



High performance industrial-grade data acquisition systems with wide-ranging application support
High-speed, high-withstand-voltage, high-reliability multi-channel data acquisition system

MX100

PC-Based Real Time Data Acquisition System

MW100

Web-enabled Data Acquisition/Data Logging System



communication interface for MW100
EtherNet/IP™
conformance tested

Modbus/TCP
Modbus/RTU

Designed to perform under severe measurement conditions

High-speed, multi-channel measurement

(Ideal for test lab and process applications)

High withstand voltage rating

(600 VACrms (50/60Hz) continuous)

High noise immunity

(4 channel isolated A/D circuitry)

Multi-interval function

(Measure and record at different intervals)

Scalable architecture to match your size requirements

(1 to 6 slots/unit, max. 1200 ch for 20 units)



Low power consumption
 saves energy resources

MX100 MX100 PC-Based Real Time Data Acquisition System

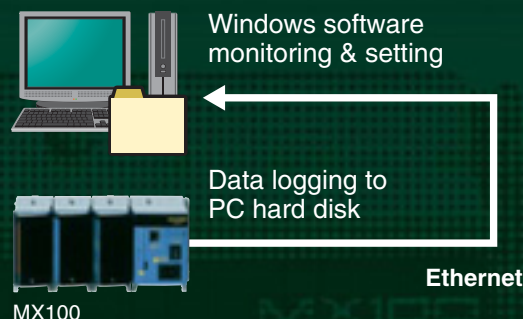
Network Data Acquisition Unit



Get Your System Set Up Quickly, from Desktop Measurement to Large-Scale Data Logging

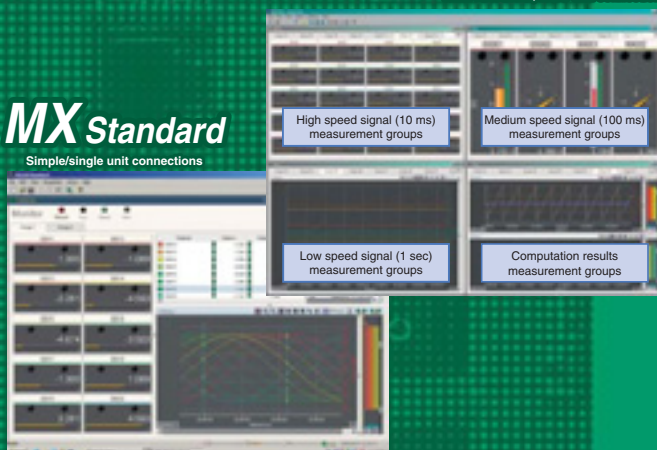
With its modular configuration that offers flexible scalability, the MX100 platform enables you to construct the optimal data logging system for your measuring environment with the freedom of high speed Ethernet, minimal wiring, and lack of constraints with regard to wiring distance. The MX gets you up and running in a short amount of time with a highly reliable, real time data logging system that meets your requirements for R&D, durability testing, quality assurance, and facilities monitoring.

PC-based data logging



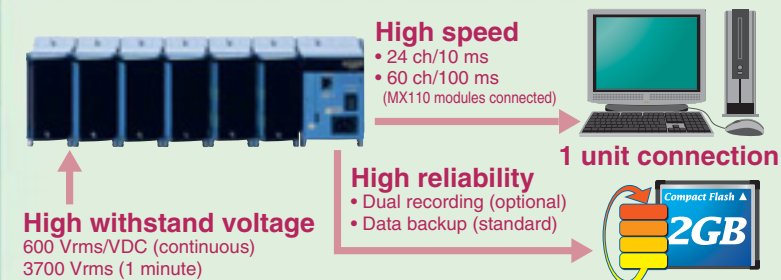
MXLOGGER

Multi-functional, multi-unit connections



MX100 Guide Line

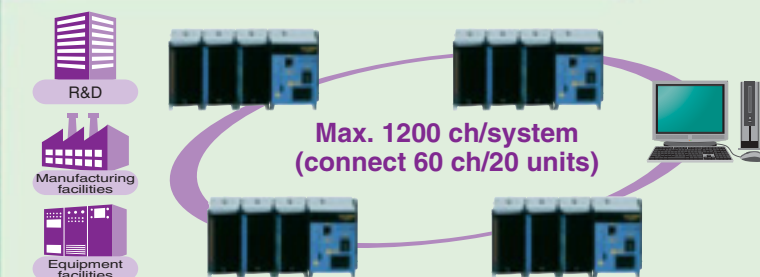
Single Unit Data Logging



MXStandard software (comes standard with the MX100) is designed for connections to a single unit, and is ideal for small-scale data acquisition at 24 ch/10 ms or 60 ch/100 ms.

The main unit is equipped with a CF card that adds to the reliability of your acquisition system by backing up data upon communication disconnections, and through the Dual recording function (optional).

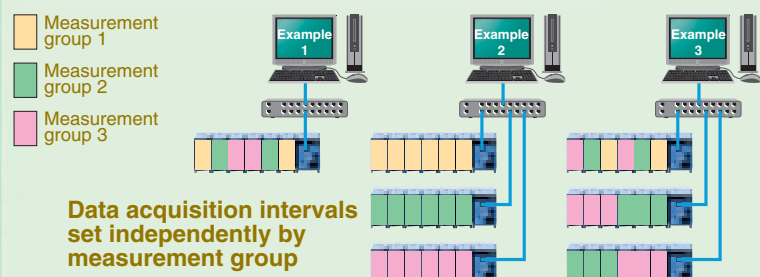
Multi Unit Data Logging



With MXLOGGER (sold separately), you can quickly set up a large-scale data acquisition system of up to 1200 ch/20 units with no programming required.

Equipped with high speed Ethernet communication (100Base-TX), enables creation of flexible measuring systems without the constraints of total cable length and connection formats.

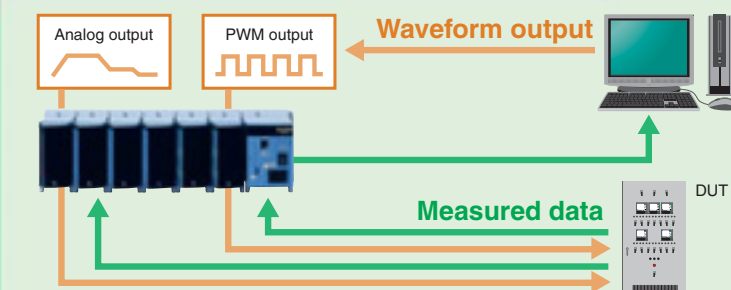
Multi Interval Data Logging



By assigning input modules to one of three measurement groups, you can set measuring intervals for signals from transients to temperature on a group-by-group basis.

Through separate waveform observation by measurement group, you can easily find correlations in waveform changes and identify trends, improving efficiency of analysis of phenomena

Waveform Pattern Output & Data Logging



Enables editing of up to 4 waveform output patterns, waveform data output, and measured data logging on a single unit

Assign waveform output from analog and PWM output modules to transmission output channels for multi-channel output

Web-Enabled Data Acquisition/Data Logging System

MW100

Remote Data Acquisition Unit

MW100 Guide Line

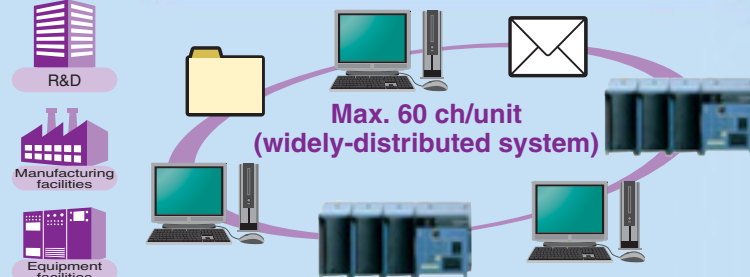
On-Demand, Remote Measuring System



Point a Web browser to URL of the MW100, access the MW100 at the site, and browse any data, any time.

From changing settings to Starting/Stopping data acquisition, the MW100 is easy to operate with a familiar, Web browser interface.

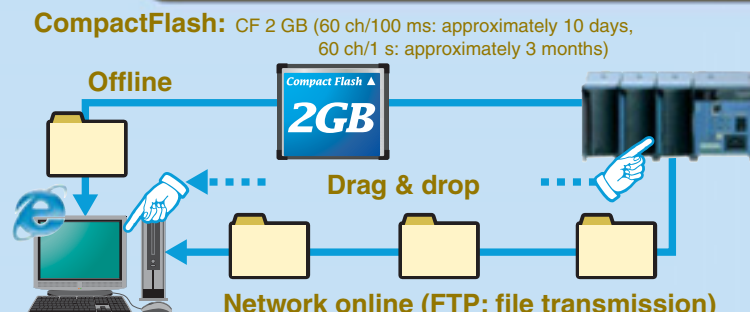
Multi-User & Multi-Access



Use measuring and networking technology to share a broad range of data from the field and access multiple facilities simultaneously with a Web browser to check on the status of equipment.

Comes with DHCP (automatic IP address assignment) and SNTP (time correction function) for connections with Modbus-compatible instruments (requires the /M1 MATH option on the client side)

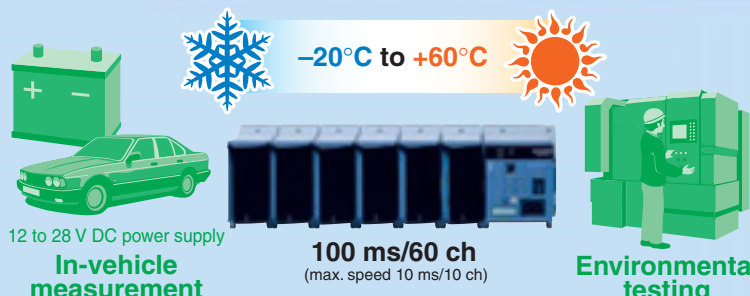
Long Duration Memory & File Transmission



Point a Web browser to URL of the MW100 to send MW100 data files with drag-and-drop ease

Files can be sent automatically as they are created, or manually transferred with the CF card in the main unit

Wide Operating Temperature Range



With expanded high and low operating temperatures, the MW can support a wide range of applications regardless of where it is installed

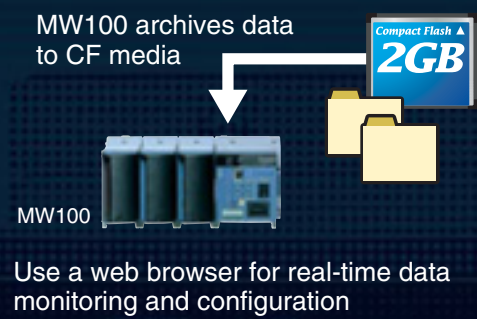
The main unit has a Start/Stop key for data acquisition making it useful as a portable, stand-alone type data logger.



Combined Web Browser Monitoring and Data Logging of Plant and Equipment Data

With your web browser, access any number of MW100s within a plant or installed on equipment to see real-time site conditions and equipment operating statuses. The functionality of the Web browser allows you to share information from multiple locations, and construct highly distributed remote monitoring/data acquisitions systems that are ideal for facilities management and equipment monitoring.

Stand-alone data logging



EtherNet/IP™ Modbus/TCP Modbus/RTU

conformance tested

MW100 standard monitor



User customized monitors (Create dedicated monitors with a Web editor)

Custom Measurement Capability for Wide Ranging Application Support

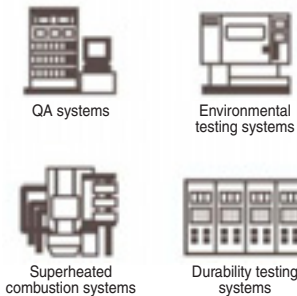
MX110-UNV-M10

High speed, high withstand voltage 10 ch multiplexer! Superior cost performance 100 ms/10 ch general purpose measurement module

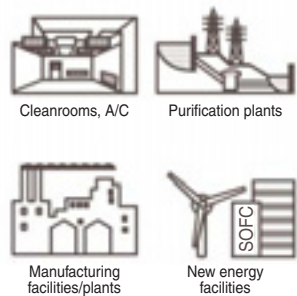
- **Data acquisition**
High withstand voltage data acquisition
- **Universal input**
DC voltage, TC, RTD, contact
Current: Equipped with terminal plate with built-in shunt resistance
- **High withstand voltage (reinforced insulation)**
600 VACrms (50/60 Hz) continuous, 3700 VACrms (1 minute)
- **Removable terminal plate/external M4 screw terminal block**
Removable terminal plate makes wiring easier



Measuring systems for R&D and testing equipment



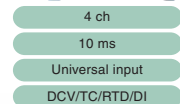
Remote measurement for facilities and equipment management



MX110-UNV-H04

Features multi-channel A/D converters! Superior noise rejection performance 10 ms/4 ch high speed measurement module

- **High definition data acquisition**
High speed (up to 10 ms), high withstand voltage data acquisition
MX100: 10-ms measurement on up to 24 ch/6 modules
MW100: 10-ms measurement on up to 10 ch/3 modules
- **Universal input**
DC voltage, TC, RTD, contact
- **Noise rejection**
Each channel has an integrating A/D converter and digital filter
- **High withstand voltage (reinforced insulation)**
600 VACrms (50/60 Hz) continuous, 3700 VACrms (1 minute)
- **Removable terminals**
Removable terminal block (772064) makes wiring easier



Noise rejection performance for temperature measurement

Digital home appliance high density LSI heat dissipation measurements

Development task: Countermeasures against heat dissipated from LSIs due to increased charge/discharge current and high density packaging achieved with finer electrodes. Measure the effects of heat dissipated from the LSI when installed in the digital home appliance.
DUT: Apply high speed, high voltage pulse signals to the LSI pins which are the points of interest for temperature measurement. Accurate measurement not possible due to pulse noise from drive circuits.
Solution: 4-ch medium speed module's noise rejection enables high precision temperature measurements 600 VACrms (50/60 Hz) continuous, 3700 VACrms (1 minute) withstand voltage enhances safety.

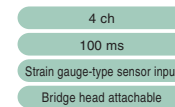
Inverter circuit temperature measurements

Development task: Heat suppression in products with inverter circuits or inverter control products.
DUT: Solid-state relay type measurement instruments are highly susceptible to switching noise-induced common mode noise even if the inverter temperature is measured with a TC.
Solution: 4-ch medium speed module's noise rejection enables high precision temperature measurements 600 VACrms (50/60 Hz) continuous, 3700 VACrms (1 minute) withstand voltage enhances safety.

MX112-NDI-M04

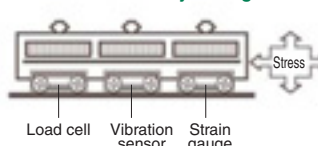
NDIS-type strain connectors for direct connection! For strain gauge-type sensors 100 ms/4 ch strain measurement module

- **Data acquisition**
Acquisition of high speed (100 ms) strain gauge type sensor data
- **Strain gauge-type sensors**
You can connect various kinds of strain gauge type sensors with NDIS type connectors and use them by converting the scale
- **External bridge head**
When using the strain gauge in combination with a bridge head, use the external bridge head unit (701955(120Ω)/701956(350Ω)).
- **Strain conversion cable**
Use a conversion cable (DV450-001) when using sensors without remote sensing.

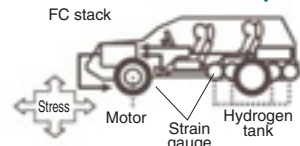


Automotive, rail, and aviation safety standards testing

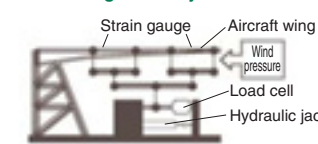
Railcar/Rail Durability Testing



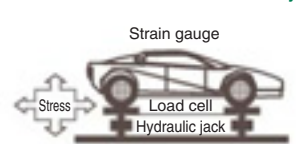
In-vehicle fuel cell and durability testing



Aircraft wing durability test



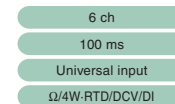
Chassis durability test



MX110-V4R-M06

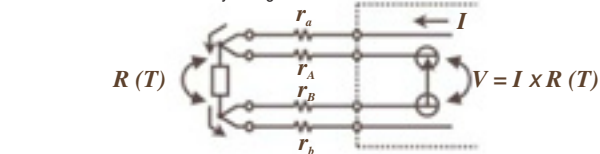
Measure 4 wire RTD and resistance values in 100 ms! Realize highly precise measurement 6 ch/4 wire RTD resistance measurement module

- **Data acquisition**
Data acquisition at high speed (up to 100 ms), high withstand voltage
- **Input types**
Resistance, 4-wire RTD, DC voltage, contact
- **Resistance ranges**
20 Ω, 200 Ω, 2000 Ω
- **4-wire RTD range**
Pt50, Pt100, JPt100, Pt500, Pt1000, Cu10, and others
- **Removable terminal plate**
Wiring made easier with removable terminal plate (772067)

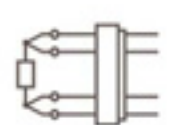


4-wire RTD high precision measurement/resistance measurement

4-wire RTDs are not affected by wiring resistance



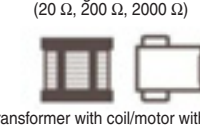
Not affected by contact resistance at the connector



Sensors on the equipment side are 4-wire RTDs



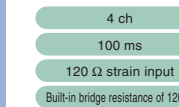
Temperature measurement using Ohm's law (20 Ω, 200 Ω, 2000 Ω)



MX112-B12-M04

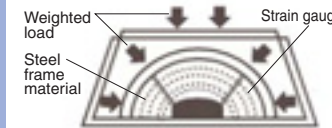
Direct connection with 120 Ω strain gauge! 100 ms/4 ch strain measurement module with built-in 120 Ω bridge resistance

- **Data acquisition**
Acquisition of 120 Ω strain data at up to 100 ms
- **Direct strain gauge input**
120 Ω bridge resistance built in
- **Strain gauge connection**
Set the strain gauge connection type on each channel with a DIP switch
- **Removable terminal plate**
Wiring made easier with removable terminal plate (772068)

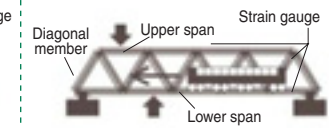


Civil engineering, construction, and building safety standards testing

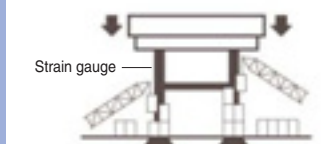
Durability testing and maintenance of tunnel materials



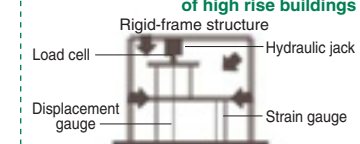
Durability testing and maintenance of bridges



Durability testing for highway construction



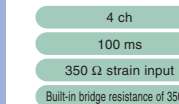
Structural tests for development of high rise buildings



MX112-B35-M04

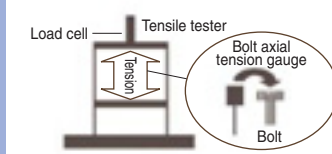
Direct connection with 350 Ω strain gauge! 100 ms/4 ch strain measurement module with built-in 350 Ω bridge resistance

- **Data acquisition**
Acquisition of 350 Ω strain data at up to 100 ms
- **Direct strain gauge input**
Built-in bridge resistance of 350 Ω
- **Strain gauge connection**
Set the strain gauge connection type on each channel with a DIP switch
- **Removable terminal plate**
Wiring made easier with removable terminal plate (772069)

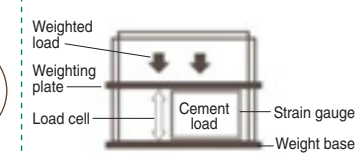


Component and structural safety standards testing

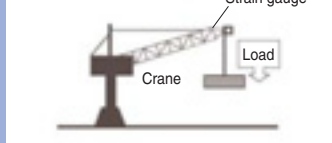
Durability testing of parts/metal plates



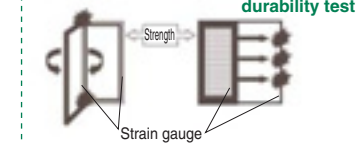
Cement block durability testing



Crane durability test



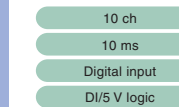
Automatic door (opening/closing) durability test



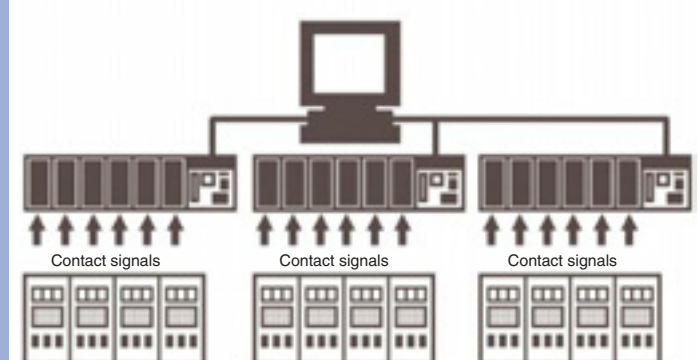
MX115-D05-H10

Multiple contact input signal measurements High performance 10 ms/10 ch contact input module

- **High speed data acquisition**
Acquisition of high speed contact signal data at 10 ms
- **Digital input**
Non-voltage contact or open collector
100 Ω or less: ON, 100 kΩ or more: OFF
Level (5 V logic)
OFF at 1 V or less and ON at 3 V or greater
- **Screw terminal**
Plate with M3 screw terminals (772080)
External M4 screw terminal block (772061/772062)
- **Removable terminal plate**
Wiring made easier with removable terminal plate



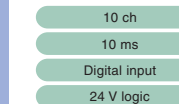
Monitor operational and control signal status from a wide range of equipment



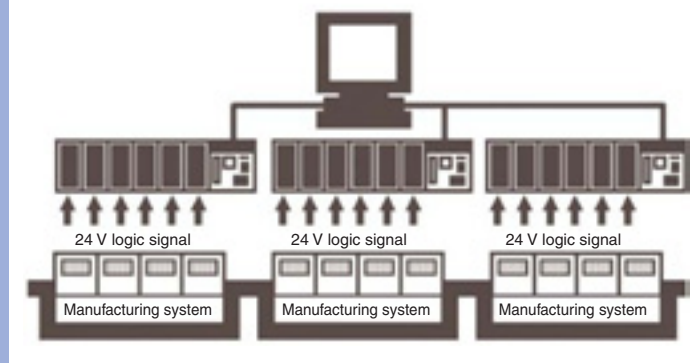
MX115-D24-H10

Multi-channel measurement of 24 V logic signals High performance 10 ms/10 ch contact input module

- **High speed data acquisition**
Acquisition of 24 V logic signal data at up to 10 ms
- **24 V logic input**
Level (24 V logic)
OFF at 6 V or less and ON at 16 V or more
Non-isolated between channels
- **Screw terminal**
Plate with M3 screw terminals (772080)
External M4 screw terminal block (772061/772062)
- **Removable terminal plate**
Wiring made easier with removable terminal plate



Multi-channel data acquisition of 24 V logic signals in manufacturing systems



System Configuration



DAQMASTER

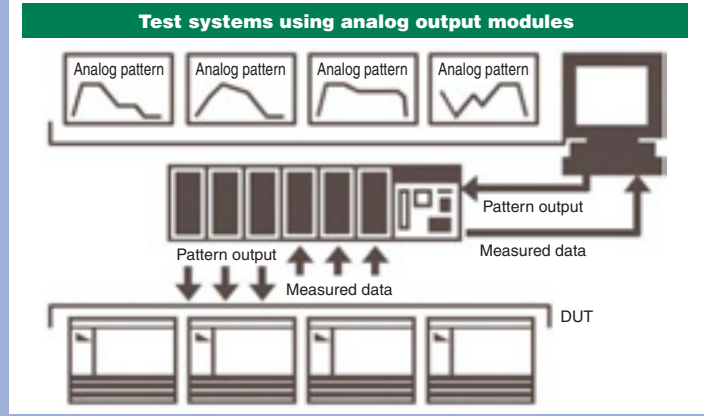
MX120-VAO-M08

Analog output re-transmission and pattern generator
Output patterns can be edited with software

100 ms/8 ch, analog output module

- Analog output**
Output ± 10 V voltage/4–20 mA current on each channel
- Arbitrarily edit four waveform output patterns**
MX100: Edit with MXLOGGER PC software
MW100: Specify the MATH option (/M1) for user editing
Provides synchronized or unsynchronized output of 4 waveforms
- Transmission output**
Assign up to 4 waveform patterns for analog output transmission
Re-transmit a wide range of measured input signals such as temperature, voltage, and strain
- Removable connector terminals**
Wiring made easier with removable connector terminals (772065)
- Also provides a current output (requires an external 24 V power supply)**
No external power supply required for voltage output

8 ch
100 ms
Analog pattern output
Analog transmission output



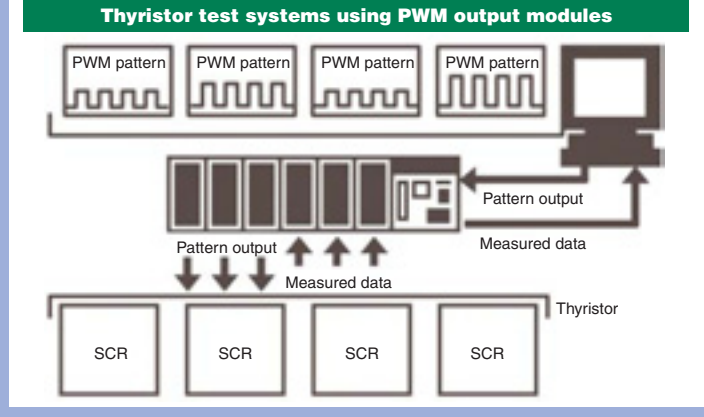
MX120-PWM-M08

PWM pattern waveform analog output
Output patterns can be edited with software

100 ms/8 ch, PWM output module

- Pulse width modulation output**
Pulse interval by ch: Set between 1 ms–300 s, and output
- Arbitrarily edit four waveform output patterns**
MX100: Edit with MXLOGGER PC software
MW100: Specify the MATH option (/M1) for user editing
Enables synchronized or unsynchronized output of 4 waveforms
- Transmission output**
Set 4 waveform patterns to transmission output for multi-channel PWM output
Analog transmission output of various input signals such as temperature, voltage, and strain
- Removable connector terminals**
Wiring made easier with removable connector terminals (772065)
- PWM output requires a 4–28 V external power supply**

8 ch
100 ms
PWM pattern output
Analog transmission output

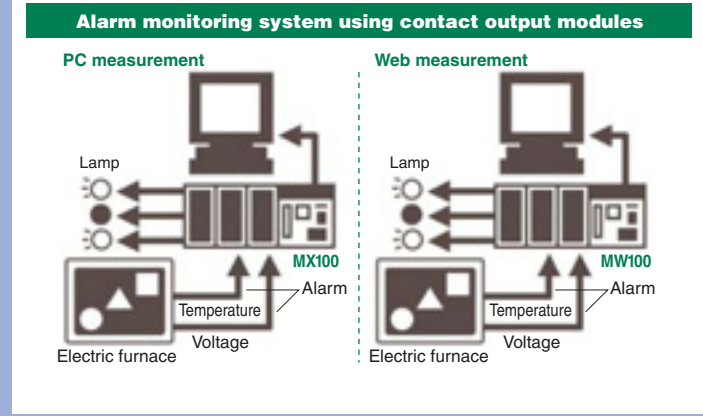


MX125-MKC-M10

Alarm relay outputs
100 ms/10 ch contact output module

- Relay contact output**
Activate an alarm relay output when an input signal level is reached
- Form A relay contacts**
Can be used as alarm relay output
- Contact ratings:**
250 VDC/0.1 A, 250 VAC/2 A, 30 VDC/2 A (Resistive load)
- Removable connector terminals**
Wiring made easier with removable connector terminals (772065)

10 ch
100 ms
DO contact output
Alarm relay output



Removable terminal plate/connector
Input/output module's terminal plate can be removed, making wiring easier
(NDIS strain: excluding MX112-NDI-M04)

772063 772064 772065 772067 772068 772069 772080 772081 772082 772083

Model	Description
772061	Used in combination with the external M4 screw terminal block, RJC (reference junction compensation), and 772062. Applies to MX110-UNV-M10, MX114, MX115-D□□-H10
772062	Used in combination with the input module -M4 screw terminal block connection cable and 772061. Applies to MX110-UNV-M10, MX114, MX115-D□□-H10
772063	Plate with clamp terminals (with RJC), applies to MX110-UNV-M10 and MX115-D□□-H10
772064	Clamp terminal, applies to MX110-UNV-H04
772065	Clamp terminal, applies to MX120-VAO-M08, MX120-PWM-M08, and MX125-MKC-M10
772067	Plate with clamp terminals, applies to MX110-V4R-M06
772068	Plate with clamp terminals with 120 Ω built in bridge resistance, applies to MX112-B□□-M04
772069	Plate with clamp terminal with 350 Ω built in bridge resistance, applies to MX112-B□□-M04
772080	Plate with M3 screw terminals (with RJC), applies to MX110-UNV-M10 and MX114, MX115
772081	Plate with clamp terminal for current with 10 Ω built in bridge resistance, applies to MX110-UNV-M10
772082	Plate with clamp terminal for current with 100 Ω built in bridge resistance, applies to MX110-UNV-M10
772083	Plate with clamp terminal for current with 250 Ω built in bridge resistance, applies to MX110-UNV-M10

Base plate

Base plate available for mounting the various MX100/MW100 I/O modules

No. of slots	Model
1	MX150-1
2	MX150-2
3	MX150-3
4	MX150-4
5	MX150-5
6	MX150-6

Accessories

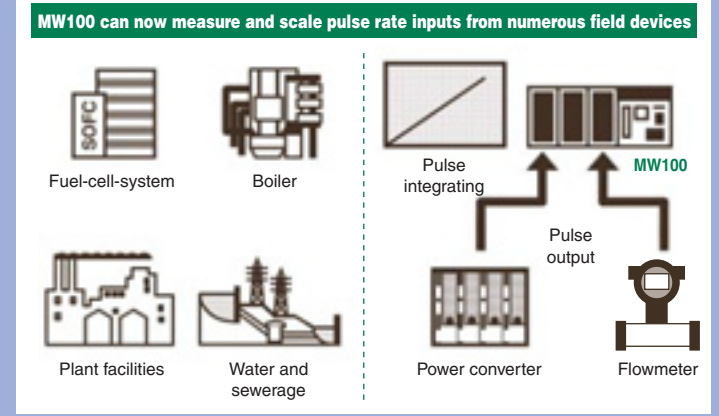
- Connector cover**
Connector cover for open slots
- AC adaptor**
AC adaptor for the DC power model (772075)
Operating temperature range: 0–40°C

MX114-PLS-M10

MW100 pulse integration input module
(10,000 sample/sec integration speed)
-Dedicated MW100-
10 channel pulse input module

- Data acquisition**
Up to 100 ms update of integrated pulse data
- Pulse input**
Non-voltage contact /Open collector
Count every change when the value of 100 k Ω or above changes to the value of 100 Ω or below.
LEVEL (5 V logic)
Count every change when the value of 1 V or below changes to 3 V or above.
- Input range**
Max. speed 10000 pulse/sec (30000 pulse/measuring interval)
- Screw terminals**
M3 plate with screw terminals (772080)
M4 external screw terminal block (772061/772062)
- Removable terminal plate**
Easier field wiring terminations

10 ch
100 ms
10000 pulse/sec
Integrating



/M3 Reporting option for MW100

Creates hourly, daily, weekly, and monthly reports synchronized to recording start and stop. On recording stop action, a report file is saved to the MW100 CF media. A report status display is provided in the web browser monitor mode. Report data is saved to a text file compatible with common software applications.

Up to 60 report channels reporting data from assigned measure or math channels
Report channel data: MIN, MAX, average, summation, and instantaneous values
Display format: tabular digital data display and graph for totalizer data
File format: text file
Report math interval: up to 100 ms
Email messaging: An email message is sent at the report creation time
File transfer: the report file can be transferred to an FTP server at the report creation time

Report logging display

Graph display of totalizer data

Modbus/TCP (Ethernet connection)
Modbus/RTU (RS485 connection)

Display data from indicating controllers and power monitors on the MW100's Web monitor and save the data to the built-in compact flash card (requires the MATH option)

Ethernet (Modbus/TCP) or RS-422/485

Use Excel or other applications to create custom reports from the report text file.

(Up to 16 slaves can be connected)

UT/UP series of controllers PR300 power monitors

Reduced cost per channel for high input capacity systems
Excellent measurement and cost performance
30 ch general purpose input module with 500 ms scan speed

MX110-VTD-L30
MX110-VTD-L30/H3

- Data acquisition**
Up to 500 ms scan speed
- Input types**
DCV/TC/DI
- High withstand voltage**
600 VACrms (50/60 Hz) continuous, 3700 VACrms (1 minute)
- Input terminals**
Standard clamp terminals or M3 screw terminals when /H3 is specified in the model code.
Input terminals are non-removable.

(Clamp terminal)
(M3 Screw terminal)

30 ch
500 ms
DCV/TC/DI
M3 Screw/Clamp

DXAdvanced / MVAdvanced
Automatically assigns expansion input channels

30 ch module
(Model shown: MX110-VTD-L30/H3)

MW100 (30ch) MW100 (60ch)

DXAdvanced / MVAdvanced
MW100 Automatic Assignment Function (/MC1 Option)

The DX2000 and MV2000 can use MW100 system hardware as additional external input channels. They can automatically recognize MW100s on a network and perform automatic assignment of the MW100 input channels to build a large multi-point data acquisition system quickly and easily with no PC requirement. System requirements: /MC1 external input option and /M1 math option. See the product bulletins and general specifications for details.

Modbus/TCP (Ethernet connection*)
Modbus/RTU (RS-422A/RS485 connection)

Automatic recognition
Channels automatically assigned

Automatic recognition
Channels automatically assigned

Modbus client

Modbus server

Ethernet

(Up to 16 servers can be connected)

*: This function only available on a DX2000 and MV2000 with the external input channel function (/MC1 option). Also, MW100s that support auto channel assignment are those with firmware version R2.22 or later.

Data Acquisition Software Package DAQWORX

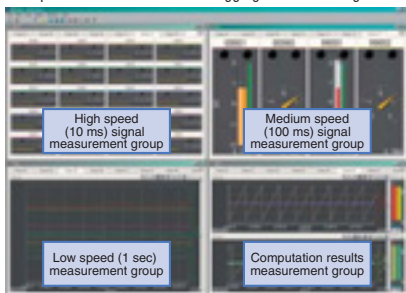
MX LOGGER

for Microsoft Windows 2000/XP/Vista/7

Data Logging Software for MX100 (dedicated)
Incorporates a multitude of data logging and monitoring functions in a low cost and easy to use package.



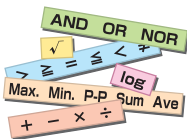
Sold separately



Equipped with software MATH functions

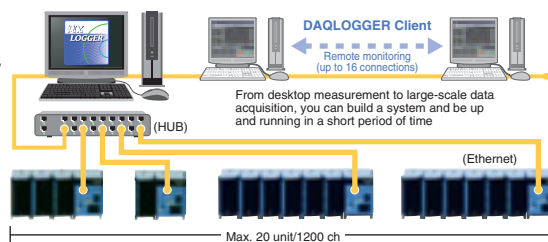
Comes with a diverse range of MATH functions suited to PC software, including arithmetic, logical operators, and statistical calculations.

·MXLOGGER: 240 ch ·MXStandard: 60 ch



Concentration of PC-Based Data Acquisition Technology

- High speed (200 ms)/1200 ch max (20 units) network data acquisition
- Enables highly precise network data acquisition as fast as 10 ms and up to 24 ch
- Multi-interval data acquisition possible with up to 3 measuring intervals on 3 groups
- W recording (data backup on the PC & MX100 CompactFlash)
- Automatically convert created data files to Excel, Lotus, or ASCII and save



Easily edit analog and PWM output module patterns using drag and drop method

- Arbitrarily edit up to 4 waveform output patterns
- Specify patterns for transmission output and output to multiple channels
- Adjust output level arbitrarily with variable volume
- Synchronized or unsynchronized output of 4 waveform patterns

Add Observer

for Microsoft Windows 2000/XP/Vista/7

Combine "AddObserver" Add-on Software with MXLOGGER to create your own, original monitor screens.

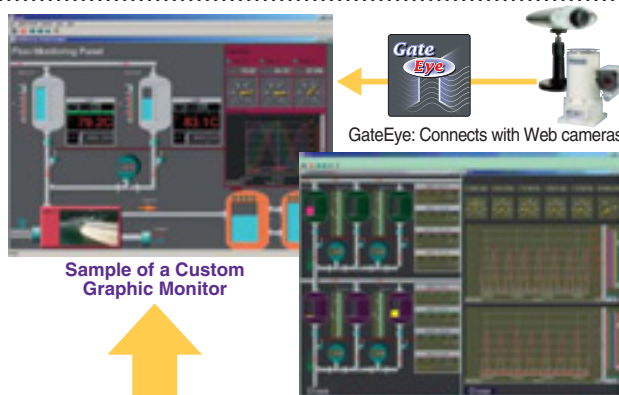
- Easy to operate Builder function lets you construct monitor screens with no technical expertise required
- Full set of objects (trend graphs, assorted meters, thermometers, numerical displays, controllers, diagrams, etc.)
- Connect up to 16 run-time monitors to the network to create a remote monitoring system



Sold separately



Custom Graphic Monitor conveys information powerfully and effectively



Sample of a Custom Graphic Monitor

DAQ LOGGER

for Microsoft Windows 2000/XP/Vista/7

Supports a wide range of recorders, data loggers, controllers, and measuring instruments. Data acquisition systems comprising diverse models can be set up without programming.

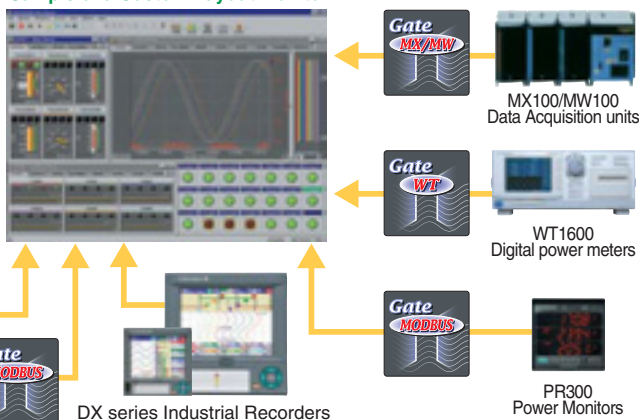
- Data acquisition and recording on up to 1600 channels at 1 second intervals (shortest)
- Real time monitoring of up to 50 groups of 32 channels
- Data acquisition systems allowing connections with up to 32 units of differing models
- Saved data can be redisplayed, printed, converted to other formats, and appended with comments



Sold separately



Sample of a Custom Layout Monitor



MX100 API for Software Development

Use the API to create custom data acquisition software for the MX100. The API comprises a set of functions for communication with the MX100 that are available as DLLs (dynamic link libraries).
Languages: Visual C++, Visual C, Visual Basic, Visual Basic.NET, C#

LabVIEW Drivers

The driver software required to connect the MX100/MW100 with the LabVIEW measuring system software by National Instruments is available for download at our Web site: <http://www.yokogawa.com/ns/>

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Printed in Japan, 205(KP)

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RS-20E