OpreX™ Data Acquisition

SMARTDAC+
Data Acquisition & Control

Data Acquisition System GM

Bulletin 04L55B01-01EN

SMARTDAC+™

Data Acquisition & Control

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
PROFINET communication (GX90NW)

Reliability
Secure data storage /
High accuracy measurement

Noise Tolerance
Electromagnetic relay module

What's New

"Equipment / Quality
Easy Predictive Detection"

Ready for the future when you are
Smart Architecture

Navigate with ease
Smart User Interface

Data analysis made simple and mobile
Smart Functionality

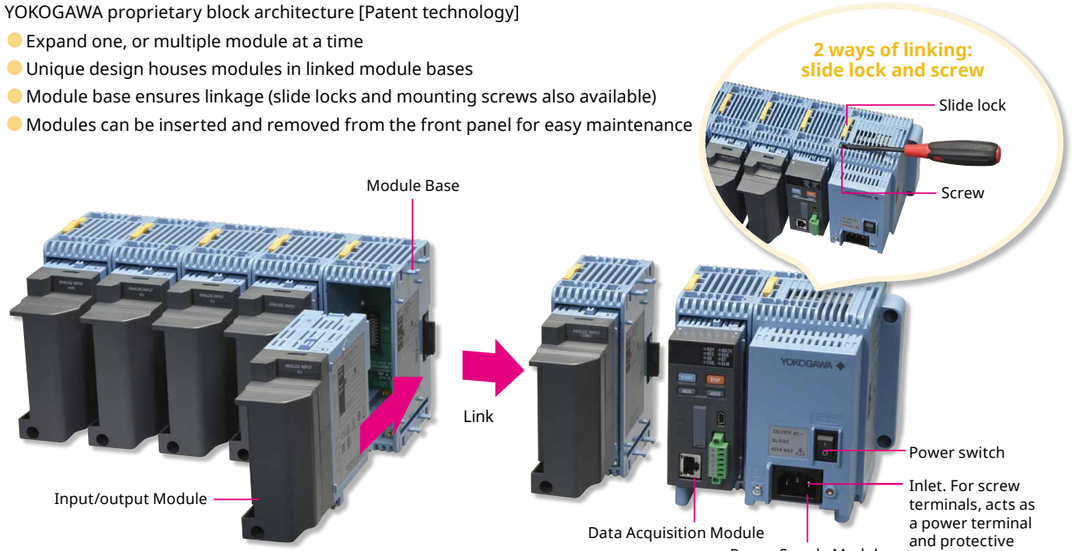
Ready for the future when you are

Smart Architecture

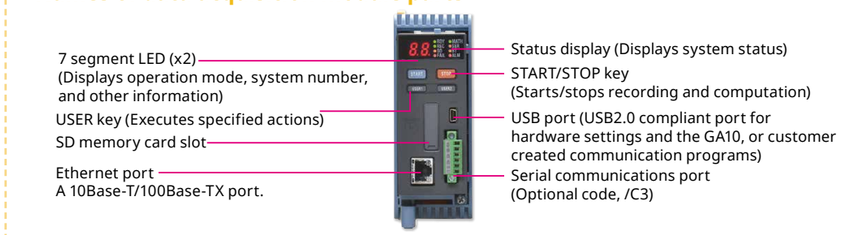
Increase channels by adding additional block modules

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



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)

* There is a limit to the maximum number of connected modules depending on the module type. For details, please confirm the General Specifications.

Installs anywhere

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

Desktop

Mounted on DIN rails

Wall-mounted

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.

Model	Name	Measurement/Application	No. of channels*1	Channels
GX90XA-10-U2	Analog input module	DC voltage, thermocouple, RTD, contact (solid state relay scanner type)	10	10
GX90XA-10-L1		DC voltage, thermocouple, contact (Low withstand voltage solid state relay scanner type)	10	10
GX90XA-10-T1*		DC voltage, thermocouple, contact (electromagnetic relay scanner type)	10	10
GX90XA-10-C1		DC current (mA) (solid state relay scanner type)	10	10
GX90XA-10-V1		DC voltage, contact (Solid state relay scanner type), High withstand voltage (600 V double insulation, 1000 VDC basic insulation)	10	10
GX90XA-04-H0*		DC voltage, thermocouple, RTD, contact (individual A/D type)	4	4
GX90XA-06-R1		4-wire RTD, 4-wire resistance(solid state relay scanner type)	6	6
GX90YA*	Analog output module	Current output (Isolated between channels)	4	4
GX90XD*	Digital input module	Remote control input or operation recording	16	16
GX90YD*	Digital output module	Alarm output	6	6
GX90WD*	Digital input/output module	Remote control input or operation recording/alarm output	14	DI:8/DO:6
GX90XP	Pulse Input Module	Pulse signal data acquisition, integral count	10	10
GX90UT*	PID control module	PID control (2 loop)	26	AI:2/AO:2 DI:8/DO:8

SMARTDAC+ series

You can attach and remove I/O terminals. This saves time and effort on wiring.

* = Mounting restrictions apply. See the general specifications for details.
*1: Large memory model required if the total number of channels installed exceeds 100.

Analog input module scan interval and measurement type

Type	Channels	Scan interval (shortest)	Scanner	TC	RTD	DCV	DI	mA	Resistance	Feature
Universal (-U2)	10	100ms	SSR	○	○	○	○			Universal
Low withstand voltage relay (-L1)	10	500ms	SSR	○		○	○			Mid-price
Electromagnetic relay (-T1)	10	1s	Relay	○		○	○			Noise-resistance
DC current input (-C1)	10	100ms	SSR					○		mA only
High withstand voltage (-V1)	10	100ms	SSR	○		○	○			High withstand voltage
High speed universal (-H0)	4	1ms	—	○	○	○	○			High speed measurement
4-wire RTD/resistance (-R1)	6	100ms	SSR		○				○	4-wireRTD

Internal memory and max. I/O channels

Type	Internal memory	Max. input/output channels*	
GM10-1	500MB	Single-unit configuration	0 to 100
		Multi-unit configuration	0 to 100
GM10-2	1.2GB	Single-unit configuration	0 to 100
		Multi-unit configuration	0 to 420

* When analog input only

Actual values support high precision measurement

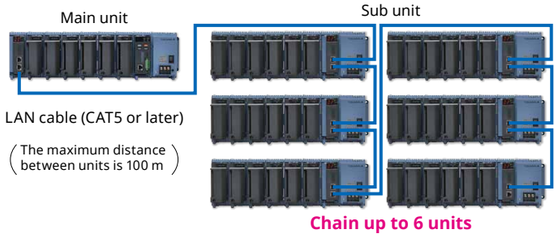
Input type		Measuring accuracy*1 (typical value*2)
DCV	20mV	±(0.01% of rdg + 5 μV)
	60mV	±(0.01% of rdg + 5 μV)
	6V(1-5V)	±(0.01% of rdg + 2 mV)
TC*3	R, S	± 1.1°C
	B	± 1.5°C
	K (-200.0 to 1370.0°C)	± (0.01% of rdg +0.2°C for 0.0 to 1370.0°C; ± (0.15% of rdg +0.2°C) for -200.0 to 0.0°C
	K (-200.0 to 500.0°C)	± 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)

The measuring accuracies noted in the general specifications on page 15 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 listed to the left.

*1 Applies to GX90XA-10-U2, A/D integration time 16.67ms or more, General operating conditions: 23 ± 2°C, 55 ± 10% RH, supply voltage 90–132, 180–264V AC, power frequency within 50/60Hz ± 1%, warm-up of 30minutes or more, no vibrations or other hindrances to performance.
*2 For the measuring accuracy (guaranteed), see the module's general specifications (GS 04L53B01-01EN).
*3 These values do not include the reference junction compensation accuracy.

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

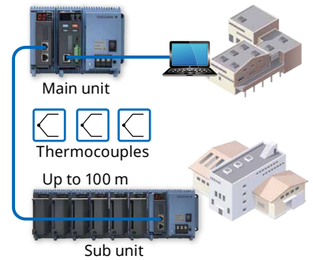
Expand up to 420 ch by using the GX90EX expansion module. (GM10-2)
On the GM10-2 large capacity type, up to 1000 ch are available for recording when including MATH and communication channels.
Connect units with LAN cables for dispersed installations.



You connect directly with a LAN cable without connecting through a hub or repeater.
* You can also connect a GX60 expansion unit.

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.



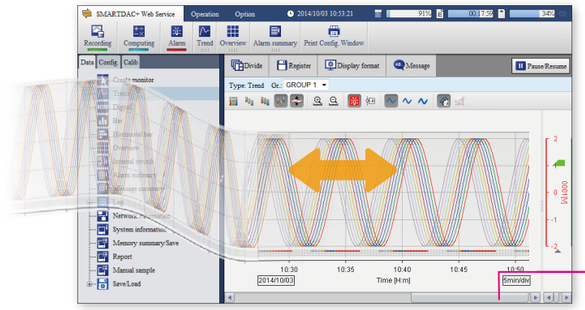
Navigate with ease

Smart User Interface

Easy access from a Web browser

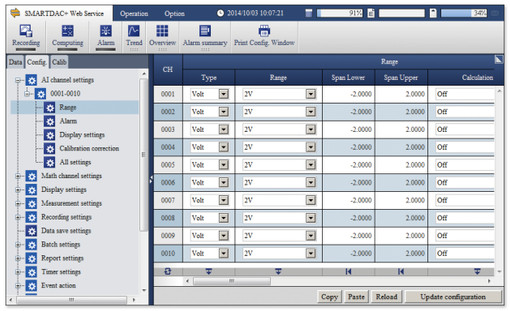
Through a Web browser you can monitor the GM in real time and change settings.
You can easily build a seamless, low-cost remote monitoring system with no additional software.

Real time monitoring screen

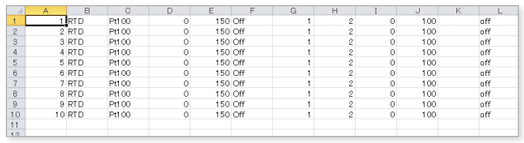


With the scroll bar, you can seamlessly scroll between past and current trends.

Enter settings online with a web browser

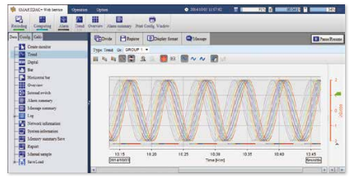


The setting screen lets you copy AI channel settings and other information to Excel for editing.
You can reimport the data into the setting screen after editing.



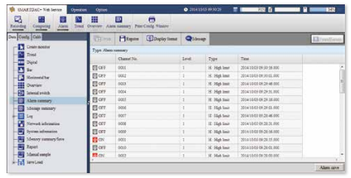
Trend, digital, and other real-time displays

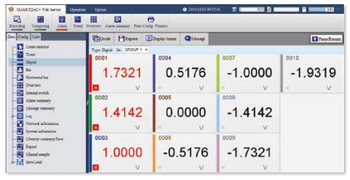
Trend



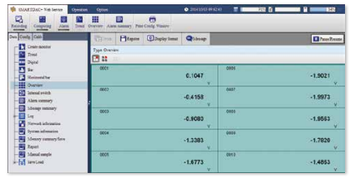
Bar graph

Alarm/Message/Memory summary





Digital

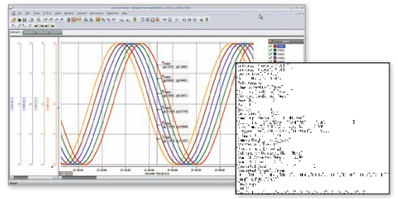


Overview

Dedicated software (free download) is available for loading waveforms and GM settings

Universal viewer

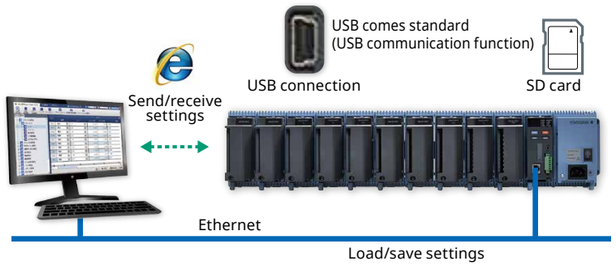
Data files saved on the GM can be viewed and printed. You can perform statistical computation over an area and export to ASCII, Excel, or other formats.



Data converted to an ASCII file

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.

Environmental testing

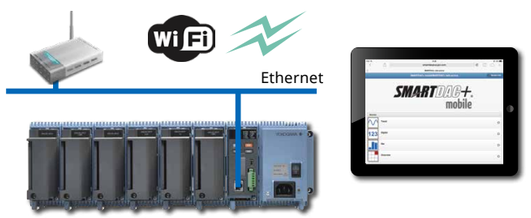
Monitoring and settings can also be done on a tablet

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.

Monitoring and settings are available via Bluetooth

Bluetooth supports Android only.
Wi-Fi supports both Android and iOS.

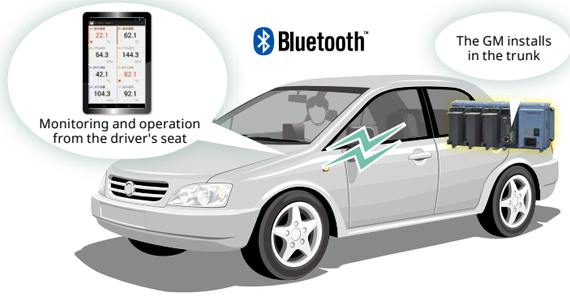
Enables monitoring via Wi-Fi



Powerful applications

Bluetooth connection

Simple to use for in-veheicle testing.



USB connection

Service staff can easily perform maintenance on the GM.