General Specifications

GP10/GP20
Paperless Recorder
(Portable type)

SMARTDAC+™

GS 04L52B01-01EN ***[Release R5]***

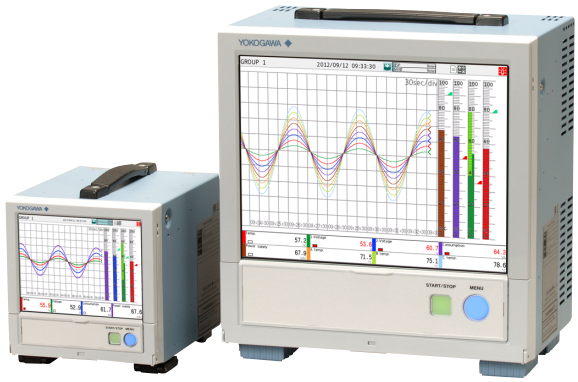
■ OVERVIEW

The GP10/GP20 are portable type paperless recorders that display real-time measured data on a touch screen and save data on an external storage medium (SD card).

For the input/output module specification, please see GX90XA/GX90XD/GX90YD/GX90WD/GX90XP/ GX90YA Input/Output Module and GX90UT PID Control Module General Specification (GS 04L53B01-01EN, GS 04L53B01-31EN.)

- The number of analog input is a maximum of 100 channels in GP10 with expandable I/O*1, GM sub unit*1, a maximum of 100 channels in GP20 standard type (GP20-1) with expandable I/O,and a maximum of 450 channels*2 in GP20 large memory type (GP20-2) with expandable I/O, GM sub unit.
  *1 A unit for expanding the number of channels.
  *2 Max. number of input/output channels is 500 channels.
- The GP10/GP20 have the large internal memory (GP10/GP20-1: 500MB, GP20-2: 1.2 GB), and prolonged record and preservation are possible.
- As the input signal, a DC voltage, thermocouple, resistance temperature detector, DI (DCV input (TTL), contact signal), or mA (DC current) can be set to each channel.
- Analog output is capable of retransmission output of various types of channels and also manual output. It provides current output with channels that are isolated. (Analog output module)
- Input and output have module structure and it can extend them easily. (GP10: max. 3*, GP20: max. 10*)
  * In case of using expandable I/O, GM sub unit, GX10 can extend two units, GX20 can extend 9 units.
- A module type is seven types, an analog input, a analog output, a digital input, a digital output, a digital input/output, a pulse input, and a PID control.
- Up to 6 units of expandable I/O units and GM sub units can be connected to the GP10/GP20. Each expandable I/O and GM sub unit can incorporate a maximum of six modules. With expandable I/O, GM sub unit connected, GP10 and the large memory type GP20 can use multiple channels. Furthermore, the I/O ports can be installed in separate locations from where GP10/GP20 is located, helping you reduce wiring requirements and build a decentralized configuration.
- The intuitive operation by flick, pinch in, and pinch out are possible.
- The past trend under recording can be seamlessly displayed on a trend screen.
- Predicts* the future from past data and draws future waveforms simultaneously with real-time data on the trend screen. (Future pen function)

  * Future waveforms predicted by the Future Pen function are for reference only. Performance, accuracy, and other properties are not guaranteed.



GP10 GP20

- Moreover, the measurement data of the time specified on the calendar screen can be searched and displayed.
- Various functions, such as a freehand message, a PDF/Excel output of a report file, a direct output to a network printer, a scale movement of a trend display, and a buzzer, are equipped.
- It can be hooked up to network via Ethernet, which enables to inform by Email and to monitor on Web site as well as to transfer files by using FTP. Also, it can communicate with Modbus/RTU or Modbus/TCP.
- Equipment/Quality Easy Predictive Detection
  - Health Monitor Function
  This function judges quality based on a predictive detection model. You can check health scores that indicate degrees of normality and abnormality. Create predictive detection models with the Equipment/Quality Predictive Detection Tool (sold separately, in the cloud or offline) based on historical measurement data.
  For more details, please see the Equipment/Quality Predictive Detection Tool General Specification(GS 04L66B01-01EN)
  - Profile Function
  This function alerts you to deviations from the profile trend (upper and lower range of measured values). You can also check deviations from a reference waveform on screen. Create profile trends with the Equipment/Quality Predictive Detection Tool (sold separately, in the cloud or offline) based on historical measurement data.
  For more details, please see the Equipment/Quality Predictive Detection Tool General Specification(GS 04L66B01-01EN)

  Note Judgments from equipment/quality easy predictive detection are for reference only. Performance, accuracy, and other properties are not guaranteed.

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- Safe measurement up to withstand voltage of 600 V between input terminal and ground is possible by using a high withstand voltage analog input module.
- In high-speed measurement, measurement at the shortest interval of 1 ms is possible by using a highspeed analog input module (high-speed AI).
- In dual interval measurement, measurement can be performed by setting two different scan intervals.
- The PID control function enables PID control on up to 20 loops (6 loops for the GP10/GP20-1) by installing a PID control module.
- The program control function enables program control of up to 99 patterns by using a PID control module and program control function (/PG option). Up to 32 time events and 32 PV events can be set for each segment.
  * For PID control module, PID control Function, and program control function (/PG), see the GX90UT PID Control Module General Specifications (GS 04L53B01-31EN)
- Various types of computation are possible with the math function (/MT option). The report function enables creation of hourly, daily, and monthly reports and other types of data. Logic math outputs results of computation as 0s or 1s to internal switches and DO channels.
- A setup of GP can be performed on-line from the web browser on PC. A setup by off-line is also possible.
- Universal Viewer software allows a PC to display waveforms on its screen and to print out waveforms.

The contents of this general specifications correspond to the GP10/GP20 with release number 5 and style number 3 and 4.
Release number: firmware ID number
Style number: hardware ID number

- The measuring accuracies noted in the general specifications have a margin of error that takes into account the product's components and the equipment used for adjustment and testing. However, the actual values calculated from the accuracy testing data upon shipment of the instrument from the factory are as follows.

Input type		Measuring accuracy*1 (typical value*2)
DCV	20 mV	± (0.01 % of rdg + 5 µV)
	60 mV	± (0.01 % of rdg + 5 µV)
	6 V (1-5 V)	± (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) (-150.0 to 150.0 °C)	± (0.02 % of rdg + 0.16 °C)

*1 Applies to GX90XA-10-U2, A/D integration time 16.67ms or more, General operating conditions: 23±2 ºC, 55±10% RH, supply voltage 90–132, 180–264 VAC, supply frequency within 50/60 Hz ±1%, warm-up of 30 minutes or more, no vibrations or other hindrances to performance.
*2 For the measuring accuracy (guaranteed), see the module's general specifications (GS04L53B01-01EN).
*3 These values do not include the reference junction compensation accuracy.
rdg: reading value

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■ MAIN UNIT SPECIFICATIONS

■ FUNCTIONAL SPECIFICATION

Input/Output Specifications

Please see GX90XA/GX90XD/GX90YD/GX90WD/GX90XP/GX90YA I/O Module and GX90UT PID Control Module General Specifications.

Model	Name	General Specification No.
GX90XA	Analog input module	GS 04L53B01-01EN
GX90DX	Digital input module	
GX90YD	Digital output module	
GX90WD	Digital input/output module	
GX90XP	Pulse input module	
GX90YA	Analog output module	
GX90UT	PID control module	GS 04L53B01-31EN

Measuring Functions

- The number of installable modules and I/O channels (total for GP, expandable I/O and GM sub unit)

GP10/GP20-1

Item	GP10/GP20-1
Number of module	Max. 10
Number of input/output module	Max. 100

GP20-2

Item	GP20-2
Number of module	Max. 45
Number of input/output module	Max. 500 (or max. 450 for AI only)

Module installation limitations:
See “Limitations” and “Notes on Module Installation.”

- Expandable I/O, GM sub unit connection
  Number of connectable units: Up to 6 units total
  * Connection is not possible if the measurement mode is set to High speed.
    For details on expandable I/O units and GM sub units, see the respective General Specifications (GS 04L53B00-01EN, GS 04L55B01-01EN).

Scan interval:
1, 2, 5, 10, 20, 50, 100, 200, 500 ms, 1, 2, 5 s
Note) Some intervals will be unavailable depending on the system configuration and modules.
For details, see the I/O Module General Specifications (GS 04L53B01-01EN) and “Limitations” in this manual.

Measurment mode:

- Normal
  A mode in which the shortest measurement interval is 100 ms
  Number of measurment groups: 1
  File type: Display data, event data
  Data format: Binary or text
  Scan interval: 100 ms (fastest)
  Compatible modules: All modules
- High speed
  A mode in which high-speed measurement is possible at the shortest measurement interval of 1 ms
  Number of measurment groups: 1
  File type: Event data only
  Data format: Binary only
  Scan interval: 1 ms (fastest)
  Compatible modules: High-speed AI (GX90XA-04-H0), DI (GX90XD), DIO (GX90WD)
  However, one module, either DI or DIO, can be installed. DI input is fixed to remote mode. Measurement and recording are not possible.
- Dual interval
  A mode in which measurement is possible by setting different scan intervals on the two measurement groups.
  Number of measurement groups: 2
  File type: Event data only
  Data format: Binary only
  Scan interval:

Model	measurement group 1	measurement group 2
GP10/GP20-1	5 ms (fastest)	100 ms (fastest)
GP20-2	1 ms (fastest)	100 ms (fastest)

Compatible modules: All modules except PID control module

* Depending on the measurement mode, there is a limit to the number of measurement channels and recording channels at scan intervals shorter than 100 ms. See “Limitations.”

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Display Functions

Display groups:

Number of groups; GP10: 30, GP20-1: 50, GP20-2: 60
Number of channels that can be assigned to each group; GP10: 10, GP20: 20

Display color (Trend/Bar graph/Digital display):

Channel: Select from 24 colors
A desired display color can be selected freely using its RGB value.
Background: Select from white or black

Display type:

- Trend display (T-Y)
  Display method:
  Direction: Horizontal, vertical
  Trend interval(Recording interval): 50 ms/div (1 ms), 100 ms/div (2 ms), 250 ms/div (5 ms), 500 ms/div (10 ms), 1 s/div (20 ms), 2.5 s/div (50 ms), 5 s/div (100 ms), 10 s/div (200 ms), 15 s/div (500 ms), 30 s/div (1 s), 1 min/div (2 s), 2 min/div (4 s), 5 min/div (10 s), 10 min/div (20 s), 15 min/div (30 s), 20 min/div (40 s), 30 min/div (1 min), 1 h/div (2 min), 2 h/div (4 min), 4 h/div (8 min), 10 h/div (20 min)
  - Trend interval shorter than 30 s/div (1 s) cannot be set on electromagnetic relay type analog input modules.
  - Trend interval shorter than 15 s/div (500 ms) cannot be set on low withstand voltage relay type analog input modules.
  - Scan interval shorter than 5 s/div (100 ms) can be specified when the measurement mode is set to High speed or Dual interval.
  - On the GP10/GP20-1, scan interval shorter than 250 ms/div cannot be specified in dual interval mode.

  Trend line width: Thick, normal, thin
  Scale; GP10: Max. 6, GP20: Max. 10
  Current value bar graph, color scale band, and alarm point marks can be displayed on the scale.
  A bitmap image scale can be attached.
  Moving scale; Scale can be moved on any waveform.
  Others; Grid (Auto, 4 to 12), Trip line, Message, Zone display, Partial expanded display
- Historical trend display (T-Y display)
  Redisplays the display data or event data in the internal memory or external storage medium
  Time axis operation: The time axis can be reduced or expanded.
  Data search: Waveforms from the internal memory can be displayed through the specification of a date and time, calendar, each summary
  All historical trends can be displayed in one screen.
- Bar graph display
  Direction: Vertical or horizontal
  Scale: Display a scale for each channel
  Color scale band, and alarm point marks can be displayed on the scale.
- Digital display
  Displays measured values numerically
  A DI input state can be displayed as an arbitrary character string (0=Off/1=On, etc.)
  Update rate: 0.5 s
- Overview display
  Display format: All channels, each groups
  Displays the measured values of all channels and the alarm statuses
  Display in groups only when the maximum number of channels that can be displayed (30 on the GP10, 100 on the GP20) is exceeded.
- Alarm summary display
  Displays a log of up to 1000 alarms
  Specify an alarm with the cursor and jump to the corresponding section on the historical trend display.
- Future alarm summary display
  Displays a list of alarms currently detected by the future alarm function (the history of future alarms is not stored)
- Message summary display
  Time and content of up to 500 messages (simultaneous writing: 450, additional writing: 50)
  Specify a message with the cursor and jump to the corresponding section on the historical trend display.
- Memory summary display
  Displays the information (up to 500 (GP10/GP20-1) or up to 1000 (GP20-2) of the data in the memory
  Specify a file with the cursor and jump to the corresponding section on the historical trend display.
- Report display
  Displays the report data residing in the internal memory
  For more details, see "MATHEMATICAL FUNCTIONS WITH REPORT FUNCTION (/MT)."
- Log display
  Displays the event log, error log, communication log, FTP log, Web log, e-mail log, SNTP log, DHCP log, Modbus log, SLMP log, and health monitor log.
- Multi-panel display (Only for GP20)
  Divides the screen into two to six sections and displays some different display formats.
- Internal switch/relay state display
  Displays the internal switch and ON/OFF state of DO
  Operates the internal switch and ON/OFF state
- Control screen display (when a PID control module is installed)
  Control group, control overview, tuning, control summary, control alarm summary, program operation,* program selection*
  * Only when the /PG option is installed
- Other displays
  Network information display
  System information display
  System configuration display

Auto scroll:

The displayed groups can be automatically switched at a specified interval.
The display switches in ascending group order.

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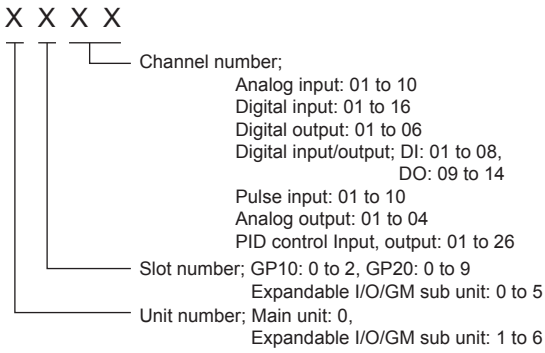
Names of channels:



Tags:

- Tag and Tag numbers can be displayed.
- Tag number; Number of characters: Up to 16
  Displayable characters: Alphanumeric characters
  Tag numbers can be enabled or disabled.
- Tag; Number of characters: Up to 32
  Displayable characters: Alphanumeric characters

Message:

- Write messages to the trend display.
- Number of messages: 100
- Number of characters: Up to 32
- Write method: Write a preset message or write an arbitrary message on the spot.
- Write destination: Select only the displayed group or all groups.
- Auto message: Write a message when the GP recovers from a power failure while memory sampling is in progress.
  Write a message when the trend interval is switched during memory sampling.

Add message:

- Write messages to the past data positions.
- Message: The same as the “Message” item above
  Number of writable messages per file: 50 messages (including 10 freehand messages)

Freehand message:

- Can be written by dedicated pen.
  Number of writable messages per file: 50 messages (including 10 Add messages)

Data Saving Functions

Internal memory:

- Temporarily saves various types of data.
- Medium: Flash memory
- File storage capacity;
  GP10, GP20-1: 500 MB
  GP20-2: 1.2 GB

External storage medium:

- Medium SD card (SD/SDHC) (up to 32 GB)
- Format: FAT32 or FAT16

Data type:

- Display data, Event data, Alarm summary data, Manual sampled data, Screen image data, Setup data, Report data, and Health monitor log data

Display data:

- Target: Measurement (input/output module)/ math/communication channels, alarm summary, message summary
  Description: Maximum or minimum value per recordling interval
- Recording intervals: Determined by the trend interval, recording data type (display data/display data + event data, GP20-2)
- Number of channels that can be recorded
  For GP20-1

Trend interval (div)	Number of channels
5 s	100
10 s	200
15 s or longer	500

For GP20-2

Trend interval (div)	Number of channels	
	Display data	Display data + Event data
5 s	200	100
10 s	500	200
15 s	1000	500
30 s or longer	1000	1000

Note that the maximum number of channels is fixed at 100 in the GP10.

- Data size;
  Analog input data: 12 bytes/ch.
  Analog output data: 12 bytes/ch.
  Digital I/O data: 4 bytes/ch.
  Pulse input data: 12 bytes/ch.
  Math channel data: 12 bytes/ch.
  Communication channel data: 12 bytes/ch.
- File size: Up to 18 MB
- Number of files for GP10, GP20-1: Up to 500 (including event data), for GP20-2; Up to 1000 (including event data)
  Operation in the internal memory: FIFO (First In First Out)
- Data format: Binary or text
- Recording: Records data at all times.
- Display data file sample time
  Measurement channel = 30. Math Channel = 0

Internal Memory	500 MB
Trend interval (minute/div)	30 minutes
Recording interval (s)	60 s
Total sample time	Approx. 2.5 years

Event data:

- Target: Measurement (input/output module)/ math/communication channels, alarm summary, message summary, operation log
  Description: Instantaneous value per recording interval
- Recording intervals: Determined by the scan interval, recording data type (display data/display data + event data)
- Number of channels that can be recorded:
  Measurment mode: Normal

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For GP20-1

Recording interval	Number of channels*1
100 ms	100
200 ms	200
500 ms or longer	500

For GP20-2

Recording interval	Number of channels*1	
	Display data	Display data + Event data
100 ms	500	100
200 ms	500	200
500 ms	1000	500
1 s or longer	1000	1000

Note that the maximum number of channels is 100 in the GP10.

Measurment mode: High speed

Recording interval	Number of channels*1		
	GP10	GP20-1	GP20-2
1 ms	2	2	10
2 ms	4	4	20
5 ms	10	10	50
10 ms	20	20	100
20 ms	40	40	150
50 ms	100	100	150
100 ms	100	100	200
200 ms	100	200	500
500 ms	100	500	1000
1 s or longer	100	500	1000

Measurment mode: Dual interval

Recording interval	Number of channels*1 *2		
	GP10	GP20-1	GP20-2
1 ms	—	—	5
2 ms	—	—	10
5 ms	5	5	25
10 ms	10	10	40
20 ms	20	20	50
50 ms	50	50	50
100 ms	100	100	100
200 ms	100	100	200
500 ms	100	250	600
1 s or longer	100	250	600

*1 Total number including I/O channels, math channels, and communication channels

*2 Number of channels that can be recorded is the same for scan group 1 and scan group 2.

- Data size;
  Analog input data: 6 bytes/ch.
  Analog output data: 6 bytes/ch.
  Digital I/O data: 2 bytes/ch.
  Pulse input data: 6 bytes/ch.
  Math channel data: 6 bytes/ch.
  Communication channel data: 6 bytes/ch.
- File size: Up to 18 MB
- Number of files for GP10, GP20-1: Up to 500 (including display data), for GP20-2; Up to 1000 (including display data)
- Operation in the internal memory: FIFO (First In First Out)
- Data format: Binary or text
- Mode; Free: Records data at all times.
  Trigger: Starts recording data when a certain event occurs and records for the specified interval.
  Repetition trigger: Repeat Trigger mode
- Event data file sample time
  Measurement channel = 30. Math Channel = 0

Internal Memory	500 MB
Recording period (s)	1 s
Total sample time	Approx. 1 month

Manual Sampled Data:
- Item: Instantaneous value at an arbitrary time
- Target: Measurement (input/output module)/ math/communication channels
- Number of recording channels;
  GP10, GP20-1: Max. 50
  GP20-2: Max. 100
- Maximum number of data values that the internal memory can store: 400
- Data format: Text

Report Data:
- Item: Report at each scheduled time of report
- Target: Measurement (input/output module)/ math/communication channels
- Maximum number of reports that the internal memory can store: 800
- Data format: Text

Snapshot Data:
- Item: Displayed screen image data
- Data format: PNG
- Output destination: External medium or communication output

Setup Data:
- Item: GP setup data
- Data format: text
- Output/read destination (for saving/loading): External medium

Health Monitor Log Data
- Item: GP health monitor log data
- Data format: Text
- Output destination: External medium
- Maximum number of data values that the internal memory can store: 300

Alarm Functions

- Number of alarms: Up to four alarms (level) for each measurement channels
- Alarm type: High limit, low limit, difference high limit, difference low limit, high limit on rate-of-change alarm, low limit on rate-of-change alarm, delay high limit, delay low limit, profile high limit, and profile low limit
- Alarm delay time: 1 s to 24 hours (for each channel)
- Rate-of-change calculation interval of rate-of-change alarms: 1 to 32 times the scan interval (common to all channels)

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- Hysteresis: 0.0 to 5.0% of the span (for each alarm (level))
- Alarm output: Output to the internal switch, relay
  Internal switch/relay operation: AND/OR operation selectable
- Display: Displays the status on the respective operation screen and an alarm icon on the status display section when an alarm occurs.
  Display operation: Hold or not hold the display until the alarm acknowledge operation
- Alarm hide function (alarm no logging function)
  Used for relay and internal switch output and events of event action and not recorded in alarm display or alarm summary (each channel)
  - Alarm information: Displays a log of alarm occurrences on the alarm summary
- Reflash: The duration for which the reflash relays are deactivated can be set to 500 ms, 1 s, or 2 s.
- Individual alarm ACK function:
  Alarm display and relay output can be cancelled on individual alarms

Event Action Functions

- Event action: Execute a specified operation when a given event occurs.
- Number of settings: 50
  Events: Remote control input, etc.
  Number of timers: 12
  Number of match time timers: 12
  Action: Specify memory start/stop, alarm ACK, etc.

Control Event Action Functions

See GX90UT PID Control Module General Specifications (GS 04L53B01-31EN).

Future Pen Function

This is available when the measurement mode is normal and when the advanced security function (/AS option) and multi-batch function (/BT option) are disabled.

Future pen:

For channels registered as targets of the future pen, the waveform of the future part can be drawn on the trend screen.

- Maximum number of channels: 10
- Prediction range: Recording interval x 60 point
- Recording interval: Enabled when 1 s or more

Suitable for data with relatively moderate fluctuations.
Not suitable for data that fluctuates rapidly.

Future alarm:

For channels registered as targets of the future pen, an alarm can be generated for measured values predicted in the future.
The alarm value of the future alarm uses the existing alarm setting value.

- Target alarm types: High limit, Low limit, Difference high limit*, Difference low limit*
  * For channels for which delta is set, only the difference hight limit and difference low limit are enabled.
- Display: When a future alarm occurs, the status appears[1] on each operation screen and the alarm icon* appears in the status display area.
  * However, normal alarm display has priority.
- Future alarm mail: Alarm emails can be sent when a future alarm occurs/is released.
- Event Action: Set actions can be run when a future alarm occurs/is released.

Note)
1 Multi panel screen and custom display cannot display predicted future waveforms.
2 Disabled when trend rate switching is ON.
3 Disabled when the file type is event and the recording mode is single/repeat.
4 If the input type is Log input, Pseudo-log input, or Linear-log input, predicted future waveforms cannot be displayed.
5 The web application cannot display predicted future waveforms and future alarms.

Equipment/Quality Easy Predictive Detection

Health Monitor Functions

- Target channel: I/O channel, Math channel, Communication channel
- Number of target channels: 20
- Health monitor: Predictive detection model name, judgment（OK/NG）, health score
- Predictive section:
  Start/Stop: Touch operation, Sync with recording, Threshold, Event action, Modbus, Communication command, Repeat
- Operating conditions:
  Multi-batch function (/BT option): Off
  Measurement mode: Normal

Profile Functions

- Target channel: Input channel, Math channel, Communication channel
- Number of target channels: 20
- Predictive section:
  Start/Stop: Touch operation, Sync with recording, Threshold, Event action, Modbus, Communication comand, Repeat
- Hold: Touch operation, Event action, Modbus, Communication comand
- Operating Conditions:
  Multi-batch function (/BT option): Off
  Future pen: Off
  Measurement mode: Normal
  Recording interval: 500 ms or more

Note Communication channel (/MC option) required if using the profile function.

Security Functions

- Operation lock function: Limitations to touch operation, access to the external storage medium, and various operations
- Login function: Only registered users can operate the GP.
  It can be set to each of touch operation and communication access.
  System administrators and Users: 50 (totally)
  Number of Authority of user: 10 level

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Clock Functions

- Clock: With a calendar function
- Accuracy: ± 5 ppm (0 to 50°C), excluding a delay (of 1 second, maximum) caused each time the power is turned on.
- Time difference between units: ±2ms max. (time difference between a GP and I/O Base Unit (Expandable I/O))
- Time setting: Using touch operation, communication command, event action function, or SNTP client function
- Time adjustment method:
  Limit in which the time is gradually adjusted:
  Select from the available settings between 5 s and 15 s.
  Whether to change an out-of-limit operation immediately or report it as an error can be selected.
  While memory sampling: Corrects the time by 1 ms for each second.
  While memory is stopped: Immediately change the time.
- DST: The date/time for switching between standard time and DST can be specified.
- Time zone: Sets the time difference from GMT.
- Date format: Select "YYYY/MM/DD", "MM/DD/YYYY", "DD/MM/YYYY" or "DD.MM.YYYY".
  MM expression can be selected from the numeric character or ellipsis. Ex. January: 01 or Jan
  The delimiter can be selected from "/", ".", "-".

Ethernet Communication Functions

- Electrical specifications: Conforms to IEEE 802.3
- Connection: Ethernet (10BASE-T/100BASE-TX)
- Max. segment length: 100 m
- Max. connecting configuration: Cascade Max. 4 level (10BASE-T), Max. 2 level (100BASE-TX)
- Connector: RJ-45
- Protocols: TCP, UDP, IP, ICMP, ARP, DHCP, HTTP, FTP, SMTP, SNTP, Modbus, and dedicated protocols
- E-mail client: Automatically send e-mail at specified times.
  E-mail is sent by events as below.
  - Alarm occurring/alarm releasing (Max. 50ch)
  - Recover from power failure
  - Report data generating
  - Storage medium error, FTP client function error
  - Specified time period
  - Future alarm occurring/alarm releasing
  - When the health score is below the early notification threshold (if a threshold is set), and when the health score is less than 0
- POP before SMTP and SMTP authentication (PLAIN and CRAM-MD5) is available.
- FTP client: Automatically transfer data files to the FTP server.
  Applicable files: Display data, event data, screen image data, report data, etc.
- FTP Server: Transfer files, delete files, manipulate directories, and output file lists of the GP.
  Number of the simultaneous connection: Max. 4
- Web server: Web application, GP real-time monitoring and setting changes/operations can be performed with the Web browser.
  Number of the simultaneous connection: Max. 4
- SNTP client: Inquires the time to the SNTP server and sets the GP.
- SNTP server: Outputs the GP time.
  Time resolution: 10 ms
- DHCP client: Automatically obtain the network address settings from the DHCP server.
- Modbus client*: Reads data from another device and writes to the registers.
  Number of connectable sever;
  GP10, GP20-1: Max. 16
  GP20-2: Max. 32
  *: Required /MC option
- Modbus server: Loads measurement and math channel data
  Loads and writes communication channel data
  Some control commands such as memory start
  Modbus client* register access limitations
  *: Required /MC option
  Number of the simultaneous connection: Max. 4
- Setting/Measurement server: Operate, set, and output data of the GP using a dedicated protocol.
  Number of the simultaneous connection: Max. 4

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- DARWIN compatible communication server:
  Supports some DARWIN commands
  Communication with GP is possible using DARWIN communication commands.
  • Output-related commands: Output measurement (IO) channel data, Output calculation channel data, Output relay status, Output the position of the decimal point for the measurement (IO) channel, Output the position of the decimal point for the calculation channel, Output the information on system configuration
  • Setup-related commands: Range, Scale unit, Alarm, Time, Moving average, zone
  • Operation-related commands: Reset alarm, Reset timer, Start MATH calculation, Rebuild system, Initialize, Input communication, Output communication DO, Write message

Batch Function

- Function: Data management using batch names.
  Enter text fields and batch comments in the data file.
- Batch name: Added to the file name of the display data and event data.
  Structure: Batch number (up to 32 characters) + lot number (up to 8 digits)
  Use/not use selectable for lot number, on/off selectable for auto increment function.
- Text field: Adds text to the display data and event data.
  There are 24 available text fields.
  Up to 20 title characters and 30 other characters can be entered per field.
- Batch comment: Adds text to the display data and event data.
  3 comments (max. 50 characters) are available.

Printer Output Function

- Snapshot Data can be printed out with any LAN-connected printer supporting the HP PCL5c language and the port 9100.

SSL Communication Functions

Communication that sends and receives information encrypted by the SSL (Secure Socket Layer) protocol is possible.

- Server function:
  Supported servers: HTTP server and FTP server (Port number: 443 when encryption is used)
  Private key: Created in GP and saved in the internal memory
  Server certificate: Server certificates created by users can be saved in the internal memory.
  Self-signed certificates can be created in GP.
- Client function:
  Supported clients: FTP client (only Explicit mode is supported) and SMTP client (only STARTTLS is supported)
  Trusted certificate: Trusted certificates (a total of up to 80 KB) can be saved in the internal memory.

Electronic Signature Function

Electronic signatures can be added to report files created in PDF format using the PDF form creation function. An electronic signature is provided each time a report file is created.

- Certificate for electronic signature: Certificates for electronic signatures created by users can be saved in the internal memory.

Loop control Function (With PID control module)

See GX90UT PID Control Module General Specifications (GS 04L53B01-31EN).

Other Functions

- Buzzer: GP makes a buzzer sound at touch screen operation, or when alarm occurs.
- Backlight saver function: Dim or turn off the LCD backlight if there is no key operation for a specified time.
- Favorite display: Register frequently used displays to the Favorite and show them through simple operation.
- The main alarm is indicated using the MENU key LED.
  No alarm: Blue (same condition as power-on)
  Alarm condition: Red.
- User function feature: A button to which the user can assign a desired function is provided. It can be assigned to an event triggered by the event action function.
- Firmware update function: The Web application, the IO module, or the expansion module firmware can be updated by operating GP.

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■ HARDWARE SPECIFICATIONS (MAIN UNIT)

Display

Display unit*:
GP10: 5.7-inch TFT color LCD (640 × 480 dots)
GP20: 12.1-inch TFT color LCD (800 × 600 dots)
* A small number of missing or steady-on LCD pixels and minor variations in brightness uniformity is a normal display characteristic and not a malfunction.

Touch screen:
4 wire resistive touch screen

Construction

- Material;
  Case: Metal plate
  Bezel and display cover: Polycarbonate
- Color;
  Case: Smoke blue(Munsell 4.1PB6.0/4.5 equivalent)
  Bezel: Light grey (Munsell 5.2PB8.2/1.0 equivalent)
- External dimensions:
  When installing modules
  GP10: 144(W) × 168(H) × 248(D) mm
  GP20: 288(W) × 318(H) × 248(D) mm
  When uninstalling modules
  GP10: 144(W) × 168(H) × 197(D) mm
  GP20: 288(W) × 318(H) × 197(D) mm
  (D: depth from the panel mounting plane)
- Weight:
  GP10: Approx. 1.9 kg, GP20: Approx. 5.4 kg (excluding modules)

Power Supply

[Power supply suffix code: 1]

- 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	LCD backlight off	Normal operation	Maximum
100 V AC	GP10: 16 VA GP20: 28 VA	GP10: 20 VA GP20: 34 VA	GP10: 48 VA GP20: 90 VA
240 V AC	GP10: 24 VA GP20: 38 VA	GP10: 30 VA GP20: 45 VA	GP10: 60 VA GP20: 110 VA

* The following combinations are assumed for LCD backlight off and normal operation.
GP10: 1 AI module, 1 DO module, 1 DI module
GP20: 5 AI modules, 4 DO modules, 1 DI module

- Module power supply voltage: The total allowable power consumption of respective modules is up to 6 W in the GP10 and up to 20 W in the GP20.
- Allowable interruption time: Less than 1 cycle of the power supply frequency

[Power supply suffix code: 2]

- Rated supply voltage: 12 VDC
- Allowable power supply voltage range: 10 to 20 VDC
- Power consumption:

Supply voltage	LCD backlight off	Normal operation	Maximum
12 V DC	7 VA	10 VA	26 VA

Isolation

- Insulation resistance: Between the Ethernet, RS-422/485, and each insulation terminals and earth: 20 MΩ or greater at 500 VDC
- Withstand voltage:
  Between the power terminal and earth (In case of Power supply suffix code: 1): 3000 V AC at 50/60 Hz for one minute
  Between the power terminal and earth (In case of Power supply suffix code: 2): 500 V AC at 50/60 Hz for one minute
  Between the contact output terminal and earth: 3000 VAC 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	FAIL output terminal	Internal circuit
	Ethernet port	
	RS-422/485 terminal	
	Input and output module terminal	
	Input and output module internal circuit	
	Earth (PE) terminal	
	RS-232 terminal	
	SD card slot	
	USB port	

The circuits divided by lines are insulated mutually.

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 *4,
  Overvoltage Category II or I *1, Pollution Degree 2 *2,
  Measurement Category *3
- UL:
  UL 61010-1, UL Std. No. 61010-2-030,
  UL 61010-2-201 *4 (CSA NRTL/C),
  Overvoltage Category II or I *1, Pollution Degree 2 *2,
  Measurement Category *3
- CE/EMC directive:
  EN 61326-1 Class A Table 2 (For use in industrial locations) compliant
  EN IEC 61000-3-2 compliant
  EN 61000-3-3 compliant
  EN 55011 Class A Group 1 compliant
- CE/Low voltage directive:
  EN 61010-1, EN 61010-2-030,
  EN IEC 61010-2-201 *4 compliant,
  Overvoltage Category II or I *1,
  Pollution Degree 2 *2, Measurement Category *3
- CE/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

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*1 Overvoltage Category:
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.
II: Applied to power supply voltage code 1 (100-240 VAC)
I: Applied to power supply voltage code 2 (12 VDC)

*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

Category	Measurement category	Description	Remarks
II	CAT II	Available in the testing and measuring circuits directly connected to a usage location (receptacle or the like) of a low-voltage main power supply facility.	Appliances, portable equipment, etc.
III	CAT III	Available in the testing and measuring circuits connected to a power distribution portion of a low-voltage main power supply facility.	Distribution board, circuit breaker, etc.
IV	CAT IV	Available in the testing and measuring circuits connected to a power source of a low-voltage main power supply facility.	verhead wire, cable systems, etc.

*4 Support for GX10/GX20 hardware style 2 and later.
This product is designed as open equipment under the relevant standard, install it as follows:
• To make the GP10/GP20 comply with the relevant standard, support the parts of the device other than the front-panel control area with an instrumentation panel or the like, and install it in a location where people cannot touch the terminals carelessly or in a panel.
• Install the GX60/GM unit 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.

Normal Operating Conditions:

- Power supply voltage: 100 to 240 V AC ±10 %
- Power supply frequency: 50/60Hz ±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:
  $5 \leq f < 8.4$ Hz amplitude 3.5 mm (peak)
  $8.4 \leq f \leq 160$ Hz acceleration 9.8 m/s^2
- Shock:
  Non-energization, 500 m/s^2 or less, approximate 10 ms, 6 directions (±X, ±Y, ±Z), 3 times in each direction
- 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

Other Specifications:

- Memory backup: A built-in lithium battery backs up the settings and runs the clock
- Recommended replacement periods of Battery: Approximately 10 years (at room temperature)

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^2 maximum
- Shock: 392 m/s^2 maximum (in packaged condition)

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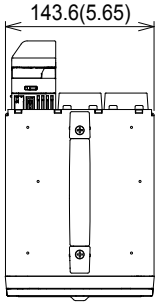
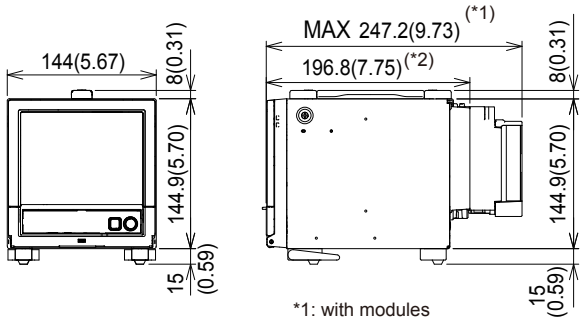
■ EXTERNAL DIMENSIONS AND PANEL CUTOUT DIMENSIONS

GP10:



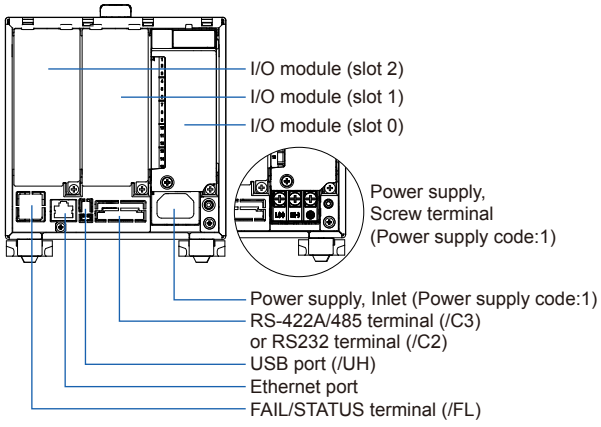
Unit: mm (approx. inch)
Unless otherwise specified, tolerance is ±3% (however, tolerance is ±0.3 mm when below 10 mm).



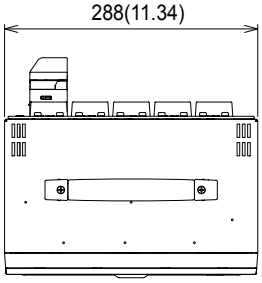
*1: with modules
*2: without moduels

When using the stand, GP10 is upward 12 degrees.

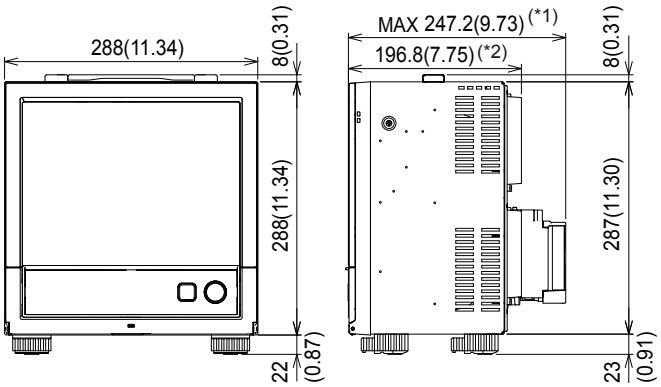
Rear view



GP20:

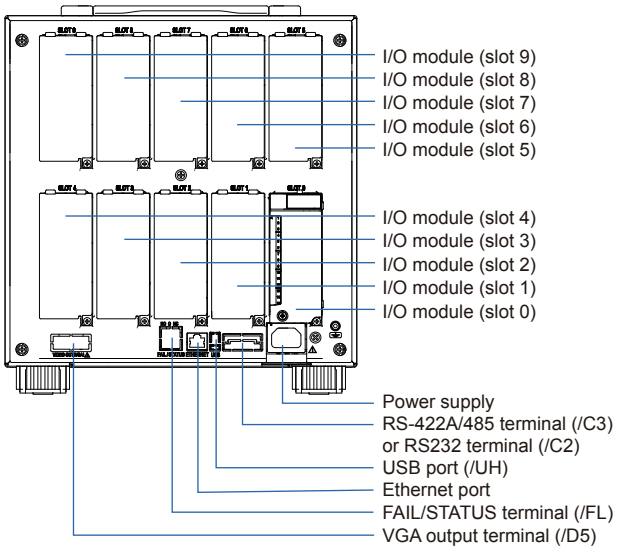


Unit: mm (approx. inch)
Unless otherwise specified, tolerance is ±3% (however, tolerance is ±0.3 mm when below 10 mm).



*1: with modules
*2: without moduels

Rear view



Precautions to Be Taken While Wiring
With a screw terminal, we recommend that you use a crimp-on lug with an insulation sleeve (M4 for power supply wiring, M3 for signal wiring).
Recommended signal wiring crimp-on lug
N1.25-MS3 (JST Mfg. Co., Ltd.)

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■ SPECIFICATIONS OF OPTIONAL FUNCTIONS

ADVANCED SECURITY FUNCTION (/AS)

Security functions, electronic recording and electronic signature functions, and data integrity functions complying with FDA 21 CFR Part11 will be added.

- Enabling/disabling the advanced security function:
  You can enable or disable the advanced security function.
  * The set values and data stored in the internal memory are initialized each time the function is enabled or disabled.
- Data anti-tamper function:
  Settings and measured data are saved as encrypted binary files.
- Data type:
  Only for display or event
  Trigger mode is not possible with event data.
- Login function:
  Using the login function described below, you can enter security settings on the instrument
  - User name
  - Password
  - User ID (depend on setting)
  - User level and number of users:
    System administrator (all can be operated), Second administrator (Admin property and user property settings can be used to restrict executable operations and signatures.), General user (With user restrictions, you can set restrictions on performing operations and sign authority.), Monitor user (monitoring only), totally 100 users (GP20-2: 200 users)
  - Admin property setting: 10 kinds (for second administrator)
  - User restrictions setting: 10 kinds (for second administrator, general users)
- Password expiration time:
  select form Off, 1month, 3 month, 6month
- Advance notice of expiry date:
  A message encouraging the user to change the password is displayed when the user logs in during the specified notification period (Off, 5 days before, 10 days before).
- Password policy function:
  The minimum number of characters, the types of characters that must be included and the number of previous passwords can be set.
- Password control function:
  Logins are verified by a Kerberos v5 authentication server* (only user name and password)
  Encryption method:
  AES128-CTS-HMAC-SHA1-96
  AES256-CTS-HMAC-SHA1-96
  ARCFOUR-HMAC-MD5
  Pre-Auth function: use
  * The function has confirmed compatibility with Windows Server 2003 SP2/Windows Server 2008 SP2/Windows Server 2012/Windows Server 2016/Windows Server 2019 ActiveDirectory
- Signature function:
  After checking data that has finished being recorded, you can add three levels of electronic signature, select a pass/fail, and enter comments (50 characters maximum)
- Audit trail function:
  The operation log, the settings change log and the settings file when the change was made are saved.
  Comments that are entered when settings are changed or when an alarm is acknowledged are recorded in the event log. This allows you to check the comments and details of the setting changes.
- Measurement mode limitations
  High speed and Dual interval measurement modes are not supported.
- Module limitations
  PID control modules are not supported.

SERIAL COMMUNICATION INTERFACE (/C2, /C3)

- Connection: EIA RS-232(/C2) or EIA RS-422/485(/C3)
- Protocol: Dedicated protocol, Modbus/RTU, or DARWIN compatible communication
- Setting/measurement server function: Operation, setting or output of measurement data are available by dedicated protocol.
- Synchronization: Start-stop synchronization
- Transmission mode (RS-422/485):
  RS-422: Four-wire half-duplex multi-drop connection (1:n (n = 1 to 31))
  RS485: Two-wire half-duplex multi-drop connection (1:n (n = 1 to 31))
- Baud rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 bps
- Data length 7 or 8 bits
- Start bit: 1 bit
- Stop bit: 1 bit or 2 bit
- Parity: ODD, EVEN, or NONE
- Handshaking Off: Off, XON: XON, XON: RS, and CS: RS
- Communication distance; RS-422/485: 1200 m (57600 bps or less), 600 m (115200 bps)
  RS-232: 15 m
  Applicable cable: AWG24 to 16
- Modbus/RTU communication: Reading or writing of measurement data on other instruments is available by Modbus protocol.
  Communication channel function option (/MC) is needed to read measurement data from other instruments.
- Operation modes: Master or slave
- Execution of a communication command using a bar code: The entered text can be executed as a communication command.

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CUSTOM DISPLAY (/CG)

Using DXA170 DAQStudio, screen creation software, a custom screen can be constructed and displayed in which display components (such as trend, digital, and bar graphs) are freely placed. The screen data is transferred from DAQStudio to the internal memory via communication, or loaded from an external medium to the internal memory and displayed.

- Number of screens: 30 (internal memory)
- Display components:
  - Normal components (digital value, bar graph, tag No., tag comment, simple digital value, simple bar graph, alarm mark, unit, alarm indicator, lower-limit span value, upper-limit span value, group name, system icon, memory sample bar, date/time view, batch name, and user name)
  - Trend components (trend group display (with scale board))
  - List components (alarm list view and message list view)
  - Operation components (DO (DO operable), internal switch (internal switch operable), numeric value operations (viewing data of and writing data to communication channels), and button operations (writing numeric values, operating bits, switching screens, and executing communication commands)
  - Text components (labels)
  - Figure components (line view, rectangle view, and circle view)
  - Image components (PNG image data)
  - Batch components (Batch number, Lot number, Text field, Batch comment, Batch group number*)
    * Only on GP with the Multi batch function (/BT option)
  - Control component (controller, control alarm indicator, external controller)
- Configuring screens: Screen creation software Creation using DXA170 DAQStudio (GP does not have a creation function)
- Saving/loading screen data:
  A specified screen or all the screens is/are loaded from an external storage medium to the internal memory, or a specified screen or all the screens in the internal memory is/are saved on an external storage medium.

VGA VIDEO OUTPUT (/D5) (Only for GP20)

- External display:
  Resolution: 800 × 600 dots (VGA)
  Connector: 15-pin D-Sub (female)

EtherNet/IP COMMUNICATION (PLC communication protocol) (/E1)

Can be joined to an Ethernet/IP network as an adapter (or a server).

- Loading data from the I/O channel or calculation channel (/MT), alarm status
  Note: Control alarm status cannot be loaded.
  I/O channel:
  GP10: 100, GP20-1: 100, GP20-2: 500
  Calculation channel:
  GP10: 50, GP20-1: 100, GP20-2: 200
- Loading and writing data from/to the communication channel (/MC)
  Loading from the alarm status
  Communication channel:
  GP10: 50, GP20-1: 300, GP20-2: 500
- Implementation level: Level 2
- Operations that can be performed using explicit messages:
  Communication is performed using the CIP extension feature of the PLC-specific PCCC command by Rockwell Automation.
  Start and stop recording and computation
  Write batch information
  Write messages
  Load alarm status
  Write alarm setpoints and alarm types
  Alarm ACK
  Note: The following operations are not possible: load control alarm status, write control alarm setpoints and control alarm types, control alarm ACK.
- Supported protocols: EIP/PCCC, EIP/native
- Number of the simultaneous connection: Max. 10 (Explicit message)

WT COMMUNICATION (/E2)

Collects data by connecting to WT equipment manufactured by Yokogawa Test & Measurement Corp. via Ethernet communication*.

* The /MC option is required.

- Supported models: WT1800E (command type WT1800), WT1800, WT300E (command mode WT300), WT500, and WT300
- Number of connectable units:
  GP10: 8
  GP20: 16
- Communication cycle: 500 ms/1 s/2 s/5 s/10 s/20 s/30 s
- Types of data that can be obtained: Voltage, current, power, power factor, phase, electrical energy, high-frequency wave, etc.
- Number of data allocations
  GP20：300
  GP10：50

FAIL OUTPUT (/FL)

- Contact: C contact, 1 point
- FAIL output:
  The relay contact output on the rear panel indicates the occurrence of CPU failure.
  Relay operation: Energized during normal operation and de-energized on CPU failure.
- Status output: The relay contact, which is de-energized in normal output state, is energized upon the occurrence of a memory/media error, measurement error, communication error, recording stop, or alarm.

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- Rated power supply voltage: 24 V DC or 250 V AC or less
- Rated load current: 3A (DC)/3A (AC), resistance load
- Min. load current: 100 mA
- Recommended replacement periods of contact: Electrical: 30,000 more ON-OFF operations, Mechanical: 5,000,000 more ON-OFF operations

Log SCALE (/LG)

A logarithmic voltage that has been converted from a physical value is applied to the GP, and then the GP's Log scale (logarithmic scale) is used to display and record the physical value.

- Input type: Log input (logarithmic input), Pseudo log input: An input that supports pseudo logs, Log linear input: Input that is linear on a logarithmic scale.
- Range: 20mV/60mV/200mV/1V/2V/6V/20V/50V/100V
- Scalable range:
  - Log input:
    1.00E-15 to 1.00E+15 (15decade maximum)
    Scale_L < Scale_U
    If the lower limit mantissa is 1.00, the difference between the exponents must be 1 or more.
    If the lower limit mantissa is a value other than 1.00, the difference between the exponents must be 2 or more.
  - Pseudo Log Input/Log linear input
    1.00E-15 to 1.00E+15 (15decade maximum)
    The higher limit mantissa is the same as the lower limit mantissa).
    If the lower limit mantissa is 1.00, the value must be between 1.00E–15 and 1.00E+15, the difference between the exponents must be 1 or more, and the maximum decades is 15.
    If the lower limit mantissa is a value other than 1.00, the value must be between 1.01E–15 and 9.99E+14, the difference between the exponents must be 1 or more and the maximum decades is 15.
- Alarm type: High limit, low limit, delay high limit, and delay low limit
- Alarm setting range: The range converted into the LOG scale corresponding to -5% to 105% of the span width.
- Alarm hysteresis: Fixed to 0
- Green band setting range: The lower limit to the upper limit of the scale. However, the lower limit of the display position must be smaller than the upper limit.
- Position of the decimal point: 1 to 2
- Misc: Nonlinear input is possible by correcting the input value

MATHEMATICAL FUNCTIONS WITH REPORT FUNCTION (/MT)

Mathematical Function:

- Number of math channels; GP10: 50, GP20-1: 100, GP20-2: 200

Note) Note: Depending on the measurement mode, there is a limit to the number of math channels at scan intervals shorter than 100 ms. See "Limitations."

- Scan interval

Measurement mode	Scan interval
Normal	Scan interval
High speed	Scan interval
Dual interval	Master scan interval*

* When the measurement mode is Dual interval, this item sets which scan interval to use, the interval of measurement group 1 or that of scan group 2, for creating measured values of math or communication channels and other similar operations.

- Number of expressions:
- Operation:
  General arithmetic operations: Four arithmetic operations (+, -, *, /), square root, absolute, common logarithm, natural logarithm, exponential, and power
  Relational operations: <, ≤, >, ≥, =, and ≠
  Logic operations: AND, OR, NOT, and XOR
  Statistical operations: TLOG (maximum, minimum, average, sum, P-P values of time series data) or CLOG (maximum, minimum, average, sum, P-P values of a specified channel)
  Special operations: PRE, HOLD, RESET, and CARRY
  Conditional operation: [a?b:c]
  Bit operation: BIT
  Integer extracting operation: INT
  Remainder extracting operation: MOD
  Trigonometric functions: SIN, COS
  CP operations: CP.02, CP.CO2
- Computation accuracy: Double-precision floating point
- Data that can be used;
  Channel data: Measurement channels (0001 to 6516 to 6516), mathematical channels (GP10: A001 to A050, GP20-1: A001 to A100, GP20-2: A001 to A200), Communication channels (GP10: C001 to C050, GP20-1: C001 to C300, GP20-2: C001 to C500), Communication channels raw data (GP10: RC001 to RC050, GP20-1: C001 to C300,GP20-2: RC001 to RC500),Constants:-K001 to K100, Variable constant: W001 to W100, Internal switch: S001 to S100, Flag: F01 to F20, Recording state (REC01), Integer data: Z000 to Z999

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Logic math function:

A function that outputs calculated results as 0 or 1 to DOs or internal switches

- Number of logic calculations maths:
  GP10: 20, GP20-1/GP20-2: 50
- Expression: Up to 120 characters
- Computation type: Basic arithmetic, relational, logical, conditional, bit
- Data that can be used: All channel data
- Logic math: LM001 to LM020 (GP10), LM001 to LM050 (GP20-1/GP20-2)
- Output destination: DO channels, internal switches (only when set to Manual in either case)
- Setting change: Cannot be changed during recording
- Math interval: 100 ms (fastest)

Report function:

- Number of report channels; GP10: 50, GP20: 60

Note) Depending on the measurement mode, there is a limit to the number of report channels at scan intervals shorter than 100 ms. See “Limitations.”

- Scan interval

Measurement mode	Scan interval
Normal	Scan interval
High speed	Scan interval
Dual interval	Scan interval of each measurement group

- Report types: Hourly + daily, daily + weekly, daily + monthly, Batch, Day custom
- Computation types: Average, maximum, minimum, sum, or instantaneous value
- Unit of sum: OFF, /s, /min, /hour, /day
- Report templates: Office Open XML spreadsheet files (which can be displayed with Microsoft Office Excel) or PDF files can be output or printed out with any LAN-connected printer supporting the HP PCL5c language and the port 9100.

COMMUNICATION CHANNEL FUNCTIONS (/MC)

- Number of communication channels;
  GP10: 50 (C001 to C050)
  GP20-1: 300 (C001 to C300)
  GP20-2: 500 (C001 to C500)

Note) Depending on the measurement mode, there is a limit to the number of communication channels at scan intervals shorter than 100 ms. See “Limitations.”
The minimum communication channel update interval is 100 ms.

- Scan interval

Measurement mode	Scan interval
Normal	Scan interval
High speed	Scan interval
Dual interval	Master scan interval

* Required to record data from EtherNet/IP (/E1), Modbus devices, or PCs on the GP and to write data in the remote device from the GP via Modbus.

- Calibration correction
  Mode: Linearizer Approximation, Linearizer Bias, Correction factor*
  Number of set points: 2 to 12

* Only when the /AH option is installed

USB INTERFACE (/UH)

- USB port: Complies with USB 2.0 and host function
- Number of ports: 2 (one each on the front panel and rear panel)
- Connectable devices: Only connect the devices listed below to prevent damage to the devices.
  Keyboard: Complies with HID Class Ver. 1.1
  104/89 keyboard (US) and 109/89 keyboard (Japanese)
  Mouse: Complies with HID Class Ver. 1.1
  External medium: USB flash memory
  FAT16 or FAT32 format with a 32 KB or smaller cluster size.
  Does not guarantee the operation of all USB flash memories
  External medium such as a hard disk, ZIP, MO, and optical discs are not supported.
  Barcode reader: USB HID Class Ver. 1.1 compatible
  English (U.S.) standard USB keyboard compatible
- Execution of a communication command using a bar code: The entered text can be executed as a communication command.
- Power supply: 5 V ±10%, 500 mA *1

*1: Devices which need more than 500 mA total bus power for 2 ports cannot be connected at the same time.
For low powered devices (bus power < 100 mA): 5V ± 5%
For high powered devices (bus power < 500 mA): 5V ± 10%

AEROSPACE HEAT TREATMENT (/AH)

Supports heat treatment application AMS2750/NADCAP.
Schedule management for periodically executing calibration correction configuration and the like.
In correction coefficient mode of calibration correction, two biases can be specified: one based on thermocouple and another based on device

- Number of manageable schedules
  GP20-1:6
  GP20-2: 12
- Calibration correction mode:
  Off, Linearizer approximation, Linearizer bias, correction factor
- Number of set points: 2 to 12
- Notification contents
  Title, Notification message, Due date

Notification buzzer can be sounded.

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MULTI-BATCH FUNCTION (/BT)

Recording start/stop and data file creation is possible for each batch.

- Number of multi-batches:
  GP10/GP20-1: max. 6, GP20-2: max. 12
- Batch single operation: Memory start/stop, math reset, message writing
- Batch overview operation: Computation start/stop, report start/stop, manual sampling, setup data save/load
- Scan interval: 500ms, 1 s, 2 s, 5 s (common to all batches)
- Data type: Display or event only Trigger mode not available for event data.
- Recording interval: Common to all batches
- Data file: Display or event data file created for each batch
- Number of display groups:
  GP10: 6 max. per batch
  Number of channels per group: 10
  GP20-1: 6 max. per batch
  Number of channels per group: 20
  GP20-2: 12 max. per batch
  Number of channels per group: 20
  Channels assigned to the display group of each batch and those set as recording channels are recorded to data files.
- Batch single settings: Group, trip line, file header, data file name, text field, batch number, lot number
- Measurement mode limitations
  High speed and Dual interval measurement modes are not supported.

OPC-UA SERVER (/E3)

Data acquired by the GP can be accessed through Ethernet communication from a host system (OPC-UA client).

- Communication
  Mode: OPC-UA Server
  Encoding: UA Binary
  Protocol: OPC UA TCP
  Maximum number of connections: 3 sessions
  Profile Micro Embedded Device Server
- Security
  Type: None
  Encryption: None
  Login: Anonymous, Username
- Data acquisition:
  Measurement value, alarm status, and alarm value
  Computation value, alarm status, and alarm value
  Communication value, alarm status, and alarm value
  Batch information
  PV, SP, OUT, R/S, A/M/C, R/L, Alarm status in loop
- Data writing: Measurement channel (DO channel only), communication channel, alarm value, batch information, OUT, R/S, A/M/C, R/L
- Other acquired information: Device name, serial number, time, device status
- Port number: 4840 (changeable: 1 to 65535)
- Number of items:
  GP10: 100 max. (MonitoredItem/Session)
  GP20: 300 max. (MonitoredItem/Session)
- Fastest period:100ms
- Service set:

Discovery	FindServers, GetEndpoints
SecureChannel	OpenSecureChannel, CloseSecureChannel
Session	CreateSession, ActivateSession, CloseSession
View	Browse, BrowseNext, TranslateBrowsePathsToNodeIds
Attribute	Read, Write
MonitoredItem	CreateMonitoredItems, ModifyMonitoredItems, DeleteMonitoredItems, SetMonitoringMode
Subscription	CreateSubscription, ModifySubscription, DeleteSubscriptions, Publish, Republish, SetPublishingMode

SLMP COMMUNICATION (Mitsubishi PLC) (/E4)

CC-Link family SLMP communication protocol function, which enables connection from a GP to Mitsubishi Electric PLCs without sequencer programs.

The GP operates as an SLMP client. Writing GP measurement data to a PLC and reading PLC data into communication channels* are possible.

* The communication channel function (/MC option) is required.

- Number of connection destination servers: 16 max.
- Read cycle: 100ms/200ms/500ms/1s/2s/5s/10s/20s/30s/1min
- Number of commands that can be registered
  GP10: 50
  GP20-1: 100
  GP20-2: 200
- Communicable internal data:
  Special relay (SM), special register (SD), input (X), output (Y), internal relay (M), latch relay (L), annunciator (F), edge relay (V), link relay (B), data register (D), link register (W), timer contact (TS), timer coil (TC), current timer value (TN), integration timer contact (SS), integration timer coil (SC), current integration timer value (SN), counter contact (CS), counter coil (CC), current counter value (CN), special link relay (SB), special link register (SW), direct access input (DX), direct access output (DY), index register (Z), file register (R, ZR), extended data register (D), extended link register (W)

Device code is indicated in parentheses.

Program control function (/PG)

See GX90UT PID Control Module General Specifications (GS 04L53B01-31EN)

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■ Limitations

System limitations

Maximum number of channels

System	Measurment mode	Maximum number of module connections	Maximum number of channels			
			Input/output	Communication	Math	Report
GP10	Normal	10	100	50	50	50
	High speed	3	12	50	50	50
	Dual interval	10	50	25	25	25
GP20-1	Normal	10	100	300	100	60
	High speed	10	40	300	100	60
	Dual interval	10	50	150	50	30
GP20-2	Normal	45	500	500	200	60
	High speed	10	40	500	200	60
	Dual interval	45	250	250	100	30

Limit to the number of expandable I/O units or GM sub units

- Up to six units can be connected.
- Connection is not possible if the measurement mode is set to High speed.

Limit to the number of GP main unit modules

Module	GP10	GP20-1	GP20-2
When GX90XA-04-H0 and GX90YA are included	2*	9	9
When GX90UT is included	2*	8	8

* When the 12 V DC (Power supply Suffix Code 2) model.

Limit on Modules

- Up to 10 modules consisting of GX90YD, GX90WD, and GX90UT can be installed into the system.
- One GX90WD module can be installed in a GP. One module can be installed in a GX60 (expandable I/O) and each GM sub unit.
- One GX90YA module can be installed in a GP10. Two modules can be installed in each of the GP20, GX60 (expandable I/O) and GM sub unit.
- Up to 10 GX90YA modules can be installed in a GP10/GP20-1 system and up to 12 in a GP20-2 system.
- If the measurement mode is High speed, a GX90XD or GX90WD module can be installed in the system.
- If the measurement mode is High speed, only GX90XA-04-H0 (high-speed AI), GX90XD (DI), and GX90WD (DIO) are detected. DI and DIO are fixed to remote mode. Measurement and recording are not possible.
- If the measurement mode is Dual interval, GX90UT is not detected.

Limit to the Number of Measurement Channels

The following limitation applies to the number of channels that can measure at scan intervals shorter than 100 ms.

If the measurement mode is Dual interval, the limitation applies at the scan group level. However, there are scan intervals you cannot set.

- **Measurement mode is High speed**

GP10

Channel	Scan interval					
	1 ms	2 ms	5 ms	10 ms	20 ms	50 ms
Input/output	1	2	5	10	12	12
math	–	1	2	5	10	25
communication	–	1	2	5	10	25
Report	–	1	2	5	10	25

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GP20-1

Channel	Scan interval					
	1 ms	2 ms	5 ms	10 ms	20 ms	50 ms
Input.output	1	2	5	10	20	40
math	1	2	5	10	20	50
communication	3	6	15	30	60	150
Report	1	2	5	10	20	50

GP20-2

Channel	Scan interval					
	1 ms	2 ms	5 ms	10 ms	20 ms	50 ms
Input.output	5	10	25	40	40	40
math	2	4	10	20	40	100
communication	5	10	25	50	100	250
Report	2	4	10	20	40	60

- **Measurement mode is Dual interva**

GP10

Channel	Scan interval					
	1 ms	2 ms	5 ms	10 ms	20 ms	50 ms
Input.output	–	–	5	10	12	12
math	–	–	1	2	5	12
communication	–	–	1	2	5	12
Report	–	–	1	2	5	12

GP20-1

Channel	Scan interval					
	1 ms	2 ms	5 ms	10 ms	20 ms	50 ms
Input.output	–	–	5	10	20	40
math	–	–	2	5	10	25
communication	–	–	7	15	30	75
Report	–	–	2	5	10	25

GP20-2

Channel	Scan interval					
	1 ms	2 ms	5 ms	10 ms	20 ms	50 ms
Input.output	5	10	25	40	40	40
math	1	2	5	10	20	50
communication	2	5	12	25	50	125
Report	1	2	5	10	20	30

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Limit to the Number of Recording Channels in Each Measurement Mode

I/O channel + math channel + communication channel

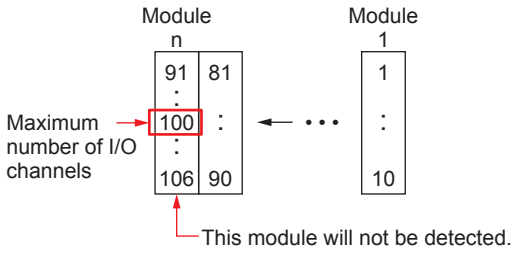
Model	Measurment mode	Recording interval									
		1ms	2 ms	5 ms	10 ms	20 ms	50 ms	100 ms	200 ms	500 ms	1 s or more
GP10	Normal	–	–	–	–	–	–	100	100	100	100
	High speed	1	4	9	20	32	62	100	100	100	100
	Dual interval	–	–	5	10	20	36	100	100	100	100
GP20-1	Normal	–	–	–	–	–	–	100	200	500	500
	High speed	2	4	10	20	40	100	100	200	500	500
	Dual interval	–	–	5	10	20	50	100	100	250	250
GP20-2	Normal	–	–	–	–	–	–	500	500	1000	1000
	High speed	10	20	50	100	150	150	200	500	1000	1000
	Dual interval	5	10	25	40	50	50	100	20	600	600

Note) Number of active recordable channels.

Notes on Module Installation

- When the reference junction compensation of this product is used with the thermocouple input of a GX90XA-10-U2, GX90XA-10-L1, GX90XA-10-T1, GX90XA-10-V1 or GX90XA-04-H0, if the following module is installed to the right (slot with the smaller number) of the GX90XA module as seen from the GP rear panel, the reference junction compensation accuracy of that module may deviate from the guaranteed range (except when GX90XA-04-H0 is installed to adjacent slots).
  GX90XA-10-C1, GX90XA-04-H0, GX90WD, GX90YA, GX90UT
- On the GP20, when the reference junction compensation of this product is used with the thermocouple input of a GX90XA-10-U2, GX90XA-10-L1, GX90XA-10-T1, GX90XA-10-V1 or GX90XA-04-H0, if the following module is installed above, below, to the right, or to the left (slot with the smaller number) of the GX90XA module as seen from the GP rear panel, the reference junction compensation accuracy of that module may deviate from the guaranteed range.
  GX90YA, GX90UT
- If you want to use the DI of a GX90XD or GX90WD, only a single module installed in the GP main unit can be used.
- If the maximum number of I/O channels are assigned and the last channel is assigned to an intermediate channel of a connected I/O module, that module and subsequent modules will not be recognized.

Example GP10/GP20-1



Dual Interval File Searching of Universal Viewer

Recording mode	Link dual interval waveform*1	Show dual interval integrated link view*2
Free + Free	✓	✓
Free + Trigger (single/repeat)	–	–
Trigger (single/repeat) + Trigger (single/repeat)	–	–

*1 Link dual interval waveform: A function that searches a folder for and displays the file that forms a pair with the displayed file.

*2 Show dual interval integrated link view: A function that displays from the result of Search Open one of the files that forms a pair and displays both trends when it is clicked.

PID program pattern setting from the Web application

You cannot set from the Web application. Hardware Configurator is required for setting program patterns.

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■ Liability

YOKOGAWA assumes no liability to any party for any loss or damage, direct or indirect, caused by lost or missing data due to interrupted wireless or cable communication, or the use of the product outside the design, specifications, or handling conditions.
Except for the matters stipulated in the warranty of this product, YOKOGAWA does not guarantee any measurement data and operation taken when there is a failure, erroneous operation, and problem with the product.

■ 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 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://partner.yokogawa.com/global/

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■ INPUT/OUTPUT MODULE SPECIFICATIONS

ANALOG INPUT MODULE (Model GX90XA or Option /Uxx0)

DIGITAL INPUT MODULE (Model GX90XD or Options /CRx1)

DIGITAL OUTPUT MODULE (Model GX90YD, or Options /CR1x, /CR2x, /CR4x)

DIGITAL INPUT/OUTPUT MODULE (Model GX90WD)

PULSE INPUT MODULE (Model GX90XP)

ANALOG OUTPUT MODULE (Model GX90YA)

PID CONTROL MODULE (Model GX90UT)

Please see GX90XA/GX90YA/GX90XD/GX90YD/GX90WD/GX90XP Input/Output Module and PID Control (GS 04L53B01-31EN) General Specification (GS 04L53B01-01EN.)

■ APPLICATION SOFTWARE

SMARTDAC+ STANDARD

- Universal viewer
- Hardware configurator (with Program pattern setting)

Download the latest version of the software from the following URL;
www.smartdacplus.com/software/en/

Operating environment

OS:

OS	Type
Windows 8.1	Update
	Pro Update
Windows 10	Home (32-bit and 64-bit Editions)
	Pro (32-bit and 64-bit Editions)
	Enterprise (32-bit and 64-bit Editions)
	Enterprise LTSB (32-bit and 64-bit Editions)
	Enterprise LTSC (32-bit and 64-bit Editions)
Windows 11	Home (64-bit Editions)
	Pro (64-bit Editions)

Yokogawa will also stop supporting OSs that Microsoft Corporation no longer supports.

Processor and main memory:

OS	Processor and main memory
Windows 8.1 Windows 10	32-bit edition Intel Core2 Duo E6300 or faster x64 or x86, 2 GB or more 64-bit edition Intel x64 processor that is equivalent to Intel Core2 Duo E6300 or faster, 2 GB or more
Windows 11	64-bit edition Core-i5 or faster and 8th generation later Intel processor, 8 GB or more

Browser:
Supported browser: Microsoft Edge, Google Chrome

Hard disk:

- 100 MB or more (Windows 8.1, Windows 10), 64 GB or more (Windows 11) of free space

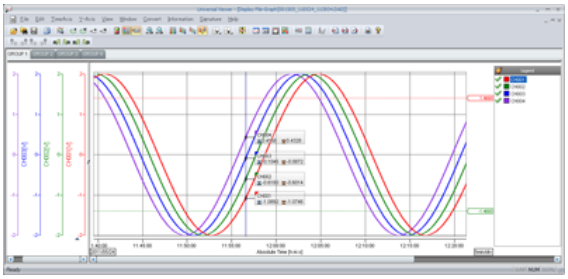
Display:

- A video card that is recommended for the OS and a display that is supported by the OS.

Universal Viewer software

The universal viewer can display the following data generated by the recorder on the screen and print it out on the printer.

- Display data file
- Event data file
- Report data file (Including Hour, Day, Week Month)
- Manual sample data file

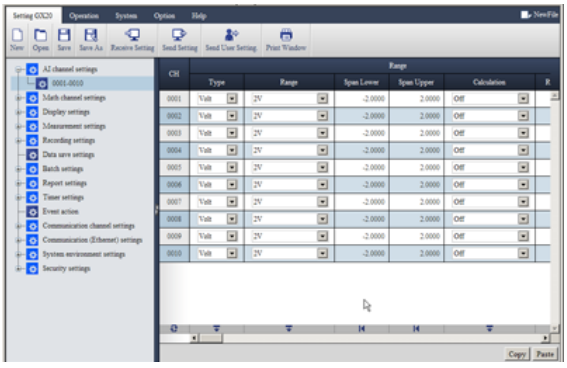


- Viewer function
  Waveform display, digital display, circular display, list display, report display, operation log display etc.
- Data conversion:
  File conversion to ASCII or MS-Excel format
- Signin function

Web application/Hardware configurator

- Online setting on Web browser
- Offline setting on Web browser

Settings can be made using browsers such as Microsoft Edge, Google Chrome.



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■ MODEL AND SUFFIX CODES

Model	Suffix Code				Optional code	Description
GP10						Paperless recorder (Portable type, Small display) *13
GP20						Paperless recorder (Portable type, Large display) *13
Type	**-1**					Standard (Max. measurement channels: 100 ch)
	-2					Large memory (Max. measurement channels: 500 ch) *12
Display language		**E**				English, degF, DST (summer/winter time) *9
Power supply			**1**			100 V AC, 240 V AC *16
			2			12 V DC *17
Power cord				**D**		Power cord UL/CSA standard
				F		Power cord VDE standard
				R		Power cord AS standard
				Q		Power cord BS standard
				H		Power cord GB standard
				N		Power cord NBR standard
				W		Screw terminal, power cord not included
Optional features					**/AH**	Aerospace heat treatment
					/AS	Advanced security function (Part 11)*23
					/BT	Multi-batch function*24
					/C2	RS-232 *1
					/C3	RS-422/485 *1
					/CG	Custom display *15
					/D5	VGA output *2
					/E1	EtherNet/IP communication (PLC communication protocol) *20
					/E2	WT communication *14
					/E3	OPC-UA server
					/E4	SLMP communication (Mitsubishi PLC) *21
					/FL	Fail output, 1 point
					/LG	Log scale
					/MT	Mathematical function (with report function) *18 *19
					/MC	Communication channel function *21 *26
					/PG	Program control function*25
					/UH	USB interface (Host 2 ports)

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Analog input module, Digital I/O module:

Please add the following suffix codes to the main unit model and specification codes.

Option	Optional code	Description
Optional features (Analog input) *3*11	**/UC10**	With analog input module, 10ch (Clamp terminal)
	/UC20	With analog input module, 20ch (Clamp terminal) *7
	/UC30	With analog input module, 30ch (Clamp terminal) *8
	/UC40	With analog input module, 40ch (Clamp terminal) *5
	/UC50	With analog input module, 50ch (Clamp terminal) *5
	/US10	With analog input module, 10ch (M3 screw terminal)
	/US20	With analog input module, 20ch (M3 screw terminal) *7
	/US30	With analog input module, 30ch (M3 screw terminal) *8
	/US40	With analog input module, 40ch (M3 screw terminal) *5
	/US50	With analog input module, 50ch (M3 screw terminal) *5
Optional features (Digital I/O) *4	**/CR01**	With digital I/O module, (Output:0, Input:16) *8 *9 *18
	/CR10	With digital I/O module, (Output:6, Input:0) *8
	/CR11	With digital I/O module, (Output:6, Input:16) *7 *8 *9 *18
	/CR20	With digital I/O module, (Output:12, Input:0) *6
	/CR21	With digital I/O module, (Output:12, Input:16) *6 *9 *18
	/CR40	With digital I/O module, (Output:24, Input:0) *6
	/CR41	With digital I/O module, (Output:24, Input:16) *6 *9 *18

*1 /C2 and /C3 cannot be specified together.
*2 /D5 can be specified only for the GP20.
*3 Only one option can be specified.
*4 Only one option can be specified.
*5 /UC40, /UC50, /US40 and /US50 cannot be specified for the GP10.
*6 /CR20, /CR21, /CR40 and /CR41 cannot be specified for the GP10.
*7 If /UC20 or /US20 is specified, /CR11 cannot be specified for the GP10.
*8 If /UC30 or /US30 is specified, /CR01, /CR10 and /CR11 cannot be specified for the GP10.
*9 Digital input module have M3 screw terminals.
*10 The Display language is selectable from English, German, French, Russian, Korean, Chinese, Italian, Japanese. To confirm the current available languages, please visit the following website. URL: http://www.yokogawa.com/ns/language/
*11 Universal type (Type Suffix Code: -U2). If you need the electromagnetic relay type (Type Suffix Code: -T1), current (mA) input type (Type Suffix Code: -C1), Low withstand voltage relay, type (Type Suffix Code: -L1), High-speed universal type (Type Suffix Code: -H0), 4-wire RTD/resistance type (Type Suffix Code: -R1), purchase it separately.
*12 Large memory type can be specified only for the GP20.
*13 To connect an expandable I/O, GM sub unit, you will need one expansion module for the GP.
*14 /MC must be specified together when the WT communication is selected.
*15 Creating custom displays requires DXA170 DAQStudio (sold separately). (GP does not have a creation function.)
*16 Power code can be specified the suffix code D, F, R, Q, H, or N..
*17 12 V DC power supply can be specified only for the GP10 without power code (suffix code: W).
*18 Optional code /MT (MATH) required if using the GX90XD's or GX90WD's pulse input.
*19 The /MT option (computation) is required to perform pulse integration on GX90XP pulse input modules.
*20 If you want to write from a PLC to the GP via EtherNet/IP communication, a communication channel (/MC) must be specified together.
*21 If you want to read PLC data to communication channel via SLMP communication, a communication channel (/MC) must be specified together.
*22 A communication channel (/MC) is required to configure the Modbus client function and for other devices to write to the GP Modbus server.
*23 When the advanced security function is set to ON, the scan interval is set to 100 ms or longer. In addition, the dual interval function and PID modules cannot be used.
*24 When the multi-batch function is set to ON, the scan interval is set to 500 ms or longer. In addition, the dual interval function cannot be used.
*25 A PID control module is required to use the program control function.
*26 Communication channel (/MC) required if using the profile function.

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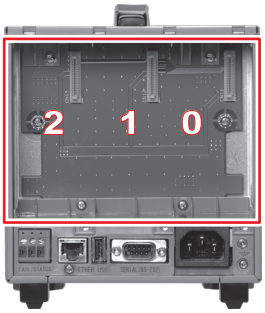
Module installation positions of analog input modules and digital I/O modules when they are preinstalled

GP10

Module type	Optional code	Slot number		
		2	1	0
Analog Input (GX90XA-10-U2)	/UC10 or /US10	---	---	AI
	/UC20 or /US20	---	AI	AI
	/UC30 or /US30	AI	AI	AI
Digital I/O (GX90XD, GX90YD)	/CR01	---	---	DI
	/CR10	---	---	DO
	/CR11	---	DO	DI
Analog Input (GX90XA-10-U2 + Digital I/O (GX90XD, GX90YD)	/UC10 or /US10, /CR01	---	DI	AI
	/UC10 or /US10, /CR10	---	DO	AI
	/UC20 or /US20, /CR01	DI	AI	AI
	/UC20 or /US20, /CR10	DO	AI	AI

- Analog input modules specified with /U □□ 0 are installed in slots 0 to 2.
- Digital input and digital output modules specified with /CR □□ are installed in slots 0 and 1. The digital input module is installed with higher precedence than the digital output module.
- If both /U □□ 0 and /CR □□ are specified, the modules are installed to slots 0 to 2 in the following order of precedence: analog input, digital input, digital output.
- AI: GX90XA-10-U2N- □ N, DI: GX90XD-16-11N-3N, DO: GX90YD-06-11N-3N

Slot number



GP10 Rear

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GP20

Module type	Optional code	Slot number				
		9	8	7	6	5
		4	3	2	1	0
Analog Inpu (GX90XA-10-U2)	/UC10 or /US10	---	---	---	---	---
		---	---	---	---	AI
	/UC20 or/US20	---	---	---	---	---
		---	---	---	AI	AI
	/UC30 or /US30	---	---	---	---	---
		---	---	AI	AI	AI
	/UC40 or /US40	---	---	---	---	---
		---	AI	AI	AI	AI
	/UC50 or /US50	---	---	---	---	---
		AI	AI	AI	AI	AI
Digital I/O (GX90XD, X90YD)	/CR01	---	---	---	---	DI
		---	---	---	---	---
	/CR10	---	---	---	---	DO
		---	---	---	---	---
	/CR11	---	---	---	DO	DI
		---	---	---	---	---
	/CR20	---	---	---	DO	DO
		---	---	---	---	---
	/CR21	---	---	DO	DO	DI
		---	---	---	---	---
	/CR40	---	DO	DO	DO	DO
		---	---	---	---	---
	/CR41	DO	DO	DO	DO	DI
		---	---	---	---	---

- Analog input modules specified with /U □□ 0 are installed in slots 0 to 2.
- Digital input and digital output modules specified with /CR □□ are installed in slots 0 and 1.
  The digital input module is installed with higher precedence than the digital output module.
- If both /U □□ 0 and /CR □□ are specified, each module is installed in its corresponding position.
- AI: GX90XA-10-U2N- □ N, DI: GX90XD-16-11N-3N, DO: GX90YD-06-11N-3N

Slot number

GP20 Rear

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

MODEL and SUFFIX Code (GX90XA)

MODEL and SUFFIX Code (GX90XD)

MODEL and SUFFIX Code (GX90YD)

MODEL and SUFFIX Code (GX90WD)

MODEL and SUFFIX Code (GX90XP)

MODEL and SUFFIX Code (GX90YA)

MODEL and SUFFIX Code (GX90UT)

Please see GX90XA/GX90XD/GX90YD/GX90WD/GX90XP/GX90YA Input/Output Module General Specification (GS 04L53B01-01EN.) and PID Control Module (GS 04L53B01-31EN)

When connecting the Expandable I/O

Please see GX60 Expandable I/O, GX90EX Expansion Module General Specification (GS 04L53B00-01EN.)

■ Standard Accessories

Product	Qty
SD memory card (1GB)	1
Stylus pen (touch pen)	1
Tag sheet (for GP10 or GP20)	1
Sheet (for GP10 or GP20)	1
Power cord	1*
Dummy cover (For empty slots)	-

* Except GP10 power supply suffix code: 2

■ Application Software (Sold Separately)

Model	Description	OS
DXA170	DAQStudio software	Windows 8.1/10/11
GA10	Data Logging Software	Windows 8.1/10/11 Windows Server 2008/2012/2016/2019
CE10	Cloud Equipment/Qualtiy Predictive Detection tool (Validity period : 12 months)	Windows 10/11
CE10L	Cloud Predictive Detection model download license	-
OE10	Offline Equipment/ Quality Predictive Detection tool with Predictive Detection model download license for 1 unit	Windows 10/11
OE10L	Offline Predictive Detection model download license	-

■ Optional Accessories (Sold Separately)

Product	Model/part no.
Model SD memory card (1GB)	773001
Stylus pen (touch pen)	B8740BZ
Shunt resister for M3 terminal (250 Ω ± 0.1 %)	415940
Shunt resister for M3 terminal (100 Ω ± 0.1 %)	415941
Shunt resister for M3 terminal (10 Ω ± 0.1 %)	415942
Shunt resister for Clamp terminal (250 Ω ± 0.1 %)	438920
Shunt resister for Clamp terminal (100 Ω ± 0.1 %)	438921
Shunt resister for Clamp terminal (10 Ω ± 0.1 %)	438922
Dummy cover	B8740CZ
Validation Documents (For /AS option)*1	773230

*1 Provision of Validation Documents
A license sheet containing the license key required for installation is provided.
Download the validation document from the following URL.
http://www.smartdacplus.com/software/en/

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Calibration certificate (sold separately)
When ordering the GP10/GP20 with options (analog input), the calibration certificate for the modules is included in and shipped with the calibration certificate of the main unit. When ordering an analog input module separately, each module gets its own calibration certificate (one certificate per module).

Test certificate (QIC, sold separately)
When ordering the GP10/GP20 with options (analog/digial I/O), the QIC for each module is included in and shipped with the QIC of the main unit. When ordering analog input modules and digital I/O modules 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 Acrobat Reader (latest version recommended) by Adobe Systems.

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

Product Purchase Specifications
The GP10/GP20 is composed of the main unit, I/O modules, Expandable I/O, and Expansion module.

There are two ways to purchase I/O modules.

One way is to purchase them individually by specifying models GX90XA, GX90XD, GX90YD, GX90WD and GX90XP, GX90YA, GX90UT.

The other way is to purchase them as an option (/UCxx or /USxx). Purchasing them as an option is convenient, but this places limitations on the number of analog inputs that you can obtain.

If you want to use more than 50 channels, please purchase the I/O modules individually.

To connect expandable I/O (GX60), GM sub unit to GP10 or GP20, you must purchase one unit of expansion module (GX90EX) for GP10/GP20 in addition to the expandable I/O, GM sub unit.

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- Google Chrome is a registered trademark of Google LLC.
- Kerberos is a trademark of MIT.
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■ MODEL SELECTION GUIDE

Selection of the system configuration and GP10, GP20 type

Model-Type	Internal memory	Number of input/output channels	
		Main unit only	Main + expandable I/O
GP10	500 MB	48 ch (30 ch)	100 ch
GP20-1	500 MB	100 ch	100 ch
GP20-2	1.2 GB	100 ch	500 ch (450 ch)

* The values inside parentheses are for when only analog input channels are available.

I/O Modules

Model	Suffix code	Product name	Description	Number of channels	Measurement interval (shortest)
GX90XA	-10-C1N-□N	Analog Input Module	Current (mA) input DC current (mA), DC current standard signal (4-20mA)	10	100 ms
	-10-L1N-□N		Low withstand voltage relay DC voltage, standard signal, thermocouple (TC), DI (voltage, contact), and DC current (by adding an external shunt resistor)		500 ms
	-10-U2N-□N		Universal input DC voltage, standard signal, thermocouple (TC), resistance temperature detector (RTD), DI (voltage, contact), and DC current (by adding an external shunt resistor)		100 ms
	-10-T1N-□N		Electromagnetic relay DC voltage, standard signal, thermocouple (TC), DI (voltage, contact), and DC current (by adding an external shunt resistor)		1 s
	-10-V1N-□N		High withstand voltage DC voltage, standard signal, thermocouple (TC), DI (voltage, contact), and DC current (by adding an external shunt resistor)		100 ms
	-04-H0N- □ N		High-speed universal input DC voltage, standard signal, thermocouple, resistance temperature detector (RTD), DI (voltage, contact), DC current (when an external shunt resistor is connected)	4	1 ms
	-06-R1N- □ N		4-wire RTD, 4-wire resistance	6	100 ms
GX90XD	-16-11N-□N	Digital Input Module	Remote control input, pulse input	16	100 ms
GX90XP	-10-11N-□N	Pulse Input Module	Pulse input (flow sum and the like)	10	100 ms
GX90YD	-06-11N-3N	Digital Output Module	Alarm output, etc	6	100 ms (update interval)
GX90WD	-0806-01N-3N	Digital Input/Output Module	Remote control input, pulse input	DI: 8 DO: 6	100 ms
GX90YA	-04-C1N-□N	Analog Output Module	Transmission output, manual output	4	100 ms(update interval)
GX90UT	-02-11N-3N	PID Control Module	Control of temperature, flow, pressure etc.	2 loops	100 ms(update interval)

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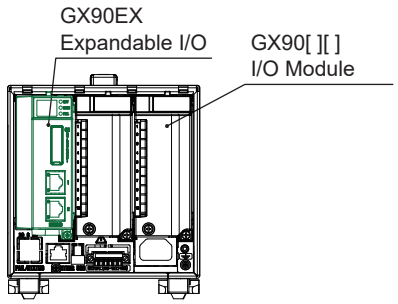
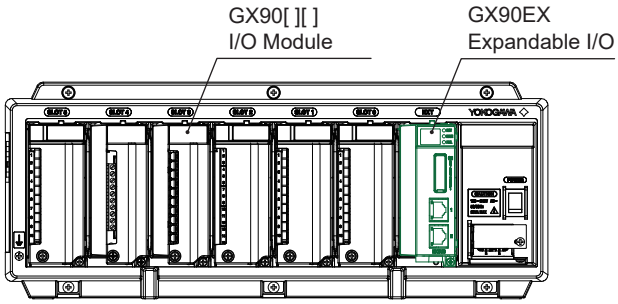
GP10 System Configuration (up to 100 channels)



GP10 Configuration example (maximum)

- GP10: 1
- GX90[][]: 2
- GX90EX: 1



GX60 Configuration example (maximum)

- GX60: 2
- GX90[][]: 8
- GX90EX: 2 (Already installed in the GX60)

GP10
(Unit 0)

SLOT 2	SLOT 1	SLOT 0
GX90EX	**GX90[][]**	**GX90[][]**

Expandable I/O)
GX60
(Unit 1)

SLOT 5	SLOT 4	SLOT 3	SLOT 2	SLOT 1	SLOT 0	EXT
GX90[][]	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	GX90EX

Expandable I/O)
GX60
(Unit 2)

SLOT 5	SLOT 4	SLOT 3	SLOT 2	SLOT 1	SLOT 0	EXT
---	---	---	---	**GX90[][]**	**GX90[][]**	GX90EX

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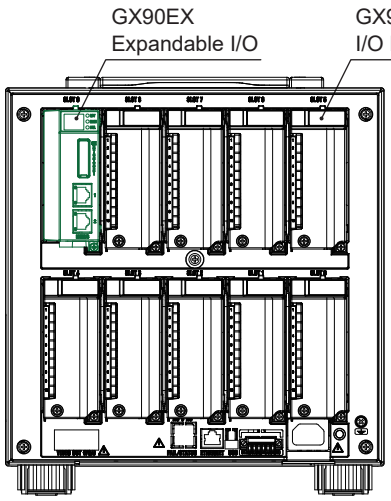
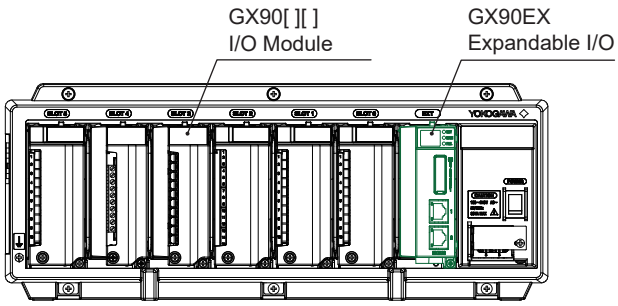
GP20 System Configuration (up to 450 channels)





GP20 Configuration example (maximum)

- GP20: 1
- GX90[][]: 9
- GX90EX: 1

GX60 Configuration example (maximum)

- GX60: 6
- GX90[][]: 36
- GX90EX: 6 (Already installed in the GX60)

GP20
(Unit 0)

SLOT 9	SLOT 8	SLOT 7	SLOT 6	SLOT 5
GX90EX	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**
SLOT 4	SLOT 3	SLOT 2	SLOT 1	SLOT 0
GX90[][]	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**

Expandable I/O)
GX60
(Unit 1)

SLOT 5	SLOT 4	SLOT 3	SLOT 2	SLOT 1	SLOT 0	EXT
GX90[][]	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	GX90EX

Expandable I/O)
GX60
(Unit 2)

SLOT 5	SLOT 4	SLOT 3	SLOT 2	SLOT 1	SLOT 0	EXT
GX90[][]	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	GX90EX

Expandable I/O)
GX60
(Unit 3)

SLOT 5	SLOT 4	SLOT 3	SLOT 2	SLOT 1	SLOT 0	EXT
GX90[][]	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	GX90EX

Expandable I/O)
GX60
(Unit 4)

SLOT 5	SLOT 4	SLOT 3	SLOT 2	SLOT 1	SLOT 0	EXT
GX90[][]	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	GX90EX

Expandable I/O)
GX60
(Unit 5)

SLOT 5	SLOT 4	SLOT 3	SLOT 2	SLOT 1	SLOT 0	EXT
GX90[][]	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	GX90EX

Expandable I/O)
GX60
(Unit 6)

SLOT 5	SLOT 4	SLOT 3	SLOT 2	SLOT 1	SLOT 0	EXT
GX90[][]	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	**GX90[][]**	GX90EX

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