th>Internal memory</th>
<th>Max. input/output channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM10-1</td>
<td>500MB</td>
<td>Single-unit configuration 0 to 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multi-unit configuration 0 to 100</td>
</tr>
<tr>
<td>GM10-2</td>
<td>1.2GB</td>
<td>Single-unit configuration 0 to 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multi-unit configuration 0 to 420</td>
</tr>
</tbody>
</table>

* When analog input only

**Reduce wiring with distributed installation**

When the data logger is installed offsite (away from the DUT), you can place the sub unit at the site and monitor data without the need for long-distance wiring of thermocouples and other sensors.
Easy access from a Web browser

Through a Web browser you can monitor the GM in real time and change settings. You can easily build a seamless, low-cost remote monitoring system with no additional software.

Real time monitoring screen

With the scroll bar, you can seamlessly scroll between past and current trends.

Enter settings online with a web browser

The setting screen lets you copy AI channel settings and other information to Excel for editing. You can reimport the data into the setting screen after editing.

Trend, digital, and other real-time displays

Trend
Bar graph
Alarm/Message/Memory summary
Digital
Overview
Dedicated software (free download) is available for loading waveforms and GM settings

**Universal viewer**
Data files saved on the GM can be viewed and printed. You can perform statistical computation over an area and export to ASCII, Excel, or other formats.

**Offline setting software**
Save settings or transfer them to the GM. Connections can also be made easily via USB or Bluetooth.

**Safe to use in a wide range of temperatures**
With operating temperatures of -20°C–60°C, it supports a wide range of applications in varying installation environments.

**Monitoring and settings can also be done on a tablet**
Supports Bluetooth (optional code /C8)
You can enter settings or monitor from a tablet without ever bringing a PC to the site.
Dedicated applications is available for free download. For more information, visit our website.

**Powerful applications**

**Bluetooth connection**
Simple to use for in-vehicle testing.

**USB connection**
Service staff can easily perform maintenance on the GM.
**Data analysis made simple and mobile**

**Smart Functionality**

**High speed measurement (down to 1 ms)**

Yokogawa’s proprietary A/D converter allows the high speed module to measure data points as fast as 1 ms.

- High speed (1 ms) measurement
- Proprietary A/D converter

* With 1ch per module.
  At 2 ms, 2 ch per module, and at 5 ms or more, all 4 ch per module.

Max. channels

<table>
<thead>
<tr>
<th>Model</th>
<th>Scan interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1ms</td>
</tr>
<tr>
<td>GM10-1</td>
<td>1ch</td>
</tr>
<tr>
<td>GM10-2</td>
<td>5ch</td>
</tr>
</tbody>
</table>

**Dual interval measurement with two different scan intervals**

Users have the ability to choose two different scan intervals on a single GM system. This allows users the flexibility to measure various types of inputs with two different scan intervals in a single system.

For example, this provides for efficient, simultaneous measurement of signals with slow fluctuations such as temperature, and fast-changing signals such as pressure and vibration. Modules can be assigned to measurement groups.

**Application examples**

- Acquire temperature and vibration data from power plant turbines
  - Monitoring and recording of alarms when abnormal temperature or vibration are detected
  - At 5 ms sampling, reliably detect abnormalities
  - Dual interval multipoint measurement

- Measures LCD projector overheating
  - Evaluates the rise in temperature of parts near the projector lamp, and the drop in temperature after powering OFF
  - At 10 to 1 ms sampling, record steep temperature changes in detail

- Car battery charge/discharge test
  - Measures transient current during charging and discharging
  - Sampling requirement: 1 ms
PID control function

Control function
Enables PID and program control
- PID control module
  2-loops per module, up to 20 loops per system
- Setpoint program control function (/PG option)
  Up to 99 patterns

Remote operation and monitoring
The web application enables remote operation and monitoring from a browser.

Application examples
Industrial furnace
- Ideal for centralized control of multiple loops
- Modular structure makes for easy maintenance of individual loops

Utility equipment
- Simplifies loop control and remote monitoring of utility equipment
- Readily scalable for additional loops

Engine endurance test bench
- Measures evaluation data while generating test patterns

MATH (including reports), and event actions
MATH function (/MT option)
Supports various kinds of math computation, including basic math and functions (square root, logarithms, trigonometry). Write formulas using variables for measured or computed data and save or display the results—this saves time and effort on post-processing. Create hourly, daily, monthly, and other reports with the Report function.

Event actions
Ability to assign actions tied to specific events during the operation of the data acquisition station.

Event
- Alarm
- Remote
- Relay
- Timer
- Match time timer
- Internal switch
- User function key, etc.

Action
- Record start/stop
- MATH start/stop
- Manual sample
- Alarm ACK
- Message
- Event trigger
- Reset timer
- Relay ON/OFF, etc.
Aerospace Heat Treatment Supports heat treatment application AMS2750/NADCAP

Calibration correction schedule control function (/AH option)
Schedule management for periodically executing calibration correction configuration and the like. You can set the input correction factor as a sensor correction factor and instrument correction factor. TUS software is available for easily creating TUS (temperature uniformity survey) reports.

* For details on TUS software, consult with your Yokogawa dealer.

Record data in separate files per equipment set

Multi-batch Function (/BT option)
Record pre-defined channel groups to separate data files with independent start and stop control. You can create up to 12 batches.

Report creation and network functions (/MT option)

Input calibration is performed in the AI channel setting screen, and the calibration period settings are entered in the schedule management setting screen.
Provides a variety of convenient networking functions

Networking

Modbus/TCP and Modbus/RTU Communications

GM supports Modbus TCP/IP client and server modes for Ethernet communications and Modbus RTU master and slave modes for optional serial communications.

**Modbus/TCP (Ethernet connection), Modbus/RTU (RS-422/485 connection)**

- **Modbus client/Modbus master**
  - Using the Modbus/TCP and Modbus/RTU functions, you can display and save data from the server and slave devices on the GM.
  - * Requires the communication channel (/MC option).

- **Modbus server/Modbus slave**
  - Using the Modbus/TCP and Modbus/RTU functions, you can acquire GM data from upstream devices.
  - Ethernet, RS-422/485 (You can connect up to 16 Modbus/TCP servers, or up to 32 servers with the GM10-2.)
  - (You can connect up to 31 Modbus/RTU slaves.)

EtherNet/IP Function (/E1 option)

GM supports EtherNet/IP server functions. You can access GM from PLCs or other devices and load measurement/MATH channels or write to communication input channels (GM10-1: up to 300 ch, GM10-2: up to 500 ch).

* Requires the communication channel (/MC option) is required.

- PLC
- EtherNet/IP communication
  - Data reading
  - Data writing
- Ethernet

CC-Link family SLMP communication (/E4 option)

Protocol function that enables connection from a GM to Mitsubishi Electric PLCs without sequencer programs. The GM can run as the SLMP client to write to a GM measured data PLC, or PLC data to communication channels.

* Requires the communication channel option (/MC option).

- SLMP communication
- Command
- Required data

Data acquisition on power measuring instruments (/E2 and /MC options)

Acquire precise digital data on the GM by digital communication connectivity to a power measuring instrument (WT series power analyzers) and record it along with the GM’s measured data. Since it records a device’s power consumption, temperature, and other phenomena at the same time, the GM is ideal for performance evaluation testing.

**Models that can be connected**
Yokogawa Meters & Instruments Corp.
WT1800/WT1800E (command type WT1800), WT500 WT300/WT300E (command mode WT300)
Max. no. of connections 16
**OPC-UA Server (/E3 option)**

Data acquired by the GM can be accessed through Ethernet communication from a host system (OPCUA client). Writing from upstream systems to GM communication channels requires the communication channel function (/MC option).

**FTP-based file transfer**

The FTP client/server functions allow you to easily share and manage data from a centralized file server.

**E-mail messaging function**

The GM can send a variety of informative e-mail messages that include alarm notification reports, periodic instantaneous data values, scheduled report data and other information.

**Time synchronization with network time servers**

GM uses SNTP protocol in client mode to acquire time information from a network time-server. This function allows any number of GM units within a facility to have precisely synchronized time; all units will record data with coordinated date and time stamp information. In addition, GM can function as a server, providing time data to other SNTP client units on the network.

**Automatic network setup (DHCP) function**

Using Dynamic Host Configuration Protocol (DHCP), the GM can automatically acquire the settings it needs (IP address) for network communications from a DHCP server. This makes it easier than ever to install the unit on a plant network.

**Comes with communication functions that are compatible with the DARWIN data acquisition unit**

The GM supports DARWIN communication commands. Use your current DARWIN communication programs as-is on the GM. It’s easy to switch from an existing DARWIN unit.

* See your dealer or nearest Yokogawa representative for details.
Be confident that recorded data is saved

Supports long-duration and multichannel recording. Measured data is always stored to internal memory, and data is transferred to external storage media at regular intervals. Redundancy can be achieved by sending data to a server with the FTP client function. Securely saves measured data even in the event of a sudden power loss.

Approximate sample time

<table>
<thead>
<tr>
<th>Number of recording channels</th>
<th>Total sample time</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Approx. 71 days</td>
</tr>
<tr>
<td>100</td>
<td>Approx. 23 days</td>
</tr>
<tr>
<td>300</td>
<td>Approx. 7 days</td>
</tr>
</tbody>
</table>

With an internal memory of 1.2 GB and recording interval of 1 sec.

Select file formats according to your application

For increased security, measured data can be saved in binary format. This format is very difficult to decipher or modify in traditional text editors or other programs. To enable easy and direct opening of the data in text editors or spreadsheet programs, choose text format. This allows you to work with your measurement data without dedicated software.

21 CFR Part 11 support ([AS option])

With the advanced security function option, GM supports the USA FDA’s Title 21 CFR Part 11 regulations (for the pharmaceutical manufacturing industry). It gives you access to a login function for requiring user names, IDs, and passwords, plus electronic signatures, audit trails, an anti-tampering function, an Active Directory-based password management function, and other security features.

Part 11

FDA 21 CFR PART 11

Security enhancements

Safely sends and receives customer data.

SSL support function

- FTP client
- SMTP client
- FTP server
- HTTP server

Digital signatures

- Add electronic signatures to records (PDF)

SLL-based encryption

SSL: An encryption protocol for data sent over TCP/IP networks.

Key lock

You can use settings to lock the GM10 operation keys in order to avoid accidental start/stop of measurement or computation.

Analog front end module

A proprietary A/D converter delivers high speed, high precision data acquisition. (High-speed AI, PID Control module)
Specifications

For detailed specs, see the general specifications (data acquisition module/power supply module/module base: GS 04L53B01-01EN, expansion unit/extension modules: GS 04L53B00-01EN, I/O modules: GS 04L53B01-01EN, PID control module: GS 04L53B01-31EN).

**Data Acquisition Module**

- **Model:** GM10
- **Bus:** EtherCAT, OPC-UA Server, Modbus/TCP, Ethernet

**Measurement**

- **Measurand type:** RTD, thermocouple, process current, input signal
- **Reference junction:** Type J, K, E, T, N, R, S, W, L, U, W97Re3-W75Re25

**Communication**

- **Communication devices:** OPC-UA Server, Modbus/TCP, Ethernet

**Safety**

- **Insulation resistance:** Between analog input channels: 1000 V AC, 1 minute
- **Withstand voltage:** Between power terminal and earth: 3000 V AC (50/60 Hz), 1 minute

**Electrical/mechanical specifications**

- **Environment:** Universal: High withstand voltage: 50 Hz
- **Humidity:** 10 to 90% non-condensing

**Environmental conditions**

- **Operating conditions:** 5 to 40°C (23°C ± 1°C), 90% or lower non-condensing
- **Storage conditions:** 0 to 60°C, 95% or lower non-condensing

**Data format**

- **Binary or text:** Binary, text

**Alarm**

- **Number of items:** 300 max. (Monitored Item/Session)
- **Port number:** 4840 (changeable: 1 to 65535)

**Events**

- **Number of events:** 50
- **Effect of ambient temperature and system configuration:** ± 0.5°C (23°C ± 1°C)

**Software**

- **Software version:** V1.10 or higher
- **Operating system:** Windows 7/8/10

**Network**

- **Scalable:** Between terminal and internal circuitry: 20 MΩ or greater (at 500 VDC)

**Output**

- **Max. connections:** 20 (or 10 max. at TCP/IP level)

**Input/output**

- **No. of I/O channels:** GM10-1: 100 max.
- **Number of manageable segments:** 99 segments/pattern

**Multi-batch Function**

- **Number of multiple batches:** GM10-1: 6 max., GM10-2: 12 max.

**Aerodynamic Heat Treatment**

- **Air volume:** 1000 VAC, 1 minute

**Other Function**

- **Program control:** Program patterns of up to 20 loops can be stored in a single set.

**Gas OUT PID control module is required. SMARTDAC + Hardware Configurator is required for program pattern setting.**

**Data Transmission System**

- **Type:** OPC-UA Server
- **Encoding:** UA Binary

**OPC-UA**

- **Max. common mode voltage:** 1000 VAC (50/60Hz)
- **High speed industrial:** 2000 VAC (50/60Hz)

**Effect of ambient temperature**

- **Effects of ambient temperature:** When integrated temperature is 16.67°C or higher, ±0.05% of rdg mean ± 0.05% of reading or ±0.1°C, whichever is less

**Insulation resistance**

- **Between terminal and earth:** 20 MΩ or more (at 500 VDC)
- **Between input terminals and earth:** 20 MΩ or more (at 500 VDC)

**Conclusion**

- **Conclusion:** The specifications have been updated.
GX90WD Digital Input Module

Inputs:
- 16
- Input format: Open collector or non-voltage contact
- Range types: DI, pulse (250Hz (The chattering filter: OFF), 12kHz (The chattering filter: ON)), min. pulse width: 2 ms, requires the MATH (optional code /MT).
- ON/OFF detection: Open collector: Voltage of 0.5 VDC or less when ON, leakage current of 0.5 mA or less when OFF. Non-voltage contact: Contact resistance of 200 Ω or more when ON, 50 kΩ or more when OFF
- Input calculation: Linear, differential calculations
- Contact rating: 12 VDC, 20 mA or more
- No. of common: 2 (1 common per 8 channels)
- Allowable input voltage: 10 V
- Insulation resistance: Between input terminals and internal circuitry: 20 MΩ or greater (at 500 VDC)
- Withstand voltage: Between input terminals and internal circuitry: 1500 VAC, 1 minute

GX90YD Digital Output Module

Outputs:
- 6
- Output format: Relay contact (s) contact
- Rated load voltage: 30 VDC or 250 VAC or less
- Max. load current: 3 (A (DC), 2 A (AC), resistive load, each)
- Min. load voltage/current: 5 VDC/10 mA
- No. of common: 6 (all outputs independent)
- Allowable input voltage: 10 V
- Insulation resistance: Between output terminals and internal circuitry: 20 MΩ or greater (at 500 VDC)
- Withstand voltage: Between output terminals and internal circuitry: 3000 VAC, 1 minute

GX90XD Digital Input/Output Module

- Digital input (DI) section
  Inputs:
  - 8
  - Input format: Open collector or non-voltage contact
  - Range types: DI, pulse (250Hz (The chattering filter: OFF), 12kHz (The chattering filter: ON)), min. pulse width: 2 ms, requires the MATH (optional code /MT).
  - ON/OFF detection: Open collector: Voltage of 0.5 VDC or less when ON, leakage current of 0.5 mA or less when OFF. Non-voltage contact: Contact resistance of 200 Ω or more when ON, 50 kΩ or more when OFF
  - Input calculation: Linear, differential calculations
  - Contact rating: 12 VDC, 20 mA or more
  - No. of common: 2 (1 common per 8 channels)
  - Allowable input voltage: 20 V
  - Insulation resistance: Between input terminals and internal circuitry: 20 MΩ or greater (at 500 VDC)
  - Withstand voltage: Between input terminals and internal circuitry: 1500 VAC, 1 minute

- Digital output (DO) section
  Outputs:
  - 6
  - Output format: Relay contact (s) contact
  - Rated load voltage: 150 VAC or less when connected to the main circuit (first-order power supply), 250 VAC or less when connected to a circuit derived from the main circuit (second-order power supply), or 30 VDC or less
  - Max. load current: 2 (A (DC), 1 A (AC), resistive load, each)
  - Min. load voltage/current: 5 VDC/10 mA
  - No. of common: 6 (all outputs independent)
  - Insulation resistance: Between output terminals and internal circuitry: 20 MΩ or greater (at 500 VDC)
  - Withstand voltage: Between output terminals and internal circuitry: 2750 VAC, 1 minute

GX90XP Pulse Input Module

- Number of inputs: 10
- Measurement interval: 100 ms (shortest)
- Input type: Contact (open collector, voltage-free contact), level (5 V logic)
- Input range: Up to 20 kHz
- Minimum detection pulse width: 25 μs
- Measurement accuracy: ± 1 pulse
- Chattering filter: Removes chattering up to 5 ms (can be turned on/off on each channel)

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 VDC, Ic>=30 mA
Maximum input voltage: ± 10 V DC
Insulation resistance: Between input terminals and internal circuitry: 20 MΩ or greater at 500 V DC
Withstand voltage: Between input terminals and internal circuitry: 1500 V AC for 1 minute

PID control module GX90UT
- Control loop
- Number of loops: 2
- Analog input (measured input)
- Measured points: 2
- Measurement type: DC voltage (DCV)/standardized signal, TC/RDT, DI, DELV and non-voltage contact/DC current with external shunt resistance
- Scan (control) interval: 100 ms or 200 ms (system global setting)
- Analog output (control output/transmission output/sensor power supply)
- Outputs: 2
- Output type: Power supply for current, voltage, pulse, or sensors. Current output: 4–20 mA or 0–20 mA. Voltage pulse output: ON voltage = 12 VDC or more (load resistance 600 Ω or more), OFF voltage = 0.1 V DC or less. Can be used as a sensor power supply (13.0–18.3 VDC)
- Digital input (switching the SP, operation mode, etc.)
- Inputs: 8
- Input format: Non-voltage contact and open collector
- Contact rating: 12 VDC or more, 20 mA or more
- Digital output (of alarms, events, etc.)
- Outputs: 8
- Output format: Open collector (sink type)
- Output contact capacity: Max 24 V, 50 mA
- Withstand voltage/insulation resistance: See PID control module general specifications (GS 04L1901-316N)
- Terminal type: M3 screw terminals
- Weight: Approximately 0.3 kg

GX90EX Expansion Module

Connects via dedicated communication between main unit and subunits, and between subunits. Communication speed: 10Base-T/100Base-TX (Auto)
Ports: 2
- Connection cable: STP cable, CAT5 or later
- Connection between modules: Cascade connection (no ring connection)
- Communication range: 100 m

SMARTDAC+ GM common specifications

Standards supported
- CSA: CAN/CSA-C22.2 No. 61010-1, overvoltage category II or I, pollution degree 2
- UL/CAN/CSA: CAN/CSA-C22.2 No. 61010-2-030
- UL: UL 61010-1-030
- CE/EMC: EN 61326-1 compliance, Class A Table 2, EN61000-3-2 compliance, directives: EN61000-3-3 compliance, EN50511 Class A Group 1
- CE/Electric voltage: EN61010-1, EN 61010-2-030, overvoltage category II or I, pollution degree 2
directive: Measurement category II, EN61010-2-020-201 compliance
- ATEX: HEALTH&SAFETY EN61010-1 compliance
- ATEX: EN61010-2-020-201 compliance
- contact: Overvoltage category II or I, pollution degree 2 Measurement category II
- EMC: EN62311 compliance
- EMC: EN301 489-17 compliance
- EMC: EN61326-1 compliance
- SPIE spectrum: EN30 328 compliance

EMC Regulatory Arrangement in Australia and New Zealand (RCA): EN50511 Class A Group 1
Wireless communication standards of Australia and New Zealand (RCA) (optional code /CB): AS/NZS4266, AS/NZS2772.2
- KC marking: Electromagnetic wave interference prevention standard, electromagnetic wave protection standard compliance

Environmental performance: WEEE directive support
- Wireless (Bluetooth): Supports radio wave regulations of Japan, America, Canada, Europe (EU), Australia, New Zealand, China, and Korea.

Normal operating conditions
- Ambient temperature: -20 to 60°C
- Power consumption: 12 W (100 mA)
- When using the GX90YD, GX90WD, and GX90XA-T1
- When OFF, 500 m/s
- Measurement range (0.075% of rdg + 0.05% of range) or less fluctuation per 10°C change
- Upon MATH start: +1 measuring period
- Upon MATH stop: -1 measuring period
- Scan (control) interval: 100 ms or 200 ms (system global setting)
- 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 VDC, Ic>=30 mA
- Maximum input voltage: ± 10 V DC
- Insulation resistance: Between input terminals and internal circuitry: 20 MΩ or greater at 500 V DC
- Withstand voltage: Between input terminals and internal circuitry: 1500 V AC for 1 minute

Members only
## Main measurement range and accuracy

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

<table>
<thead>
<tr>
<th>Input type</th>
<th>Range</th>
<th>Measurement range</th>
<th>Measurement accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCV</td>
<td>20mV</td>
<td>-20.000 to 20.000 mV</td>
<td>±(0.05 % of rdg+12 μV)</td>
</tr>
<tr>
<td></td>
<td>60mV</td>
<td>-60.00 to 60.00 mV</td>
<td>±(0.05 % of rdg+0.03 mV)</td>
</tr>
<tr>
<td></td>
<td>200mV</td>
<td>-200.00 to 200.00 mV</td>
<td>±(0.05 % of rdg+0.03 mV)</td>
</tr>
<tr>
<td></td>
<td>1V</td>
<td>-1.0000 to 1.0000 V</td>
<td>±(0.05 % of rdg+0.12 mV)</td>
</tr>
<tr>
<td></td>
<td>2V</td>
<td>-2.0000 to 2.0000 V</td>
<td>±(0.05 % of rdg+1.2 mV)</td>
</tr>
<tr>
<td></td>
<td>6V</td>
<td>-6.000 to 6.000 V</td>
<td>±(0.05 % of rdg+3 mV)</td>
</tr>
<tr>
<td></td>
<td>20V</td>
<td>-20.000 to 20.000 V</td>
<td>±(0.05 % of rdg+3 mV)</td>
</tr>
<tr>
<td></td>
<td>0.4V</td>
<td>-50.00 to 50.00 V</td>
<td>±(0.05 % of rdg+0.03 V)</td>
</tr>
<tr>
<td></td>
<td>50V</td>
<td>-50.00 to 50.00 V</td>
<td>±(0.05 % of rdg+10 V)</td>
</tr>
<tr>
<td>Standard signal</td>
<td>0.4-2V</td>
<td>0.3200 to 2.0800 V</td>
<td>±(0.05 % of rdg+1.2 mV)</td>
</tr>
<tr>
<td>DC current</td>
<td>1-5V</td>
<td>0.800 to 5.200 V</td>
<td>±(0.05 % of rdg+3 mV)</td>
</tr>
<tr>
<td></td>
<td>0-20mA</td>
<td>0.000 to 20.000mA</td>
<td>±(0.1 % of rdg+10 V)</td>
</tr>
<tr>
<td>DC current (standard signal)</td>
<td>4-20mA</td>
<td>3.200 to 20.800mA</td>
<td>±(0.3 % of rdg+5 μA)</td>
</tr>
</tbody>
</table>

### TC (Excluding RJC accuracy)

#### R

<table>
<thead>
<tr>
<th>R</th>
<th>-270.0 to 1370.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>-270.0 to 1100.0</td>
</tr>
<tr>
<td>J</td>
<td>-270.0 to 400.0</td>
</tr>
<tr>
<td>N</td>
<td>-270.0 to 1300.0</td>
</tr>
</tbody>
</table>

#### W

<table>
<thead>
<tr>
<th>W</th>
<th>-200.0 to 900.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>-200.0 to 900.0</td>
</tr>
<tr>
<td>U</td>
<td>-200.0 to 400.0</td>
</tr>
</tbody>
</table>

#### WrE3-25

| WrE3-25 | 0.000 to 2320.0 |

### RTD (Measured current: 1 mA)

<table>
<thead>
<tr>
<th>Pt100</th>
<th>-200.0 to 850.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pt100</td>
<td>-150.0 to 150.00</td>
</tr>
</tbody>
</table>

### 4-wire RTD (Measured current: 1 mA)

<table>
<thead>
<tr>
<th>Pt100</th>
<th>-200.0 to 850.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pt100</td>
<td>-150.0 to 150.00</td>
</tr>
</tbody>
</table>

### 4-wire RTD (Measured current: 0.25 mA)

<table>
<thead>
<tr>
<th>Pt1500</th>
<th>-200.0 to 850.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pt1000</td>
<td>-200.0 to 850.0</td>
</tr>
</tbody>
</table>

### Resistance (4-wire)

<table>
<thead>
<tr>
<th>20 (Measured current: 1mA)</th>
<th>0.000 to 20.000 Ω</th>
<th>±(0.05 % of rdg+0.007 Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 Ω (Measured current: 1mA)</td>
<td>0.00 to 200.00 Ω</td>
<td>±(0.05 % of rdg+0.03 Ω)</td>
</tr>
<tr>
<td>2000 Ω (Measured current: 0.25mA)</td>
<td>0.0 to 2000.0 Ω</td>
<td>±(0.05 % of rdg+0.3 Ω)</td>
</tr>
</tbody>
</table>

### DI

<table>
<thead>
<tr>
<th>Level</th>
<th>Threshold level (Vth=2.4 V) accuracy ± 0.1 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact</td>
<td>1 kΩ or less: 1 (ON), 100 kΩ or more: 0 (OFF) (shunt capacitance 0.01 μF or less)</td>
</tr>
</tbody>
</table>

## High-speed universal type

### Input type | Range | Measurement range | Measurement accuracy |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DCV</td>
<td>20 mV</td>
<td>-20.000 to 20.000 mV</td>
<td>±(0.05 % of rdg+512μV)</td>
</tr>
<tr>
<td></td>
<td>60 mV</td>
<td>-60.00 to 60.00 mV</td>
<td>±(0.05 % of rdg+0.02 mV)</td>
</tr>
<tr>
<td></td>
<td>200 mV</td>
<td>-200.00 to 200.00 mV</td>
<td>±(0.05 % of rdg+0.02 mV)</td>
</tr>
<tr>
<td></td>
<td>1V</td>
<td>-1.0000 to 1.0000 V</td>
<td>±(0.05 % of rdg+0.2 mV)</td>
</tr>
<tr>
<td></td>
<td>2V</td>
<td>-2.0000 to 2.0000 V</td>
<td>±(0.05 % of rdg+0.512 mV)</td>
</tr>
<tr>
<td></td>
<td>6V</td>
<td>-6.000 to 6.000 V</td>
<td>±(0.05 % of rdg+2 mV)</td>
</tr>
<tr>
<td></td>
<td>20V</td>
<td>-20.000 to 20.000 V</td>
<td>±(0.05 % of rdg+2 mV)</td>
</tr>
<tr>
<td></td>
<td>50V</td>
<td>-50.00 to 50.00 V</td>
<td>±(0.05 % of rdg+0.2 V)</td>
</tr>
<tr>
<td></td>
<td>100V</td>
<td>-100.00 to 100.00 V</td>
<td>±(0.05 % of rdg+0.2 V)</td>
</tr>
</tbody>
</table>

### Standard signal

<table>
<thead>
<tr>
<th>R</th>
<th>0.0 to 1760.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>0.0 to 1760.0</td>
</tr>
<tr>
<td>B</td>
<td>0.0 to 1820.0</td>
</tr>
<tr>
<td>K</td>
<td>-270.0 to 1370.0</td>
</tr>
</tbody>
</table>

### TC (Excluding RJC accuracy)

<table>
<thead>
<tr>
<th>R</th>
<th>0.0 to 1760.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>0.0 to 1760.0</td>
</tr>
<tr>
<td>B</td>
<td>0.0 to 1820.0</td>
</tr>
<tr>
<td>K</td>
<td>-270.0 to 1370.0</td>
</tr>
</tbody>
</table>

---

1. Data Acquisition System GM
### MODEL and SUFFIX CODES

#### MODEL and SUFFIX Code (GM10)

<table>
<thead>
<tr>
<th>Input type</th>
<th>Range</th>
<th>Measurement range</th>
<th>Measurement accuracy (Only the Values in [ ] apply when the scan interval is 50/100/200 ms)</th>
<th>Measurement accuracy (Only the Values in [ ] apply when the scan interval is 1/2/5 ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC(^*(1)) (Excluding RJC accuracy)</td>
<td>E</td>
<td>-270.0 to 800.0°C</td>
<td>±(0.05 % of rdg + 0.5°C)</td>
<td>±(0.1 % of rdg + 2.5°C)</td>
</tr>
<tr>
<td></td>
<td>J</td>
<td>-200.0 to 1100.0°C</td>
<td>However, -200.0 to 0.0°C: ±(0.2 % of rdg + 0.5°C)</td>
<td>However, -200.0 to 0.0°C: ±(0.2 % of rdg + 2.5°C)</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>-270.0 to 400.0°C</td>
<td>±(0.05 % of rdg + 0.5°C)</td>
<td>±(0.1 % of rdg + 2.5°C)</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>-270.0 to 1300.0°C</td>
<td>±(0.05 % of rdg + 0.5°C)</td>
<td>±(0.1 % of rdg + 2.5°C)</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>0.0 to 2315.0°C</td>
<td>±(0.05 % of rdg + 0.7°C)</td>
<td>±(0.1 % of rdg + 4.0°C)</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>-200.0 to 900.0°C</td>
<td>±(0.05 % of rdg + 0.5°C)</td>
<td>±(0.1 % of rdg + 2.5°C)</td>
</tr>
<tr>
<td></td>
<td>U</td>
<td>-200.0 to 400.0°C</td>
<td>±(0.05 % of rdg + 0.5°C)</td>
<td>±(0.1 % of rdg + 4.0°C)</td>
</tr>
<tr>
<td></td>
<td>WrE3-25</td>
<td>0.0 to 2320.0°C</td>
<td>±(0.05 % of rdg + 2.0°C)</td>
<td>±(0.1 % of rdg + 1.5°C)</td>
</tr>
</tbody>
</table>

#### RTD (Measured current: 1 mA)

- Pt100: -200.0 to 850.0°C, ±2.0% of rdg (0.05 % of rdg + 1.0°C)
- Pt100: -200.0 to 550.0°C, ±2.0% of rdg (0.05 % of rdg + 1.0°C)
- Pt100: -200.0 to 150.0°C, ±1.0% of rdg (0.05 % of rdg + 0.5°C)

#### DI Level

<table>
<thead>
<tr>
<th>Level</th>
<th>Threshold level (Vth=2.4 V) accuracy</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDG</td>
<td>±0.15% of rdg (0.5 % of rdg + 0.5°C)</td>
<td>100 kΩ or less: 1 (ON), 10 kΩ or more: 0 (OFF)</td>
</tr>
</tbody>
</table>

**OPTIONAL CODES**

- /MC: Communication channel function
- /MT: Mathematical function (with report function)
- /CM: Communication channel function
- /LG: Log scale
- /PG: Program control function

#### EXAMPLE

**Model Suffix code**

- **GM10**
- **Type**
  - **-1**: Standard (Max. measurement channels: 100 ch)
  - **-2**: Large memory (Max. measurement channels: 500 ch)
- **Area**
  - **E**: General (temp. unit: Cel, Deg F)
- **Optional features**
  - /AH: Aerospace heat treatment
  - /AS: Advanced security function
  - /BT: Multi-batch function
  - /C3: RS-422/485
  - /CB: Bluetooth
  - /E1: EtherNet/IP communication (PLC communication protocol)
  - /E2: WT communication
  - /E3: OPC-UA sever
  - /E4: SLM communication (Mitsubishi PLC)
  - /MT: Mathematical function (with report function) (\(^*(2)\))
  - /MC: Communication channel function
  - /LG: Log scale
  - /PG: Program control function

*1 Reference operating conditions: 23 ± 2°C, 55 ± 10% RH, supply voltage 90–132 VAC, 180–264 VAC, supply frequency within 50/60 Hz ± 1%, warmup 30 minutes or more, no vibrations or other hindrances to performance.  
Please inquire for modules with increased guaranteed accuracy specifications.

*2 10 channel mode with scan interval set to 500 ms or higher, or 2 channel mode

*3 Only W (Screw terminal (M4)) is available for the power supply connection.

*4 For the measuring ranges and accuracy below, see the general specification (GS 04LS3000-01EN).

*5 When the Multibatch function is ON the scan interval is 500 ms or more, and the Dual Interval function and PID modules are unavailable.

*6 When the Multibatch function is ON the scan interval is 500 ms or more, and the Dual Interval function is unavailable.

*7 Using the Program Control function requires the PID control module.

---

#### MODEL and SUFFIX Code (GM90PS)

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM90PS</td>
<td></td>
<td>Power Supply Module for SMARTDAC+ GM</td>
</tr>
<tr>
<td>Type</td>
<td>-1</td>
<td>Always 1</td>
</tr>
<tr>
<td>Area</td>
<td>N</td>
<td>General</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>1</td>
<td>100 to 240 V AC</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>12-28 VDC</td>
</tr>
<tr>
<td>Power supply connection</td>
<td>D</td>
<td>Power inlet with UL/CSA cable</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>Power inlet with VDE cable</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>Power inlet with GB cable</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>Power inlet with NBR cable</td>
</tr>
<tr>
<td></td>
<td>Q</td>
<td>Power inlet with BS cable</td>
</tr>
<tr>
<td></td>
<td>R</td>
<td>Power inlet with AS cable</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>Screw terminal (without power cable)</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Always 0</td>
</tr>
</tbody>
</table>

*1 Only W (Screw terminal (M4)) is available for the power supply connection.

#### MODEL and SUFFIX Code (GM90MB)

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM90MB</td>
<td></td>
<td>Module Base for SMARTDAC+ GM</td>
</tr>
<tr>
<td>Type</td>
<td>-01</td>
<td>Always -01</td>
</tr>
<tr>
<td>Area</td>
<td>N</td>
<td>General</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Always 0</td>
</tr>
</tbody>
</table>

---

*1 Communication channel function (/MC option) must be specified at the same time with WT communication.

*2 Optional code /MT (MATH) required if using the GX90X0D’s or GX90X0D’s pulse input.

*3 Optional code /MT (MATH) required if using the GX90X0P’s pulse input.

*4 When the Advanced Security function is ON the scan interval is 100 ms or more, and the Dual Interval function and PID modules are unavailable.

*5 When the Multibatch function is ON the scan interval is 500 ms or more, and the Dual Interval function is unavailable.

*6 Using the Program Control function requires the PID control module.

---

**Diagram:**

- ON rail
- L0 module
- GAT0
- GM90PS
- GM90MB

**Connected modules:**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
</table>

**Unit:** mm [inch]
**Data Acquisition System GM**

**Calibration certificate (sold separately)**
A calibration certificate for specific analog input modules.

**Test certificate (QIC, sold separately)**
A QIC for specific data acquisition modules, power supply modules, module bases, or I/O modules.

**User's Manual**
Product user's manuals can be downloaded or viewed at the following URL.

### MODEL and SUFFIX Code (GX90XA)

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GX90XA</td>
<td>-4</td>
<td>4 channels (-H0 type only)</td>
</tr>
<tr>
<td>Number of channels</td>
<td>-6</td>
<td>6 channels (-R1 type only)</td>
</tr>
<tr>
<td>-10</td>
<td>10 channels (C1, L1, U2, T1, V1)</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>-C1</td>
<td>Current, scanner type (isolated between channels)</td>
</tr>
<tr>
<td>-L1</td>
<td>DCV/TC/DI, low withstand voltage scanner type (isolated between channels)</td>
<td></td>
</tr>
<tr>
<td>-U2</td>
<td>Universal, Solid state relay scanner type (3-wire RTD b-terminal common)</td>
<td></td>
</tr>
<tr>
<td>-T1</td>
<td>DCV/TC/DI, Electromagnetic relay scanner type (isolated between channels)</td>
<td></td>
</tr>
<tr>
<td>-H0</td>
<td>High speed universal, individual A/D type (isolated between channels)</td>
<td></td>
</tr>
<tr>
<td>-R1</td>
<td>4-wire RTD/resistance, scanner type (isolated between channels)</td>
<td></td>
</tr>
<tr>
<td>-V1</td>
<td>DCV/TC/DI, high withstand voltage scanner type (isolated between channels)</td>
<td></td>
</tr>
<tr>
<td>Terminal form</td>
<td>-N</td>
<td>Always N</td>
</tr>
<tr>
<td>Area</td>
<td>-N</td>
<td>General</td>
</tr>
</tbody>
</table>

### MODEL and SUFFIX Code (GX90XD)

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GX90XD</td>
<td>-16</td>
<td>16 channels</td>
</tr>
<tr>
<td>Number of channels</td>
<td>-11</td>
<td>Open collector/Non-voltage, contact (shared common), Rated 5 VDC</td>
</tr>
<tr>
<td>Type</td>
<td>-N</td>
<td>Always N</td>
</tr>
<tr>
<td>Terminal form</td>
<td>-3</td>
<td>Screw terminal (M3)</td>
</tr>
<tr>
<td>Area</td>
<td>-N</td>
<td>General</td>
</tr>
</tbody>
</table>

### MODEL and SUFFIX Code (GX90YD)

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GX90YD</td>
<td>-06</td>
<td>Digital Input Module</td>
</tr>
<tr>
<td>Number of channels</td>
<td>-11</td>
<td>6 channels</td>
</tr>
<tr>
<td>Type</td>
<td>-N</td>
<td>Always N</td>
</tr>
<tr>
<td>Terminal form</td>
<td>-3</td>
<td>Screw terminal (M3)</td>
</tr>
<tr>
<td>Area</td>
<td>-N</td>
<td>General</td>
</tr>
</tbody>
</table>

### MODEL and SUFFIX Code (GX90WD)

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GX90WD</td>
<td>-0806</td>
<td>Digital Input/Output Module</td>
</tr>
<tr>
<td>Number of channels</td>
<td>-01</td>
<td>8 channel DIs, 6 channel DOs</td>
</tr>
<tr>
<td>Type</td>
<td>-N</td>
<td>Always N</td>
</tr>
<tr>
<td>Terminal form</td>
<td>-3</td>
<td>Screw terminal (M3)</td>
</tr>
<tr>
<td>Area</td>
<td>-N</td>
<td>General</td>
</tr>
</tbody>
</table>

### MODEL and SUFFIX Code (GX90XP)

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GX90XP</td>
<td>-10</td>
<td>Pulse Input Module</td>
</tr>
<tr>
<td>Number of channels</td>
<td>-11</td>
<td>10 channels</td>
</tr>
<tr>
<td>Type</td>
<td>-N</td>
<td>Always N</td>
</tr>
<tr>
<td>Terminal form</td>
<td>-3</td>
<td>Screw terminal (M3)</td>
</tr>
<tr>
<td>Area</td>
<td>-N</td>
<td>General</td>
</tr>
</tbody>
</table>

### Application Software (Sold Separately)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>OS</th>
</tr>
</thead>
</table>

**Calibration certificate (sold separately)**
A calibration certificate for specific analog input modules.

**Test certificate (QIC, sold separately)**
A QIC for specific data acquisition modules, power supply modules, module bases, or I/O modules.

**User's Manual**
Product user’s manuals can be downloaded or viewed at the following URL.
### Configuration example

(with a supply voltage of 100-240 VAC, power inlet, universal input, and clamp terminal)

#### Single-unit configuration example

<table>
<thead>
<tr>
<th>30 ch (analog input)</th>
<th>60 ch (analog input)</th>
<th>100 ch (analog input)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM10-1E0 x 1</td>
<td>GM10-1E0 x 1</td>
<td>GM10-1E0 x 1</td>
</tr>
<tr>
<td>GM90PS-1N1D0 x 1</td>
<td>GM90PS-1N1D0 x 1</td>
<td>GM90PS-1N1D0 x 1</td>
</tr>
<tr>
<td>GX90XA-10-U2N-CN x 3</td>
<td>GX90XA-10-U2N-CN x 6</td>
<td>GX90XA-10-U2N-CN x 10</td>
</tr>
<tr>
<td>GM90MB-01N0 x 4</td>
<td>GM90MB-01N0 x 7</td>
<td>GM90MB-01N0 x 11</td>
</tr>
</tbody>
</table>

#### Multi-unit configuration example

<table>
<thead>
<tr>
<th>120 ch (analog input)</th>
<th>300 ch (analog input)</th>
<th>420 ch (analog input)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM10-2E0 x 1</td>
<td>GM10-2E0 x 1</td>
<td>GM10-2E0 x 1</td>
</tr>
<tr>
<td>GM90PS-1N1D0 x 2</td>
<td>GM90PS-1N1D0 x 5</td>
<td>GM90PS-1N1D0 x 7</td>
</tr>
<tr>
<td>GX90XA-10-U2N-CN x 12</td>
<td>GX90XA-10-U2N-CN x 30</td>
<td>GX90XA-10-U2N-CN x 42</td>
</tr>
<tr>
<td>GX90EX-02-TP1N-N x 2</td>
<td>GX90EX-02-TP1N-N x 5</td>
<td>GX90EX-02-TP1N-N x 7</td>
</tr>
<tr>
<td>GM90MB-01N0 x 15</td>
<td>GM90MB-01N0 x 36</td>
<td>GM90MB-01N0 x 50</td>
</tr>
</tbody>
</table>

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**Paperless recorder GX/GP**

With the touch panel, reliability meets user empowerment in an expanding range of applications.

#### Intuitive user interface
- Easily move through screens like on a smart device to quickly access past data
- A variety of screen displays come standard, such as trend, numeric, and bar graph
- Custom display function (CG option) lets you build screens any way you like
- At a phenomenon of interest, write a message with a single touch

#### Highly customizable architecture
- Modular I/O configuration for easy expandability

#### Up to 450 ch of measurement (actual input)
- Many I/O modules available to support a wide variety of applications

#### A full range of network functions and software
- Like the GM, a full range of networking functions are available including Modbus and EtherNet/IP.

#### Solid hardware and high security
- High precision measurement in a durable unit
- Reliably saves measured data
- Supports 21 CFR Part 11
- With enhanced security, safely sends/receives data
**Data Logging Software GA10 (sold separately)**

**Centrally acquire data from multiple devices on a PC**

GA10 is a PC based software package that acquires real time data from SMARTDAC+ data acquisition systems and other devices connected to a network. Connected PCs can monitor real time and historical data, which can be stored on a PC harddrive or centrally on a network drive.

### Aggregate data for monitoring!
- Easy to read screen layouts provide operator friendly real time monitoring.
- Group channels any way you like
- Play back data up to recording start, even during measurement
- Instantly recognize alarms (in red)

### Save the data all together!
- Data is stored in a binary tamper proof format preventing unauthorized access. Data can also be exported to excel format for data manipulation and analysis.

**Application example**

#### Data monitoring in manufacturing sites
Monitor factory data from the office. You can also add clients and share data across multiple PCs.

#### Recording data from multiple equipments
Saves testing/manufacturing equipment data on a PC. In addition to simultaneous acquisition, you can acquire data from different equipment at different timing (multilogging).

**Effect:** No more moving around large factories to do work!

**Effect:** Manage all data on the PC, one set of equipment at a time!

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**Synaptic Business Automation**

Synaptic Business Automation creates sustainable value by connecting everything in our customers’ organization. To realize this, Yokogawa integrates its business and domain knowledge with digital automation technologies, and co-innovates with customers to drive their business process transformation.

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**Co-innovating tomorrow**

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http://www.yokogawa.com/eu/

YOKOGAWA ENGINEERING ASIA PTE. LTD.
http://www.yokogawa.com/sg/

Before operating the product, read the instruction manual thoroughly for proper and safe operation.

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