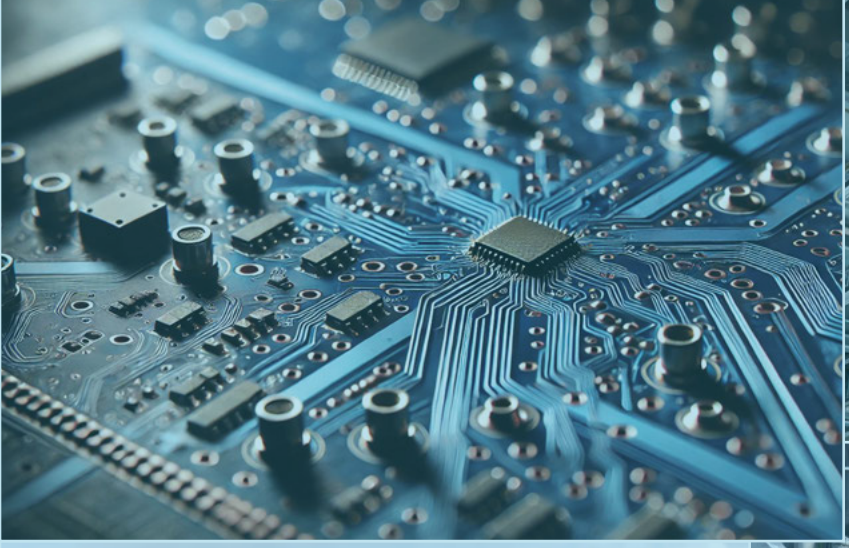
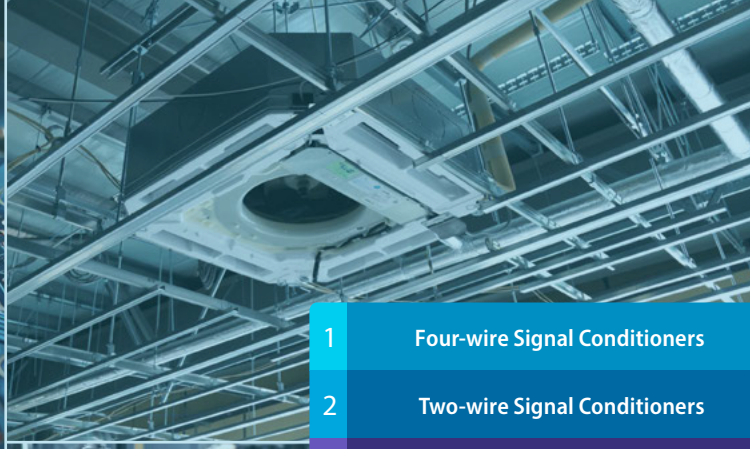
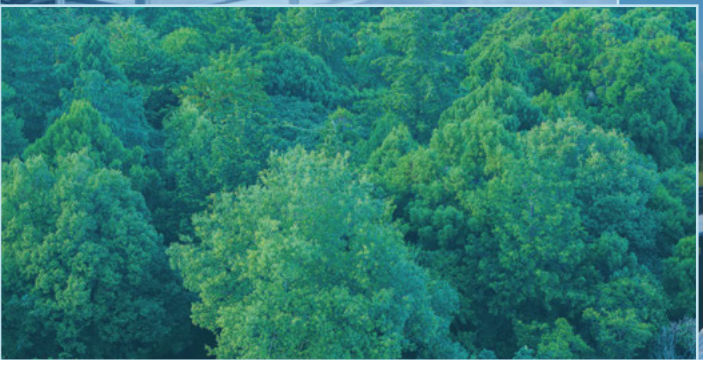




I/O SOLUTION PRODUCTS



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November 2024
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MG CO., LTD.
www.mgco.jp

Make Greener automation

CATEGORY INDEX

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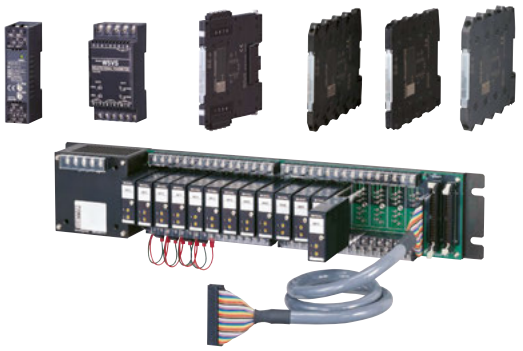

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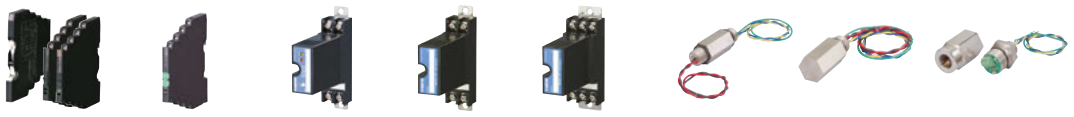

Sensors

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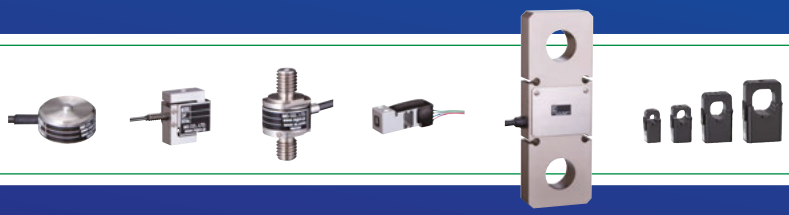
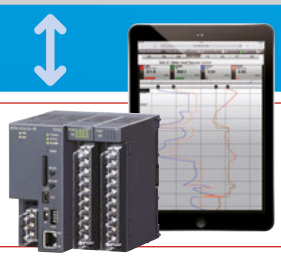


SCADA Software

Limited to Japanese Market



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Tower Lights

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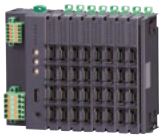

CC-Link CC-Link IE Field CC-Link IE TSN
DeviceNet EtherNet/IP EtherCAT
PROFINET Modbus Modbus/TCP
LONWORKS MECHATROLINK HLS
FL-net T-Link
OPC UA

• Wireless I/O System

For Limited Markets

• Isolation Amplifiers

Power Monitoring Components

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CC-Link Modbus
Modbus/TCP LONWORKS

Final Control Components

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CC-Link
DeviceNet
Modbus

Field

Sensors / Transmitters

Mobile terminals (smartphones, tablets) or mobile network operator services are not our products.

FOUR-WIRE SIGNAL CONDITIONERS

A signal conditioner is used to condition and convert a field sensor signal suitable for processing with the PLC/DCS in a wide variety of process plants and factories. Typical applications are:

- **Signal conversion**
- **Signal isolation to stop ground loops**
- **Signal boosting to increase load drive capability**

Our signal conditioners are available with wide combinations of process signal I/O, power input and mounting configuration. Additionally, we offer the broadest line of signal splitters available.

Choose by Housing and Terminal Access Styles

- Plug-in base socket mounted
- Terminal block style
- Euro terminal block style
- Ultra-slim housing
- Installation base mounted
- Rack mounted
- Field enclosure mounted
- Sensor head mounted
- PCB mounted
- Connector output

Choose by I/O Signal Types

- Universal input
- DC mV, V, mA
- Two-wire transmitter
- Temperature
- Potentiometer
- Strain gauge
- CT & VT
- Frequency and pulse
- Pneumatic
- AC power
- And others

Choose by Functions

- Isolation / Amplification
- Conversion / Transmission
- Signal splitting
- Limit alarm
- Filtering
- Math / Process function
- Linearization

Choose by Power Supply

- AC line powered (4-wire)
- DC line powered (4-wire)
- Output loop powered (2-wire)
- Input loop powered (self powered)

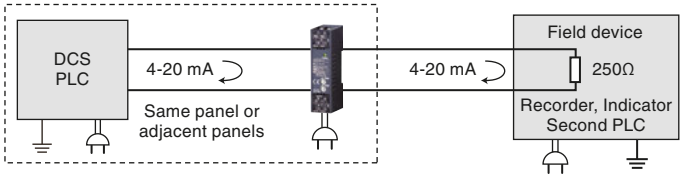
Simulation experiments demonstrate effectiveness of isolators

How to choose DC signal isolators

ISOLATOR APPLICATIONS 1

Isolator is installed between a transmitter (i.e. sensor) and a receiver to galvanically isolate DC signals.
Breaking the path between a field instrument and a control room device minimizes various influences coming from the field site to the control room.
In addition, each instrument separated by galvanic isolation can choose its own ground point independently from other ones, avoiding the 'ground loop' problem.
Lastly, the isolator can provide impedance conversion to beat loop impedance constraints, and signal level conversion (e.g. from 10-50 mA to 4-20 mA) function.

4-wire isolator : 4-20 mA (passive) input / 4-20 mA output / Line powered

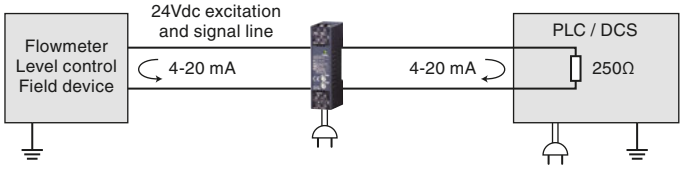


e.g. M5VS DC input, fixed range
W5VS DC input, fixed range, signal splitter
M6xXV DC input, programmable range

Designed primarily for front-ending PLC/DCS systems which are mounted within the same panel or adjacent to it.
The isolator module is powered from terminals separate from signal lines.

- Test and measurement applications
- Manufacturing cells
- Monitoring systems located in-line with the manufacturing process

4-wire isolator / current loop supply : 4-20 mA (active) input / 4-20 mA output / Line powered



e.g. M5DY Fixed range
W5DY Fixed range, signal splitter
M3LDY Programmable linearization

Basic isolator designed to interface a PLC and DCS system with a field instrument.
The isolator module supplies 24 Vdc power to the field device and provides a linearized output signal if necessary.

- Remote field signal monitored by control system
- Water/wastewater treatment
- Petrochemical, tank farms, large manufacturing sites

Low-profile Signal Conditioners

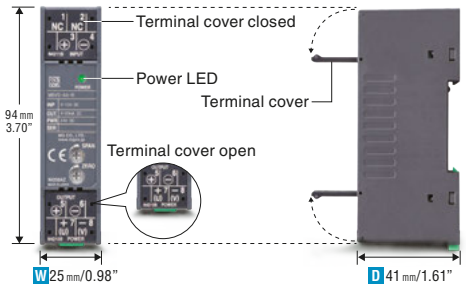
M5 / M5X / W5 Series

- Only 41 mm (1.61 in) deep, terminal block style modules can be installed anywhere, even behind the panel cover.
- M5X Series PC programmable types have a convenient loop test output function.
- W5 Series provides a second isolated output of independent range.

Compact, terminal block style housing

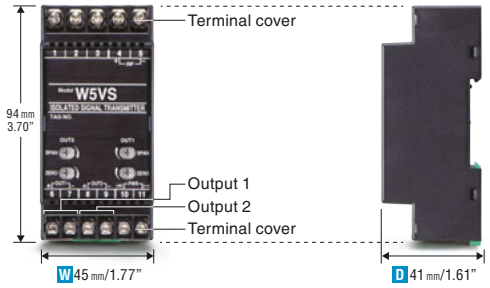
M5 Series

CE | TERMINAL BLOCK | 3-PORT ISOLATION | AC or DC POWER



W5 Series

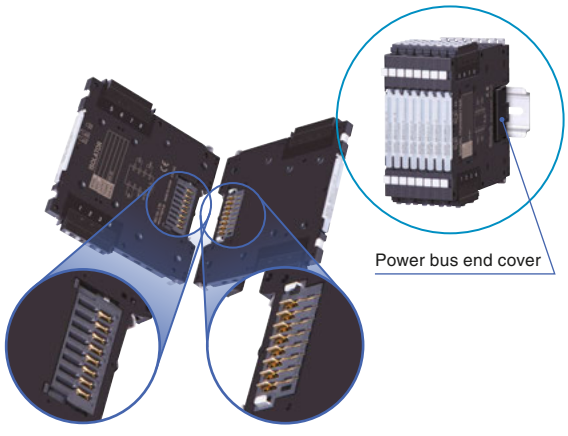
CE | TERMINAL BLOCK | 4-PORT ISOLATION | AC or DC POWER



Ultra-slim Signal Conditioners

M6 / M60 Series

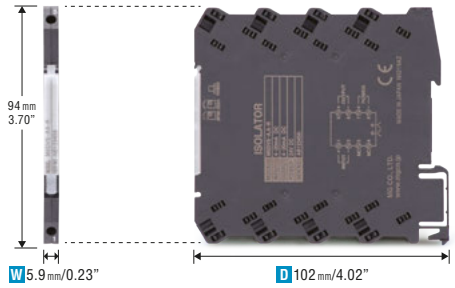
- M6 Series is available with three connection styles: Tension-clamp (M6S), screw terminal (M6N) or euro terminal (M6D).
- M60 Series is available with separable tension-clamp terminal block or mini-clamp (e-CON) connector.
- Low power consumption, high load drive capability



Highly reliable power bus connection: hooks and grooves sliding into each other (M60 Series)

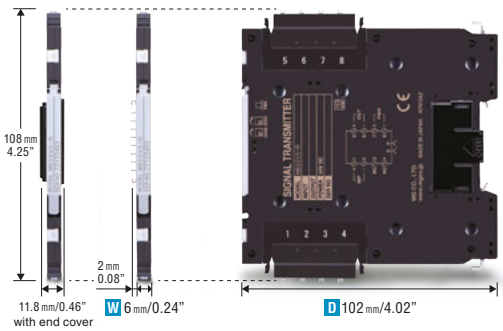
M6D Series

CE | cULus | SPACE SAVING | 3-PORT ISOLATION | AC or DC POWER



M60 Series

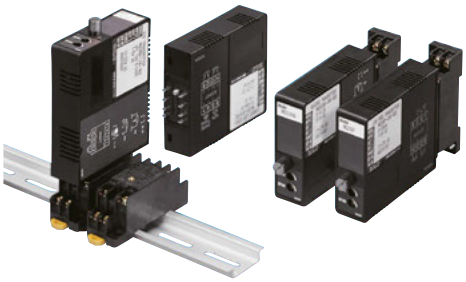
CE | SPACE SAVING | 3-PORT ISOLATION | 4-PORT ISOLATION | DC POWER



Compact Plug-in Signal Conditioners

M2 / M2E / W2 Series

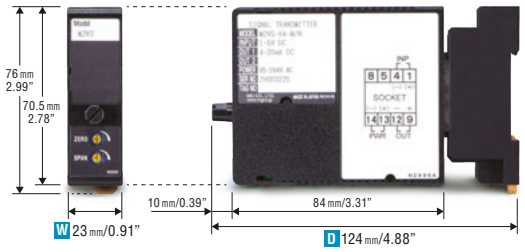
- M2/W2 Series (Mini-M and Mini-MW) features a wide selection of input/output ranges and functions.
- M2E Series with bright, high-contrast OEL (Organic Electroluminescence) display for setup and process monitor
- W2 Series provides a second isolated output of independent range.
- PC programmable types have a convenient loop test output function.
- Base socket included with the modules



Plug-in socket mounted

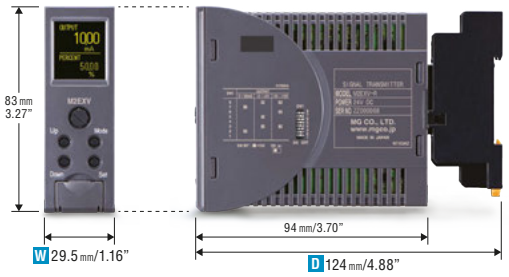
M2 Series

CE UK CA c UL us | PLUG-IN | 3-PORT ISOLATION | AC or DC POWER



M2E Series

CE | PLUG-IN | 3-PORT ISOLATION | AC or DC POWER

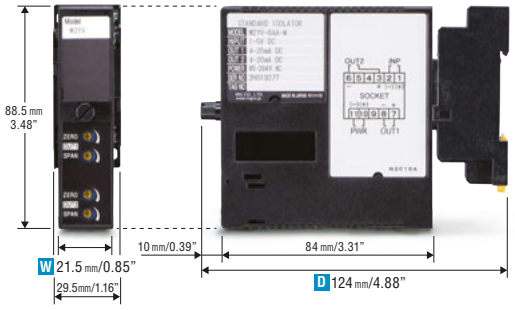


M2E SERIES: High-contrast OEL display makes loop checking easy for commissioning and maintenance

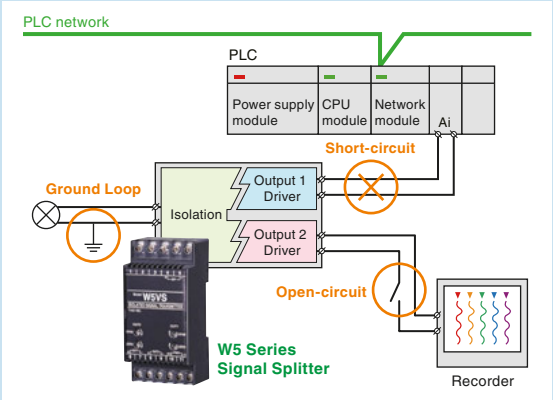
Multi display | Single display | Programming mode

W2 Series

CE UK CA c UL us | PLUG-IN | 4-PORT ISOLATION | AC or DC POWER



Why Isolate the Second Output?



Channel-to-channel Isolation Enhances the Overall System Reliability

Whenever you want to add another device such as a recorder to a sensor signal loop connected to PLC's analog input module, a signal splitter that can output two isolated signals is recommended.

The loop's load capacity may allow to connect one more load in series to (4-20 mA current signal) or in parallel to (1-5 V voltage signal) an existing receiving instrument. However, in such a configuration, short-circuit, open-circuit or ground loop at one part of the loop could affect the entire system.

Galvanically separating each part of the loop is beneficial to contain any damage to the limited section in case of an accident, thus to making troubleshooting easier, minimizing the system downtime.

M3L Series

"One-Step Cal" Configuration without PC

- Enhanced PC configurator software is also available.
- Universal I/O specifications ideal for spare parts stock reduction programs

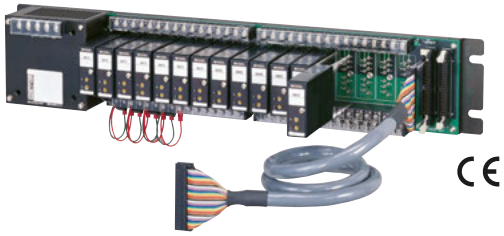
M3S Series

12-mm Wide, Thin-profile Module

- Space-saving modules with separable terminal blocks
- Universal AC/DC power input available

M8 Series

Direct Connection to PLC/DCS Plus Field Output



- Super-mini, plug-in modules
- 4-, 8- or 16-position installation base
- 4-20 mA output module available for control

20 Series Isolation Amplifiers

Customized Hybrid IC

- Greatly saves development lead time for analog isolation circuitry
- Standardized product lineup as a second source of major suppliers
- RoHS compliant
- Two-port or three-port isolation
- ±5 V, ±10 V input/output and other ranges
- Frequency characteristics options
- Withstand voltage up to 5000 Vac

STANDARDIZED MODEL EXAMPLES

20VS5-201
Linearity ±0.005% TYP
G=1 (±0.01% MAX)

20VS5-202
Linearity ±0.01% TYP
G=1 (±0.015% MAX)

20VS8-202
SIP or DIP
3000 Vac isolation

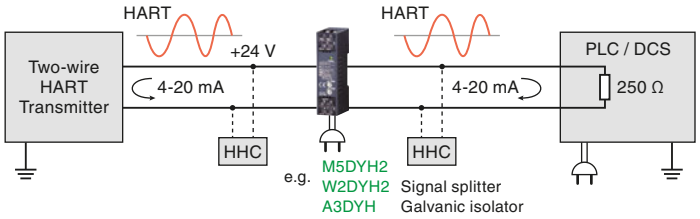
20VS8-210
Frequency characteristics
Approx. 20 kHz

Simulation experiments demonstrate effectiveness of isolators

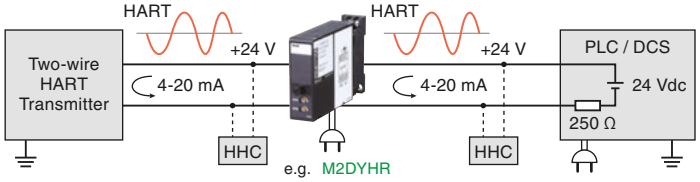
How to choose DC signal isolators

ISOLATOR APPLICATIONS 2

4-wire isolator / current loop supply : 4-20 mA (active) input / 4-20 mA output (source) / Line powered



When the receiver powers the isolator's output loop (sink)



Designed to interface a PLC and DCS system with a field HART transmitter.
The isolator module supplies 24 Vdc power to the field device.
It also allows the HART signal to pass when a technician needs to access the transmitter's process and diagnostic information via the HART signal using a HART hand-held communicator (HHC), from any termination point of the loop at both sides of the isolator.

- Remote field signal monitored by control system
- Water/wastewater treatment
- Petrochemical, tank farms, large manufacturing sites

Function Modules & Retrofit Products

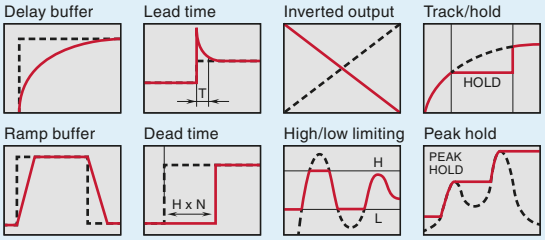
Unique Functions for Stable Process Operations

- Math functions
- Process functions
- Filters
- Unique functions to ensure stable process operations and to solve problems in system upgrading

M5 Series | M6 Series | M2 Series

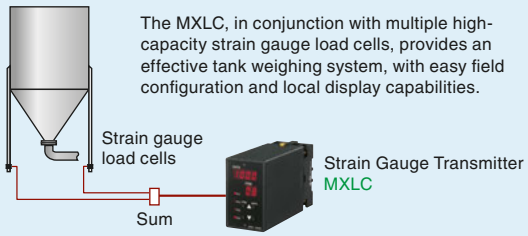
- Temp/pressure compensation
- Addition / Subtraction
- Multiplication / Division
- Ratio / Bias
- Delay buffer / Ramp buffer
- Moving average
- Lead time / Dead time
- Linearization
- Square root extraction
- Palmer-Borlus flume / Parshall flume
- Triangular/v-notch/rectangular weir
- Inverted output
- High / Low limiting
- Track / Hold
- Peak / Valley hold
- High / Low selecting
- Channel switching
- Parameter generator

I/O CHARACTERISTICS EXAMPLES



Strain Gauge Transmitters

Tank / silo / hopper weighing system



The MXLC, in conjunction with multiple high-capacity strain gauge load cells, provides an effective tank weighing system, with easy field configuration and local display capabilities.

"One-Step Cal" Configuration without PC

M3LLC

- DIP switch or PC configurable
- <10 msec. response
- Auto tare feature controlled by PLC or DCS
- Manual on-site calibration

Dual Isolated Outputs

W5LCS

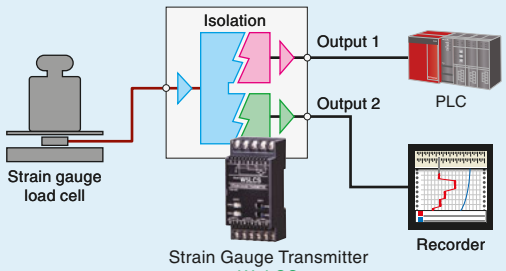
- Low profile: depth 41 mm (1.21 in.)
- Providing a second isolated output of independent range

Fast Response Remote Sensing

LCF

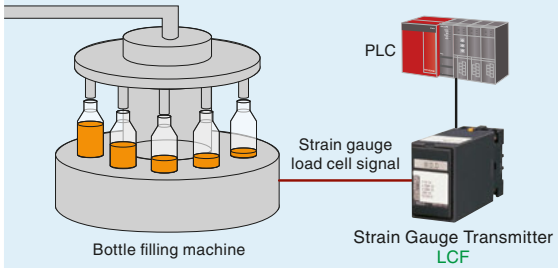
- Six-wire bridge
- <300 microsec. response (2 kHz, -3 dB)

Adding an extra output for a PLC



An extra isolated output signal for a PLC can be safely added to an existing signal loop by using the W5LCS.

High speed weight measurement for filling machines



To control a bottle filling machine that runs in high speed, liquid weight in each bottle must be measured with speed and accuracy. The LCF converts minute load cell signal changes with speed and accuracy.

A limit alarm is used to provide one or more relay/contact outputs when a monitored process signal goes out of preset high or low limits. Typical applications are:

- **Trouble warning (annunciators)**
- **Emergency shutdown**
- **ON/OFF control**

Our limit alarms are available with wide combinations of process signal I/O and power input, featuring also various setpoint access means.

Programmable alarms feature enhanced programmable functions such as failsafe operation, deadband, delay time, latching relay and others, while analog alarms feature basic but easy setting.

Programmable Limit Alarms

Quad/Octad Alarm with OEL Display

M1EA Series

- Multi-line display showing parameters and selection in text: intuitive, easy programming
- 4-point SPDT or 8-point NO or NC contact (single-channel type)
- 2-point SPDT or 4-point NO or NC contact (dual-channel type)
- PC configuration is also available.

Dual/Quad Alarm with LED Display

AS4 Series

- Simple configuration via the front Up/Down buttons with a help of two displays, by calling parameters' ID numbers (ITEM) and choosing values (DATA)
- Direct sensor input: DC, temperature, potentiometer, strain gauge and CT
- Field selectable sensor type and range
- 2-point SPDT or 4-point NO or NC output

Products' weight test results

Products' weight test may be conducted using a quad limit alarm. Alarm setpoints can be changed at the front end of PLC, without needing to modify the PLC's ladder programs.

Dual/Quad Alarm with OEL Display

M2EA Series

- Multi-line display showing parameters and selection in text: intuitive, easy programming
- 2-point SPDT or 4-point NO or NC contact
- PC configuration is also available.

Panel Surface Mount

KS2V2 / KS2TR2

- 1/16 DIN size (48 mm square) panel cutout
- 1-5 Vdc input (KS2V2) or temperature (T/C or RTD) input (KS2TR2)
- Dual SPDT output

Analog Limit Alarms

Simple Setting, Direct Sensor Inputs

- Various setting methods are available: dial setting, thumbwheel switch setting, rotary switch setting, potentiometer setting.
- Direct sensor input type and extra DC transmitter output (AE-UNIT)

Sensor inputs:
• DC mV, V, mA • Thermocouple • RTD • Potentiometer
• Two-wire transmitter (4-20 mA active input)
• Frequency • Tachogenerator
• AC current/voltage • PT • CT

M2SED

M2AVS

AE-UNIT Series

Four-wire Signal Conditioners Selection Guide




SERIES	M5		W5	M2 / M2E	
Enclosure / Mounting type	41 mm-deep low-profile housing, DIN rail mount			Plug-in base socket, DIN rail or surface mount	
Connection	M3.5 screw terminal		M3.5/M3 screw terminal	M3 screw terminal	
Dual output	---		Yes	(M2WVS)	
Power input	AC/DC			AC/DC	
Isolation	2000V AC (M5/AC powered type: 1500V AC)			2000V AC	
Operating temperature	-5 to +55°C (23 to 131°F) (M5X: -20 to +65°C (-4 to +149°F))			-5 to +55°C (23 to 131°F)	
Standards & Approval	CE (DC powered type)		CE (DC powered type)	M2: CE / UKCA / UL / C-UL M2E: CE	
Range Availability	Fixed range	PC configurable	Fixed range (except W5FV)	Fixed range	PC configurable (M2) Front display setting (M2E)
Isolators & Sensor Inputs					
Input loop powered isolator	M5SN			M2SN	
Isolator	M5YV				
Output isolator					
Universal input		M5XU			M2XU, M2XUM
DC mV, voltage & current	M5VS, M5MV	M5XV	W5VS, W5FV	M2VS, M2WVS	M2FV, M2XV2, M2EXV
DC mV, voltage & current (fast response)	M5VF, M5VF2			M2VF, M2VF2, M2VF3	
Universal temperature input		M5XTR			
Thermocouple	M5TS	(M5XTR)	W5TS	M2TS	M2XT2, M2EXT
RTD	M5RS	(M5XTR)	W5RS	M2RS, M2RS1	M2XR2, M2EXR
Potentiometer	M5MS		W5MS	M2MS	M2XM2, M2EXM
Current loop supply	M5D, M5DY		W5DY	M2D, M2D2, M2DYS	
Current loop supply, SQR				M2DL, M2DNY	
Current loop supply, HART	M5DYH2			M2DYH2, M2DYHR	
Strain gauge			W5LCS	M2LCS	
AC voltage & current	M5TG, M5AC*			M2TG, M2AC	
Power Transducers					
Voltage transformer	M5PT			M2PA, M2PE	
Current transformer	M5CT			M2CA, M2CE	
Clamp-on current sensor	M5CTC			M2CEC	
Multi power transducer		M5XWT, M5XWTU			
Frequency I/O					
Pulse to analog	M5PA	M5XPA	W5PA	M2SP	M2XPA3
Encoder		M5XRP			M2XRP2
Analog to pulse	M5AP*			M2AP	
Pulse isolator	M5PP, M5YPD*			M2PP	
Pulse scaler, divider	M5PRU*			M2PRU, M2PDU	
Pneumatic Transducers					
19.6-98.1 kPa				M2PV	
Function Modules					
Multi function					
Four arithmetic functions		M5XADS, M5XSBS, M5XMLS, M5XDIS		M2ADS, M2SBS, M2MLS, M2DIS	
Ratio/bias		M5XREB, M5XRTS		M2REB, M2RTS	
Linearizer		M5XF			M2XF2
Square root extractor		M5XFLS		M2FL, M2FLS	(M2XF2)
Limiter				M2LMS	
Inverted output		M5XUDS		M2UDS2, M2UDS	
Delay buffer				M2CDS	
Ramp buffer		M5XCRS		M2CRS	
Track/hold		M5XAMS		M2AMS2, M2AMS	
Peak/valley hold		M5XPHS		M2PHS2, M2PHS	
High/low selector		M5XSES		M2SES2, M2SES	
Analog switching module				M2MNV	
Parameter generator		M5XMST		M2MST	

*Under development as of November 2024

Only typical signal conditioner modules and specs are mentioned in this table.
Please visit our web site to confirm availability and specs of specific models.

W2		M6 / M60		M3 / M3S / A3		SERIES
Plug-in base socket, DIN rail or surface mount		Ultra-slim housing, DIN rail mount		18 mm- or 12 mm-wide housing, DIN rail mount		Enclosure / Mounting type
M3 screw terminal		Tension clamp, M3 screw terminal, euro type terminal, mini-clamp (e-CON) connector		Euro type connector terminal		Connection
Yes		(M6xWVS, M60xWVS)		(M3SWVS)		Dual output
AC/DC		DC (M6xYV, M6xXU, M6xVS: AD/DC)		AC/DC		Power input
2000V AC		M6 Series: 2000V AC M60 Series: 1500V AC		2000V AC		Isolation
-5 to +55°C (23 to 131°F)		-20 to +55°C (-4 to +131°F)		M3: -20 to +65°C (-4 to +149°F) M3S: -10 to +55°C (14 to 131°F)		Operating temperature
CE / UKCA / UL / C-UL		M6: CE / UL / C-UL M60: CE		M3: CE / UL / C-UL, M3S: CE A3DYH: CE / ATEX / FM		Standards & Approval
Fixed range	PC configurable	Fixed range	PC configurable (M6) DIP SW setting (M60)	Fixed range	One-step cal (M3L) PC configurable (M3X)	Range Availability
Isolators & Sensor Inputs						
		M6xSN				Input loop powered isolator
		M6xYV, M60xYV		M3SYV		Isolator
						Output isolator
			M6xXU		M3LU2, M3LU	Universal input
W2VS		M6xVS, M6xWVS	M6xXV, M60xVS, M60xWVS	M3SVS, M3SWVS	M3LV, M3SXV	DC mV, voltage & current
W2VF		M6xVF				DC mV, voltage & current (fast response)
						Universal temperature input
W2TS	W2XT		M6xXT		M3LT, M3SXT	Thermocouple
W2RS, W2RS1	W2XR		M6xXR	M3SRS	M3LR, M3SXR	RTD
W2MS	W2XM		M6xXM	M3SMS	M3LM, M3SXM	Potentiometer
W2DYS		M6xDY		M3DY, M3SDY	M3LDY	Current loop supply
W2DNY					(M3LDY)	Current loop supply, SQR
W2DYH2				A3DYH (IS)		Current loop supply, HART
					M3LLC	Strain gauge
W2TG, W2AC						AC voltage & current
Power Transducers						
W2PA, W2PE						Voltage transformer
W2CA, W2CE						Current transformer
		M6xCTC				Clamp-on current sensor
						Multi power transducer
Frequency I/O						
W2SP		M6xPA			M3LPA2	Pulse to analog
						Encoder
W2AP			M6xXAP			Analog to pulse
W2PP		M6xPP				Pulse isolator
						Pulse scaler
Pneumatic Transducers						
W2PV						19.6-98.1 kPa
Function Modules						
			M6xXF1, M6xXF2			Multi function
			M6xXF2			Four arithmetic functions
						Ratio/bias
	W2XF		(M6xXF1)			Linearizer
	(W2XF2)		(M6xXF1)			Square root extractor
			(M6xXF1)			Limiter
			(M6xXF1)			Inverted output
			(M6xXF1)			Delay buffer
			(M6xXF1)			Ramp buffer
			M6xXF3			Track/hold
			M6xXF3			Peak/valley hold
			(M6xXF2)			High/low selector
						Analog switching module
W2MST			(M6xXF1)			Parameter generator

TWO-WIRE SIGNAL CONDITIONERS

DIN Rail-mount Signal Conditioners

B5 Series

Low-profile Terminal Block Style

- Only 41 mm (1.61 in) deep, terminal block style modules can be installed anywhere, even behind the panel cover.
- Power LED
- 2000 Vac isolation between input and output

B3 Series

DIP Switch Configurable

- Input type and range selectable with the internal DIP switches and fine calibration using the front potentiometers
- Wide supply voltage range 12-45 Vdc
- 1500 Vac isolation between input and output

Field-mount Signal Conditioners

27 / 26 Series

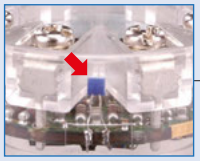
DIN Type B Head-mount Transmitters

- 27 Series: HART or PC programmable type available
- 26 Series: Fixed range

27 Series

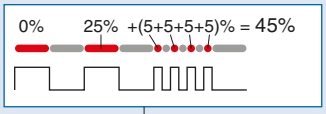
26 Series

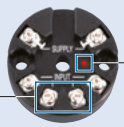
High Accuracy



Pt100 CJC sensor placed between the input terminals (27HU, 27U, 27TS)

Function Monitor LED





Flashing patterns of the light can tell you input signal level in 5% increments (27R, 27RS, 27PM)

B6U / B6U-B

Universal HART Temperature Transmitters

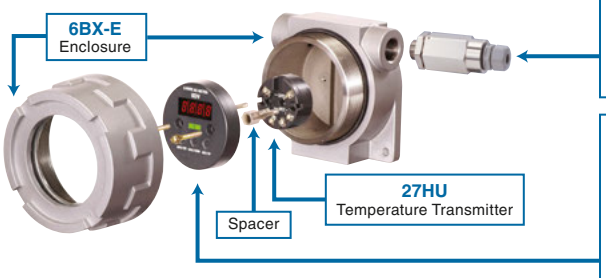
- Plug-in two-line LCD display
- HART programmable
- User's own temperature calibration tables can be used.
- IP66 / IP67 field enclosure; Stainless steel optional

B6U

B6U-B

IP66/IP67

FIELD-MOUNT ACCESSORIES



MD6 Series Surge Protectors

6DV / 6DV-B
4-digit Loop Powered Indicator

6DV

6DV-B

Two-wire Signal Conditioners Selection Guide

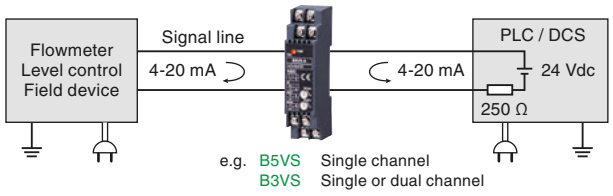
					
SERIES	**B5**	**B3**	**B6 / 27**	**27**	**26**
Enclosure / Mounting type	41 mm-deep low-profile housing, DIN rail mount	18 mm-wide housing, DIN rail mount	Field mount enclosure	DIN type B head mount	
Connection	M3.5 screw terminal	Euro type connector terminal	M3.5/M3 screw terminal	M3 screw terminal	Euro type terminal block
Power input	Output loop powered				
Isolation	2000V AC	2000V AC	1500V AC		
Operating temperature	-40 to +80°C (-40 to +176°F)	-40 to +85°C (-40 to +185°F)	-40 to +85°C (-40 to +185°F)		
Standards & Approval	CE	CE / UL / C-UL / ATEX / FM	CE / ATEX / FM	CE / ATEX / FM	CE
Input loop powered isolator	B5SN				
DC mV, voltage & current	B5VS	B3VS/1, B3VS/2, B3FV			
Thermocouple	B5TS	B3FT		27TS	26TS1
RTD	B5RS	B3FR		27R, 27RS	26R1, 26RS
Potentiometer	B5MS			27PM	
Pulse		B3FP			
Universal input				27U	
Universal input, HART, IS		B3HU, B3HU2	B6U, B6U-B, 27HU-B	27HU	
Universal input, PROFIBUS		B3PA			

Simulation experiments demonstrate effectiveness of isolators

How to choose DC signal isolators

ISOLATOR APPLICATIONS 3

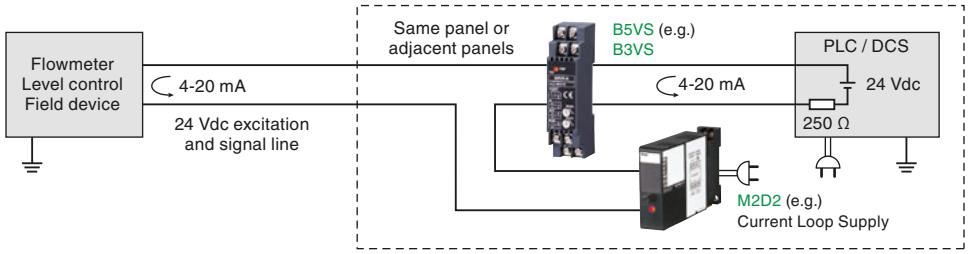
2-wire isolator : 4-20 mA input / 4-20 mA output (loop powered)



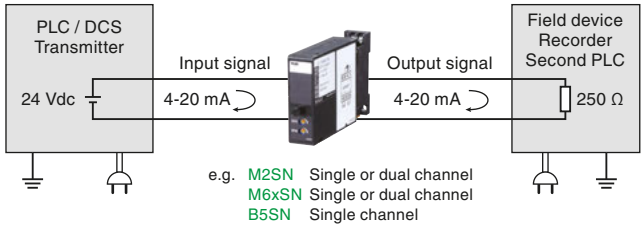
Basic isolator designed to interface a PLC and DCS system that provides a 24 Vdc power supply with a 4-20 mA input.

- Remote field signal monitored by control system
- Water/wastewater treatment
- Petrochemical, tank farms, large manufacturing sites

With the excitation supply to the field device



2-wire isolator : 4-20 mA input (loop powered) / 4-20 mA output



Mainly used to retrofit existing 4-20 mA process loops that need to add another instrument to the loop while maintaining isolation.

- Chart recorder or another PLC
- Backup monitoring system

Low-profile Multi Power Transducers

M50EXWTU / M50XWTU

- Low-profile, terminal block style modules can be installed even in shallow breaker boxes or on wall-mounted panels.
- Clamp-on current sensor input up to 600 A
- Single-phase 2-wire and 3-wire, three-phase 3-wire and 4-wire systems
- Up to 31st harmonic distortion measurement
- Modbus plus two contact outputs (energy count pulse)

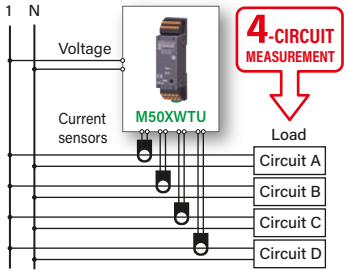
M50EXWTU
with OEL display

M50XWTU

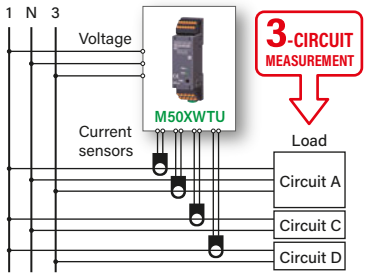
CE Modbus CE Modbus

Single Module can Measure up to 4 Circuits! Space-saving and Economical.

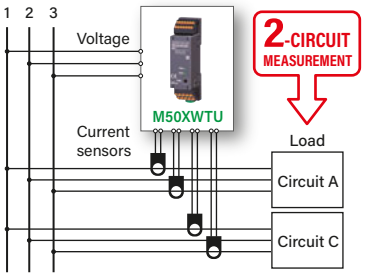
●4 x Single-phase/2-wire circuits



●1 x Single-phase/3-wire + 2 x Single-phase/2-wire circuits

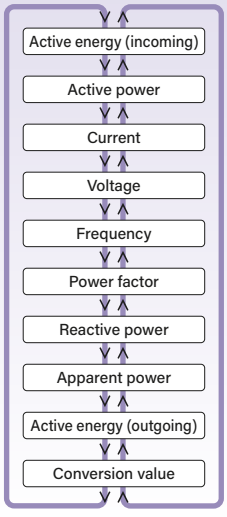


●2 x Three-phase/3-wire circuits

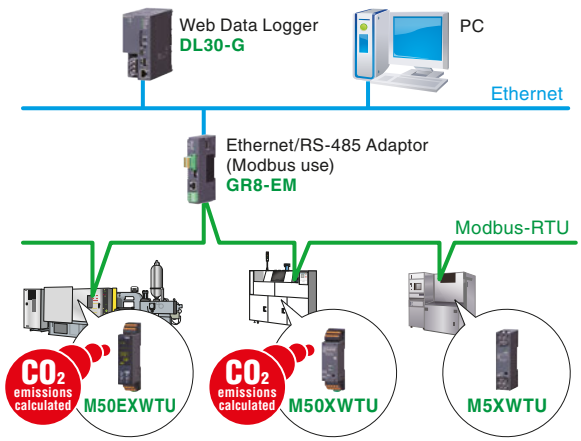


M50EXWTU: High-contrast OEL display

Measuring value display mode



Detailed Monitoring of Energy Usage to Calculate Carbon Footprint of Products



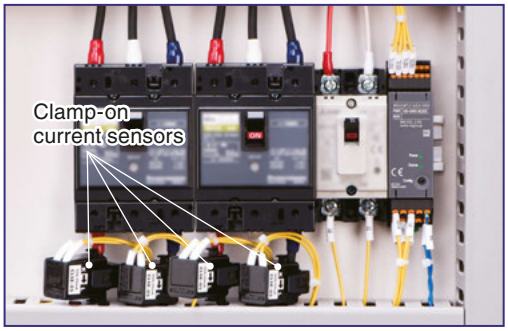
M5X Series Multi Power Transducers

- Only 41 mm (1.61 in) deep, terminal block style modules
- Clamp-on current sensor input up to 600 A
- Up to 31st harmonic distortion measurement (M5XWTU)
- Analog or pulse output option (M5XWTU)
- Basic model M5XWT without harmonic distortion measurement

M5XWT(U)

Modbus

Low-profile Transducer can be Retrofitted.



53U / 54U Series Multi Power Monitors

- Single-phase 2-wire and 3-wire, three-phase 3-wire and 4-wire systems
- Various network communication and Ao/Do combinations selectable
- Up to 31st harmonic distortion
- Software lock
- IP50 front panel (53U, 54U)

L53U: DIN rail mounted

CE Modbus

IP50

53U: 1/4 DIN (96-mm sq.) panel size

CE cULus Modbus

IP50

54U: 110-mm sq. panel size

CC-Link Modbus LONWORKS

R3 Series Remote I/O

- 4-point totalized pulse input module for pulse pickups
- Other heavy current system input modules: AC voltage/current, zero-phase current, wattage
- Temperature, DC and other sensor signal inputs are also available.

CC-Link CC-Link IE Field Modbus Modbus/TCP
DeviceNet PROFIBUS EtherCAT EtherNet/IP
MECHATROLINK LONWORKS FL-net T-Link

R7 Series Remote I/O

- Clamp-on current sensor use: easy installation
- 2-system input

CC-Link Modbus Modbus/TCP LONWORKS

R9 Series Remote I/O

- Clamp-on current sensor use: easy installation
- Up to 8-system input
- Time stamped data logging in SD card

CC-Link Modbus Modbus/TCP LONWORKS

LSMT4 Multi Power Transducer

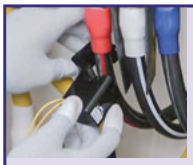
- Measuring AC current, voltage, active/ reactive/apparent power and power factor
- 10 x DC voltage/mA outputs plus 2 x Do

CE

LT-UNIT Series Power Transducers

- True RMS sensing
- M4 screw terminals
- Max. 550 Vac input
- Conforming to IEC 60688

CE



CLSE SERIES:
Easy-to-Install, Spring-loaded Clamp-on Current Sensor

5 A
50 A
100 A
200 A
400 A
600 A

CE

Digital Panel Meters

Bright, Colorful LED

47L Series

- 1/8 DIN size (96 x 48 mm)
- Red, Orange, Green, Bluegreen, Blue and White LED selectable
- 4 or 4 1/2 digit display
- Alarm and/or transmitter output optional
- IP66 front panel
- Separable terminal block

CE IP66


Red


Orange


Green


Bluegreen


Blue


White

High Performance LCD Display

47D Series

- 1/8 DIN size (96 x 48 mm)
- 5 1/2 digit display plus small 20 segment bargraph
- Main display color can be changed from green to red in alarm.
- Alarm and/or transmitter output optional
- 12 V or 24 Vdc sensor excitation
- RS-485 Modbus-RTU interface optional
- IP66 front panel
- Separable terminal block

IP66

Bargraph

Sub display

Large 0.8" High LED Display

40 Series

- 1/8 DIN size (96 x 48 mm)
- 3 1/2 or 4 digit display
- Display hold function

CE

1/32 DIN Size Meters

43 Series

- 1/32 DIN size (48 x 24 mm)
- Easy-to-wire tension clamp connecting
- 24 Vdc powered or loop powered (no external power supply required)
- 43E Series with alarm output

CE cULus

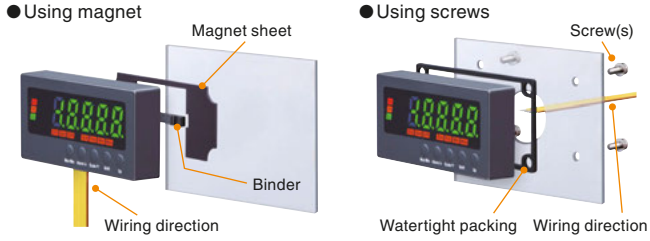
Ultra-slim Housing with Flat Rear Surface

47NL Series

- 1/8 DIN size (96 x 48 mm)
- Large 16 mm-high, 4 or 4 1/2 digit display: Bright and colorful
- Mountable on standard 30 mm round panel cutout
- Tension-clamp or screw terminal block for electrical connection
- IP66 (except for magnet mounting)
- Moving average function to suppress display flickering
- High/low alarm trips

CE IP66

Mounting of Tension-clamp Terminal Block Type



Digital Panel Meters Selection Guide

APPLICATION	47NL	47L	47D	40	43
DC input, input loop powered	47NLN, 47NLNT	---	---	40DN	43AL1
DC input	47NLV, 47NLVT	47LYV, 47LV	47DV	40LV, 40DV1	43DV2, 43EV
Thermocouple input	---	47LT	47DT	40DT	---
RTD input	47NLR, 47NLRT	47LR	47DR	40DR	---
Potentiometer input	---	47LM	47DM	---	---
2-wire transmitter input (with excitation)	47NLDY, 47NLDYT	---	---	---	43EDY
Strain gauge input	---	47LLC, 47LLC2*	---	---	---
AC current / voltage input	---	47LAC	47DAC	---	---
PT input	---	47LPT	---	40DPT	---
CT input	---	47LCT	---	40DCT	---
Frequency input (AC line voltage)	---	47LHZ	---	---	---
Frequency input	---	47LPA	---	---	---
Pulse input totalizer (6 digits)	---	47LPQ	---	---	---

*Under development as of November 2024

Bargraph Indicators

48N Series Bargraph Indicators

- 9/64 DIN size (36 x 144 mm)
- 101-segment, 3 mm wide LED
- Red, amber, green and blue colors
- Alarm and/or transmitter output optional
- Vertical or horizontal mounting
- Custom scale with no extra cost
- IP65 front panel
- Separable terminal block

CE UK CA IP65

48NV / 48NV1
- Single or dual bars

48NAV
- Single bar
- Dual/quad alarm

48NDV
- Single bar
- Dual/quad alarm
- 4-digit digital display

48SV2 Bargraph Indicator

- 18 x 72 mm size
- 51-segment LED
- Red, amber, green and blue colors
- Vertical or horizontal mounting
- Custom scale with no extra cost
- Zero & span adjustments at the front panel
- Separable terminal block optional

CE

48SV2

APPLICATION	48NV	48NA	48ND
DC input, single channel	48NV-1 48NV1-1	48NAV	48NDV
DC input, dual channel	48NV-2 48NV1-2	---	---
DC input, transmitter output	---	48NAVA	48NDVA
4-20 mA input, excitation supply	---	48NAVD	48NDVD
Thermocouple input	---	48NAT	48NDVT
RTD input	---	48NAR	48NDR
Potentiometer input	---	48NAM	48NDM

Field Indicators

6DV / 6DV-B Loop Powered Field Indicator

- 4-20 mA input loop powered
- No external power source required
- Scaling & linearization selectable via the front control buttons
- IP66 / IP67 field enclosure, aluminium or stainless steel
- ATEX Zone 0, FM Class I, II, III, Division 1 approvals

CE Ex FM APPROVED

6DV

6DV-B

IP66/IP67

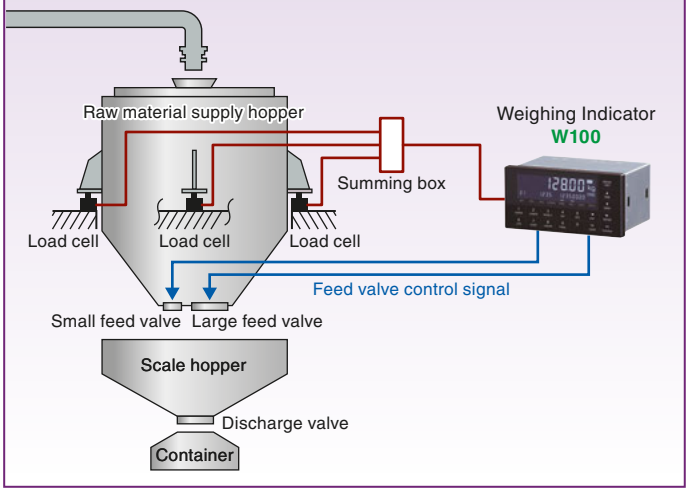
W100 Weighing Indicator

Automatic Quantitative Feeding Control

The W100 repeats precise and stable measurement of liquid or powder to perform a quantitative feeding control while displaying accurate weight values.

- 72 x 144 mm size
- Highly visible LCD with white characters
- Weighing functions: feeding and discharging
- Control functions: simple comparison or sequence control
- Weighing stability functions: digital low pass filter, moving average, stability detection, stable state filter
- Max. 32 preset values (CODE) can be registered.
- 12-point discrete outputs and 12-point discrete inputs
- IP65 front panel
- Modbus communication

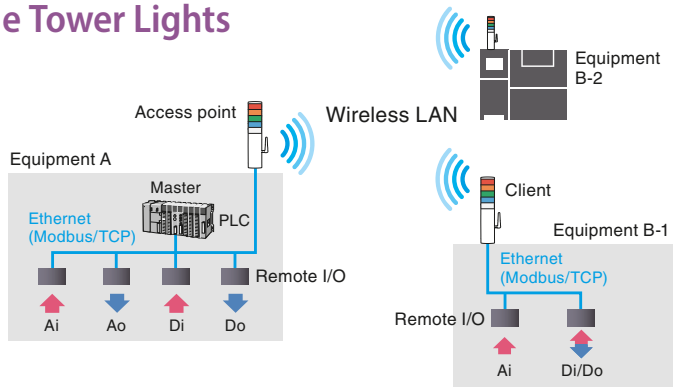
Example of Discharge-weighing System Configuration



IT Series Tower Lights

Wireless & Open Network Capable Tower Lights

- Energy saving, maintenance free LED lights
- Bright and even illumination
- Direct Modbus/TCP and CC-Link control saves wiring and cost.
- Wireless LAN access point and infrastructure mode (IEEE 802.11b/g/n, 2.4 GHz) certified for use in the EU countries
- Licence-free 900 MHz ISM band, FCC Part 15 compliant wireless module certified for use in the US



	WIRELESS LAN		900 MHz ISM BAND		OPEN NETWORK		DISCRETE INPUT		
	For EU countries		FCC Part 15 compliant						
									
LED DIAMETER	Bridge	Access point	Parent	Child	Modbus/TCP	CC-Link	Tall	Short	Pole mounting
40 mm	IT40SW1	IT40SW2	IT40SW5F	IT40SW6F	IT40SRE	IT40SRC	IT40SA1	IT40SA2	IT40SA3
50 mm	IT50SW1	IT50SW2	IT50SW5F	IT50SW6F	IT50SRE	IT50SRC	IT50SA1	IT50SA2	IT50SA3
60 mm	IT60SW1	IT60SW2	IT60SW5F	IT60SW6F	IT60SRE	IT60SRC	IT60SA1	IT60SA2	IT60SA3

The flexibility and scalability of our Remote I/O supports future system upgrades with full isolation between power-communication-I/O and between analog channels. Economical non-isolated analog modules are also selectable.

Applications include: signal concentrator, data collection in flow and level monitoring, injection molding monitoring and control, test stands and prototyping, glass furnace temperature control, pharmaceutical processes, semiconductor manufacturing equipment, assembly line discrete ON/OFF, and IoT equipment.

Remote I/O

Scalable I/O
with free combination of I/O, network and power supply

LARGE NUMBER OF I/O POINTS

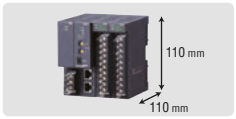
Multi-channel, Scalable Remote I/O

R3 Series

Hot Swappable Modules

Compact, Scalable Remote I/O

R30 Series



Compact size

Slice Type, Scalable Remote I/O

R8/R80 Series

Flexible Configuration without Base

SMALL NUMBER OF I/O POINTS

Ultra-Slim, Scalable Remote I/O

R6 Series

Only 78 mm wide with 8 I/O modules

All-in-One I/O
with I/O, network and power supply in single package

LARGE NUMBER OF I/O POINTS

Compact, Multi-point Remote I/O

R1 Series

12-point Universal Input Module

SMALL NUMBER OF I/O POINTS

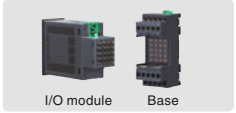
Expandable, Compact Remote I/O

R7 Series

Attached with Discrete I/O Extension Module

Plug-in Remote I/O

R10 Series

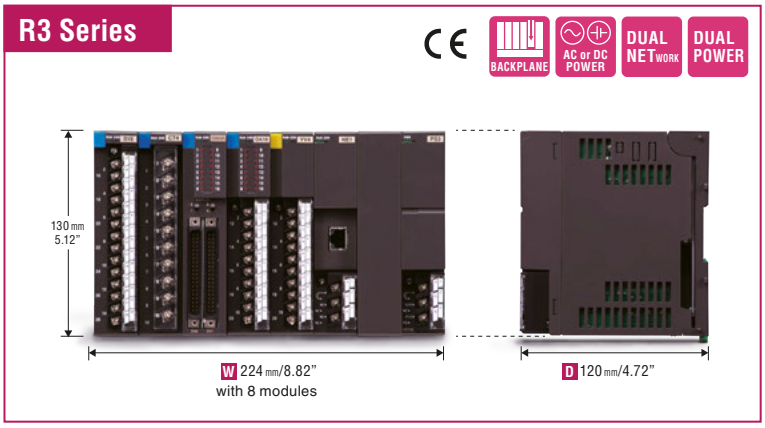


Base Socket Mounted Module

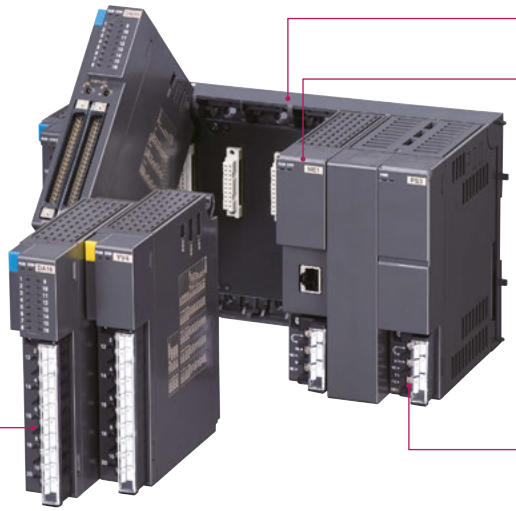
Multi-channel, Scalable Remote I/O

R3 Series

- Wide selection of I/O modules including DC, AC, temperature, strain gauge, pulse trains, AC power, etc.
- 4 isolated to 16 non-isolated analog inputs per module
- Max. 64 discrete I/O per module
- Selections of AC power, CT and VT modules suitable for energy monitoring applications
- Dual redundant communication networks and power supplies



Free Combinations of Network and I/O Modules on Backplane Base

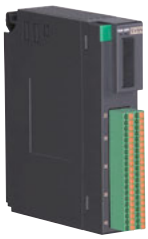


I/O Module

- DC input module ..... 24 models
- Sensor input module ..... 20 models
- AC power input module ..... 16 models
- Analog output module ..... 7 models
- Pulse I/O module ..... 13 models
- Alarm module ..... 7 models
- Discrete I/O module ..... 29 models
- BCD I/O module ..... 2 models
- Function module for air conditioning ..... 2 models
- Temperature control module ..... 1 model

Three Types of I/O Connections

R3 Series
M3 screws
M3.5 screws

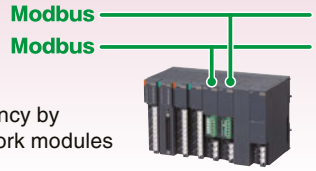


R3S Series
Tension-clamp terminal

R3Y Series
FCN connector

Dual Communication Networks and Power Supplies

Redundant Networks (example)

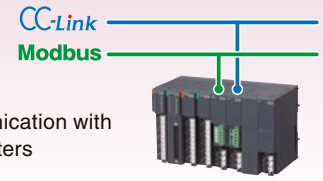


Redundancy by two network modules

Redundant Power Supplies (example)

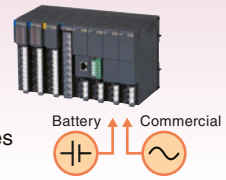
Redundancy by two power supply modules

Two Network Protocols (example)



Communication with two masters

Two Power Sources (example)



Redundancy by two separate power sources

Compact, Scalable Remote I/O

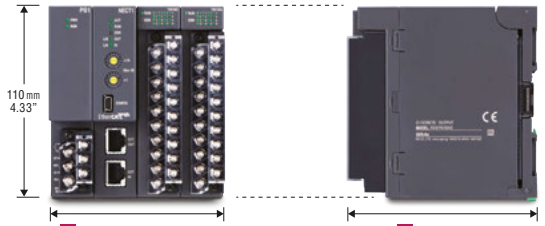
R30 Series

- Ethernet based network protocols
- High-speed internal bus
- 2 or 4 fully-isolated analog I/O per module
- 16 discrete I/O per module
- R3 Series I/O modules can be added by using special connecting base.

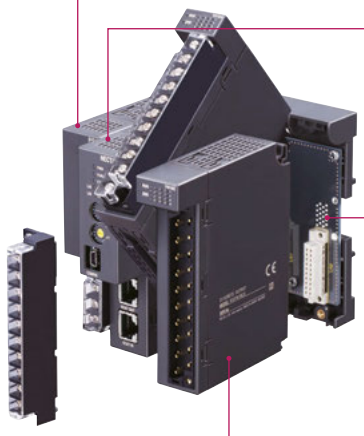
R30 Series + **R3** Series I/O modules

R30 Series

CE BACKPLANE DC POWER



Free Combinations of Network and I/O Modules on Backplane Base



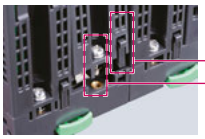
Terminal blocks can be removed/attached with wires on.

- Power Supply Module
- Network Module

CC-Link IE Field CC-Link IE TSN EtherCAT

Modbus/TCP OPC UA

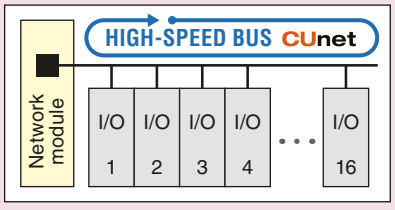
- Backplane Base



Modules are firmly secured to the base by screws even in a harsh environment with heavy vibration.

- I/O Module

Internal Bus Communication Cycle
1 millisecond per 256 points

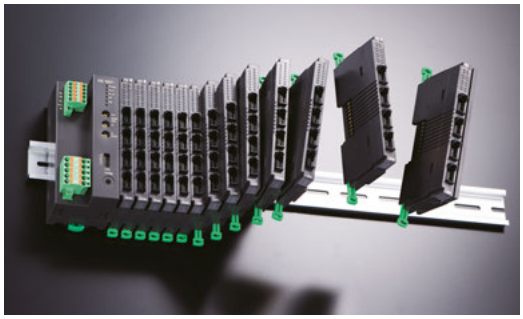


16-point discrete I/O modules
(16 x 16 = 256 points)

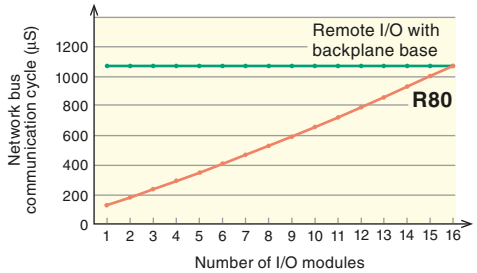
Slice Type, Scalable Remote I/O

R8 / R80 Series

- Slice type modules can be freely added by necessary number of I/O points, saving installation space to the minimum.
- Only 55 mm (2.17 in) deep modules (except connector)
- Interlock and other special function modules requested for semiconductor manufacturing equipment

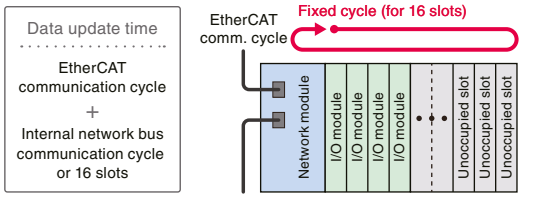


R80 Series Realizes High-speed Internal Bus Communication

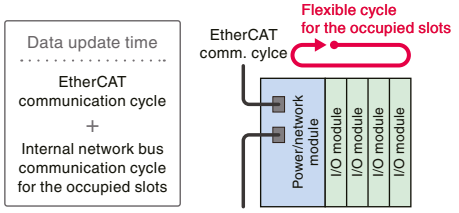


4 analog inputs per module

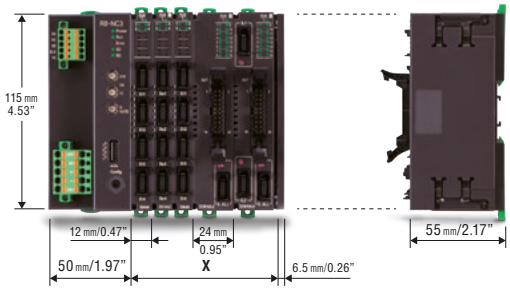
Bus communication cycle: backplane base



Bus communication cycle: slice type I/O



R8 Series

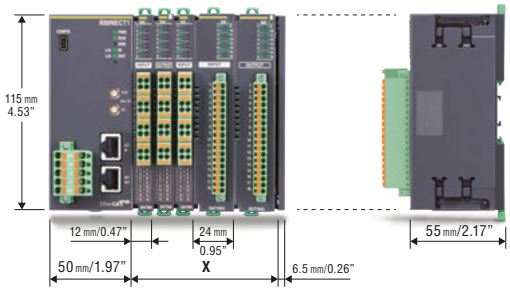


X : Calculate by number of 12-mm and 24-mm wide modules (max. 16)

R8 Series Networks

CC-Link DeviceNet Modbus EtherCAT EtherNet/IP

R80 Series



X : Calculate by number of 12-mm and 24-mm wide modules (max. 16)

R80 Series Networks

CC-Link IE TSN DeviceNet EtherNet/IP EtherCAT

I/O Connection Types

R80 Series
Tension-clamp terminal block

R8 Series

Mini-clamp (e-con) connector | MIL connector | Tension-clamp terminal block

Expandable, Compact Remote I/O

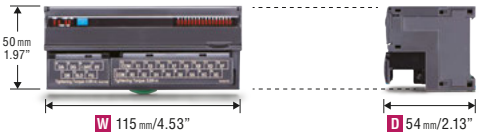
R7 Series

- Palm-top size compact module can handle 4 analog input, 2 analog output or 16 discrete signals.
- 8 or 16 discrete input/output module can be attached to the base module.

CC-Link DeviceNet Modbus Modbus/TCP LONWORKS
MECHATROLINK T-Link FLEX NETWORK® HLS Hi-speed Link System

R7 Series

ALL-IN-ONE DC POWER



Compact Remote I/O for FA Control Equipment

R7 Series

- Compact, terminal block style, all-in-one modules
- 16-point, 32-point or 64-point DI, DO or I/O-mixed modules; analog I/O types are also available.
- Various I/O terminal styles are selectable.

CC-Link

SERIES	EXTERNAL VIEW	I/O TERMINAL STYLE	I/O VARIATIONS, NUMBER OF CHANNELS			
R7F4DC		Mini-clamp connector (e-CON)	DI16	DO16	DI 8 DO8	
		Tension clamp terminal				
		One-touch connector				
R7F4HC		FCN connector	DI32	DO32	DI 16 DO16	

CC-Link IE Field

SERIES	EXTERNAL VIEW	I/O TERMINAL STYLE	I/O VARIATIONS, NUMBER OF CHANNELS			
R7I4DCIE		M3 screw terminall				AI Load cell input

DeviceNet

SERIES	EXTERNAL VIEW	I/O TERMINAL STYLE	I/O VARIATIONS, NUMBER OF CHANNELS			
R7F4DD		Tension clamp terminal	DI16	DO16	DI 8 DO8	
		Mini-clamp connector (e-CON)				
R7F4HD		MIL connector	DI32	DO32	DI 16 DO16	

EtherNet/IP

SERIES	EXTERNAL VIEW	I/O TERMINAL STYLE	I/O VARIATIONS, NUMBER OF CHANNELS			
R7F4HEIP		Tension clamp terminal	DI16	DO16	DI 8 DO8	
R7G4HEIP		M3 screw terminal	DI16	DO16		

EtherCAT

SERIES	EXTERNAL VIEW	I/O TERMINAL STYLE	I/O VARIATIONS, NUMBER OF CHANNELS			
R7I4DECT		Mini-clamp connector (e-CON)	DI32	DO32	DI 16 DO16	AI AO

Modbus

SERIES	EXTERNAL VIEW	I/O TERMINAL STYLE	I/O VARIATIONS, NUMBER OF CHANNELS			
R7K4FM		M3 screw terminal	DI32			
R7G4FM		M3 screw terminal	DI16			

Modbus/TCP

SERIES	EXTERNAL VIEW	I/O TERMINAL STYLE	I/O VARIATIONS, NUMBER OF CHANNELS			
R7K4FE		M3 screw terminal		DO16		

MECHATROLINK-III

MECHATROLINK MECHATROLINK - III

SERIES	EXTERNAL VIEW	I/O TERMINAL STYLE	I/O VARIATIONS, NUMBER OF CHANNELS			
R7K4FML3		M3 screw terminal	DI32	DO32	DI 16 DO16	
R7K4JML3		Tension clamp terminal			DI 32 DO32	
R7G4FML3		M3 screw terminal or Mini-clamp connector (e-CON)	DI16	DO16		
R7F4HML3		MIL connector			DI 16 DO16	
R7I4DML3		Mini-clamp connector (e-CON)	DI32	DO32	DI 16 DO16	
R7G4HML3		M3 screw terminal				AI AO Load cell input and Ai/Ao
R7K4GML3		Tension clamp terminal			DI 16 DO16	

MECHATROLINK-I, -II

MECHATROLINK MECHATROLINK - I, - II

SERIES	EXTERNAL VIEW	I/O TERMINAL STYLE	I/O VARIATIONS, NUMBER OF CHANNELS			
R7K4FML		M3 screw terminal	DI32	DO32	DI 16 DO16	
R7K4DML		Mini-clamp connector (e-CON)	DI32		DI 16 DO16	
R7G4HML		M3 screw terminal				AI AO

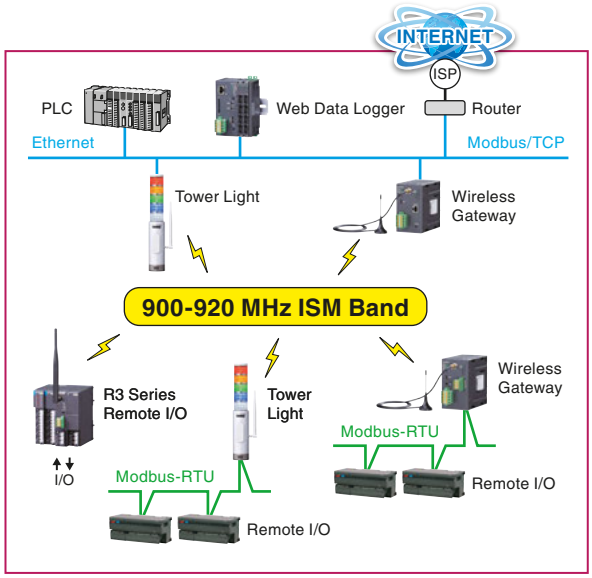
HLS

HLS Hi-speed Link System

SERIES	EXTERNAL VIEW	I/O TERMINAL STYLE	I/O VARIATIONS, NUMBER OF CHANNELS			
R7F4DH		Mini-clamp connector (e-CON), MIL connector, Tension clamp terminal	DI16	DO16	DI 8 DO8 or DI 16 DO16 (MIL connector)	
R7K4DH		Mini-clamp connector (e-CON)			DI 16 DO16	
R7G4HH		M3 screw terminal				AI AO

Wireless I/O System for IoT

- Convenient wireless converters/gateways to collect field sensor data
- Remote monitoring using your mobile terminals via the internet

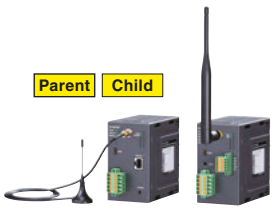


900-920 MHz ISM Band Wireless System

- Modbus-RTU transparent
- License-free
- Multi-hop technology relaying signals over long distance

Wireless Gateway
WL40 Series

USA THAILAND KOREA VIETNAM TAIWAN



Remote I/O R3 Series
Modbus Interface Module
R3-NMW1F

USA

Tower Light
ITxxSW5F
ITxxSW6F

xx : 40, 50, 60

USA

WLAN Tower Light
ITxxSW1
ITxxSW2

xx : 40, 50, 60

EU CE

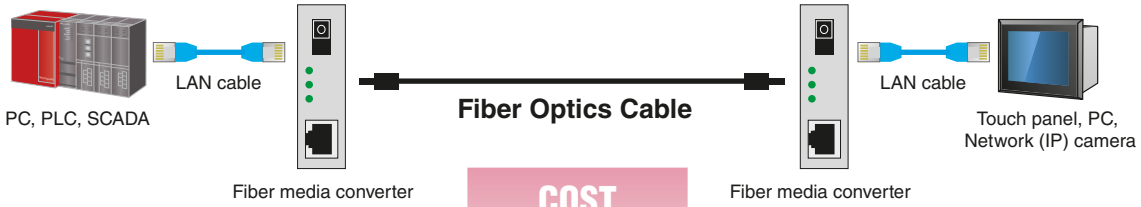
Use of wireless products is restricted by national radio regulations of individual countries. Please consult us for the details of certified products.

BA8NS-CONV Single Pair Ethernet (SPE) Converter

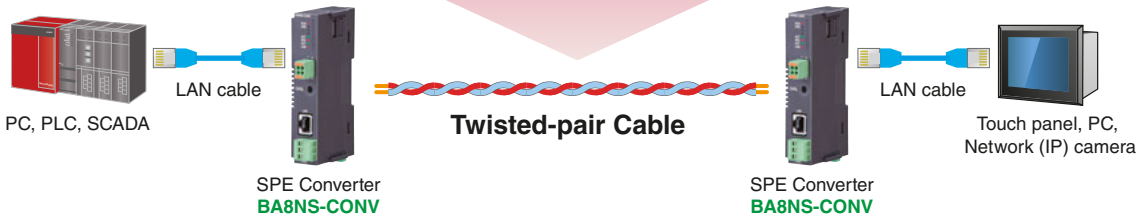
LAN Cables can be Substituted by Twisted-pair Cables

- Transmitting max. 1000 meters (*1) (0.62 mile) in 10 Mbps data rate
- Existing spare twisted-pair cable may be used.

If you want to transmit Ethernet signals over 100 meters (109 yards), fiber optics cables are usually used.
By using a pair of SPE Converters, expensive fiber optics cables and fiber media converters including installation work costs can be saved.



COST REDUCTION



(*1) Standard defined value. Transmission distance depends upon cable categories and environment.

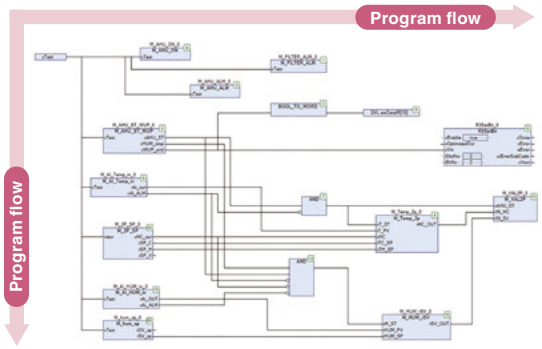
Components for Building Automation

The central HVAC (Heating, Ventilation and Air Conditioning) control system is an air-conditioning system, in which a heat source system, including boilers, chillers, and conveying pumps concentrated in one place, produces and sends chilled water, hot water, or steam to the heat exchangers, e.g. air handling units (AHUs) and fan coil units (FCUs) on each floor, thus performing the cooling or heating of the entire building.

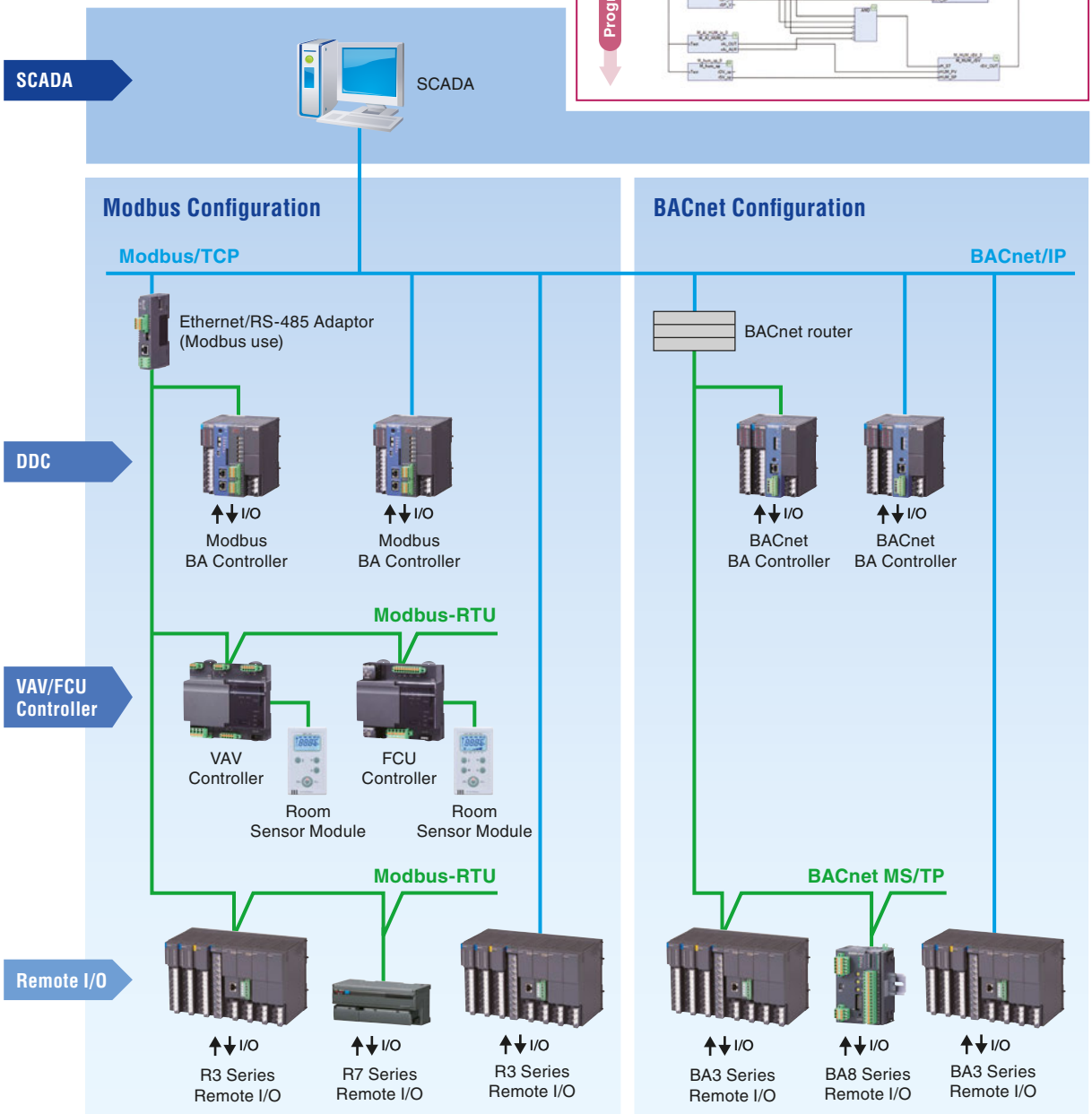
We developed Direct Digital Controller (DDC) and remote I/O modules specialized for building automation.

Some products are only available in Japanese market. Please consult us for further information.

Function Block Programming for DDC



Open Network for Air-Conditioning Control System



TR30-G Tablet Recorder
Web-enabled DAQ System

- Compact package
- No need of dedicated application software other than a web browser
- Flexible built-in I/O modules plus extended Modbus slave I/O
- Large main memory plus auxiliary SD card
- Regular and event e-mailing
- FTP server and client
- Modbus/TCP master and slave
- SNTP client
- User's original browser view

Model TR30-G is a web-based data acquisition system enabling users to view and access stored data via an internet browser. Freed from a dedicated display screen, accessibility and portability of the data is greatly enhanced.

The maximum usable I/O points are:

- 64 analog inputs (16-bit data)
- 64 discrete inputs
- 64 discrete outputs
- 32 pulse inputs (32-bit data)
- 32 function inputs

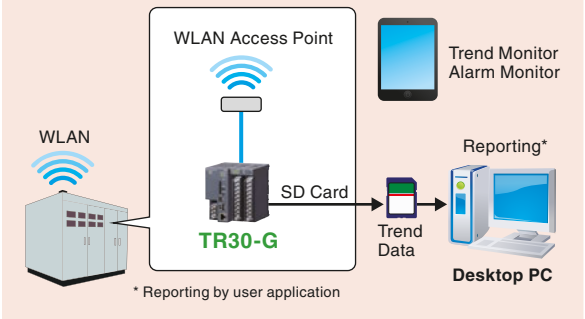
At the maximum of 120 channels can be plotted on the charts and stored at the storing cycle of 1 minute.

The fastest storing cycle is 5 milliseconds for 16 channels, 100 milliseconds for 32 channels.

Freedom from dedicated display screen — Enhanced data accessibility and portability

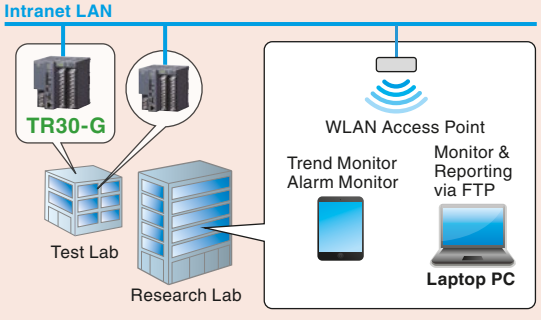
PLANT FIELD MAINTENANCE

Operators can bring in tablets and smart phones to access trend data while freely walking around the site. Data can be transferred to PC via FTP or via SD card.



TEST AND RESEARCH

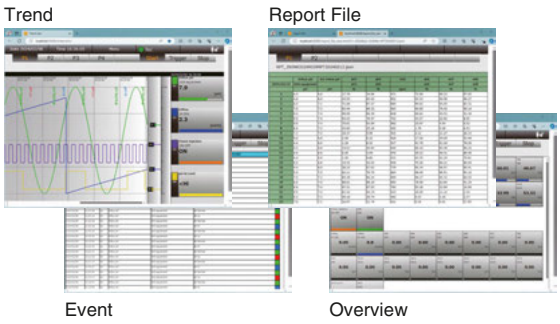
Researchers can access data logged at a test lab in a remote building while working in their own office.



PC Recorder

Paperless Recorder that is as Easy to Use as a Digital Multimeter

- USB Type-C bus powered: no external power supply needed
- Event-triggered recording
- Enhanced screens on a web browser: Trend View plus Overview, Event View and Report File Display



73VR Series Paperless Recorder

- Touch panel operated 5.5 inch TFT color LCD display
- 144 mm square DIN standard panel size
- Data can be transferred in real time to the host PC via Ethernet, viewed and stored on the MSR128 PC Recorder program.

IP65

FUNCTION	MODEL	CE	MAX. INPUT	FEATURES
Remote I/O acquisition	73VR1100	CE	128 points	Installation flexibility, fitting in the tight space of a control panel or machinery chassis
Built-in universal input	73VR2100	CE	12 points	Universal input: independent input type and range selectable per channel
Selectable I/O modules	73VR3100	---	64 points	Compatible with various open networks to communicate with major PLC

Compact Paperless Recorder

71VR1 Series

- 1/4 DIN size (96 x 96 mm) panel mount compact recorder
- 3.5 inch TFT color LCD display
- Direct field inputs at the built-in terminals and optional remote inputs via Modbus RTU

CE IP65

FUNCTION	MODEL	BUILT-IN Ai	REMOTE Ai	Di / Do
Remote I/O	71VR1-E001	---	Ai x 8	Di x 2 Do x 2 (built-in) Di x 6 Do x 6 (remote)
DC input	71VR1-E101	DC x 2	Ai x 6	
Universal input	71VR1-E501	Universal x 3 DC x 2	Ai x 3	

Ultra-compact Paperless Recorder

VR4896E-G2

CE IP55

- 1/8 DIN size (48 x 96 mm) panel mount ultra-compact recorder
- 100 milliseconds sampling intervals
- 2 x DC voltage inputs; 1 x Di for trigger input, 1 x Do for alarm output

SC100/SC200 Series Multi-Function PID Controller

- Two loops of PID control
- 2 x universal inputs, 4 x analog inputs, 5 x contact or pulse inputs, 1 x high speed pulse input
- DCS in instrument format: 2 PID blocks, 48 computation blocks and 12 sequential control blocks; Expansion model with doubled computation blocks are also available.
- Auto tuning function
- Ideal for replacing existing instruments
- High reliability for demanding process use — Built-in manual loader with enhanced security features
- Host communication via Modbus Ethernet TCP/IP or RS-485 RTU
- Peer-to-peer communication via NestBus to expand number of I/Os

CE
IP55

FUNCTION	MODEL
Basic version	SC100
Modbus/Nestbus extension	SC200 SC200W
Basic version with manual loader	SC110
Modbus/Nestbus extension with manual loader	SC210 SC210W
Pulse width output	SC200D

Highly Visible Color Graphic LCD Intuitive Touch Panel Operation

OPERATION VIEWS

ENGINEERING VIEWS

TC10 Series Temperature Controller

- Universal input configurable to T/C, RTD, DC current or voltage independently
- Discrete input for remote trigger (TC10NM, TC10EM)
- Clamp-on current sensor input to detect wire breakdown or overload
- Modbus-RTU slave

TC10CM
• 1/16 DIN size
• One PID loop

CE
IP66

TC10NM
• 1/8 DIN size
• One PID loop

CE
IP65

TC10EM
• 1/4 DIN size
• Two PID loops

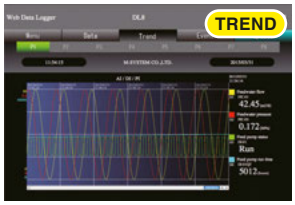
CE
IP65

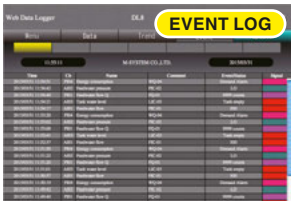
DL8 Series Web Enabled Remote Terminal Unit

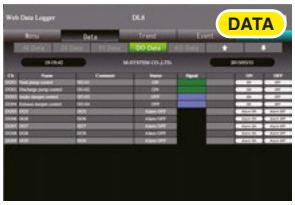
Use Internet and Your Smartphone to Build Up Remote Monitoring System

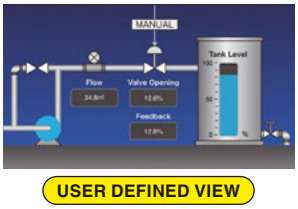
- Simple remote monitoring via the internet without needing to build up a complex PC based system
- Pre-installed user-friendly browser views for remote data access through smartphones or tablets
- Event and regular reporting by e-mails
- Local data stored in an SD card memory
- Various network protocols are usable: TCP/IP, HTTP/HTTPS server, FTP/FTPS client and server, SMTP client, Modbus/TCP master and slave.
- R8 Series remote I/O modules available to accept a wide variety of field signals

Web Browser Views Designed for Mobiles

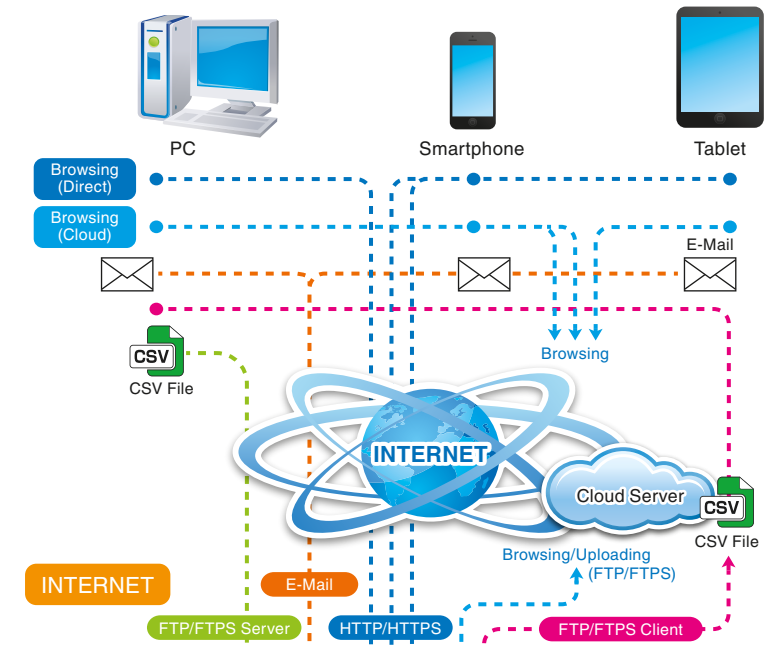


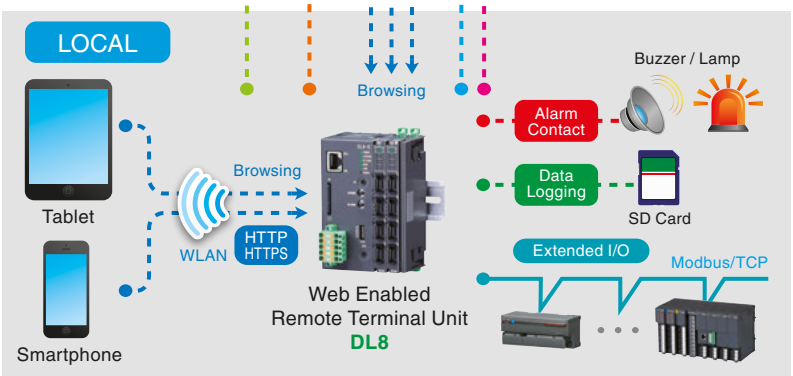




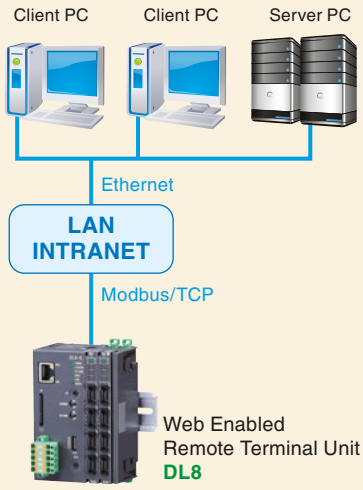


Enhanced Functions with Flexible Configurations

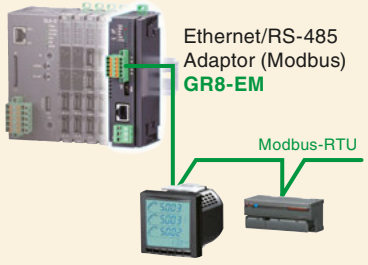




LAN / INTRANET SYSTEM CONFIGURATION



MODBUS-RTU EXTENSION VIA GATEWAY MODULE

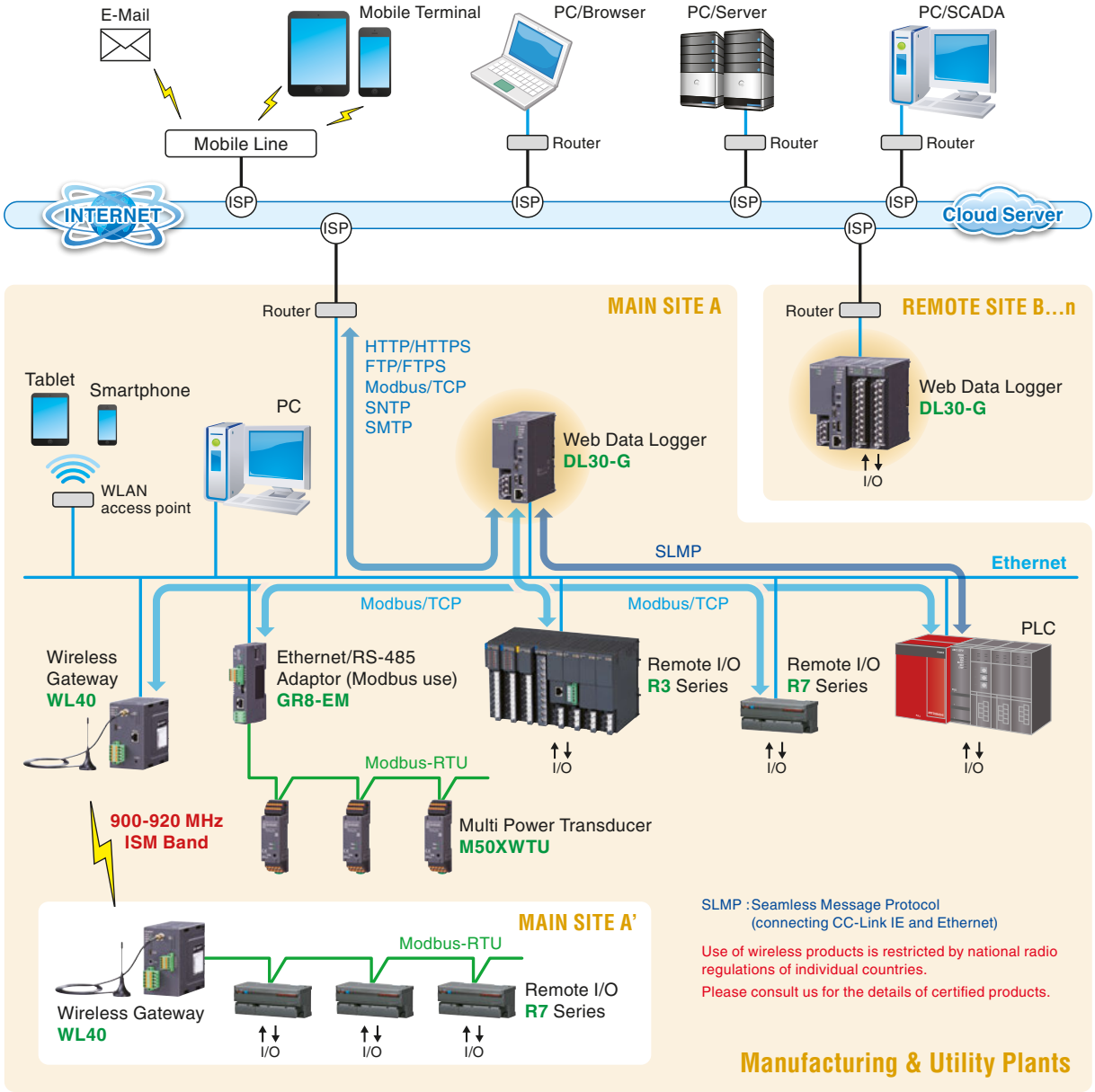


DL30-G Web Data Logger

Edge Computing Remote Terminal Unit for IoT Era

- Max. 128-point data logging in CSV format
- Large main memory capable of storing data for over 10 years; plus auxiliary SD card memory
- Event and regular reporting by e-mails
- Pre-installed user-friendly browser views for remote data access through smartphones or tablets
- Various network protocols are usable: TCP/IP, HTTP/HTTPS server, FTP/FTPS client and server, Modbus/TCP master and slave, SMTP client, SNTP client, SLMP master.
- Analog/digital function registers available for arithmetic processing of I/O measurement values
- R30 Series remote I/O modules available to accept a wide variety of field signals

Communication Control for Logging, Monitoring and Reporting



SLMP : Seamless Message Protocol
(connecting CC-Link IE and Ethernet)

Use of wireless products is restricted by national radio regulations of individual countries.
Please consult us for the details of certified products.

Manufacturing & Utility Plants

Extensive Functions with Convenient Web Browser Views: No Application Software is Required

Main Memory Capable of Storing Data for Over 10 Years

The DL30-G can save at the maximum of 128 points of analog/discrete signal data and events in its large main memory. Files are regularly copied to the SD card as backup.
Various arithmetic functions can be applied to I/O measurement values and the results are saved locally.
Data can be uploaded to a host device via FTP (or FTPS).

Event/Regular E-mail Attached with Report Files

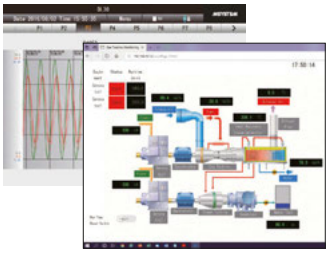
Events such as data abnormalities or machine status (Run-Stop) can be notified by e-mails.
Regular data reporting is also possible.
Notification calendar can be customized to suppress mailing on holidays.
Preformatted spreadsheet report files can be attached to mails.

Web Server for Remote Monitoring

The DL30-G has a web server function equipped with various standard monitoring windows:

- Trend graph
- Data display
- Event log
- Spreadsheet report
- Download

Graphic windows can be created by describing HTML and JavaScript.



Extensive Communication Control

The DL30-G supports various network protocols including those as master/server station, enabling users to build a local stand-alone data logging and basic edge computing system without needing a host PC.

- HTTP/HTTPS server
- FTP/FTPS client and server
- Modbus/TCP master and slave
- SMTP client
- SNTP client (automatic time adjustment)
- SLMP master

RGP30 Remote Graphic Panel

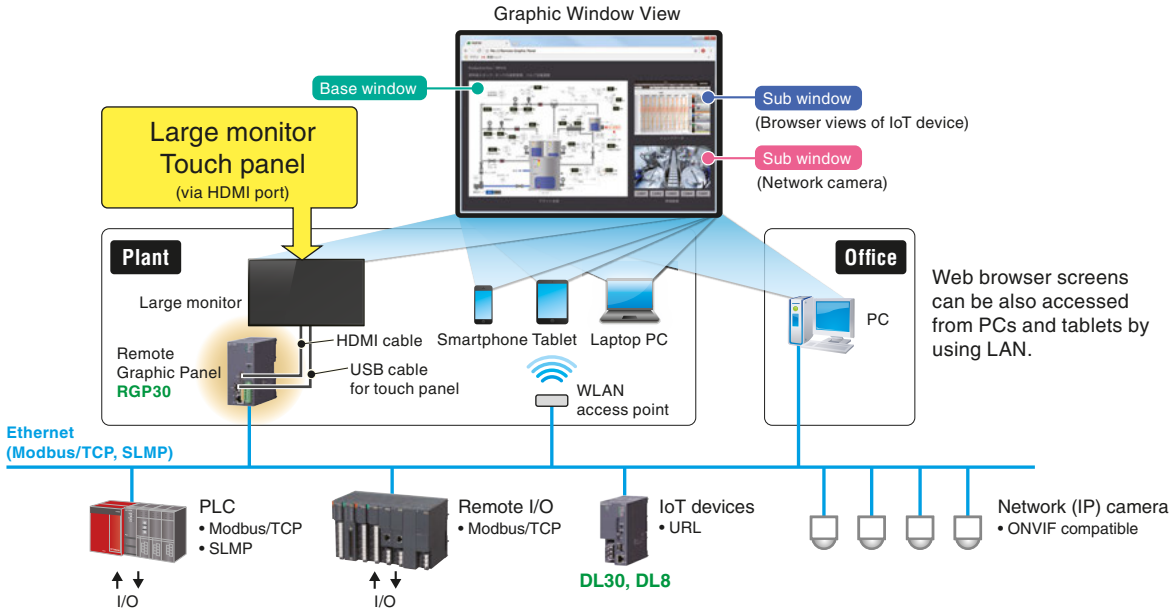
Easy Visualization of Manufacturing Plant Operations

The RGP30 is “a graphic panel without dedicated display” which enables users to freely choose a display device suitable for their applications.

It generates web browser screens showing various kind of data imported from PLCs, remote I/Os, IoT devices and CCTV cameras.

The dedicated graphic designing tool, RGP-Designer, is used to build display panel designs with multiple inline windows and original graphics using graphical parts from the component library.

Commercially Available Large Displays with Cost Performance Can be Connected through HDMI Port



Linear and Rotary Motion Electric Actuators for Valves and Machinery

Thrust (N): 150 N / 300 N / 500 N / 700 N

Linear motion type

Open network interface: CC-Link DeviceNet

MSP4 CE UKCA IP66

150 N (33.7 lbf) / 300 N (67 lbf) / 500 N (112 lbf) / 700 N (157 lbf)

600 N (135 lbf)

Open network interface: CC-Link DeviceNet

MSP5 CE UKCA IP66

150 N (33.7 lbf) / 300 N (67 lbf) / 500 N (112 lbf) / 700 N (157 lbf)

Rotary motion type

See next page

Open network interface: Modbus
Auto-setup function

MSP40 IP66

Open network interface: Modbus
Auto-setup function

MSP50 IP66

150 N (33.7 lbf) / 300 N (67 lbf) / 700 N (157 lbf)

450 N (101 lbf) / 600 N (135 lbf) / 740 N (166 lbf)

Thrust (lbf): 33.7 lbf / 67 lbf / 112 lbf / 157 lbf

MSP10 / PSP10 / PSP20 Linear Motion Electric Actuator

- Stepping motor drive
- High-speed operation control with 1/1000 resolution
- Auto-setup function makes the initial adjustment work simple and quick.
- 4-20 mA output plus Modbus-RTU communication for control and maintenance
- Thrust buffering by built-in coil spring at both ends of stroke
- Terminal box with transparent cover equipped with operating status indicator LEDs
- Operator access to the terminal box only

CE UKCA IP66

MSP10

Thrust, Stroke and Travel Time (examples) Travel time is field-programmable.

MSP10							
STROKE	THRUST						
	450 N	600 N	740 N	780 N	1200 N	1400 N	2500 N
10 mm (0.39”)	2 s	2.5 s	3.3 s	4.2 s	4 s	6 s	7.4 s
20 mm (0.79”)	3.2 s	4 s	5.7 s	7.4 s	7 s	8.4 s	13.5 s
40 mm (1.57”)	5.2 s	7 s	10.4 s	13.9 s	13 s	16.5 s	25.5 s

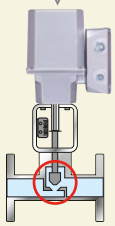
PSP10		
STROKE	THRUST	
	1400 N	2400 N
20 mm (0.79”)	5.6 s	5.6 s
40 mm (1.57”)	8.4 s	8.4 s

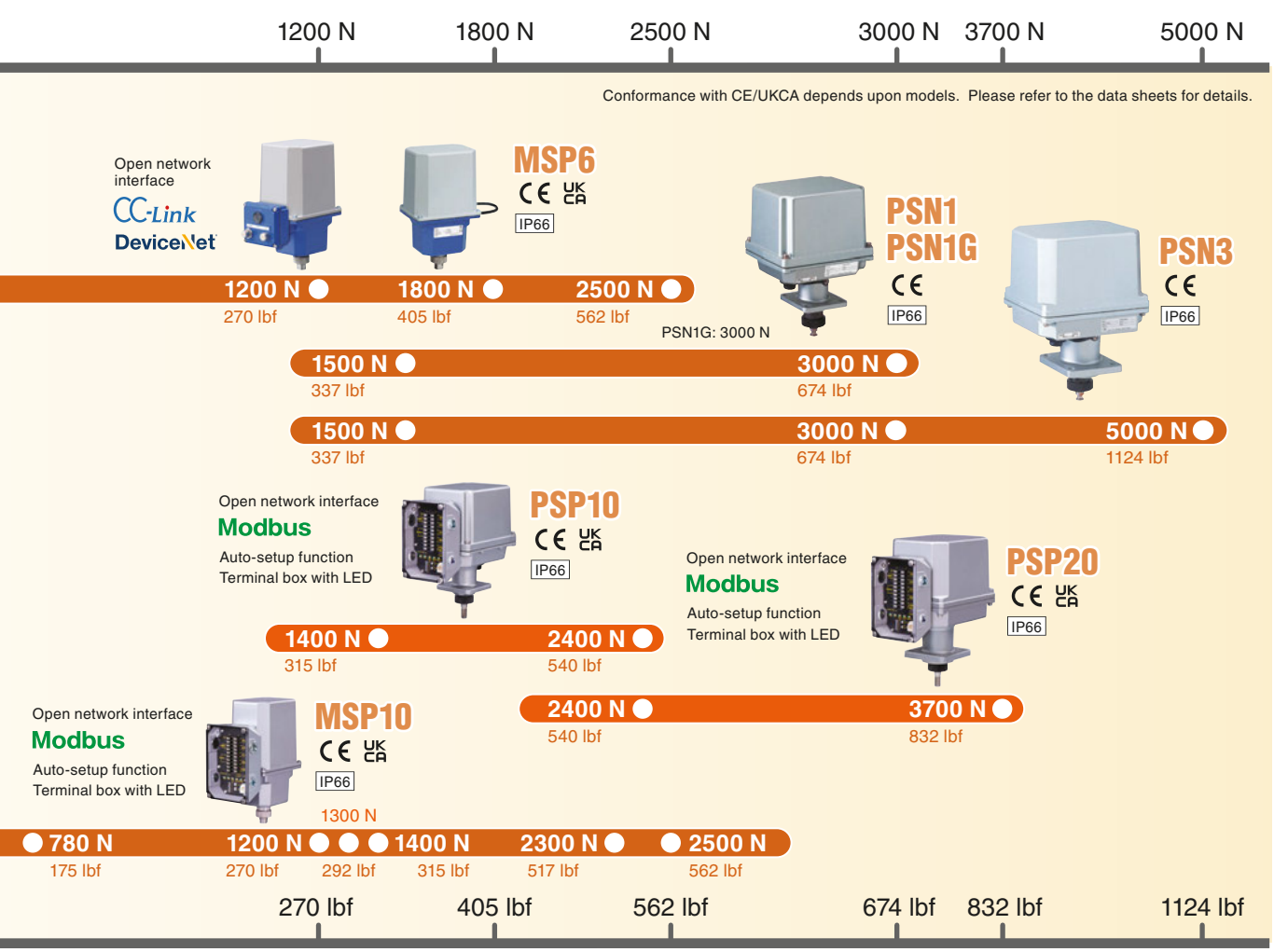
PSP20		
STROKE	THRUST	
	2400 N	3700 N
40 mm (1.57”)	14 s	14 s
60 mm (2.36”)	19 s	19 s

Easy Commissioning by Auto-Setup

START
1 Stem goes up to the full-open position
2 Stem goes down to the full-closed position
3 Coil spring pressed on
COMPLETE

SIMPLE! QUICK!





MSP Series

- Max. rated thrust: 2500 N (562 lbf)
- Max. stroke: 40 mm (1.57 in)

IP66

MSP5

- Compact size
- High resolution positioning for superior control
- Built-in feedback positioner and electric limiter
- Brushless stepping motor assures long life operation.
- Optional network interface with CC-Link, DeviceNet and Modbus

PSN Series

- Max. rated thrust: 5000 N (1124 lbf)
- Max. stroke: 60 mm (2.36 in)

IP66

PSN1

- Brushless angle sensor eliminates problems with mechanical potentiometer feedback sensing
- Opening/closing speed, split range and failsafe position programmable by hand-held programmer
- Internal temperature sensor to control heater in cold climate and to prevent motor from overheating
- Forced-open/-closed contacts for remote or manual override

Linear and Rotary Motion Electric Actuators for Valves and Machinery

Torque (N·m): 5 N·m | 10 N·m | 16 N·m | 24 N·m | 33 N·m

Rotary motion type

Linear motion type

See previous page

MRP4 IP66 CE UKCA

Open network interface

CC-Link DeviceNet

5 N·m
3.69 lbf·ft

MRP5 IP66 CE UKCA

Open network interface

CC-Link DeviceNet

10 N·m
7.38 lbf·ft

MRP6 IP66 CE UKCA

Open network interface

CC-Link DeviceNet

10 N·m (7.38 lbf·ft) | 16 N·m (11.8 lbf·ft) | 24 N·m (17.7 lbf·ft) | 33 N·m (24.3 lbf·ft)

MRP10 IP66 CE UKCA

Open network interface

Modbus

Terminal box with LED

6 N·m (4.43 lbf·ft) | 16 N·m (11.8 lbf·ft) | 35 N·m (25.8 lbf·ft)

Torque (lbf·ft): 3.69 lbf·ft | 7.38 lbf·ft | 11.8 lbf·ft | 17.7 lbf·ft | 24.3 lbf·ft

MRP10 Rotary Motion Electric Actuator

- Max. rated torque: 50 N·m (36.9 lbf·ft)
- Max. turn: 90°

Torque and Travel Time (examples)

Travel time is field-programmable.

MRP10	
TORQUE	TRAVEL TIME 90°
6 N·m (4.43 lbf·ft)	2.5 s
16 N·m (11.8 lbf·ft)	3.5 s
35 N·m (25.8 lbf·ft)	7.5 s
50 N·m (36.9 lbf·ft)	9.5 s

CE UKCA IP66

MRP10

- Stepping motor drive
- High-speed operation control with 1/1000 resolution
- 4-20 mA output plus Modbus-RTU communication for control and maintenance
- Terminal box with transparent cover equipped with operating status indicator LEDs
- Operator access to the terminal box only

MRP Series

- Max. rated torque: 33 N·m (24·3 lbf·ft)
- Max. turn: 90°

CE UKCA IP66

MRP4

- Compact size
- High resolution positioning for superior control
- Brushless stepping motor assures long life operation.
- Optional network interface with CC-Link, DeviceNet and Modbus

70 N·m 100 N·m 200 N·m 600 N·m

Conformance with CE/UKCA depends upon models. Please refer to the data sheets for details.

EAR70

Reversible AC motor type

IP66 CE

70 N·m
51.6 lbf·ft

IP66 CE **PRP-0**

100 N·m
73.8 lbf·ft

IP66 CE **PRP-1**

200 N·m
148 lbf·ft

IP66 CE **PRP-2**

600 N·m
443 lbf·ft

50 N·m
36.9 lbf·ft

51.6 lbf·ft 73.8 lbf·ft 148 lbf·ft 443 lbf·ft

PRP-0 / PRP-1

1/1000 Resolution, Quarter Turn in 8.5 Sec.

- Max. rated torque: 200 N·m (148 lbf·ft)
- Max. turn: 90°

APPROVED TYPE APPROVAL SCHEME

Lloyd's Register approved type available (ENV3)

CE IP66

PRP-0

PRP-2

Max. 600 N·m, Compact Size

- Max. rated torque:
  600 N·m (443 lbf·ft)
- Max. turn: 90°

CE IP66

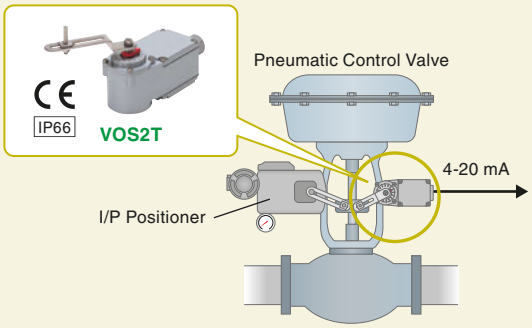
PRP-2

Two-wire Position Transmitters

VOS2T / VOS2T-R

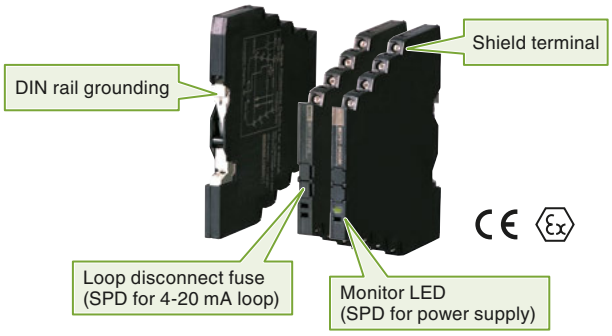
- Detecting mechanical position of pneumatic and electric actuators to send a proportional 4-20 mA signal
- Linear motion type (±22.5°) or rotary motion type (±45°)
- Brushless design for long lasting reliability
- Lightweight & compact

Remote Monitoring of Pneumatic Control Valve Position

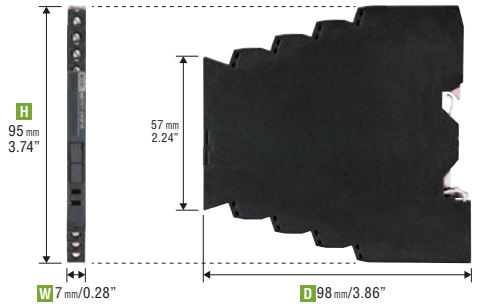


MD7 Series Ultra-slim Lightning Surge Protectors

- High density mounting with 7 mm (0.28 in) wide modules
- Excellent protection by multi-stage SPD
- Max. discharge current 20 kA (8/20 µsec)
- Independent shield terminal (3 for signal, 1 for shield)
- Floating mode for the shield selectable to avoid ground loops
- Optional loop disconnect fuse for 4-20 mA signal line to separate the MD7 failed in shortcircuit mode, to protect other devices
- DIN rail mounting / grounding
- Conforms to IEC 61643-21, Categories C1, C2, D1



MD7 Series



MDP Series

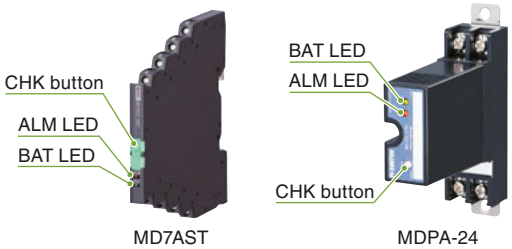
Plug-in Base Mounted

- Light-weight, easy-to-handle, plug-in construction
- Excellent protection by multi-stage SPD
- Head element can be removed and tested without disconnecting wires.
- Base socket connects input/output signals when the head element is removed.
- Wall or DIN rail mounting (with adapter A-33)

Battery Powered Health Testing

MD7AST / MDPA-24

- Protects 4-20 mA & pulse signals
- Battery powered life monitoring function
- 'Check' button with indicators alerting panel inspectors of the surge protector's health



Life indicator LEDs show surge protector's life status.

BAT	ALM	Battery	Discharge element	Voltage limiter	Replacement
☼	●	Normal			No need
☼	☼	Normal	Near end	Normal	Near
●	☼	Normal	End of life	Degraded*	Immediately required
●	●	Discharged	Unable to judge		

☼ ON ● OFF

*With pulsating line signal or that containing ripples, the LED may flicker or blink when the voltage limiter is degraded.

MD7 / MDP Series Selection Guide


APPLICATION	MD7 SERIES	MDP SERIES
4-20 mA loop, pulse signal, 24 V	MD7ST-24	MDP-24-1
4-20 mA loop, life monitor	MD7AST	MDPA-24
2-wire transmitter loop, 1- or 2-channels	MD72W MD72WD	---
3-wire transmitter loop	MD72W	---
Thermocouple transmitter	MD7TC	MDP-TC
RTD transmitter	MD7RB	MDP-RB
Potentiometer & transmitter	MD7PM	MDP-PM
Strain gauge & transmitter	MD7LC	MDP-LC
Self-synch & transmitter	MD7JS	MDP-JS
Pulse sensor & transmitter	MD7PL	MDP-SP
DC power supply, 12/24 Vdc	MD7DP	MDP-D
AC power supply	MD7AP-100 MD7AP-200	MDP-100 MDP-200
RS-422 / RS-485	MD74R	MDP-4R
PROFIBUS-PA	MD7PA	MDP-PA
FOUNDATION Fieldbus	MD7FB	MDP-PA
LONWORKS (FTT-10A)	MD7LWA	MDP-LWA

Field Transmitter Cable Conduit Mount

MD6N-24 / MD6T-24 / MD6P-24

- Protects 4-20 mA & pulse signals
- Directly mountable to the cable conduit of 2-wire transmitters and other field devices in an outdoor enclosure

IP66

SPE Use (Single Pair Ethernet)

MDCAT-SPE / MDCAT-SPE-A

- Conforms with PoDL
- Shield wire can be floating or grounding by a shortcircuit bar.

MDCAT-SPE-A
Life Monitor

CC-Link / CC-Link IE Field Use

MDW5-CC / MDCAT-NC

- Approved and recommended by CLPA

MDW5-CC

MDCAT-NC

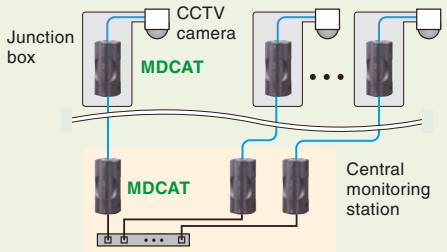
PoE Plus / 1000BASE-T Ethernet Use

MDCAT / MDCAT-A

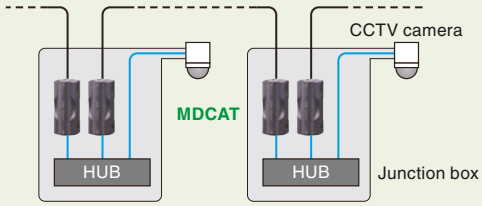
- Power-over-Ethernet compatible
- 1000BASE-T / 100BASE-TX / 10BASE-T
- Ideal to protect network devices powered over Ethernet such as webcams
- LAN cable shield wire can be floating or grounding by a shortcircuit bar.
- Conforms to IEC 61643-21, Categories C1, C2

MDCAT-A
Life Monitor

Star Connection



Cascade Connection



Life Monitor & Surge Counter

MAA-100 / MAA-200 / MAAC-100 / MAAC-200

- Protects AC power supply lines
- Life monitor function
- Alarm contact output to alert externally the surge protector's health

MAAC

One-port SPD for Power Supply

MAKF / MAT2 / MAT3

- Thermal breaker ensures degraded heat element to be automatically separated from the power lines to prevent overheating.
- MAT2 / MAT3 applicable to three-phase power lines in single module

MAKF

MAT2

MAT3

Strain Gauge Load Cells

One-Stop Solution Combining Load Cells and Interface Equipment

Compression Type

LCC Series

- 2.5 N through 500 kN
- Suitable for a variety of weight testing and measuring applications
- Application example: Forming press pressure measurement
- Customization available with 300 kN and 500 kN types

Tension and Compression Type

LCCT Series

- 1 N through 10 kN
- Female and male threaded types
- High accuracy type
- Application example: Materials testing machine

Beam Type

LCB Series

- 10 N through 100 N
- Ultra compact size
- Typically, a set of three to four beams is used for a weighing system.

Tension Type

LCT Series

- 20 kN through 200 kN
- Most suitable for traction and rope tension measurement

Broad Range of Analog and Digital Interface Equipment

Signal Conditioners & Limit Alarms Page 5-11

Controllers & Indicators Page 16-18

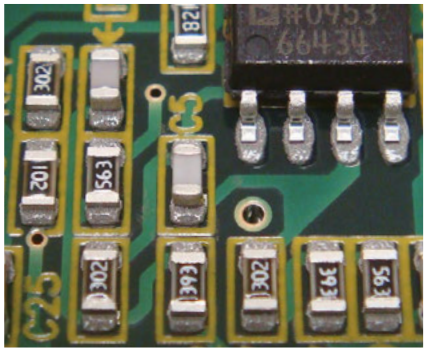
Remote I/O Page 20-21, 23-25

Lightning Surge Protectors Page 38-39

Clamp-on Current Sensors

CLS Series

- No need of cutting power line cables
- Over-voltage clamp element for safety in open circuit
- Up to 2000 A measurement
- 1 A output types available



Customer First

Service Policies

All products and services are provided outside Japan through our authorized distributors.

We are trying to enhance the customer satisfaction with the following five service policies.

As to the terms and conditions of a specific service, consult us for details.

1. Continued Products Availability

We have basic policy of never to discontinue our products without providing compatible replacements.

We always strive to procure all the electronic parts for our products. When a certain electronic part is no longer available, we will make best effort to provide a product compatibly replaceable with the existing product as long as there is substantial demand for such product.

2. Fast and Precise Delivery

The standard manufacturing lead time for most of our products is 5 days.

Quick Service Center is available for 24-48 hours shipment.

Once a delivery time is promised, the customer can of course count on us to deliver them precisely on time.

3. Special Specifications Service with no extra charge

Special specification products can be supplied without additional charge for major product series, except for those requiring excessive labor or materials.

We are putting our effort into expansion of the scope of Special Specifications Service to all of our products. Special Specification Service will be available to more product series in the future.

For detailed terms and conditions applicable to each specific product, consult us.

4. Special Repair Service

During the service period of 36 months from the date of shipment, we will provide free repair service for a damage or malfunction caused by a user's mistake when we determine at our discretion that cause of the damage or malfunction falls into the "Service Coverage" set out as conditions of this service. Such free repair service will be limited to one repair per cause of the damage or malfunction.

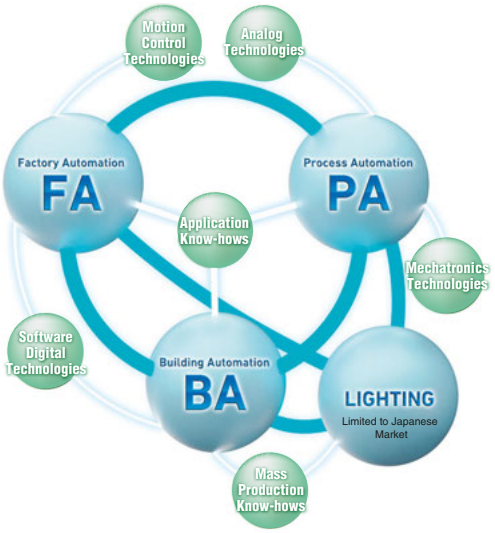
For detailed terms and conditions applicable to each specific product, consult us.

5. Factory Setting Service with no extra charge

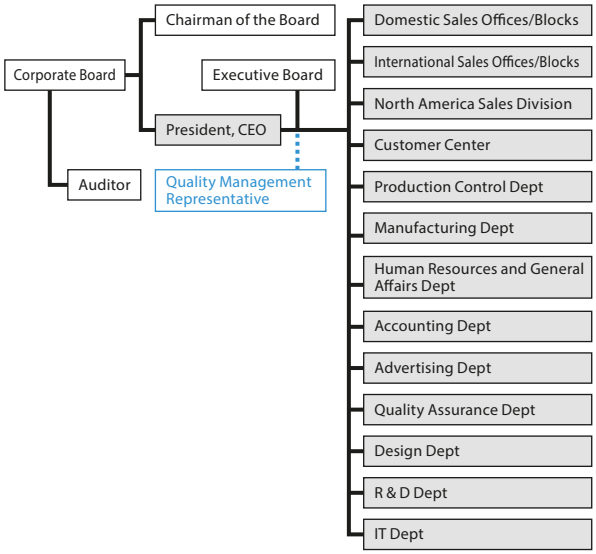
Configuration setting for programmable products is free of charge upon the customer's request for once when ordering, except for those requiring special engineering (e.g. multi-function PID controllers).

For detailed terms and conditions applicable to each specific product, consult us.

Corporate Profile



ORGANIZATION



COMPANY DATA

Company Name	MG Co., Ltd.
Established	April 1972
Headquarters	Osaka, Japan
President and CEO	Saburo Miyamichi
Company mission	Development, manufacturing and sales of signal conditioners & alarm trips, panel/field indicators, energy measurement & management devices, surge protectors, remote I/O, PID controllers, paperless recorders, electric actuators, and sensors
Annual turnover	JPY 10.840 billion (September 2024)
Employees	283
Domestic locations	Osaka (Headquarters, Customer Center), Osaka Research Center & Factory, Kyoto Techno Center, Kyoto Research Center & Factory, Kanto Branch Office, Chubu Branch Office, Kansai Branch Office, Sendai Sales Office, Kyushu Sales Office, Kanazawa Office
Overseas locations	Local companies in Shanghai (China), Guangzhou (China), Seoul (Korea)

HISTORY

2024	P Strain gauge load cells P Terminal block signal conditioners with OEL display M50E-UNIT P USB bus powered PC Recorder Company name changed to MG Co., Ltd. Corporate headquarters/Customer Center moves to Chuo-ku, Osaka.
2023	P Terminal block signal conditioners M50X-UNIT P Electric actuators with open network
2022	P Multi power transducer M5XWTU
2021	P Weighing indicator W100 Series
2019	P Slice type, scalable remote I/O R80 Series P Base-free interconnecting ultra-slim signal conditioners M60S Series
2018	Guangzhou Office opens in Guangzhou, China.
2017	P Compact plug-in signal conditioners with OEL display M1E Series
2016	P Compact signal conditioners with OEL display M2E Series P Web data logger DL30 Series
2015	P Ultra-slim digital panel meter 47NL Series
2014	P Web-enabled DAQ system Tablet Recorder TR30-G P Compact, mixed signal remote I/O R30 Series
2013	P Web data logger DL8 Series Kyoto Research Center & Factory opens in Kizugawa, Kyoto.
2012	P Tower light Series
2011	MG Korea Co., Ltd. founded in Seoul, Korea. M-System China Co., Ltd. (currently MG China Co., Ltd.) founded in Shanghai, China.
2010	P Multi-function PID controller SC Series
2008	P Ultra-slim signal conditioners M6 Series Kyoto Techno Center opens in Kizugawa, Kyoto.
2007	P Multi power monitor 53U P Paperless recorder 73VR Series Company enters the building automation market.
2006	P Compact remote I/O R7 Series P Ultra-slim surge protectors MD7 Series
2005	Company certified with ISO 14001 Representative office opens in Shanghai, China.
2004	P Hot-swappable remote I/O R3 Series Liaison office opens in Shanghai, China. Company succeeded by new CEO Saburo Miyamichi, and Founder Shigeru Miyamichi appointed as Chairman.
2003	P 'One-Step Cal' programmable transmitters M3 Series
2002	P Terminal block signal conditioners M5-UNIT Series P HART universal transmitter B6U-B with ATEX/FM approval
2000	P PC Recorder
1997	Company certified with ISO 9001
1995	P Compact signal conditioners M2 Series
1993	P MsysNet Integrated Instrumentation System with super-distributed control concept
1991	Corporate headquarters/factory moves to Nishinari-ku, Osaka.
1988	P Programmable signal conditioners JX Series P Signal splitters W-UNIT Series
1986	P Multiplex transmission system DATA-M Series
1985	P Electric actuators Factory opens in Sumiyoshi-ku, Osaka.
1973	P Lightning surge protectors P Unique plug-in signal conditioners M-UNIT Series
1972	M-System Co., Ltd. founded in Osaka, Japan by Shigeru Miyamichi

P New products

Locations

JAPAN

Osaka Research Center & Factory

- Major manufacturing location since 1991
- Research, development and design center

Corporate Headquarters
International Sales
Customer Center
Kansai Branch Office (Osaka)

Sendai Sales Office

Kanto Branch Office (Tokyo)

Chubu Branch Office (Nagoya)

Kyushu Sales Office (Fukuoka)

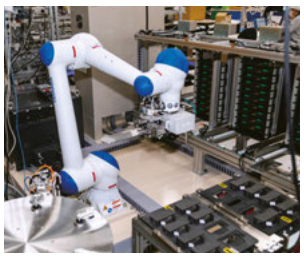
Kyoto Techno Center

Type testing and evaluation facilities

- VCCI (Japan) registered anechoic chamber
- 6 m² shielded room capable of conducting multiple tests at once

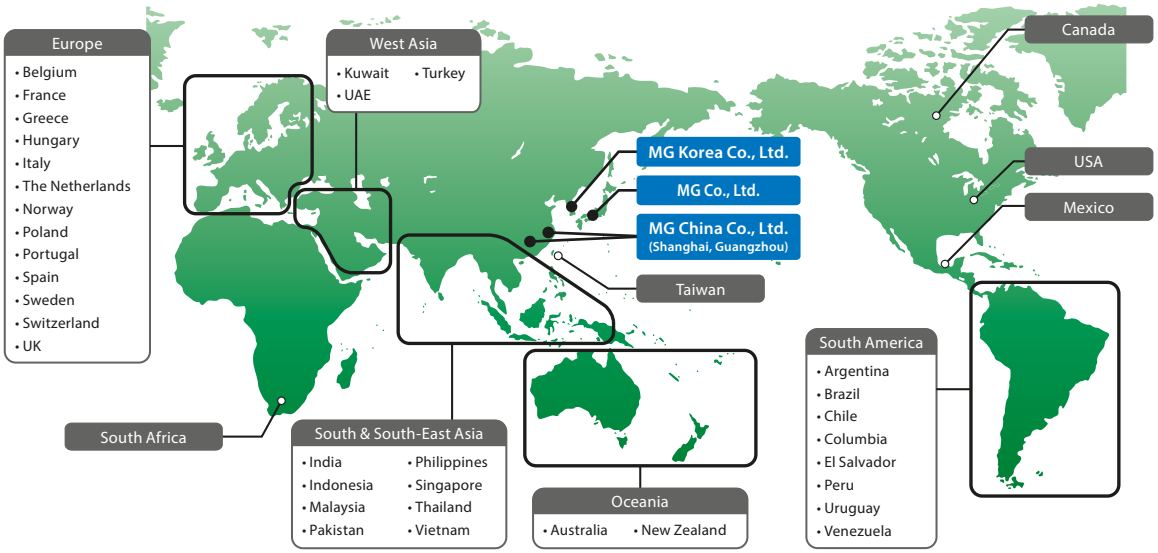
Kyoto Research Center & Factory

- Second manufacturing location inspired by BCP revised after the Great East Japan Earthquake in 2011
- Showcase plant utilizing our BA controllers



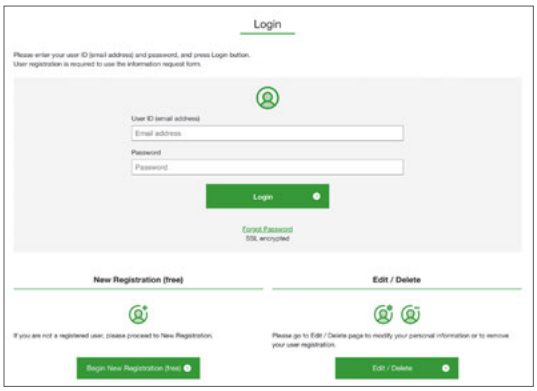
VEMS CO., LTD.
Group company for EMS

GLOBAL SALES NETWORK

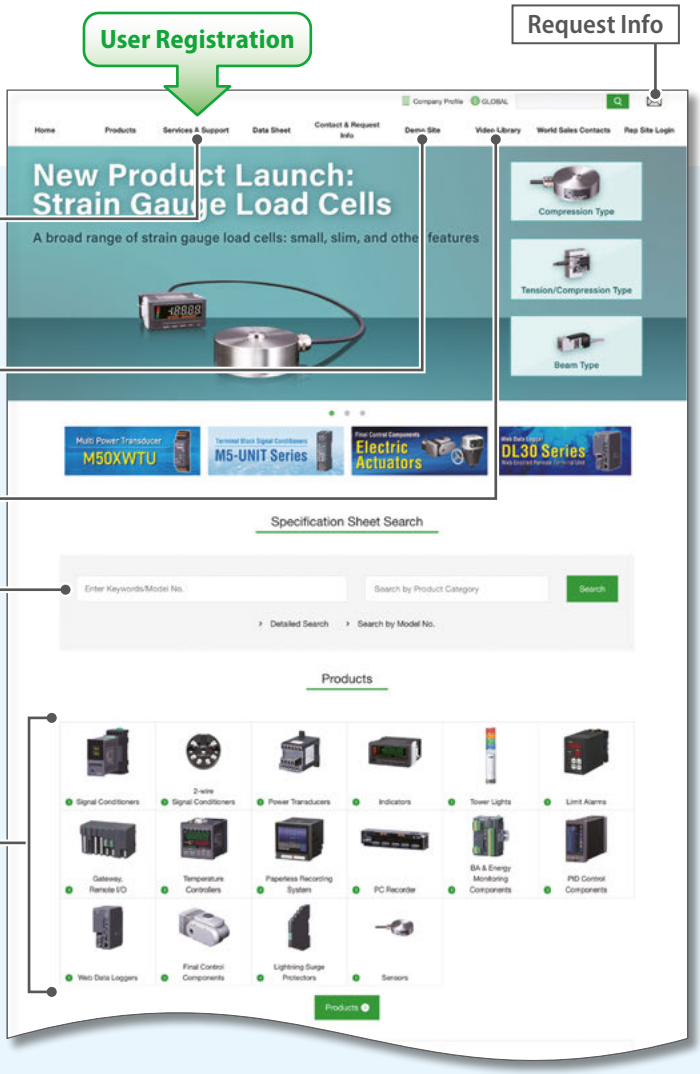


Find Complete Product Information on Our Global English Website.

Please Register Your User Information!



Please register your user information so that we can respond promptly and appropriately to your information requests.
As a registered user of our website, you can receive our newsletter "MGTrend" and products' firmware/software update information by email.
We will continue working on new convenient services.



Services & Support

You can access all downloadable materials including setup tools (software), drivers and device profiles, catalogs and videos.

Demo Site

Browse trend and data monitor windows of data logging systems using DL30, DL8 and other products.

Video Library

Videos on the products and the company, educational materials, virtual exhibition can be viewed on YouTube.

Specifications & Manuals

Enter either a product model number or a keyword to search for data sheets, instruction manuals and other related documents.
Compare specifications to find exactly what you need.
You can narrow your search by product categories.

Product Category Index

Go directly to a product category to find more about products introduced in this catalog and even more selections.

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