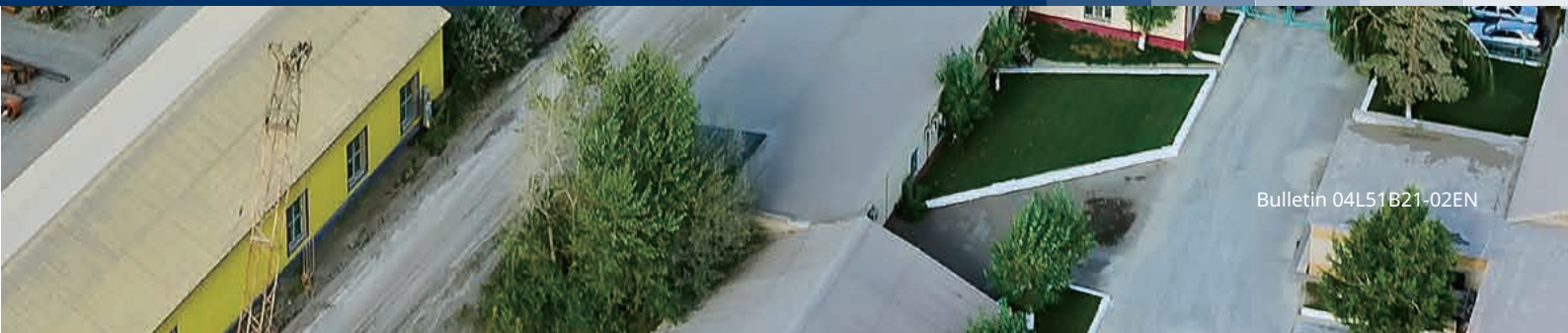


OpreX™ Data Acquisition

920 MHz band wireless communication instrument series SMART 920

For Korean market only



Want to integrate your site data and

The SMART 920 is a recorder and data logger with 920 MHz band wireless communication technology.

920 MHz wireless has a longer range than the 2.4 GHz band used in wireless LAN, and has greater reach around obstacles making it favorable for long-distances or highly obstructed environments.

The wireless input unit (GX70SM) has expanded functionality and is easier to use.

**It's easy to miss the forest when your data are like trees.
But now you see it.**



SMART 920 Features

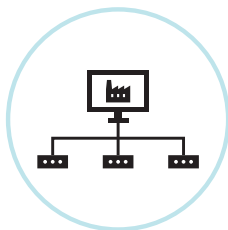
- ◆ Flexible wireless (multihop) communication
- ◆ High speed, highly reliable, multichannel communication
- ◆ Communication disconnection alarms
- ◆ Wired and wireless connection
- ◆ Battery powered, installs in a variety of locations (with GX70SM)
- ◆ Enhanced data backup function (with GX70SM)

NEW



Realize visualization of the entire factory

With targeted use of wired and wireless you acquire more data that lets you visualize the overall factory. For example, by linking data from the main production line with environmental data, you see the forest for the trees.



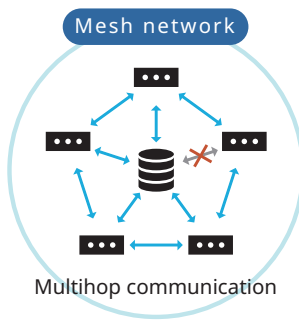
embrace the IIoT?

SMARTDAC+™



Robust communication

In a multihop network, when poor radio conditions result in lost connectivity, the signal is automatically rerouted to the optimum connection.



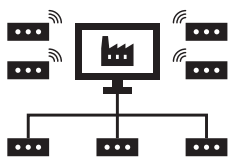
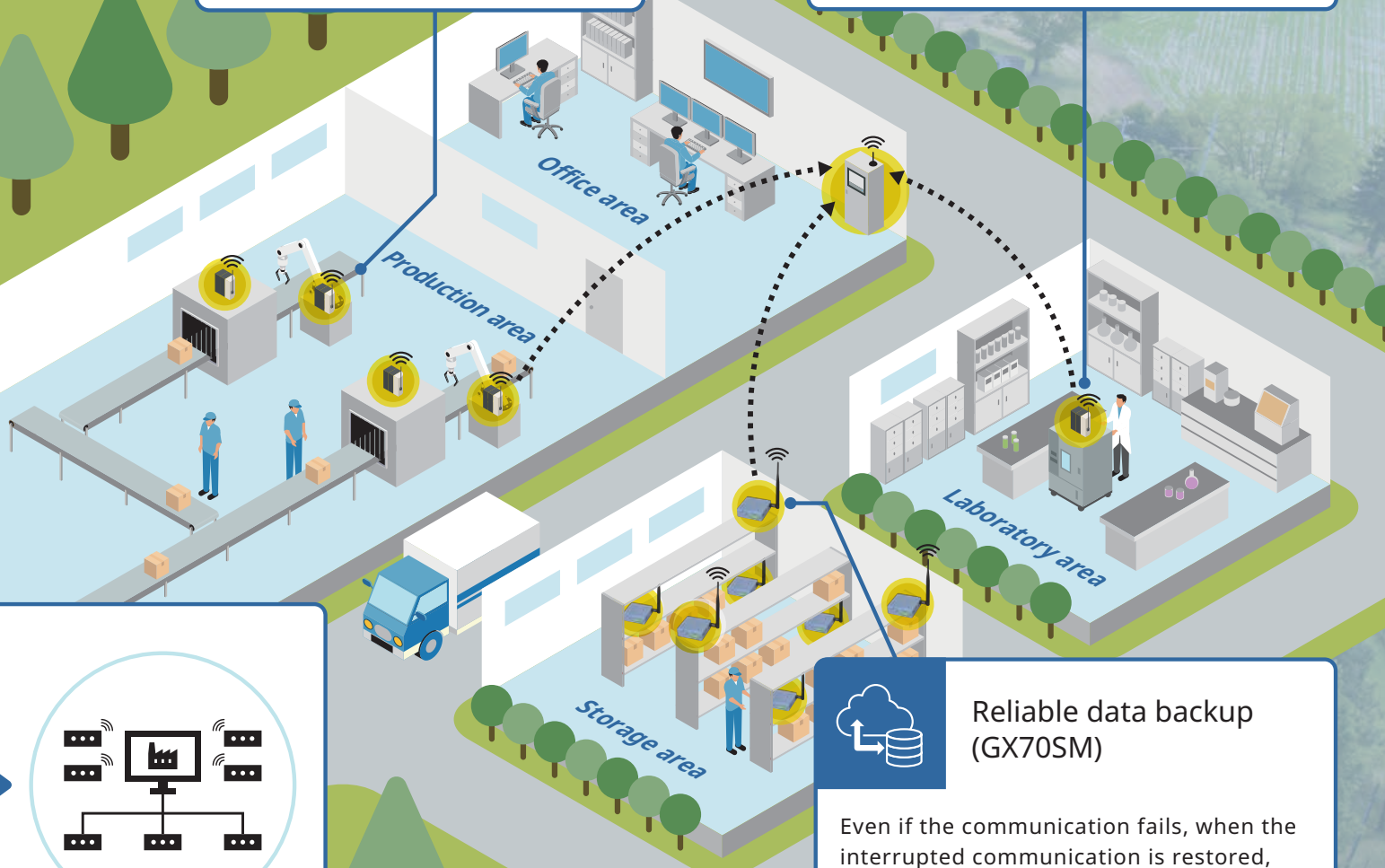
Enables long distance data acquisition

You can also send data over long distances. This allows for communication between factories and offices.



Installation and operation made easy

Installs easily, no new network infrastructure needed. And with wireless, it's easy to move equipment around. Say goodbye to costly wiring.



Reliable data backup (GX70SM)

Even if the communication fails, when the interrupted communication is restored, the recorded data will be sent to the master unit and automatically restored to the PC (using the /DB option, see page 4).

Customize how you send key data

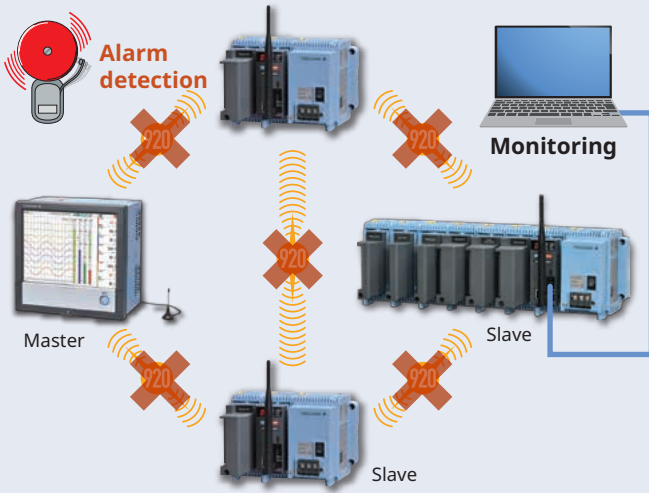
Stable wireless communication function



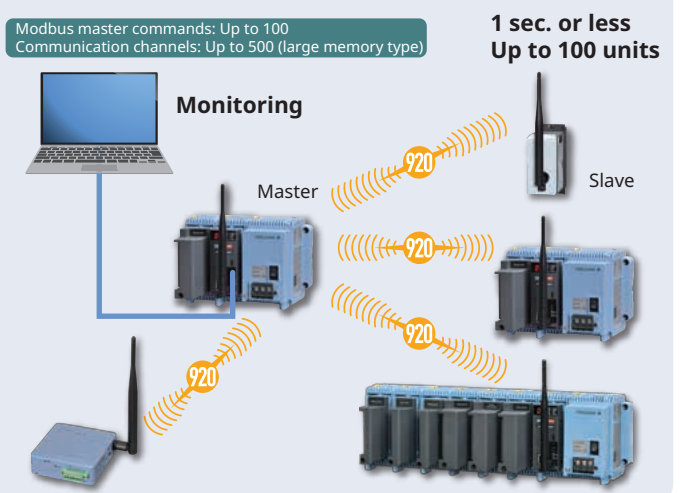
Automatic channel switching with multi-hop technology



Alarm detects and alerts when communication is lost



Supports a broad range of applications from small to multi-point



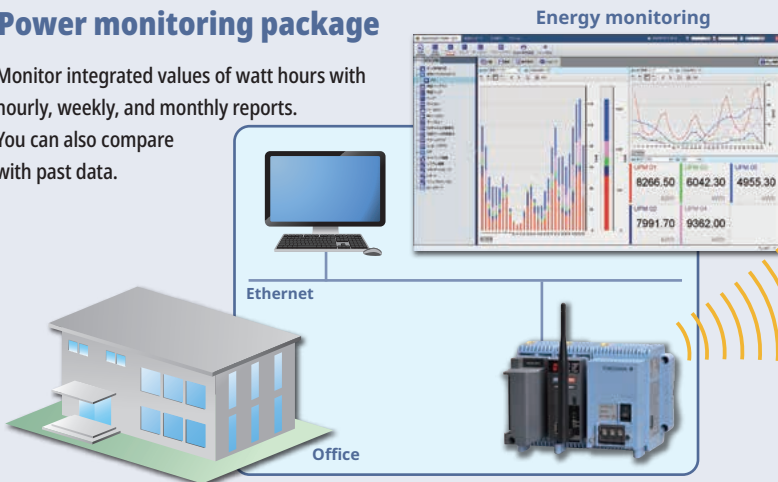
Contributes to power visualization

It enables visualization (graphing) of power usage in factories, creating reports, and other tasks, and helps you identify areas of wasted power.

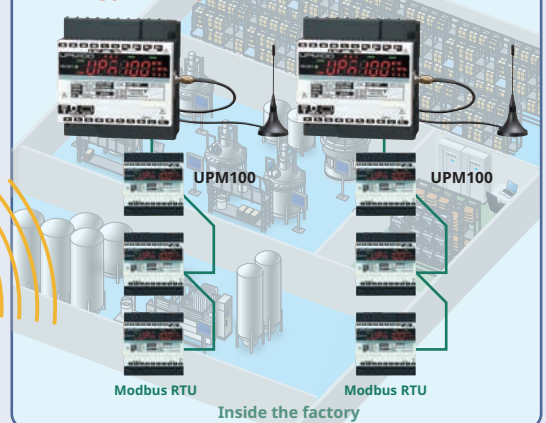
Power monitoring package

Monitor integrated values of watt hours with hourly, weekly, and monthly reports.

You can also compare with past data.



Energy savings starts with visualization



Enhances data visualization, status monitoring, remote monitoring, and other functions

Features of GX70SM wireless input unit

Battery powered

5-years battery life with 5 minutes scan interval (varies with operating conditions), supports USB power.



Multi input

2 ch of universal input, 1 ch of humidity measurement (/RH option)

°C
%RH

Single/loop calibration

Supports traceability, and input calibration by user.



Secure data

Wireless terminal authentication blocks unauthorized access. Encrypted communication prevents tampering and eavesdropping.

Linear scaling function

Sensor signals can be measured with linear scaling.

Validation documents

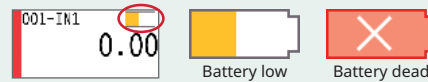
Additional verification protocols are available for the GX70SM wireless module. They can be combined with the SMARTDAC+ validation document (sold separately). You can reduce validation man-hours by using the GX70SM validation document, 773230/W.



Automatic warehouse temperature and humidity control

Battery status display (GX/GP/GM (master))

Displays the GX70SM battery status on trends, digital, bar graph, and other monitor screens.

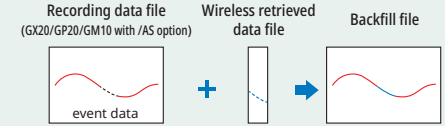


Enhanced data backup function (/DB option)



The GX70SM provides redundancy for your wireless data. The module can retain 9000 points* of logged data onboard. If the wireless connection is interrupted for any reason, the missing data can be restored from the GM70SMs memory.

* 30 days at a 5-minute scan interval

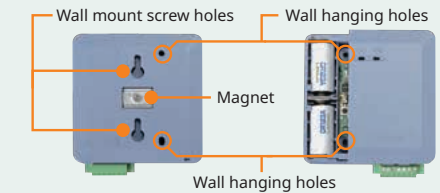


Automatic data supplement using Interpolating PC tool (free)

Installs in a variety of locations

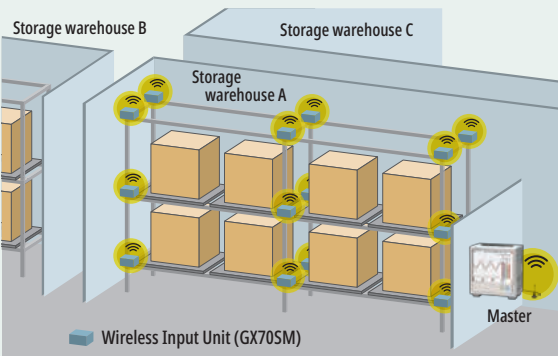
4 installation methods

(wall mount (with screws), wall hanging, magnet, desktop)



Pharmaceutical warehouse temperature mapping and continuous monitoring

The wireless input unit (GX70SM) provides a continuous temperature mapping and recording solution in product storage areas. Plus, it can continuously monitor risk points throughout the warehouse.



GX70SM connectable number of units by master model

Master	Connectable GX70SM
GX20-1 GP20-1 GM10-1	Up to 50 units
GX20-2 GP20-2 GM10-2	Up to 96 units*

* Max. connectable number of units of GX70SM with /DB option is 50.

Clean room temperature and humidity control

The GX70SM wireless input unit is battery powered, has a built-in humidity sensor, and supports user-calibration.



Measuring the WBGT value (heat index) with the SMARTDAC+

What is the WBGT (heat index)?

This is an index proposed in the US in 1954 for preventing heatstroke.

A dedicated measuring device using a black bulb is required for accurate measurement, but in locations without direct sunlight such as factories and offices, the WBGT value can be easily determined from the temperature and humidity.

Relationship between the WBGT value and temperature and humidity

Temperature (°C)	Relative humidity (%RH)																
	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
40	29	30	31	32	33	34	35	35	36	37	38	39	40	41	42	43	44
39	28	29	30	31	32	33	34	35	35	36	37	38	39	40	41	42	43
38	28	28	29	30	31	32	33	34	35	35	36	37	38	39	40	41	42
37	27	28	29	29	30	31	32	33	34	35	35	36	37	38	39	40	41
36	26	27	28	29	29	30	31	32	33	34	35	36	37	38	39	40	41
35	25	26	27	28	29	29	30	31	32	33	34	35	36	37	38	39	40
34	25	25	26	27	28	29	29	30	31	32	33	34	35	36	37	38	39
33	24	25	25	26	27	28	28	29	30	31	32	33	34	35	36	37	38
32	23	24	25	25	26	27	28	28	29	30	31	32	33	34	35	36	37
31	22	23	24	24	25	26	27	27	28	29	30	31	32	33	34	35	36
30	21	22	23	24	24	25	26	27	27	28	29	30	31	32	33	34	35
29	21	21	22	23	24	24	25	26	26	27	28	29	30	31	32	33	34
28	20	21	21	22	23	24	25	25	26	27	28	29	30	31	32	33	34
27	19	20	21	21	22	23	24	25	25	26	27	28	29	30	31	32	33
26	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33
25	18	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32
24	17	18	18	19	20	21	21	22	23	24	25	26	27	28	29	30	31
23	16	17	17	18	19	20	21	22	22	23	24	25	26	27	28	29	30
22	15	16	17	17	18	19	20	21	21	22	23	24	25	26	27	28	29
21	15	15	16	17	17	18	19	20	21	21	22	23	24	25	26	27	28

WBGT value Alarm 25°C- Critical alarm 28°C- Danger 31°C-
* From the Japan Society of Biometeorology "Preventative index for heat stroke in daily life" version 3

Improve the factory working environment



Superior response to sharp temperature changes. Contributes to temperature and humidity control, and helps prevent heatstroke.

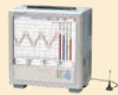
Select from the lineup according to your installation environment

■ As a parent device...

GX20



GP20



GM10



A 920 MHz wireless communication parent device can easily acquire and record data wirelessly from child devices.

■ As a relay...

GM10



UT32A



UPM100



Comes with relay functionality.

■ As a child device...

GX70SM



GM10



UT32A



UPM100



Wirelessly transmits measured data to a parent device or relay. Wall mount, desktop, and other space-saving installation options available. (GX70SM)

Multi-function I/O device for wireless monitoring (PID control or ladder program computation function, and a serial gateway function). (UT32A)

GX20 Model and Suffix code



Model	Suffix Code	Optional code	Description
GX20			Paperless recorder (Panel mount type, Large display) *1
Type	-1		Standard (Max. measurement channels: 100 ch)
	-2		Large memory (Max. measurement channels: 500 ch)
Display language	E		English, degF, DST (summer/winter time) *2
Optional features	/AH		Aerospace heat treatment
	/AS		Advanced security function (Part 11)
	/BC		Black cover
	/BT		Multi-batch function
	/C2		RS-232 *3
	/C3		RS-422/485 *3
	/CG		Custom display *4
	/D5		VGA output
	/E1		EtherNet/IP communication (PLC communication protocol)
	/E2		WT communication *5
	/E3		OPC-UA server
	/E4		SLMP communication (Mitsubishi PLC)
	/FL		Fail output, 1 point
	/LG		Log scale
	/MT		Mathematical function (with report function) *6*7
	/MC		Communication channel function *8
	/P1		24 V DC/AC power supply
/PG		Program control function	
/UH		USB interface (Host 2 ports)	
/CM3		920 MHz wireless communication (master function) *3*8	

*1 To connect an expandable I/O, GM sub unit, you will need one expansion module for the GX.

*2 The Display language is selectable. To confirm the current available languages, please visit the following website. URL: <http://www.yokogawa.com/ns/language/>

*3 /C2, /C3 and /CM3 cannot be specified together.

*4 Creating custom displays requires DXA170 DAQStudio (sold separately). (GX does not have a creation function.)

*5 /MC option must be separately specified when the WT communication is selected.

*6 Optional code /MT (MATH) required if using the GX90XD's or GX90WD's pulse input.

*7 The /MT option (computation) is required to perform pulse integration on GX90XP pulse input modules.

*8 If you want to load data from other devices into the GX using Modbus client, a communication channel (/MC) is required.

GP20 Model and Suffix code



Model	Suffix Code	Optional code	Description
GP20			Paperless recorder (Panel mount type, Large display) *1
Type	-1		Standard (Max. measurement channels: 100 ch)
	-2		Large memory (Max. measurement channels: 500 ch)
Display language	E		English, degF, DST (summer/winter time) *2
Power supply	1		100 V AC, 240 V AC
Power cord	F		Power cord VDE standard
Optional features	/AH		Aerospace heat treatment
	/AS		Advanced security function (Part 11)
	/BT		Multi-batch function
	/C2		RS-232 *3
	/C3		RS-422/485 *3
	/CG		Custom display *4
	/D5		VGA output
	/E1		EtherNet/IP communication (PLC communication protocol)
	/E2		WT communication *5
	/E3		OPC-UA server
	/E4		SLMP communication (Mitsubishi PLC)
	/FL		Fail output, 1 point
	/LG		Log scale
	/MT		Mathematical function (with report function) *6*7
	/MC		Communication channel function *8
	/PG		Program control function
	/UH		USB interface (Host 2 ports)
/CM3		920 MHz wireless communication (master function) *3*8	

*1 To connect an expandable I/O, GM sub unit, you will need one expansion module for the GP.

*2 The Display language is selectable. To confirm the current available languages, please visit the following website. URL: <http://www.yokogawa.com/ns/language/>

*3 /C2, /C3 and /CM3 cannot be specified together.

*4 Creating custom displays requires DXA170 DAQStudio (sold separately). (GX does not have a creation function.)

*5 /MC option must be separately specified when the WT communication is selected.

*6 Optional code /MT (MATH) required if using the GX90XD's or GX90WD's pulse input.

*7 The /MT option (computation) is required to perform pulse integration on GX90XP pulse input modules.

*8 If you want to load data from other devices into the GX using Modbus client, a communication channel (/MC) is required.

I/O module

Inputs and outputs of SMARTDAC+ series GX/GP/GM are modular for easy expandability.

For the GX90□□I/O modules, GX60 expansion unit, GX90EX expansion modules, GM90MB module base, add-ons and accessories, see the GX/GP or GM catalogs. GX/GP catalogs No.: Bulletin 04L51B01-01EN

GM catalogs No.: Bulletin 04L55B01-01EN

GM10 Model and Suffix code



Model	Suffix code	Optional code	Description
GM10			Data Acquisition Module for SMARTDAC+ GM
Type	-1		Standard (Max. measurement channels: 100 ch)
	-2		Large memory (Max. measurement channels: 500 ch)
Area	E		General
-		0	Always zero
Optional features	/AH		Aerospace heat treatment
	/AS		Advanced security function
	/BT		Multi-batch function
	/C3		RS-422/485 ^{*1}
	/C8		Bluetooth
	/E1		EtherNet/IP communication (PLC communication protocol)
	/E2		WT communication ^{*2}
	/E3		OPC-UA sever
	/E4		SLMP communication (Mitsubishi PLC)
	/MT		Mathematical function (with report function) ^{*3*4}
	/MC		Communication channel function ^{*5}
	/LG		Log scale
	/PG		Program control function
/CM3		920 MHz wireless communication (master function) ^{**1*5}	
/CS3		920 MHz wireless communication (slave function) ^{**1*5}	
/WH		Integration bar graph function ^{*6}	

- *1 /C3, /CM3 and /CS3 cannot be specified together.
 *2 Communication channel function (/MC option) must be specified at the same time with WT communication.
 *3 Optional code /MT (MATH) required if using the GX90XD's or GX90WD's pulse input.
 *4 Optional code /MT (MATH) required if using the GX90XP's pulse integration.
 *5 If you want to load data from other devices into the GM using Modbus client, a communication channel (/MC) is required.
 *6 If you specify /WH option, you must also specify the communication channel function (/MC option) and the mathematical function (/MT option).

GM90PS Model and Suffix code

For 100–240 VAC power (inlet), GM90PS-1N1D0/W3
 For 100–240 VAC power (M4 screw), GM90PS-1N1W0/W3
 For 12–28 VDC power (M4 screw), GM90PS-1N2W0/W3

When using with GM10 (/WH option), it is necessary to specify the /WH option (for integrated bar graph function) for GM90PS.

UT32A Model and Suffix code

UT32A-00C-11-00/MDL
 Optional suffix codes : /DC, /CT, /CV

* For details on the UT32A, see the UT32A (DIN rail type) general specifications (GS 05P01C81-01EN).



Validation document (for the GX70SM)

Additional verification protocols are available for the GX70SM wireless module. They can be combined with the SMARTDAC+ validation document (sold separately). You can reduce validation man-hours by using the GX70SM validation document, 773230/W.

Accessories

Sleeve antenna
 (Part no. : A1061ER)



Connectable models:
 GX20/GP20, GM10, GX70SM, UT32A

Used when installing with the main unit, such as inside the casing. For indoor use.

Rooftop antenna
 (Part no. : A1062ER)



Connectable models:
 GX20/GP20, GM10, GX70SM, UT32A, UPM100

For use when installing separately from the main unit. Can be used outdoors.

Input terminal block
 (Part no. : A2226T)



The input terminals on the GX70SM wireless input unit. (1 comes standard with the wireless input unit GX70SM)

Wall Mount Bracket for UT32A
 (Model: UTAP005)



Use for wall-mounting the UT32A.

GX70SM Model and Suffix code



Model	Suffix code	Optional code	Description
GX70SM			Wireless Input Unit
Number of channels	-2		2 channels
Type		-L0	Universal input, scanner type (isolation between channels)
-		N	Always N
Terminal type		-C	Clamp terminal
Area		K	For the Republic of Korea, KC mark Approval
Option		/RH	Built-in humidity sensor, 1 channel
		/DB	Enhanced data backup function ^{*1}

*1 To use the backfill function, the following conditions are required for the master unit (GX20, GP20 or GM10).

- Firmware version R4.09 or later
- Wireless communications module version v4.4.0 or later
- /AS option enabled

Standard Accessories: Manual, Magnet, Screw

* Batteries are not included. Please obtain them separately (recommended battery manufacturer: Panasonic)



UPM100 Model and Suffix code

Model	Suffix Code	Description
UPM100	-x x x x x -2 0	Universal Power Monitor
Phase and Wire Type	-1	Single-phase 2-wire
	-2	Single-phase 3-wire
	-3	Three-phase 3-wire
	-4	Three-phase 4-wire
Rated Input Voltage and Current	3	220 V/1 A AC (phase voltage 127 V AC for three-phase 4-wire) ^{*1}
	4	220 V/5 A AC (phase voltage 127 V AC for three-phase 4-wire) ^{*1}
	5	440 V/1 A AC (phase voltage 277 V AC for three-phase 4-wire)
	6	440 V/5 A AC (phase voltage 277 V AC for three-phase 4-wire)
Output Function	0	Without display function, without pulse output
	1	With display function, without pulse output
	2	Without display function, with pulse output
	3	With display function, with pulse output
Optional Communication Function	0	None (RS-485 is provided as standard)
	C	Wireless communication (with serial gateway function) ^{*2}
Optional Measuring Function	0	Integral resolution kWh
	1	Integral resolution kWh / power factor
	2	Integral resolution kWh ³ / reactive power, integrated reactive power
	3	Integral resolution kWh ³ / power factor, reactive power, integrated reactive power
	4	Integral resolution Wh
	5	Integral resolution Wh / power factor
	6	Integral resolution Wh ³ / reactive power, integrated reactive power
7	Integral resolution Wh ³ / power factor, reactive power, integrated reactive power	
Power Supply	-2	85 to 264 V AC 50/60 Hz
Fixed Code	0	Always "0"

*1 200 V AC (100 V + 100 V) for single-phase 3-wire

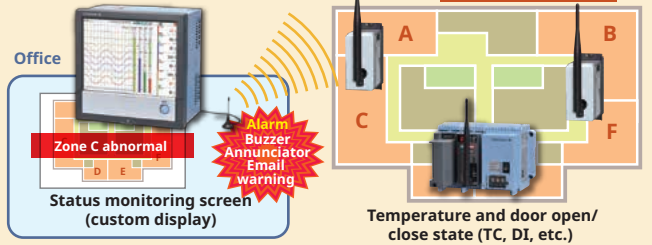
*2 Wireless communication option can only be used in the Republic of Korea.

*3 The unit is kvar or var when reactive power is selected.

Visualization at various sites

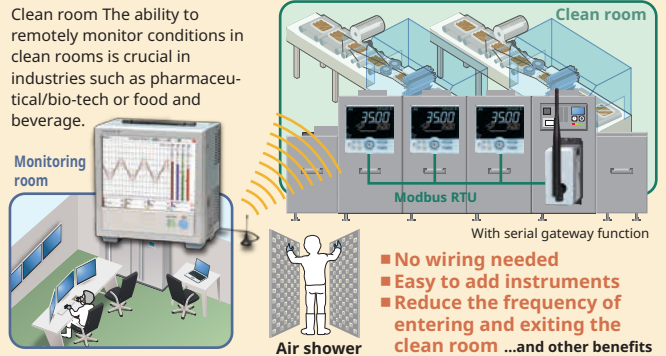
Storage warehouse door state and temperature monitoring

Monitor the temperature of the warehouse and check whether the door is open right from the office. Customize your display for immediate grasp of conditions.



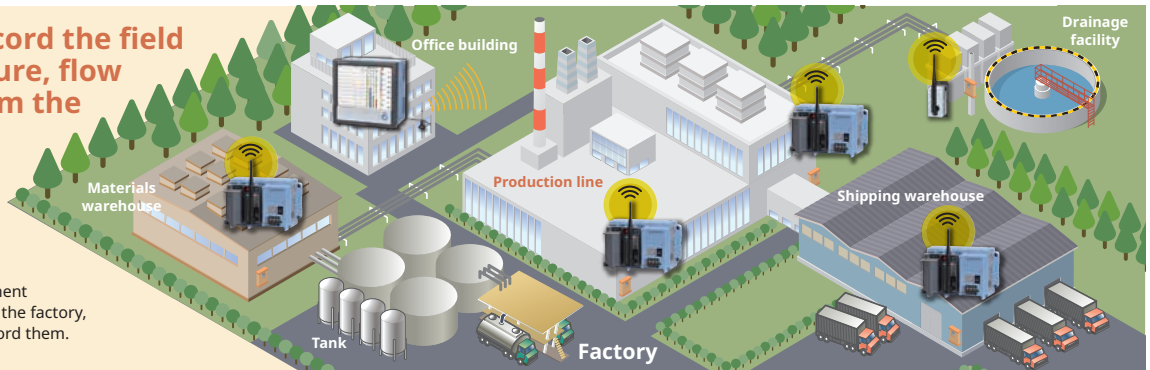
Remotely Monitor Operating Conditions

Clean room The ability to remotely monitor conditions in clean rooms is crucial in industries such as pharmaceutical/bio-tech or food and beverage.



Monitor and record the field data (temperature, flow and pH etc.) from the office building

Wirelessly connect to the temperature, flow, and pH values displayed on measurement panels distributed throughout the factory, and remotely monitor and record them.



Notes on 920 MHz Wireless Communication

This equipment is designed for use in the Republic of Korea only and cannot be used in any other country.

- Communication may not be possible in the following locations due to radio signal reflection.
 - Where strong magnetic field, static electricity, or radio interference occurs.
 - Rooms with metallic walls (including concrete containing metal reinforcement material), inside cabinets, etc.
- If another wireless device using the same radio frequency band as this product is present in the communication area of this product, data rate degradation or communication errors may occur, preventing normal communication.
- This product has obtained KC marking. As such, the following acts may be punishable by law.
 - Disassembling or altering the product.
 - Removing the certification label.
 - Using an antenna other than the specified option.
- Because this product uses radio signals, bear in mind that communication may be intercepted by third parties.

Web site

<https://www.yokogawa.com/ns/smart920/>



User Registration Request

Thank you for purchasing YOKOGAWA products. Please register to the following Partner Portal Member Site. You can use various services such as confirmation of purchased product information, download of related materials, and newsletter.

<https://partner.yokogawa.com/global/>



OpreX™ Yokogawa achieves operational excellence by providing products, services, and solutions based on the OpreX comprehensive brand that cover everything from business management to operations.

Trademarks

All brand or product names of Yokogawa Electric Corporation in this bulletin are trademarks or registered trademarks of Yokogawa Electric Corporation. All other company brand or product names in this bulletin are trademarks or registered trademarks of their respective holders.

YOKOGAWA ELECTRIC CORPORATION

Control Instruments Business Division
E-mail: ns@cs.jp.yokogawa.com

<http://www.yokogawa.com/>

YOKOGAWA ELECTRIC KOREA CO., LTD.

<http://www.yokogawa.com/kr/>

Subject to change without notice.

All Rights Reserved. Copyright© 2017, Yokogawa Electric Corporation

KP-S-1E

Printed in Japan, 103(KP)
(Ed : 02/b)