YOKOGAWA ◆

FX100

FX103/FX106/FX112
Paperless recorder

FX100

The Optimized Paperless Recorder in the Applications

Data Display that's Easy-to-Read in the Field

The FX100 is a cost effective paperless recorder with highly optimized performance. Measured data can be easily viewed on the FX's versatile displays, even in the field. Unlike data from chart recorders, electrically stored data can be archived and copied securely, quickly and easily without taking up space. The FX100 delivers what all companies demand: reductions in TCO, improved efficiency, and enhanced control.

Outstanding Display and Flexible Operation

A Wide Variety of Highly Visible Displays
• 5.5" TFT color LCD display with wide viewing angle
• Trend, digital, bar, overview, information, and historical displays
• 4 display groups and 6 channels per group: Freely assignable measurement and mathematical channels
• Display languages: English, German, French, or Japanese

Versatile Measurement
• Universal input and optional inputs (pulse and Pt1000 input)
• Up to 50 VDC direct input, no need of external voltage divider
• Up to 12 analog input channels
• Measurement interval: FX103: 250 ms
  FX106, FX112: 1 s and 2 s

Simple and Easy Operation
• Interactive setup with Key panel's navigation keys means easy operation

Dust-proof and Water-proof
(IP65)
• Can be installed in harsh environment

Easy Wiring
• Detachable analog input terminal makes it easy to wire

Detachable clamp terminal
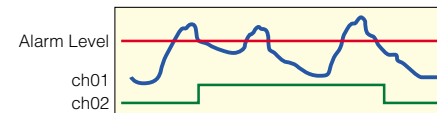
FX100 back side

Powerful and Useful Functions

Powerful Computation Functions beyond Simple Calculation (/M1 Option)
• Multiple computations for measurement channels
• Displays and records12 mathematical channels
• Report function generates periodical report

Example
- When ch02 is high,
    ch01 value is accumulated.
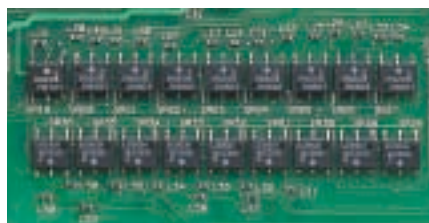- When ch01 is over measurement higher limit,
    total time is accumulated.

Alarm Level
ch01
ch02

A Variety of Communication Option Combination (/C2, /C3, /C7 Option)
• The FX100 supports Ethernet, RS232, RS422A/RS485
• Communication interface can be used with the other options such as alarm output and fail/memory end.
• Ethernet interface and RS232 or RS422A/RS485 can be used together

Reliable Measurement

Delivers Stable Measurement
• FX100 uses High-breakdown-voltage Solid-state Relays as scanners for switching signals, thus overcoming the problem of defective measurement caused by faulty or worn contacts of the mechanical contact.
• Resolution of A/D with 16 bits and isolated channel inputs for DC voltage and TC input make it stable measurement.

High-breakdown-voltage solid-state relays

Secure Data Acquisition

Protects Data When Power Interrupted
• The internal flash memory is nonvolatile (requiring no battery backup), and holds measurement data even during a power interruption.

Keeps Your Data Secure
• FX100 saves measurement data in binary format which provides high level of security.

Internal flash memory   Data security in binary format

PC Software

Online/Offline Configuration
• Setting can be sent to or received from the FX100.

Data Viewer/Conversion
• Data can be displayed, printed, or converted to ASCII, Lotus 1-2-3 and Excel format.

Standard software DAQSTANDARD

Meets Your Needs, Fits Your Applications

The FX100 provides an excellent alternative to chart recorders through enhanced data management and high performance. With a powerful set of optional functions such as pulse input, Pt1000, and mathematical functions, the FX100 enables easy operation tailored to your specific application, whether it be water treatment, wastewater treatment, heat treatment, process technology, or environmental test equipment.
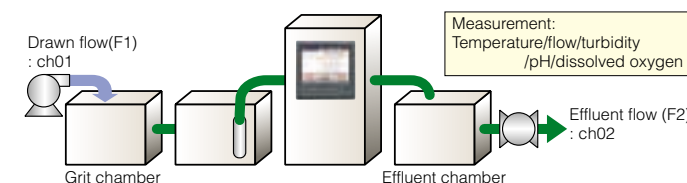
Data Display/Record in Wastewater Treatment

FX100 can display measured data and computation results in real time.
■ Display and record Inputs data such as temperature, flow, turbidity, pH, dissolved oxygen
■ Easy analysis data on the PC
■ Water quality management with the option Pt1000 (/N3): Temperature display with high resolution
■ Pulse measurement up to 100Hz with option pulse input (/PM1): Display/record of computations such as flow accumulation
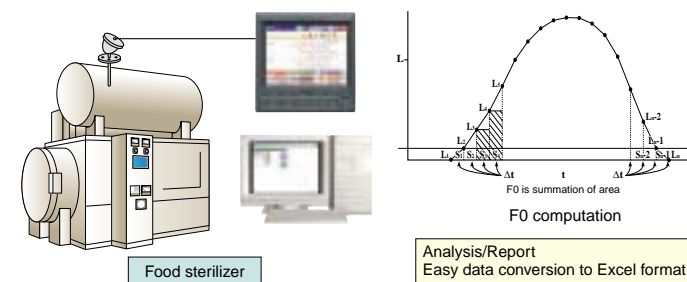
Example
- Process flow (F1-F2) display/record.
  The accumulation flow display on 31ch

Drawn flow(F1) : ch01
Grit chamber
Measurement: Temperature/flow/turbidity /pH/dissolved oxygen
Effluent flow (F2) : ch02
Effluent chamber

Temperature Recording/Monitoring for Aluminum Casting

Simplifies casting temperature quality management.
■ Displays and records Aluminum casting data
  - Molten metal temperature
  - Cooling water temperature
■ Archives data upon alarm occurrence
  - Analysis alarm data

Furnace data record
Molten metal temperature
Cooling water temperature

Melting furnace

Metal Mold

Acquiring Sterilization Data for Food

Records sterilization process with optional mathematical function (/M1): Easy F0 computation

Food sterilizer

F0 computation
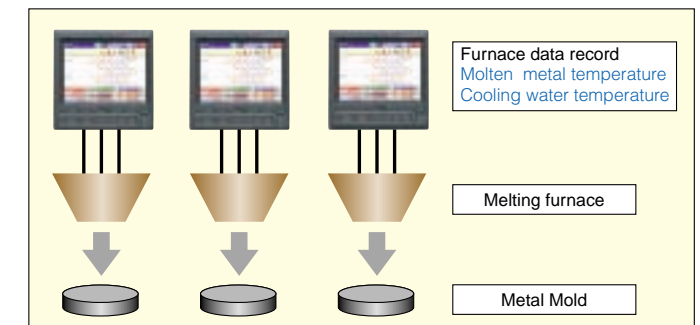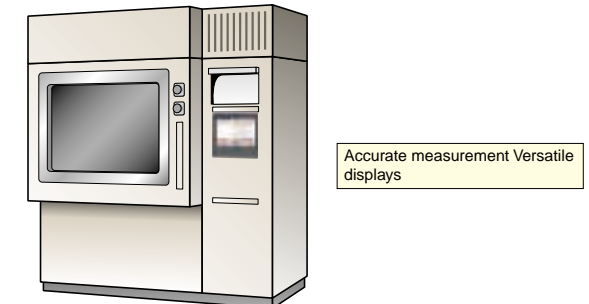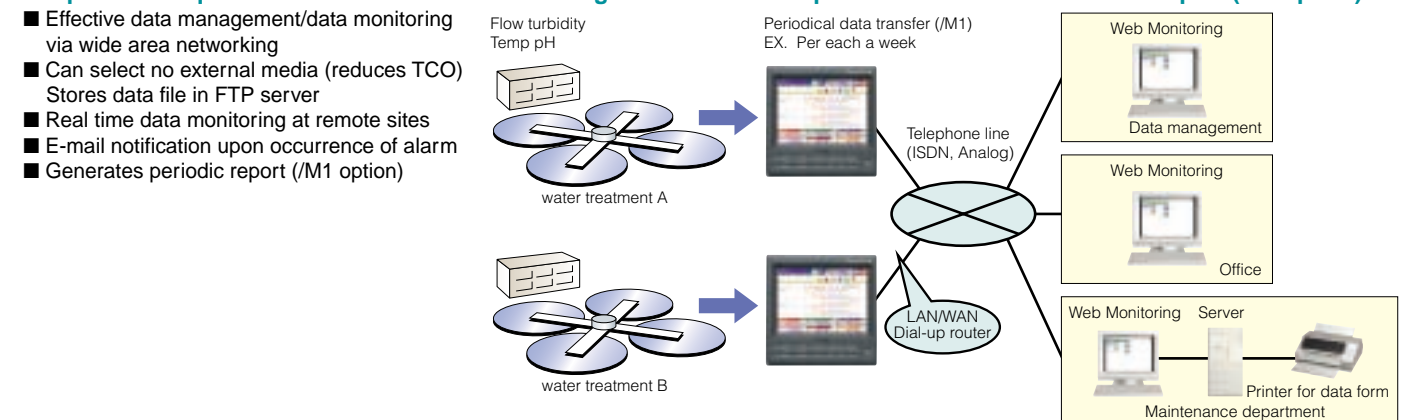
Analysis/Report
Easy data conversion to Excel format

■ Multi points and mixed inputs types (Temperature, F0, pressure, etc) record
■ Improve efficiency by electric record
■ Measurement ON/OFF by external input (option)
■ Storing files by each test

Data Display/Record in Environmental Chamber

FX100 measures accurate environmental test data and displays data on versatile screen.

Accurate measurement Versatile displays

■ Records Data (temperature, humidity, voltage, current)
■ Versatile display enable easy interpretation of data
■ Easy data analyzing with PC software
■ Simple design and paperless recorder reduces TCO

Remote Monitoring for Water Distribution

Simple data acquisition over a wide area networking is available with optional Ethernet communication port (/C7 option).
■ Effective data management/data monitoring via wide area networking
■ Can select no external media (reduces TCO) Stores data file in FTP server
■ Real time data monitoring at remote sites
■ E-mail notification upon occurrence of alarm
■ Generates periodic report (/M1 option)

Flow turbidity Temp pH

water treatment A

Periodical data transfer (/M1) EX. Per each a week

Telephone line (ISDN, Analog)

water treatment B

LAN/WAN Dial-up router

Web Monitoring

Data management

Web Monitoring

Office

Web Monitoring Server

Maintenance department

Printer for data form

FX100 Specification

Input section

Measurement points:	FX103 3 (three) channels
	FX106 6 (six) channels
	FX112 12 (twelve) channels
Measurement interval:	FX103 250 ms
	FX106, FX112 1s, 2s
Input Types	DCV:20mV, 60mV, 200mV, 2V, 6V, 20V, 50V
	TC: R, S, B, K, E, J, T, N, W, L, U, WRe
	RTD:Pt100, JPt100 (Pt1000: Optional)
	DI: voltage input (TTL), contact input
	DCA:with external shunt register
Simple Calculation:	Differential, linear scaling, square root

Maximum allowable input voltage:
±10 VDC (continuous) for less than 200mVDC range, TC, RTD, DI ranges
±60 VDC (continuous) for more than 2 VDC range

Maximum common mode noise voltage:
250 Vrms AC (50/60Hz)

Maximum noise voltage between channels:
250 Vrms AC (50/60Hz)

Display

Display:	5,5" TFT color-LCD
Display types:	Trend, bar graph, digital, overview, historical, information (alarm, message, memory)
Language:	English, French, Germany, Japanese

Data Storage Function

Internal memory:	Flash memory
External media:	One of the following external media options can be specified: - None, - 3,5" floppy disk, - compact flash memory card (32MB-512MB)
Saving method:	Automatic saving or manual saving
Data type:	Display data, event data
Data format:	Binary format

Alarm Function

Number of levels:	4 levels per channels
Type of alarm:	Higher/lower limits, differential higher/ lower limits, rate-of-change rising/falling limits

Construction

Dimensions:	144(W) x 144(H) x 234(D) mm
Weights:	FX1xx-0: approximately 2.2 kg
	FX1xx-1: approximately 2.5 kg
	FX1xx-4: approximately 2.3 kg
Front panel:	Water and dust proof (based on IEC529-IP65, except external icing test, except for side-by-side mounting)

Model	Suffix code	Option code	Description
FX103			FX100(3ch)
FX106			FX100(6ch)
FX112			FX100(12ch)
External memory	-0		None
	-1		FDD (3.5 inch, 1.44MB)
	-4		Compact flash memory card(32MB)
Display Language	-2		English (German/French/Italian/Spanish)
Option		/A1	Alarm output 2 points *1
		/A2	Alarm output 4 points *1
		/A3	Alarm output 6 points *1
		/C2	RS-232 communication interface *2
		/C3	RS-422-A/485 communication interface *2
		/C7	Ethernet(10BASE-T) communication interface
		/F1	FAIL/memory end output *3
		/M1	Mathematical function (with report function)
		/N2	3 legs isolated RTD
		/N3	Pt1000Ω input
		/P1	24V DC/AC Power Supply
		/PM1	Pulse input 3 points, remote control 5 points (including Mathematical function)*4
		/R1	Remote control 8 points

*1: /A1, /A2, /A3 cannot be specified together.
*2: /C2, /C3 cannot be specified together.
*3: If /F1 is specified, /A3 cannot be specified.
*4: If /PM1 is specified, each /A3, /R1, and /M1 cannot be specified.
*4: If /PM1 is specified, /A2 and /F1 cannot be specified together.
In case that Modbus master function is utilized, either /M1 or /PM1 must be specified.
The TCP/IP software used in this product and the document for that
TCP/IP software are based in part on BSD networking software, Release 1 licensed from The
Regents of the University of California.
• Ethernet is a registered trademark of XEROX Corporation.
• Modbus is a registered trademark of AEG Schneider
• Other company and/or product names are registered trade mark of their manufactures.

Power Supply

Rated voltage:	100 to 240 VAC
Rated frequency:	50/60 Hz
Power consumption:	normal 22 VA, maximum 35 VA

Safety and EMC Standards

Safety standards:	Certified by CSA22.2 No.1010-1, UL61010B-B complies with EN61010-1
EMC standards:	Complies with EN61326-1

Optional Pulse Input Functions (/PM1)

Number of channels:	3 for pulse, and 5 for remote controlling
Applicable frequency:	Up to 100 Hz

Minimum pulse width detection:
Low (close), high (open) : more than 5ms

Optional Relay Output (/A1, /A2, /A3)

Number of outputs:	2,4,or 6 points; energized/ di-energized, hold/non-hold, AND/OR

Optional Serial Communication functions (/C2, /C3)

Connection:	EIA RS232 (/C2) or RS-422-A/485 (/C3)
Protocols:	Yokogawa private protocol
Modbus function:	MODBUS RTU MASTER/ SLAVE

Optional Ethernet Communication functions (/C7)

Connection:	Ethernet (10Base-T)
Functions:	E-mail notification, Web-server, FTP function

Optional Mathematic Functions (/M1)

Number of channels:	Up to 12 channels
Operations:	

General arithmetic operations:
Four arithmetic operations, square root, absolute, common logarithm, exponential, power, relations, logic operations.
Statistical operations: Average, minimum, maximum, and summation
Constant: Available (up to 30 constants)
Digital data input via communication:
Up to 12 data

Report function:
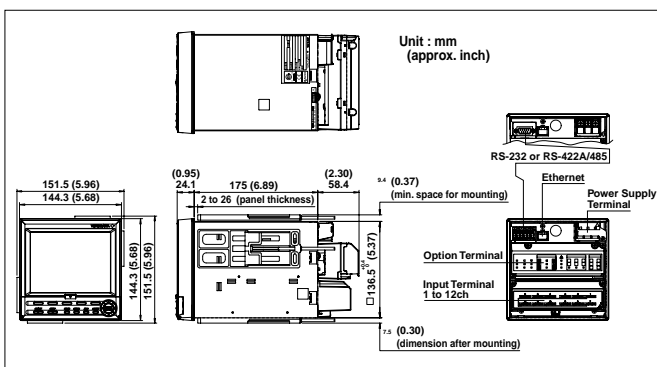|	
Type:	Hourly, daily, hourly+daily, daily+weekly, daily+monthly
Operation:	Average, maximum, minimum, summation
Data format:	ASCII

Optional Remote Controlling Functions (/R1)

Number of channels:	8 points
Operable items:	Memory start/stop, computation start/stop, computation data reset, alarm acknowledgement, event file external trigger, message writing, load setting, time setting, snapshot.

24V DC/AC Power Supply (/P1)

Rated power supply:	24V DC/AC

Allowable power supply voltage range:
21.6 to 26.4V DC/AC

Dielectric strength:	Power supply to ground terminal: 500V AC
Power Consumption:	

Supply voltage	LCD save mode	Normal	Max.
24V DC	7VA	11VA	17VA
24V AC(50/60Hz)	13VA	19VA	30VA

Unit : mm (approx. inch)

151.5 (5.96)
144.3 (5.68)
(0.95) 24.1
175 (6.89)
(2.30) 58.4
*4 (0.37) (min. space for mounting)
2 to 26 (panel thickness)
144.3 (5.68)
151.5 (5.96)
136.5 (5.37)
7.5 (0.30) (dimension after mounting)

RS-232 or RS-422A/485
Ethernet
Power Supply Terminal
Option Terminal
Input Terminal 1 to 12ch

┌─ NOTICE ─
● The mounting hardware is attached on both sides or at the top and bottom (2places) for panelmounting.
● See the general speelfication sheet (GS 04N03A01-00E) for the panel cutout for
side by side or top-and bottom mounting.