

NEW

YOKOGAWA 

Datum-Y™

Portable Data Station XL100 Series

Compact data logger offering best-in-class noise resistance and communication function

A world's first in measuring instruments!

To obtain IPv6 Ready Logo Phase-1 certification



ID:01-000273



CE

Size: 155 (W)×155 (H)×55 (D) mm
Weight: Approx. 800 g
(Without battery and rubber boot)

Robust design that achieves high performance and simple operation

Offering wide-ranging functions to support data measurement and acquisition

Comes standard with a set of communication functions that facilitate data acquisition

Yokogawa Meters & Instruments Corporation

Bulletin XL100-E

Suitable for Various Measurement / Acquisition Applications

Datum-Y is a portable data logger that directly measures and acquires temperature (thermocouple/resistance temperature detector) and DC voltage. It provides two configurations of input terminals offering eight and 16 channels, respectively. Individual channels can be set independently through universal insulated inputs. The compact unit is designed to achieve high performance and easy operation on site. Datum-Y provides wide-ranging functions and various communication capabilities to support diverse data acquisition applications.

Main Applications

- Variety of simple temperature tests and evaluations (thermostatic chambers, electric furnaces, inverter control units, etc.)
- Acquisition of facility maintenance data (data on the same time scale such as temperature, voltage, pulse, etc.)
- Remote monitoring of analog data utilizing intranet LAN
- Acquisition of electric power and temperature data on the same time scale during energy-saving operation

Compact & High Performance!

All Channels Adopt Universal Insulated Inputs

The channels in the analog input part adopt insulated inputs, which means that temperature (thermocouple/resistance temperature detector) and voltage can be set differently for each channel. The digital inputs are equipped with one pulse channel and two logic channels.



Analog and digital channels can be used in combination.

Best-in-Class Noise Resistance

Datum-Y achieves excellent noise resistance rated among the best in the class of handy measuring products. With Datum-Y, stable measurement is possible in various noise environments, such as when measuring inverter-driven machines or thyristor-controlled units that are commonly used for energy-saving purposes.



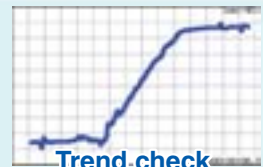
Reliable measurement

Data Saving at 100 ms

Datum-Y saves data at the maximum speed of 100 ms (when the 8-channel terminal block is used).

You can save data in either binary format or ASCII format (for display in Excel*). Binary data can be checked on site in the review mode or shown in waveforms using the supplied "D-TOOL" software.

* Excel is a registered trademark of Microsoft Corporation.



Trend check

Acquisition of Large Amounts of Data Using External Storage Media

Acquisition of Large Amounts of Data Using External Storage Media

Datum-Y lets you save data not only in its internal memory (16 MB), but also in external storage media such as compact flash memory cards* and SD cards* (up to 512 MB).

Data saved in these media can be copied to a USB memory* for easy transfer to a PC.

* Use compact flash memory cards, SD cards and/or USB memory whose compatibility with Datum-Y has been verified.

Recording time (approximate): When a 64 MB external storage medium is used (One year is counted as 365 days.)

Measurement interval	Number of measurement channels				
	1ch	8ch	16ch	16ch + Calculation 32ch	16ch + Calculation 32ch + Communication 32ch
100ms	36.7 days	4.6 days	—	—	—
200ms	73.5 days	9.2 days	4.6 days	22 hrs	12 hrs
500ms	184 days	23 days	9.2 days	2.3 days	30.6 hrs
1 sec	1 year	46 days	23 days	4.6 days	2.6 days
2 sec	2 years	92 days	46 days	9.2 days	5.1 days
5 sec	5 years	230 days	114 days	23 days	13 days
10 sec	10 years	1.3 years	230 days	46 days	26 days
1 min	Omitted	7.6 years	3.8 years	276 days	153 days
5 min	Omitted	Omitted	Omitted	3.8 years	2 years

Robust, User-friendly Design

Compact Size

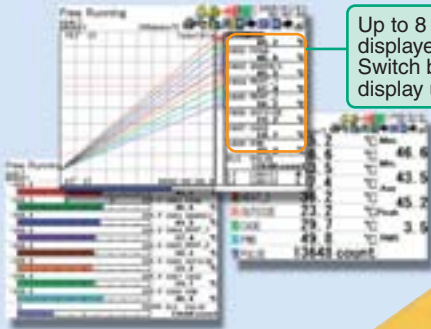
External dimensions:
155 mm x 155 mm x 55 mm
Weight: Approx. 800 g
Easy to carry

Space Saving

The analog inputs are wired from the left, while the power and communication lines are wired from the right. This design makes Datum-Y a suitable option in a narrow space.

Wide-view TFT LCD Screen

Datum-Y adopts a color TFT LCD screen offering a wide angle of view, so displayed data can be read clearly even from angled directions. You can select a desired display mode from among Waveform, Digital, Bar Graph and Waveform + Digital.



Up to 8 channels can be displayed in one screen. Switch between 4 groups to display up to 32 channels in total.

Protection on LCD

Improved Impact Resistance

The supplied rubber boot provide improved impact resistance. The rubber boot are removable.

Datum-Y fitted with rubber boot



Connector cover to protect against entry of powder dust

Operating Temperature: 0 to 50°C

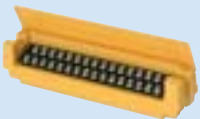
Datum-Y can be used in work areas subject to high temperatures. The unit is designed to withstand humidity in a range of 5 to 85%RH.

Detachable Terminal Block

Wiring is easy, since the terminal block can be removed with a single action.



Terminal block (for 16 channels)



M3 screws terminal block (for 16 channels)

Simple Operation

Direct operation keys are provided for measurement (free running, logging), review (checking of measured data), file management, and various setups. Each item can be set with a single hand. **Onscreen navigation of setting items eliminates the need to check the manual during setting.**

- External inputs/outputs
- External media port
- RS-232
- RS-485
- LAN
- USB memory port
- USB port (for communication)

Built-in terminal screwdriver

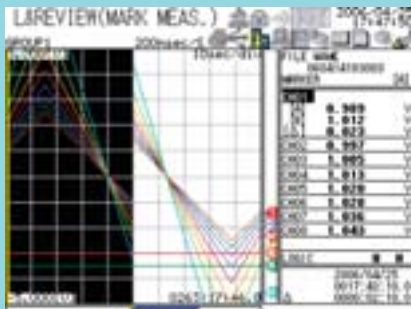


Built-in rechargeable battery

Useful Functions

Spot Check of Acquired Data

- You can check measured data (binary) on Datum-Y right away. Overall trend and alarm output can be checked on the spot immediately after acquisition.
- While Datum-Y is logging data, you can display past data and current data in the logging review mode for comparison and identification of trend. (This function is available only when binary data is acquired.)



Screen in Logging Review Mode

Calculation Function

Datum-Y is capable of inter-channel calculations (among channels, between channels and constants, etc.), statistical operations (minimum, maximum, average, root-mean-square and peak values from start to end of logging), and scaling.

Trigger Function

Datum-Y acquires data before and after a trigger (pre-trigger/trigger delay) to help you detect and analyze the cause of an error. You can select the single mode (a trigger is issued only once) or continuous mode (a trigger is issued every time the condition is satisfied).

Alarm Function

Datum-Y can be fitted with up to four alarm output channels. One alarm can be set for each input channel, and multiple channels can be combined freely with AND/OR gates. You can also use the e-mail delivery function to notify specified e-mail addresses upon occurrence or reset of an alarm.

Auto Set & Run Function (Automatic Measurement Function)

Simply connect an external storage medium (CF card, SD card or USB memory) containing a predefined file (AUTORUN.SET), and Datum-Y will change the necessary settings and take measurements automatically. (You need to enable the automatic measurement function of Datum-Y beforehand.)

Full Set of Communication Functions to Support Data Acquisition

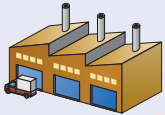
LAN

Datum-Y adopts standard protocols all network administrators familiar to with.

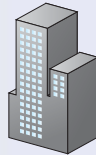
Datum-Y supports standard protocols such as HTTP, FTP, SMTP and SNMP based on Ethernet connection (10BASE-T, 100BASE-TX), so no dedicated software is necessary.

You can also use the user authentication function to permit access only to pre-registered users, in order to prevent illegal access to Datum-Y from networks. Up to seven users (one administrator and six users) can be pre-registered.

Field



Office



Web monitoring



The screen image is tentative. The actual screen may vary.

Ethernet (10BASE-T, 100BASE-TX)

● Web Server Function



You can monitor and operate Datum-Y's screens and functions via a web browser. The monitor screen can be updated automatically (every 5, 10 or 30 seconds) or manually. Select the monitor page where Datum-Y screens can be monitored, or the operator page where both monitoring and operation are possible. User authentication can be set for each page to prevent illegal access.

● FTP Server Function



You can output a list of files stored in Datum-Y's internal memory or connected external storage media, and transfer, delete or otherwise manipulate desired files.

● FTP Client Function



You can transfer the measurement data files/alarm data files created in Datum-Y's internal memory or connected external storage media, to a FTP server. Two file transfer destinations can be set (primary and secondary). If the primary FTP server goes down, files will be transferred to the secondary FTP server.

● E-mail Delivery Function



You can send e-mail to notify occurrence/reset of alarms, power recovery after outage, errors in external storage media, FTP client errors, and scheduled times. Up to two groups can be set, each containing a different set of recipients.

RS-485, RS-232

● Built-in Modbus Protocol Capability

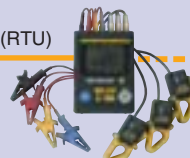
Serial communication (RS-232, RS-485) can be performed using a dedicated protocol as well as Modbus RTU and Modbus ASCII protocols that are supported by Datum-Y's standard capability. Datum-Y can be connected to other equipment to acquire data simultaneously with temperature/voltage. **32 dedicated communication channels are provided.**

Example of RS-232/RS-485 Connection

Temperature
Voltage



Modbus communication (RTU)



Clamp-on Power Meter
CW120 Series

Up to 31
units can be
connected.

Accurate measurement is possible even when loads fluctuate significantly.

USB

Datum-Y connects one-on-one with a PC. You can acquire data, change Datum-Y settings or perform various other operations on Datum-Y from a PC.



RS-232 (Printer)

RS-232 (Printer)
You can connect a printer via RS-232 connection to print paper reports on site.

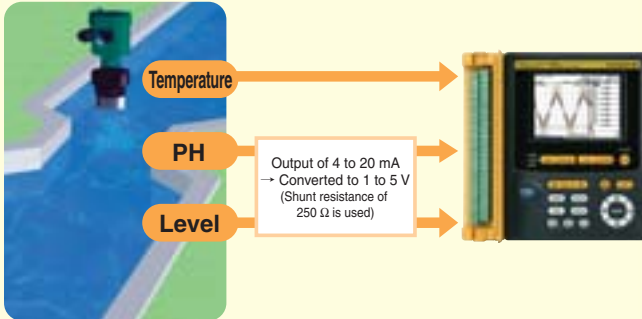


Optional printer (97010)

Application Examples

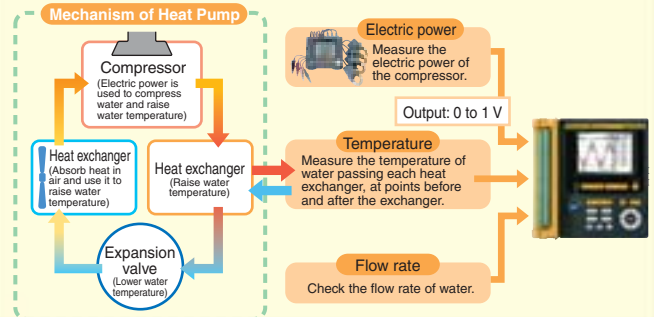
Evaluation Test of Wastewater Treatment System

Temperature, PH, and level data is acquired to check the efficiency of a wastewater treatment system. Only one Datum-Y is needed to acquire data of temperature, PH and level on the same time scale, so the processing man-hours of acquired data can be reduced. Being a portable device, Datum-Y also makes it easy to change measuring locations.



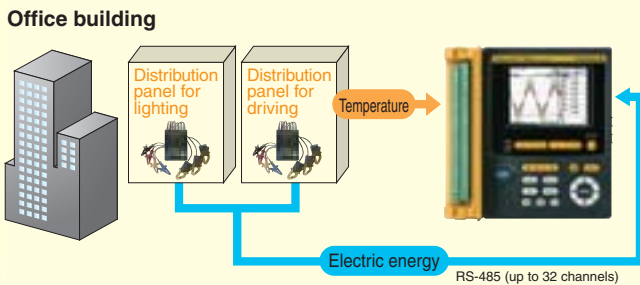
Thermal Efficiency Check of Heat Pump

Datum-Y provides an efficient way to check the thermal efficiency of a heat pump, as it can measure compressor power consumption as well as temperature and flow rate of supplied water to evaluate energy performance. Only one Datum-Y is needed to acquire data of temperature, electric power and flow rate on the same time scale, which reduces the man-hours needed to process acquired data. You can also use YOKOGAWA's clamp-on power meter to further reduce the time and effort needed to install a separate power meter.



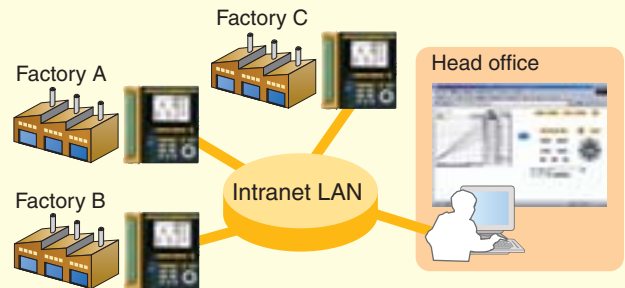
Power Measurement of Central Distribution Panel

Electric energy for each circuit can be measured simultaneously on multiple points on distribution panels for lighting/driving. All you need is one Datum-Y, since its RS-485 communication function lets you acquire data measured by power meters installed in multiple locations for lighting/driving. This reduces the time and effort needed to process acquired data.



Remote Temperature Monitoring of Each Factory

Datum-Y can be used to remotely monitor temperature data in each factory via an intranet LAN. Low-cost remote monitoring is possible, since Datum-Y supports HTTP, FTP and SMTP protocols and no dedicated software is needed. The portable device also lets you change settings easily if the line configuration has been changed. Data and alarm output can be notified periodically via e-mail.



Quick Conversion to Waveform View Using Standard Software "D-TOOL"

Main Functions

- Waveform display of measured binary data
- Enlarged view of waveforms along X/Y-axes
- Display of respective data taken at two points (measured value, measurement time) and the result of inter-channel calculation (B - A)
- Conversion to CSV for storage (skipping, saving of data between cursors)
- File division
- Settings and creation of setting files
- Copy function (clipboard copy)

Copy Function (Clipboard Copy)

A waveform graph or combination of graph and list can be copied and pasted into a different file. This is a useful function when creating a report.



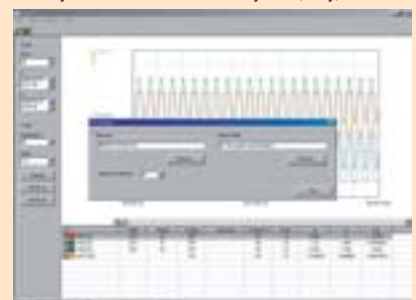
Conversion to CSV for Storage

Binary files can be converted to and saved in the CSV format. You can also skip data or save the data between cursors (A - B).



File Division

A large data file can be divided into smaller sub files. Use this function if a target file contains a large amount of data and reading it takes time, or when you want to divide a file by time, day, etc.



● Supported environment: Windows 2000*, Windows XP* * Windows 2000 and Windows XP are registered trademarks of Microsoft Corporation.

Specifications

Analog Input Section

- Input method : Floating unbalanced input, insulated between channels (Terminal "b" is shared by resistance temperature detector inputs.)
- Number of inputs : 8 channels (XL101), 16 channels (XL102, XL104)
- Terminal shape : Push-lock screw (XL101, XL102), M3 screw (XL104)
- Measurement : 100 ms (only when the 8-channel terminal block is used), 200 ms, 500 ms, 1 sec, 2 sec, 5 sec, 10 sec, 20 sec, 30 sec, 1 min, 2 min, 5 min, 10 min, 20 min, 30 min, 1 hr
- Input type : TC (thermocouple), RTD (resistance temperature detector), DCV (direct-current voltage)
 - * RTD for XL101 and XL102 only
- Range and measurement range :

Reference operating conditions: Temperature (23±2°C), humidity (55±10%RH), power supply voltage (100 to 240 VAC), power supply frequency (50/60 Hz±1% or less), warm-up (30 minutes or longer), without vibration, etc. that do not affect the operation of the instrument

Input	Range	Measuring range	Measurement accuracy	Maximum resolution
DCV	100mV	-100.00 to 100.00mV	±0.1% of f.s.	10μV
	500mV	-500.0 to 500.0mV		100μV
	1V	-1.0000 to 1.0000V		100μV
	5V	-5.000 to 5.000V		1mV
	10V	-10.000 to 10.000V		1mV
	30V	-30.00 to 30.00V		10mV
	1-5V/f.s.	1.000 to 5.000V		1mV
TC	R *1	0 to 1768°C	±0.05% of f.s.±2°C *5	1°C
	S *1	0 to 1768°C		
	B *1	600 to 1800°C		
	K *1	-200.0 to 1372.0°C	±0.05% of f.s.±1°C *5	0.1°C
	E *1	-200.0 to 1000.0°C		
	J *1	-200.0 to 1200.0°C		
	T *1	-200.0 to 400.0°C		
	N *1	-200.0 to 1300.0°C		
	W *2	0 to 2315°C	±0.05% of f.s.±2°C *5	1°C
	L *3	-200.0 to 900.0°C	±0.05% of f.s.±1°C *5	0.1°C
U *3	-200.0 to 400.0°C			
RTD	Pt100 *4	-200.0 to 850.0°C	±0.05% of f.s.±0.5°C *5	0.1°C
	JPt100 *4	-200.0 to 500.0°C		

- *1 R, S, B, K, E, J, T, N : IEC584-1 (1995), DIN IEC584, JIS C 1602-1995
- *2 W : W-5% Rd/W-26% Rd (Hoskins Mfg. Co.), ASTM E988
- *3 L : Fe-CuNi, DIN43710, U : Cu-CuNi, DIN43710
- *4 Pt100 : JIS C 1604-1997, IEC 751-1995, DIN IEC751-1996
JPt100 : JIS C 1604-1989, JIS C 1606-1989
- *5 "f.s." for TC and RTD means the full scale of the measuring range.
- Reference junction compensation: Internal reference junction compensation is used.
- Reference junction compensation accuracy: ±1°C
- Maximum input voltage
 - Voltage range of 1 VDC or below and TC: ±10 VDC
 - Voltage range of 5 VDC or above: ±60 VDC
- Input resistance: Approx. 1 MΩ
- Maximum common mode voltage: 30 VACrms (50/60 Hz) or ±60 VDC
- Common mode rejection ratio
 - 100 dB or above (50/60 Hz): Digital filter OFF
 - 140 dB or above (50/60 Hz): Digital filter ON
- Measurement interval: 5 seconds (8-channel terminal block)/10 seconds (16-channel terminal block)
- Normal mode rejection ratio
 - 50 dB or above (50/60 Hz): Digital filter ON
- Measurement interval: 5 seconds (8-channel terminal block)/10 seconds (16-channel terminal block)
- Thermocouple burnout detection: Detection is turned ON constantly during thermocouple measurement (burnout upscale only). (Display: "+*****")

Calculation

- Inter-channel calculation : Inter-channel calculation is possible. (Measurement / calculation data / communication data, constant)
- Linear scaling : langes capable of scaling: DCV, TC, RTD, pulse
Available range of scaling: -30000 to 30000
Decimal point position: Selectable from 0.0000, 00.000, 000.00, 0000.0 and 00000
Unit: Can be set by the user (6 characters) or selectable from the table below.

Unit	Item	Default	
Unit	Length	mm, cm, m, km	
	Area	mm2, cm2, m2	
	Volume	mm3, cm3, m3, cc, ml, l, kl	
	Speed	mm/s, mm/min, mm/h, cm/s, cm/min, cm/h, m/s, m/min, m/h, km/s, km/min, km/h	
	Acceleration	m/s2, km/h2, Gal, G	
	Frequency	mHz, Hz, kHz, rpm	
	Weight	mg, g, kg, t, N, kgf	
	Work	mW, W, kW, PS, HP, J, Wh, cal	
	Pressure	kg/cm2, Pa, kPa, MPa	
	Flow	m3/s, m3/min, m3/h, t/s, t/min, t/h, l/s, l/min, l/h, kg/s, kg/min, kg/h, kl/s, kl/min, kl/h, cc/s, cc/min, cc/h	
	Temperature	°C, °F	
	Voltage/current	mV, V, kV, mA, A, kA, MA	
	Electric power	mW, W, kW, MW, mvar, var, kvar, Mvar, mVA, VA, kVA, MVA, deg	
	Electric energy	Wh, kWh, MWh, varh, kvar, Mvar	
			Wh

- Statistical operation: Maximum value (MAX), minimum value (MIN), average value (AVE), peak value (P-P) and root-mean-square value (RMS) between the start and stop of logging

Digital Input Section

- Number of inputs : Pulse input: 1 channel, Logic input: 2 channels
- Input specification : Lo: Below 0.9 V or terminal short-circuited, Hi: 2.1 V or higher or terminal open
- Maximum input voltage : 10 VDC

Input	Range	Measuring range	Maximum resolution
Pulse (Instantaneous value)	None	50k/Measurement interval 0 to 50000c	1c
	50kc/f.s.	50k/Measurement interval	1c
500kc/f.s.	10c		
5Mc/f.s.	100c		
50Mc/f.s.	1kc		
500Mc/f.s.	10kc		
Pulse (Integral value)	500rpm/f.s.	50k/sec (The number of pulses per second is counted and converted to the number of revolution)	—
	5krpm/f.s.		—
	50krpm/f.s.		—
	500krpm/f.s.		—
Logic (DI)	—	—	—

c : Count

Display Section

- Display unit : 3.5-inch TFT color LCD (320 x 240 pixels)
- Display color
 - Trend/bar graphs : Selectable from 16 colors (Red, green, blue, bluish purple, brown, orange, yellowish green, light blue, reddish purple, gray, lime, blue green, dark blue, yellow, olive, purple)
 - Background color : Selectable from white and black (waveform display area) Selectable from white and black (waveform display area)
- Waveform display
 - Direction of view : Horizontal
 - Number of channels : Max. 8/display (group) (excluding pulse and DI)
 - Number of displays : 4 (4 groups)
 - Line width : Selectable from 1, 2 and 3 pixels
 - Time scale display : Selectable from 1, 2, 5, 10, 20, 30 sec/div, 1, 2, 5, 10, 20, 30 min/div and 2, 5, 10, 12, 24 h/div
- Bar graph display
 - Direction of view : Horizontal
 - Number of channels : Max. 8/display (group)
 - Number of displays : 4 (4 groups)
 - Scale : Divided in 10 blocks (fixed)
 - Reference position : Edge or midpoint
- Digital display
 - Number of channels : Max. 8/display (group)
 - Number of displays : 4 (4 groups)
- Review display
 - Displays the past logging data recorded in internal memory or external storage media (in binary format only).
 - Display : Waveform and digital display only
 - Display method : Operation of certain keys or call from the alarm summary
 - Background color : White or black (Opposite color to the one selected for "Display background color")
- Information display
 - Alarm summary : Displays the information for the latest alarms.
 - Log display : Displays the following lists. Error records, communication function records, key login/logout records
- LCD setting
 - Backlight auto off : Selectable from OFF, 10 sec, 1, 2, 5, 10, 30 and 60 min (Default: 10 min)
- Update interval : Max approx. 1 sec(Measurement interval)

Storage Functions

- Internal memory: 16 MB
- External storage medium: Compact flash memory card (Type II), SD card, USB memory (Only the copy function is supported by USB memory. Only those USB memories that have been verified by YOKOGAWA are recommended.)
- Storage data type

Type	Description	Format
Logging data	Measurement is performed at specified intervals in logging mode. / Instantaneous values (calculation data) are saved.	Binary or ASCII
Manual sampling data	Measurement is performed for all channels in free running mode when a certain key is operated. / Calculation data (instantaneous values) is saved.	ASCII
Alarm data	The same contents as the alarm summary are saved in logging mode each time an alarm occurs.	ASCII
Screen image data	The image data of the currently displayed screen is saved when a certain key is operated.	BMP
Setting data	The settings made to the instrument are saved when a certain key is operated.	Binary
Log data	The same contents as the log display are saved when a certain key is operated.	ASCII
Backup file	When data is not saved properly to the internal memory, CF or SD card in logging mode (since, for instance, no card has been inserted or the card is full), the data is saved to the backup memory.	Same format as logging data

Alarm Functions (Alarm Output)

- Alarm type : Hi (high limit), Lo (low limit), window-in (within specified upper/lower range), window-out (outside specified upper/lower range) (Only Hi and Lo are available for logic inputs.)
- Alarm delay time : Number of measurements: 0 to 36,000
- Display : Alarm status is displayed in the status display area and measured values are displayed in red when an alarm occurs. (Selectable from non-hold and hold-type)
- Hysteresis : ON/OFF switchable (0.5% of span fixed, common to all channels) 4 channels (not insulated)
- Buzzer : ON/OFF switchable when being output
- Recording : Up to 120 sets of latest information can be recorded.
- Output format : Open collector, 5 V pull-up resistor (100 k Ω)
- Contact capacity : 5 to 40 V, 100 mA

Trigger Functions

- Type : Input to the external trigger input terminal, level (high limit, low limit, window-in, window-out), alarm occurrence, time, timer (timer can only be used to stop logging) For level, the trigger target channels must be specified.
- Mode: Single trigger (ends when the stop trigger is caused)
Continuous trigger (creates a file each time the trigger is caused)
- Pre-trigger/trigger delay
 - Pre-trigger : The data before the trigger is saved.
 - Trigger delay : Data is saved when sampling has been performed the specified number of times following the trigger.

Filter Functions (Analog Input)

Selectable from among OFF, 50 Hz and 60 Hz

Average Functions (Analog Input)

Moving average calculation ON/OFF, selectable from 1, 2, 5, 10 and 20 times

Automatic Measurement Functions

The setting file (AUTORUN.SET) saved in the CF card, SD card or USB memory is loaded automatically, and recording starts according to the contents of the file.

Communication Functions (One of Ethernet, USB, RS-232 and RS-485 can be used)

- Ethernet (10BASE-T/100BASE-TX)
 - Protocol : SMTP, HTTP, FTP, TCP/IP (IPv4/IPv6), SNMP
 - E-mail delivery function : E-mail is delivered when an alarm occurs, when alarm is cleared, when power is restored from power failure, or when a medium related error or FTP client related error occurs. E-mail can also be delivered at the specified time.
 - Web server function : Displays screen images using Browser software. Two modes are available: monitor mode to view the screen, and operator mode to operate the screen and change settings. A password can be set individually.
 - FTP client function : Transfers data files (measurement, alarm, log) created in the internal memory or external storage medium to the specified FTP server.
 - FTP server function : Outputs lists of directories and files present in the internal memory or external storage medium, transfers files and deletes files.
 - Time synchronization function : The instrument is connected to SNTP server at the specified interval (1 to 24 hrs.) for time synchronization.
 - User verification : Permit access only to pre-registered users to prevent operation by third parties. Can be used with web and FTP servers.
- USB
 - Number of ports : 1
 - Electrical/mechanical specifications : Conforms to USB Rev 1.1.
 - Connector : Mini B-type 5-pin (receptacle)
 - System requirements : Personal computer (running on Windows 2000* or Windows XP*) with USB port
* Windows 2000 and Windows XP are registered trademarks of Microsoft Corporation.
- RS-232
 - Connector : Mini DIN 8-pin
 - Synchronization method : Start-stop synchronization
 - Communication method : Full duplex point-to-point
 - Baud speed : 2400, 4800, 9600, 19200, 38400bps
 - Start bit : 1 bit (fixed)
 - Data length : 7/8 bits
 - Parity : Odd, Even, None
 - Stop bit : 1/2 bits
 - Handshaking : RTS/CTS, Xon/Xoff
- RS-485
 - Terminal block : 3 terminal points with M3 fixing screw
 - Synchronization method : Start-stop synchronization
 - Communication method : Half duplex multi-drop (1:N (N = 1 to 31))
 - Baud speed : 2400, 4800, 9600, 19200, 38400, 57600, 115200bps
 - Start bit : 1 bit (fixed)
 - Data length : 7/8 bits
 - Parity : Odd, Even, None
 - Stop bit : 1/2 bits
 - Communication distance : 1.2 km (When two pairs of shielded twisted pair cables (24AWG) are used)
 - Terminating resistor : 120 Ω , 1/2 W (External connection recommended) (Between terminals A and B)

- Serial communication Modbus protocol
 - Transmission medium : RS-232 or RS-485
 - Transmission mode : RTU mode, ASCII mode

Power Supply Section

- AC power supply
 - Rated supply voltage : 100 to 240 VAC
 - Operating voltage range : 90 to 132, 180 to 264 VAC
 - Rated supply frequency : 50/60 Hz
- Battery
 - Battery used : Dedicated lithium ion battery (2,400 mAh, 7.4 V)
 - Operation : The battery can be charged on the main unit only. The instrument runs on the AC adapter when both battery and AC adapter are used.
- Charging function : The battery can be charged while the instrument is in use. Charging takes approximately 8 hours.
- Continuously operable time : Approx. 7 hours (When used at 25°C, with measurement interval of 5 minutes or longer, backlight auto-off set to 5 minutes or less, and no communication)

Other

- Clock function : Time (year, month, day, hour and minute) can be set in 24-hour system. Accuracy: ± 10 ppm (at 25°C)
- Key lock function : Operations (excluding those for which key lock function is not set) can be disabled by using certain keys.
- Key login function : Entry of the user name and password is required at the end of self test following power-ON.
- Display hold : displayed values can be held when certain keys are operated.
- Beep sound : A beeping sound is caused when the ON/OFF key is pressed.
- Data storage time display : The data storage time is displayed based on the remaining memory capacity in the selected data storage.
- Printer output : Can be printed to the dedicated printer (97010).

General Specifications

- Location for use: Indoor, at an altitude of 2000 meters or less
- Operating temperature/humidity range: 0 to 50°C (0 to 40°C if a battery is used), 5 to 85%RH (no condensation)
- Storage temperature/humidity range: -20 to 60°C, 90%RH or less (no condensation)
- Insulation resistance
 - Between each input terminal and frame : 20 M Ω or higher (500 VDC)
 - Between input terminals (except for terminal b) : 20 M Ω or higher (100 VDC)
 - Between each input terminal and digital input/output : 20 M Ω or higher (100 VDC)
- Withstanding voltage
 - Between each input terminal and frame : 350 Vp-p (50/60 Hz), 1 min.
 - Between input terminals (except for terminal b) : 350 Vp-p (50/60 Hz), 1 min.
 - Between each input terminal and digital input/output: 350 Vp-p (50/60 Hz), 1 min.
- Size : Approx. 155 (W) x 155 (H) x 55 (D) mm (Without projecting parts and rubber boot)
- Weight : Approx. 800 g (Without battery and rubber boot)
- Safety standards
 - Complying standard: EN61010-1
Measurement category I (circuit voltage used: ± 60 VDC)
Pollution degree 2
Rated transient overvoltage 350 Vp-p
- Emission
 - Complying standard: EN61326 Class A, EN55011 Class A Group 1
EN61000-3-2, EN61000-3-3
This product class A for use in an industrial environment and may cause radio interference if used for domestic use. Therefore, appropriate measures must be taken when using it for domestic use.

Cable condition:

- RS-232
Use the communication cable (91011).
- Pulse input, logic input and alarm output
Use the digital I/O cable (91029).
- Ethernet
Use category 5 Ethernet cable or better cable.
- Other (communications and I/O)
Shielded cable, less than 3m.

Immunity

- Complying standard: EN61326 Annex A
Immunity test requirement for equipment used in commercial environment.
Performance criterion under immunity test environments: B (self-returnable performance deterioration)

Cable condition:

- Same as the cable condition for emission.

Standard Accessories

- Terminal block : 8 channels (95052) or 16 channels (95053, 95055)
- AC adapter : For use in Japan (for 100 VAC)
- Rubber boot : Impact-Protection (93036)
- Screwdriver : For push-lock screws on the terminal block
- Quick manual : x1
- CD-ROM : Standard software, USB driver, instruction manual, communication function manual, quick manual

Model number and suffix code

Model	Suffix code	Specification
XL101		8ch, with Push-in type terminal block unit
XL102		16ch, with Push-in type terminal block unit
XL104		16ch, with M3 screws type terminal block unit
	-D	Power cord(UL/CSA Standard)
	-F	Power cord(VDE Standard)
	-H	Power cord(GB Standard)
	-R	Power cord(SAA Standard)
	-S	Power cord(BS Standard)

Optional accessories and Spares

	Name	Model No.	Description
Optional accessories	Type-K TC	90060	5 meter × 4 sets
	Carrying case	93037	To store the main unit and accessories
	Lithium ion battery	94009	2,400 mAh, 7.4 V
	Stand	93039	Supports tilted installation on the desktop, wall mounting, and DIN rail mounting
	Digital I/O cable	91029	For pulse/logic inputs and alarm outputs, 3 m
	Communication cable	91011	RS-232 communication cable for PC (9 pin)
	Printer cable	91010	RS-232 cable for printer
	Printer	97010	Includes 1 roll thermal paper and 1 battery pack
	Printer thermal paper	97080	10 rolls/set
	AC adapter for printer	94006	Power supply 200-240 V
AC adapter for printer	94007	Power supply 100-120 V	
Spares	Terminal block unit (16ch)	95052	8ch, Push-in type
	Terminal block unit (8ch)	95053	16ch, Push-in type
	M3 screws terminal block unit (16ch)	95055	16ch, M3 screws type
	Rubber boot	93036	Impact protection
	AC adapter	94010	Power cord
	(Suffix code)	-D	For UL/CSA Standard
		-F	For VDE Standard
		-H	For GB Standard
		-R	For SAA Standard
		-S	For BS Standard

Accessories

Printer (97010)



Carrying Case (93037)



Lithium ion battery (94009)



Digital I/O cable (91029)



Stand (93039)



* The AC adapter for printer (97010) is available as an option.

Related products (Connectable to Datum-Y)

Clamp on power meter
CW120 series

RS-485
ModBus



Digital illumination
meter 510 series

analog
0 to 1V



Clamp tester
CL series

analog
0 to 1V



YOKOGAWA 
Yokogawa Meters & Instruments Corporation

World Wide Web site at
<http://www.yokogawa.com/MCC>

NOTICE

- Before using the product, read the instruction manual carefully to ensure proper and safe operation.

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YOKOGAWA SHANGHAI TRADING CO., LTD. (CHINA)
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