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YOKOGAWA

Compact and Noise-resistant Data Logger

Datum-Y™

Data Logger

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)

Just connect to a PC to take real-time measurements
Supports remote data acquisition using a LAN

Yokogawa Meters & Instruments Corporation

Bulletin XL120-E

Best Noise Resistance in the Class of Handy Measuring Instruments Guarantees Stable Measurement Even in Noise Environments

Main Features

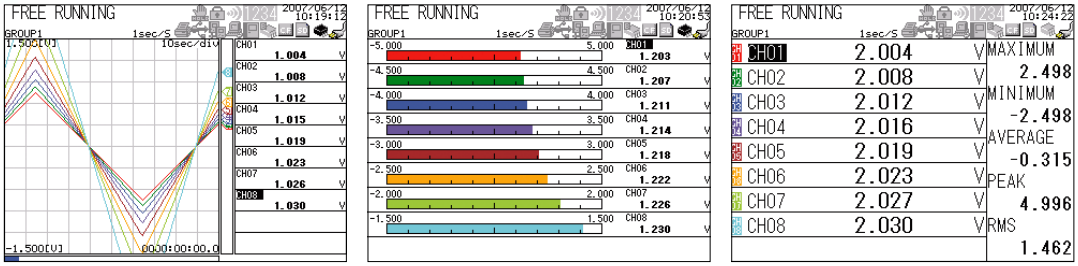
- All channels adopt universal insulated inputs : The temperature and voltage can be set independently for each channel.
- Easy-to-read screen display : A wide view color TFT LCD makes it easy to read even outdoors
- Data can be saved at the maximum speed of 100 ms : Reliably measures temperature changes
- Large amounts of data can be acquired : Employs compact flash and SD cards. USB memory enables support for a data copy function.
- Comes standard with a LAN port : Also supports remote data acquisition.

Application Examples

- Testing and evaluating product temperatures using a thermostatic chamber
- Regular maintenance of various equipment (electric furnaces, inverter control units, injection molding machines, etc.)
- Detecting and analyzing the cause of temperature changes associated with the malfunctions of equipment
- Diagnosing the deterioration of batteries (up to 48 V)
- Acquiring remote data using an internal LAN

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.

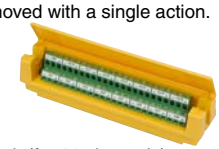


All Channels Adopt Universal Insulated Inputs

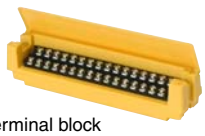
The channels in the analog input part adopt insulated inputs, which means that temperature (thermocouple/resistance temperature detector) and voltage can be set differently for each channel.
Eleven types of thermocouples, Pt100 and JPt100 temperature-measuring resistors, and a voltage up to 50 V range are supported.

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)

* Taking measurements with a resistance temperature detector (RTD) is not possible.



Built-in terminal screwdriver



Built-in rechargeable batteriy

The dedicated lithium ion battery enables up to 7 hours of operation (in conditions recommended by Yokogawa).

Compact Size

External dimensions: 155 × 155 × 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.

Main Functions are Directly Accessible with Just the Push of a Button

HOME	Free running, logging screen, system information, etc.
REVIEW	Reviewing data after acquisition and reviewing measurement data while logging
FILE	Deleting and copying measurement data and file processing such as media formatting
SETTING	Configuring the settings of Datum-Y

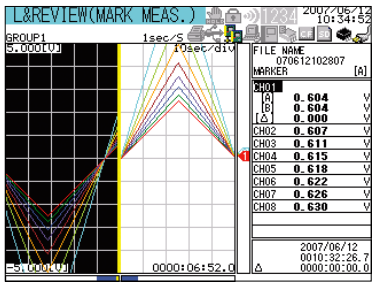
Rubber Boot (Standard Accessory)

Resistance to impact is improved by the use of a rubber boot, which is removable.

Variety of Functions Facilitate Measurement and Data Acquisition

Spot Check of Acquired Data

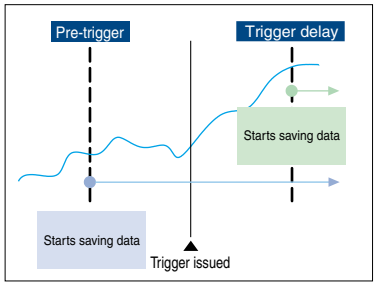
You can check measured data (binary) on Datum-Y right away. Overall trend and alarm output can be checked on the spot immediately after acquisition.
While Datum-Y is logging data, you can display past data and current data in the logging review mode for comparison and identification of trend. (This function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



Screen in Logging Review Mode

Trigger Function

You can use the pre-trigger/trigger delay function, which is convenient when you detect and analyze the cause of an error. You can start to acquire data before and after a trigger for up to 600 measurements, respectively. (Pre-trigger starts data acquisition before the trigger, while trigger-delay starts data acquisition after the trigger)



Calculation Function

Datum-Y is capable of four arithmetic functions (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.

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.

File Split and Media Overwrite Functions

You can split a measurement data file at a specified time (hours and minutes) while you are logging data. Furthermore, you can select the following save options: Delete and Save to delete past measurement data and create new data when the storage capacity of the destination storage media is full, Repeat Save to overwrite the old data in the file during measurement, and Stop to stop the saving. In addition, you can use the FTP function to acquire data stored in Datum-Y without stopping measurement.

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 512 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	1.6 years	74 days	–	–	–
200ms	3.2 years	148 days	74 days	15 days	8 days
500ms	8.1 years	1 year	185 days	37 days	20 days
1 sec	–	2 years	1 year	74 days	41 days
2 sec	–	4 years	2 years	148 days	82 days
5 sec	–	10 years	5 years	1 year	205 days
10 sec	–	10 years	10 years	2 years	1.1 years

-Side-



External Trigger Input/Output
For connecting another device and synchronizing measurements.

Digital Input/Output
For using pulse input (on one channel), logic inputs (on two channels), and alarm outputs (on four channels) via optional digital input/output cables (91029).

Type II Compact Flash Slot
For saving data to a compact flash memory card

SD Card Slot
For saving data to an SD memory card

USB Port
For inserting USB memory to use the data copy function.

RS-232 Port
For communication with a PC and a dedicated printer via an optional communication cable (91011).

RS-485 Port
For connecting another device via a communication line.

LAN Port
For using Web server, FTP server, E-mail sever and other functions via a LAN cable.

USB Port (for Communication)
For communication with a PC via a USB cable.
* Use a USB communication cable with a male Mini B connector.

Remote Data Acquisition Using Web Monitoring, FTP, and E-mail Delivery

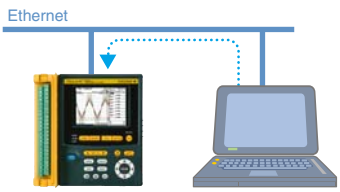
LAN

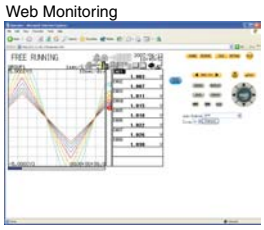
Datum-Y employs Ethernet (10Base-T and 100Base-TX) standard protocols to provide the functions described below without using dedicated software. Furthermore, you can set user authentication for access to Datum-Y to prevent unauthorized access.

Web Server Function

You can easily monitor the Datum-Y screens with the Internet Explorer*1 Web browser (Screen display can be updated every 5, 10, or 30 seconds automatically, or manually). You can use Operator Page*2 to remotely operate Datum-Y, except for turning the power on and off and key locking. You can use Monitor Page*3 just to check and switch the Datum-Y screens. You can set access authentication for each screen to enhance security.

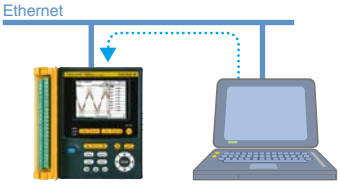
*1: Internet Explorer is a registered trademark of Microsoft Corporation.
*2: Operator Page access address: http://Datum-Y IP address/operator.htm, or http://Datum-Y domain name.host name/operator.htm
*3: Monitor Page access address: Change operator on Operator Page to monitor





FTP Server Function

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

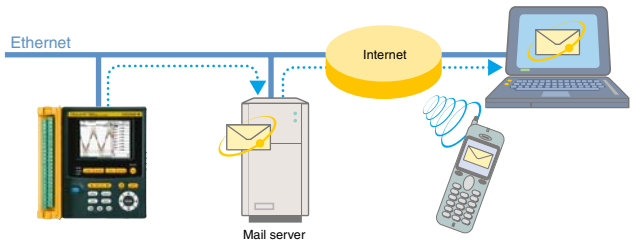




E-mail Delivery Function

You can deliver a text message to e-mail addresses specified in Datum-Y to notify of the occurrence and cancellation of alarms, the occurrence of errors in storage media and FTP client errors, power outage and recovery, and scheduled times. You can attach the instantaneous data at that time to the email message.

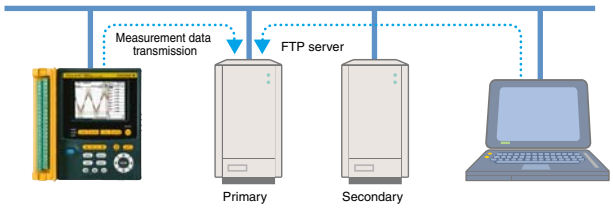
* The mail server is to be supplied by the customer.



FTP Client Function

You can use this function to automatically transfer measurement data files, which were created by splitting a file after logging or during measurement, to an FTP server specified in Datum-Y. To prevent data transfer errors, you can set two FTP servers, the primary and secondary. In addition, a function to re-transmit data that failed to be transmitted is available.

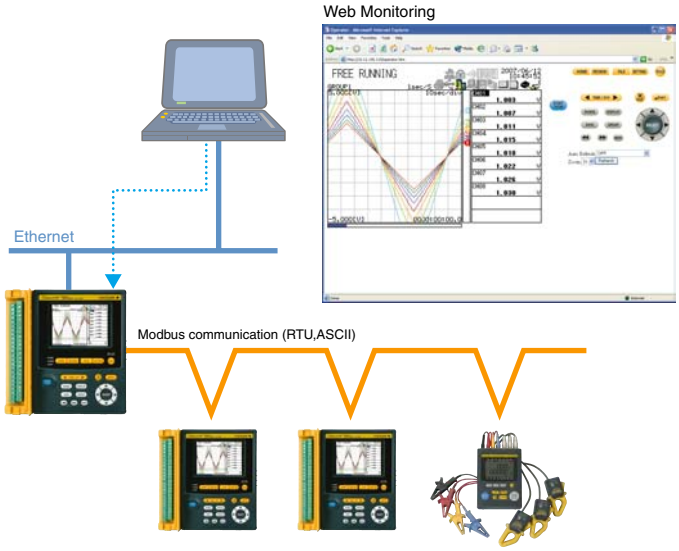
* The FTP server is to be supplied by the customer.



LAN/RS-232,LAN/RS-485

You can connect another Modbus protocol enabled device to Datum-Y to use all of the LAN functions while you are acquiring data.

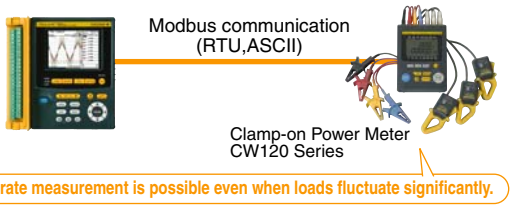
* For the LAN/RS-232 or LAN/RS-485 communication protocol, the measurement interval is more than 10 seconds, and the Modbus communication interval is more than 5 seconds.



RS-232,RS-485

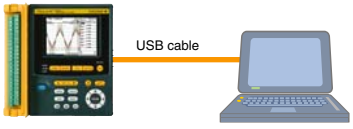
Built-in Modbus Protocol Capability

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.
In addition to analog data (temperature and voltage), you can acquire the data of up to 32 measurement items of connected devices on the 32 communication channels.



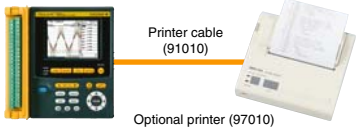
USB (for Communication)

The commercially available Datum-LOGGER software allows you to connect to a PC to perform real-time measurement and send and receive configuration data, and the supplied D-TOOL software allows you to send and receive configuration data.



RS-232 (Printer)

You can use a dedicated cable (91010) for a connection to output the instantaneous value data and screen image data.





Application Software "Datum-LOGGER"

allows you to connect up to ten Datum-Ys to analyze and process data after you perform real-time measurement and acquire data with a PC.

Main Features

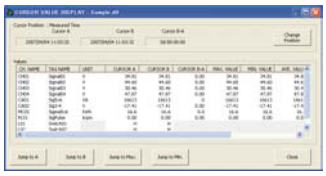
- Real-time measurement at the maximum speed of 1 second
- Zooming to analyze acquired data in the waveform view
- A variety of data saving functions available (selective and partial saving)

Composite Operation on Four Dedicated Channels during Real-time Measurement



You can perform composite operations (e.g. log, Σ, and √‾, except for the four arithmetic operations) typical for a scientific electronic calculator on four dedicated arithmetic channels. You can create a calculation formula containing up to 16 terms comprising measured values and functions.

Measured Value Display at Two Points (A and B) with a Cursor



You can display each of the measured values at two points (A and B), the difference between the measured values (B-A), and the maximum, minimum, and average values between the two points. You can change the cursor position using the method of clicking on the waveform display and the method to specify the day and hour.

Analysis Screen Display for Measured Data

You can sort and display all the measurement data or the measured values between two points (A and B) in ascending or descending order, as well as sort and display the amounts of changes in ascending or descending order.



Specifications

■ Applicable models: Datum-Y firmware version 3.01 or later

■ Real-time measurement data acquisition functions
- Communication interface: Ethernet, USB, RS-232, RS-485
- Maximum number of units that can be connected:10 units
- Data acquisition channels(per unit): Analog channels(16ch),Pulse channel(1ch),Logic channels(2ch),XL unit calculation channels(32ch),Calculation channels dedicated to Datum-LOGGER(4ch),Communication channels(32ch)
- Measurement acquisition period:1,2,5,10,20,30seconds,1,2,5,10, 20,30minutes, 1hour (If the communication interface is RS-485, the acquisition periods that can be set vary depending on the number of connected units. If the communication interface is Ethernet and the communication interface set for the station is LAN/RS-232 or LAN/RS-485, the settable measurement periods will be 10 seconds or longer irrespective of the setting made to the Datum-LOGGER software.)

■ Display functions
- Display: Waveform, Digital, Bar graph, Meter display
- Cursor value display: Display of each measurement values, difference, maximum value, minimum value and average value of cursors A and B.
- Arbitrary cursor list display: Display a list of arbitrary cursors and comments inserted in a waveform graph.
- Alarm list display: Display a list of alarms for acquired data.
- Analysis view display: Display all specified channels, value differences between cursors A and B in descending or ascending order, and the rate of change in descending or ascending order.
- Horizontal Scroll: By scrolling a waveform display horizontally, it is possible to display data acquired in the past even during real-time acquisition.
- Resizing the Horizontal axis: Display all the acquired data or data between cursors A and B.
- Jump function: Re-display a waveform centering on a data selected in the cursor value display, arbitrary cursor list display, alarm list display or analysis view display.

■ Dedicated calculation functions (available for Real-time measurement)
Formula of maximum 16-stack consisting of measurement data, functions and operators of the same Datum-Y (station) can be set for up to four channels.

■ Data load functions
Datum-Y main unit measurement files, Datum-LOGGER measurement files on PC.

■ File processing functions
- Partial storage: Save data between cursors A and B
- Divided storage: Save by specifying date/time intervals or store by dividing into specified number of files
- File division: Datum-Y measurement data files and Datum-LOGGER measurement data files stored on PC can be divided at the specified number of data interval or specified date/time interval.
- Combined storage: Combine and save divided sub files of Datum-LOGGER measurement data files.
- Skipped storage: Skip data using specified time intervals
- Storage format: Binary format (dedicated for Datum-LOGGER)

■ Report format storage: Save maximum, minimum and average of hourly reports, daily reports, weekly reports and monthly reports in CSV format. Measurement data can be added to CSV data to be stored.

■ Main unit setting functions: Send/receive setting details, load setting files and save setting files via communication.

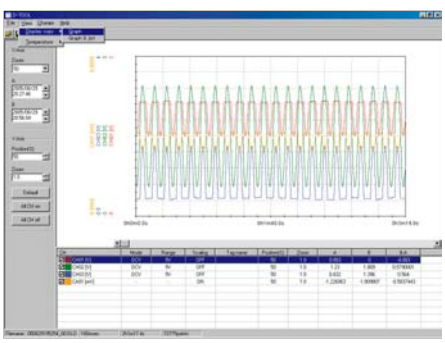
■ Clipboard copy functions: Copy a displayed waveform image to the clipboard

■ Printing functions: Print a displayed waveform image

System requirements

OS	Windows 2000(SP4 or later) Windows XP(SP1 or later)
Display	XGA(1024×768) or higher 65536color or higher
CPU performance	Pentium III 1.6GHz or higher Pentium 4 1.6GHz or faster is recommended
Memory	512MB or higher 1GB or more is recommended
Hard disk	At least 1GB of free space

- Windows are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries.
- Other company and product names are trademarks or registered trademarks of their respective companies.



Standard Supplied Software "D-TOOL"

Allows You to Show Data in Waveforms and Perform CSV Conversion

Main Function

- 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)
- Copy function (clipboard copy)
- Conversion to CSV for storage (skipping, saving of data between cursors)
- File division
- Settings and creation of setting files
- 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 (XL121), 16 channels (XL122, XL124)
- Terminal shape : Screw in (XL121, XL122), M3 screw (XL124)
- Input type : TC (thermocouple), RTD (resistance temperature detector), DCV (direct-current voltage)
  * RTD for Screw in type 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
	50V	-50.00 to 50.00V		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 *6	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.
*6 Excitation current: 2mA.

- 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

- Four arithmetic operation : Between 2 channels.
  (Measurement / calculation data / communication data, constant)
- 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
- Linear scaling : langes capable of scaling: DCV, TC, RTD, pulse
  Available range of scaling: -30000 to 30000
  (pulse: -99999 to 99999)
  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.

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

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
Pulse (Integral value)	50kc/f.s.	50k/Measurement interval	1c
	500kc/f.s.		10c
	5Mc/f.s.		100c
	50Mc/f.s.		1kc
	500Mc/f.s.		10kc
Pulse (Number of revolutions)	500rpm/f.s.	50k/sec (The number of pulses per second is counted and converted to the number of revolutions	–
	5krpm/f.s.		
	50krpm/f.s.		
	500krpm/f.s.		

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

- Measurement interval: 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

* The sampling interval during pulse input is greater than or equal to 1 s.
* If the communication is set to LAN/RS-232 or LAN/RS-485, the sampling interval is set greater than or equal to 10 s.

- 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.)
- Save mode:
  - File division: Select NO DIVISION or DIVISION.
    (Specify DIVISION to save the data by dividing the data at constant time intervals from the start of the logging operation.)
  - Memory full operation: Select STOP, REPEAT, or DELETE.

- 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 kΩ)
- 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)
- Mode: For level, the trigger target channels must be specified. Single trigger (ends when the stop 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

- 2 simultaneous communication is possible such as LAN and RS-485, LAN and RS-232
- Ethernet (10BASE-T/100BASE-TX)
  - Protocol : SMTP,HTTP,FTP,TCP/IP(IPv4/IPv6),SNTP
  - 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 a 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 a 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, OFF
- 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
  - Function: Master and slave
  - Transmission medium : RS-232 or RS-485
  - Transmission mode : RTU mode or ASCII mode
  - Communication channels : 32 channels, Modbus master
- Standard Protocol
  - Transmission medium : LAN,USB,RS-232 and RS-485

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).

Standard Accessories

- Terminal block : 8 channels (95052) or 16 channels (95053, 95055)
- AC adapter : 100 to 240 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

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 MΩ or higher (500 VDC)
  - Between input terminals (except for terminal b) : 20 MΩ or higher (100 VDC)
  - Between each input terminal and digital input/output : 20 MΩ 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) × 155 (H) × 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.

Model number and suffix code

Model	Suffix code	Specification
XL121		8ch, with Screw in type terminal block unit
XL122		16ch, wth Screw in type terminal block unit
XL124		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(AS 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
	Application Software (Datum-LOGGER)	XL900	For Datum-Y
	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, Screw in type
	Terminal block unit (8ch)	95053	16ch, Screw 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 AS Standard
		-S	For BS Standard

Accessories

Printer (97010)



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

Carrying Case (93037)



* The unit stand cannot be stored.

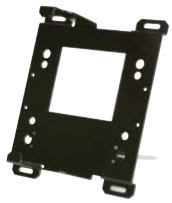
Lithium ion battery (94009)



Digital I/O cable (91029)



Stand (93039)



* Approx 200 (H) × 150 (W) mm, Approx 500g

YOKOGAWA
Yokogawa Meters & Instruments Corporation

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

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