



Four-wire Signal Conditioners



Two-wire Signal Conditioners



Power Transducers



Panel Indicators



Limit Alarms



Remote I/O



Paperless Recorder



PC Recorder



Lightning Surge Protectors



Electronic Actuators

# 2009-2010

## M-System Product Guide





**ISO 9001 / ISO 14001 Certified**



No matter what combination of process signal I/O, power input and mounting configuration you need, M-System can meet your requirements when others can't. Just what you would expect from the world's largest supplier of high-performance interface solutions.

# The Search Has Ended!

## More Than 75000 Combinations!

M-System offers more than 3000 signal conditioner and remote I/O modules as standard, with more than 75000 I/O, power and mounting configuration combinations. **Special input and output types are also available.** In fact, more than 20000 special specifications have been requested and offered to our customers worldwide until now.

If one signal conditioner is not enough for the customer's application, we can often offer you a solution by combining signal conditioners to do the same job.

M-System delivers more than 500000 I/O modules, including 300000 modules of signal conditioners, every year —

**Just ask us.**



## M-System Can, When Others Can't.



# M-System Has Not Discontinued its Products Without Compatible Replacements.

M-System does not easily stop manufacturing products once released in the market, unless we are able to supply other products of equal or better quality to replace with, because we believe it is a very important responsibility as a leading manufacturer in the world to continue to serve people who maintain the performance of process control systems.

Find specifications and instruction manuals no matter how old the product, downloadable at our online DATA LIBRARY, updated weekly.



## Count On Us for Fast & Precise Delivery Time

The standard manufacturing lead time for most M-System's signal conditioners is 5 days. But more than quarter of the total shipment are delivered in shorter lead time, and Quick Service Center expedites more than 500 orders every month on the same day or the next day after ordered.

Do not worry too much about the standard delivery. Just let us know 'When' you need a signal conditioner. Once a delivery date is promised, you can of course count on us to deliver the products precisely on time.



## Meeting with Modern Industrial Trends

M-System offers an enormous selection of I/O products including signal conditioners, distributed network I/O, paperless recorders, panel meters, surge suppressors and valve actuators. Not only that, we are continuously working on meeting modern industrial trends for open network I/O devices including Modbus, Ethernet, DeviceNet, PROFIBUS, CC-Link, LONWORKS and MECHATROLINK. Working with open-architecture networks, these products easily communicate to today's most popular HMI software packages and DCS/PLCs.

Major product offerings of M-System are certified by various industrial standards such as CE (EMC, LVD), UL & C-UL, ATEX and FM.



## Need for EMC Countermeasures

Advances in technologies have led to higher-density electronic circuits, higher-frequency signals, and lower circuit voltages in most electronic devices, making them more susceptible to the effects of weak EMI.

EMC countermeasures combining EMI and EMS components provide the basic means of dealing with electro-magnetic radiation. These countermeasures must be incorporated from the product design and development stage.

Increasingly strict standards defining the levels of EMI that are permissible from a safety standpoint have also served to focus attention on the importance of EMC countermeasures.

Many equipment manufactures rely upon public testing facilities to verify the compliance of their products with Europe's mandatory CE marking program.

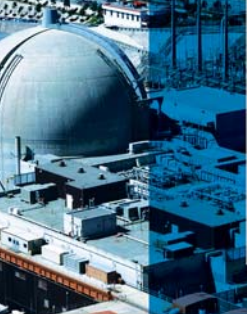
M-System has its own RF anechoic chamber and shielded room facilities, Kyoto Techno Center, in order to speed the development of new products.



M-System Kyoto Techno Center



RF Anechoic Chamber









# Signal Conditioners Selection Guide

Only typical models and specs are mentioned in this table. Please consult M-System Online Data Library to confirm availability and specs of specific models.



SERIES			M2	W2	M5 / B5	W5
Enclosure / Mounting Type			Plug-in base socket, DIN rail or surface mount		41 mm deep housing, DIN rail mount	
Range Availability			Specified when ordering or PC/One-step Cal programming		Specified when ordering or DIP switch programming (W5FV)	
Dual Output			---	Yes	---	Yes
Power Input			AC/DC		AC/DC	
Isolation			2000V AC		2000V AC (except M5/AC powered type: 1500V AC)	
Operating Temperature			-5 to +55°C (23 to 131°F)		M5/W5: -5 to +55°C (23 to 131°F) B5: -40 to +80°C (-40 to +176°F)	
Standards & Approval			CE / UL / C-UL		CE	
Four-wire Signal Conditioners	Universal input	DC output	M2XU			
	DC mV, Voltage & Current	Fixed range	M2VS	W2VS	M5VS, M5MV	W5VS
		Fixed range, high speed response	M2VF, M2VF2	W2VF	M5VF	
		Configurable	M2XV2, M2LV, M2FV			W5FV
		Dual isolated output		W2VS		W5VS
	Thermocouple	Fixed range	M2TS	W2TS	M5TS	W5TS
		Configurable	M2XT2			
	RTD	Fixed range	M2RS	W2RS	M5RS	W5RS
		Configurable	M2XR2, M2LR	W2XR		
	Potentiometer	Fixed range	M2MS	W2MS	M5MS	W5MS
		Configurable	M2XM2, M2LPM	W2XM		
	Strain gauge	Fixed range	M2LCS			W5LCS
		Configurable				
	AC voltage & current	AC voltage & current	M2AC, M2TG	W2AC, W2TG		
		Voltage transformer	M2PE, M2PA	W2PE, W2PA	M5PT	
		Current transformer	M2CE, M2CA, M2CEC	W2CE, W2CA	M5CT, M5CTC	
	Current loop supply (2-wire transmitter excitation supply)	Fixed range	M2D(2), M2DYS, M2DNY	W2DYS, W2DNY	M5DY	W5DY
		Configurable				
		HART compatible	M2DYH	W2DYH		
	Pulse to analog	Fixed range	M2SP	W2SP	M5PA	W5PA
		Configurable	M2XPA3			
		Encoder input, configurable	M2XRP2			
	Analog to pulse	Fixed range	M2AP	W2AP		
Configurable						
Pulse scaling	Configurable	M2PRU				
Pulse isolation	Fixed range	M2PP	W2PP			
	Configurable					
Pneumatic input	19.6-98.1 kPa	M2PV	W2PV			
Function modules			▶ See Page 14			
Two-wire Signal Conditioners	Input loop powered isolator	1 channel	M2SN-1		B5SN	
		2 channels	M2SN-2			
	Output loop powered isolator	1 channel			B5VS	
		2 channels				
	DC mV, Voltage & Current	Fixed range			B5VS	
		Configurable				
	Thermocouple	Fixed range			B5TS	
		Configurable				
		Configurable, IS				
	RTD	Fixed range			B5RS	
		Fixed range, IS				
		Configurable				
		Configurable, IS				
	Potentiometer	Fixed range			B5MS	
		Configurable				
	Pulse to analog	Fixed range				
		Configurable				
Universal input	Configurable, IS					
	4-20 mA output, HART, IS PROFIBUS					
Limit alarms			▶ See Page 18 and 19			



						
M3 / B3 / A3	M3S	M6	B6 / 27	27	26	SERIES
18 mm wide housing, DIN rail mount	12 mm wide housing, DIN rail mount	Ultra-slim housing, DIN rail mount	Field mount enclosure	DIN type B head mount		Enclosure / Mounting Type
Specified when ordering or PC/One-step Cal programming	Specified when ordering or PC programming	Specified when ordering or PC programming	HART (PC) programming	PC or HART programming	Specified when ordering	Range availability
---	---	Selected models	---	---	---	Dual Output
AC/DC	AC/DC	DC	Output loop powered	Output loop powered		Power Input
2000V AC (DC powered)	2000V AC	2000V AC	1500V AC	1500V AC		Isolation
M3: -25 to +65°C B3: -40 to +85°C	-10 to +55°C (14 to 131°F)	-20 to +55°C (-4 to +131°F)	-40 to +85°C (-40 to +185°F)	-40 to +85°C (-40 to +185°F)		Operating Temperature
CE / UL / C-UL / ATEX / FM	CE	CE / UL / C-UL	CE / SIL / ATEX / FM	CE / SIL / ATEX / FM	CE / ATEX	Standards & Approval
M3LU						Universal input
	M3SYV, M3SVS	M6xYV, M6xVS				DC mV, Voltage & Current
M3LV	M3SXV	M6xXV				
	M3SWVS	M6xWVS				
						Thermocouple
M3LT	M3SXT	M6xXT				RTD
	M3SRS					
M3LR	M3SXR	M6xXR				Potentiometer
	M3SMS					Strain gauge
M3LM	M3SXM	M6xXM				
						AC voltage & current
M3LLC						
		M6xCTC				Current loop supply (2-wire transmitter excitation supply)
M3DY	M3SDY	M6xDY				
M3LDY						
A3DYH (IS)						Pulse to analog
		M6xPA				
M3LPA2						Analog to pulse
		M6xXAP				Pulse scaling
						Pulse isolation
		M6xPP				Pneumatic input
▶ See Page 14						Function modules
		M6xSN-1				Input loop powered isolator
		M6xSN-2				
B3VS/1						Output loop powered isolator
B3VS/2						
B3VS						DC mV, Voltage & Current
B3FV						
					26TS1	Thermocouple
B3FT				27TS		
				27TS		RTD
					26R1, 26RS	
					26REX	
B3FR				27R, 27RS		Potentiometer
				27R, 27RS		
				27PM		Pulse to analog
B3FP						Universal input
				27U		
B3HU			B6U, B6U-B, 27HU-B	27HU		
B3PU						Limit alarms

▶ See Page 18 and 19



# Compact Plug-in Socket Mounted Signal Conditioners

M2/W2  
SERIES

- Wide selection of input/output ranges and functions
- DIN rail or panel mounting
- 2000 Vac isolation
- Base socket included with the modules
- CE marking and UL Nonincendive approval



M-System's M2 (Mini-M) Series Signal Conditioners are designed to accept a largest range of process signal inputs and provide a standard and non-standard DC output.

The W2 (Mini-MW) Series Signal Splitters provide a second isolated output of independent range, which gives you the flexibility to add sophisticated distributed control or MIS monitoring to a local loop, without a worry about mismatched impedance, or the threat of one problem system's output signal impacting the other.

Both M2 and W2 Series use a compact size, plug-in socket base for quick installation or replacement of module without disturbing wiring.

Most of these products are for use in the UL and cUL Class I, Division 2, Groups A, B, C, D applications. The combination of CE mark, UL recognition and rugged environmental electrical specifications ensure excellent reliability and stability in harsh industrial environments.



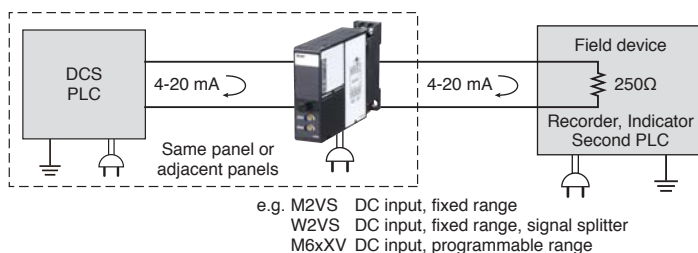
## ISOLATOR APPLICATIONS - 1

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.

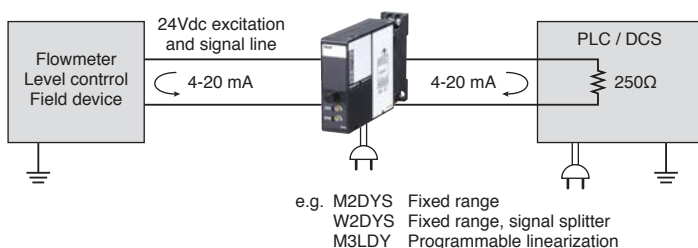
### ■ Four-wire isolator : 4-20 mA (passive) input / 4-20 mA output / Line powered



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

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



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, Compact Signal Conditioners



- Only 41 mm (1.61 in) deep, terminal block style modules
- DIN rail mounting
- 2000 Vac isolation

M-System's M5 Series Signal Conditioners are designed to accept a wide range of process signal inputs and provide a standard and non-standard DC output.

The B5 Series Transmitters are for use with two-wire loops.

The W5 Series Signal Splitters provide a second isolated output of independent range, which gives you the flexibility to add sophisticated distributed control or MIS monitoring to a local loop, without a worry about mismatched impedance, or the threat of one problem system's output signal impacting the other.

Only 41 mm (1.61 in) deep modules can be installed anywhere, even behind the panel cover.



CE M5 Series



CE B5 Series

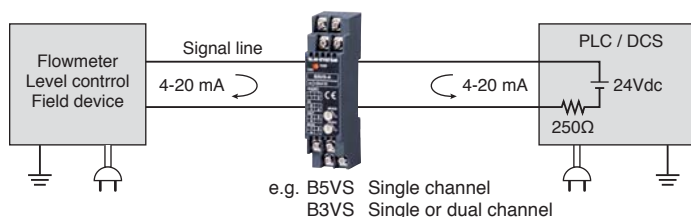


CE W5 Series



## ISOLATOR APPLICATIONS - 2

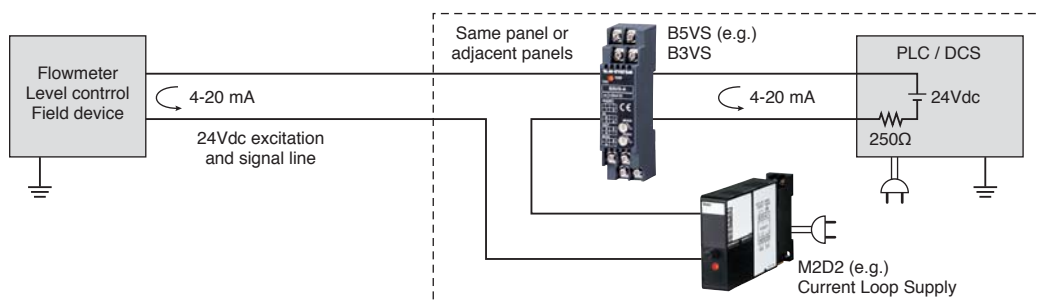
### ■ Two-wire isolator : 4-20 mA input / 4-20 mA output (loop powered)



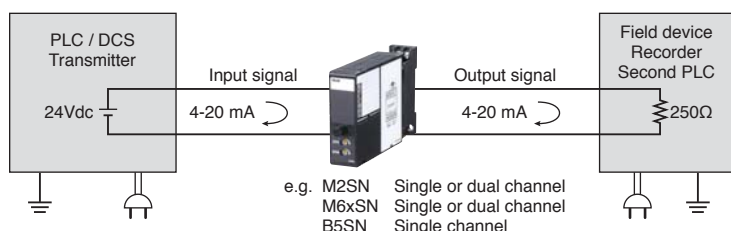
Basic isolator designed to interface a PLC and DCS system that provides a 24 Vdc power supply with a 4-20 mA input.

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

### ■ With the excitation supply to the field device



### ■ Two-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

# PC Programming or "One-Step Cal" Configuration Without PC

M3L  
SERIES

- Enhanced PC configurator software
- Easy and precise "One-Step Cal" field configuration without needing a PC
- DIN rail mounting
- 1500 Vac isolation
- CE marking and UL approval



M-System's M3L Series is a DIN rail mounted, universal input transmitter with 1500 Vac isolation.

Ideal for Spare Parts Stock Reduction Programs, the M3L Series supports two methods for configuring the transmitter module. The module's DIP switches/control buttons simplify in-field configuration without using a PC. When identical multiple configurations are required, save yourself some time downloading the setting from PC software.

M3L Series is your safe bet when you are not sure of your final I/O signals.

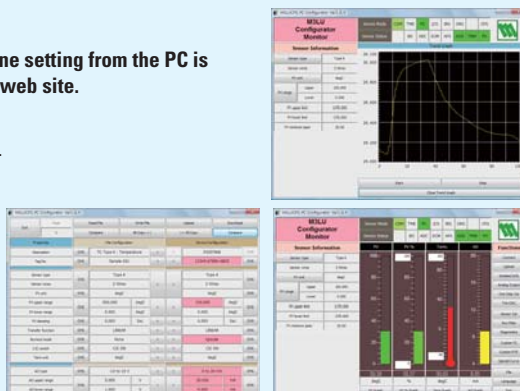
Typical applications include eliminating ground loops in temperature measurement applications and providing an isolated interface to data acquisition and control systems.

## Enhanced PC Configurator Software

**When you need to apply the same setting to multiple transmitters, downloading one setting from the PC is convenient. The PC Configurator software is available to download at M-System web site.**

**M3 PC Configurator is packed with advanced features such as:**

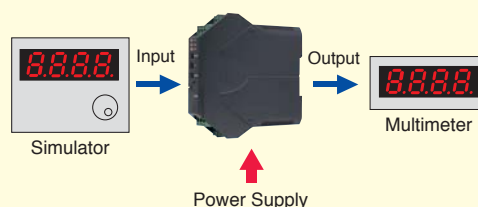
- Parameter setting is easily configured with a help of bargraphs on the screen.
- Trend graph monitoring is also possible.
- Fixed analog output can be set and provided for simulation when conducting a loop test.
- 128-point linearization and custom thermocouple/RTD tables
- Fine calibration
- Save configuration files
- Input filter
- Diagnostics



## "One-Step Cal" Configuration

Even when you do not have a PC at your disposal, a simulator and a multimeter can help you program I/O ranges. The internal DIP switches are used to configure input and output type. Once the module is configured, precise ranges can be set with the front control buttons using a simulator connected to the input terminals and a multimeter connected to the output terminals as a reference. The front LED's colors and flashing patterns help you easily identify the transmitter's status and confirm the setup actions in each step of Calibration Modes.

**Connect the M3L module to a simulator and a multimeter and to a power source.**



## Thin Profile Signal Conditioners M3S Series

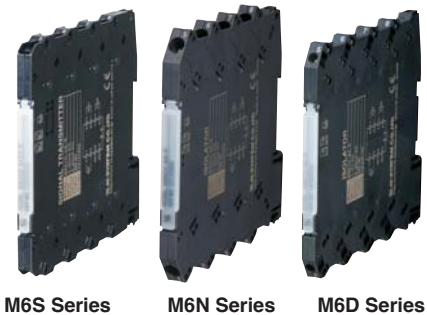
- Space-saving 12 mm (0.47 in) wide modules with separable terminal blocks
- Universal AC/DC power input available
- Fixed range and PC programmable modules







- Only 5.9 mm (0.23 in) wide ultra-slim design for M6D/M6S series
- Selectable connection styles — Tension-clamp, screw terminal or euro terminal
- Low power consumption, high load drive capability
- 2000 Vac isolation
- CE marking and UL Nonincendive approval



M6S Series

M6N Series

M6D Series

M-System's high performance signal conditioners are now packed in ultra-slim housings of only 5.9 mm (0.23 in) at the front face. As many as sixteen M6D/M6S modules can be mounted tightly side by side in a space of 9.5 centimeters (3.75 inches). Even though the power consumption of these modules is suppressed to the extreme low level, they can drive at the maximum of 550  $\Omega$  load with 4-20 mA DC output.

Each module is provided with a green power indicator LED to help you diagnose its status. In order to save you from individual power input wiring, the Installation Base holding eight modules can be expanded up to six bases for the maximum of 48 modules supported by a common power supply.

Three connection styles are available: Tension-clamp, screw terminal and euro terminal.

A wide selection of functions are available: fixed range and PC programmable transmitters, DC signal splitters, limit alarms, PC programmable function modules and input loop powered isolators.

Most of these products are for use in the UL and cUL Class I, Division 2, Groups A, B, C, D applications.

## M6S Series : Tension Clamp Style

5.9 mm (0.23 in) wide module.

No special tool or skill is required when wiring.



## M6N Series : Screw Terminal Style

7.5 mm (0.30 in) wide module.

Self-up screws prevent falling off a terminal.



## M6D Series : Euro Terminal Style

5.9 mm (0.23 in) wide module.

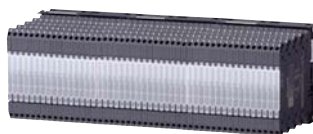
Suitable for solid wires, pin terminals.



## Ultra-High Density Mounting

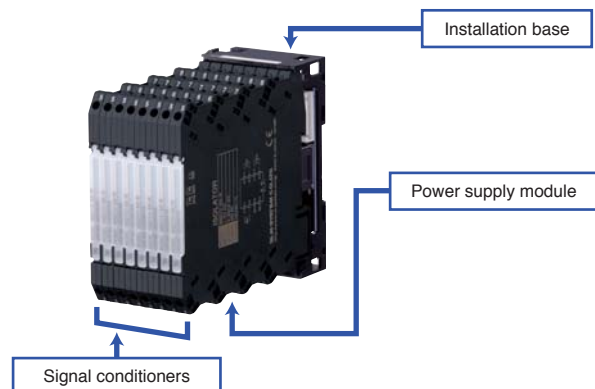


16 modules in a 9.5 cm (3.75 in) wide space (M6S/M6D)



Less than 30 cm (12 in) with 48 modules (M6S/M6D)

## Power Supply through the Backplane Bus



# Two-wire Temperature Transmitters

B6

SERIES

## Field Mount, HART Programmable

### B6U / B6U-B

- Plug-in two-line LCD display
- HART programmable
- AMS software version 6.0 or higher
- Stainless steel enclosure optional
- ATEX / FM approval



B6U-B



B6U

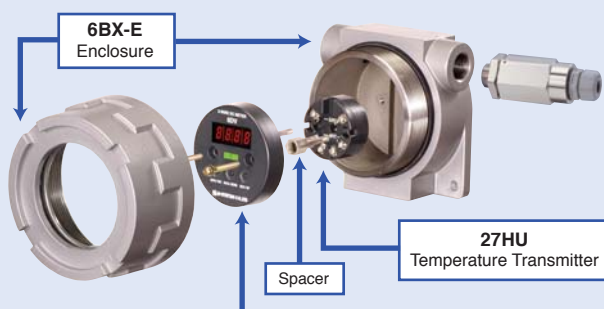
M-System's Model B6U and B6U-B accept a wide variety of inputs including thermocouples and RTDs as well as mV, resistance and potentiometer sensor types. The universal two-wire transmitters reduce component costs while meeting the requirements of hazardous applications. They provide signal isolation to output a proportional 4-20 mA signal.

Both models have the HART capability which allows users a flexibility to program the modules either via hand-held communicator or via PC. Input sensor type, temperature range and other parameters including HART properties are programmable. Additionally, user's own temperature calibration tables can be used. This feature makes the B6U and B6U-B the most universal temperature transmitters.

Optional highly legible LCD display indicates input signal in engineering unit and the transmitter status. The module is also used to configure the transmitter and can be removed when not used.

The B6U designed for intrinsic safety and the B6U-B including the explosion-proof (flameproof) enclosure (NEMA 4X, IP 65) are most suitable for use in an explosive atmosphere in chemical and petrochemical industries. A pipe mounting bracket is optional for the B6U-B for easy installation.

### FIELD-MOUNT ACCESSORIES



#### MD6 Series Surge Protectors

Directly mountable to the cable conduit of two-wire transmitters and other field devices in an outdoor enclosure



### 6DV / 6DV-B

#### 4-digit Loop Powered Indicator

- No external power source required
- Scaling and linearization via the front controls
- Mountable on top of head-mount transmitter, installed together in an outdoor enclosure



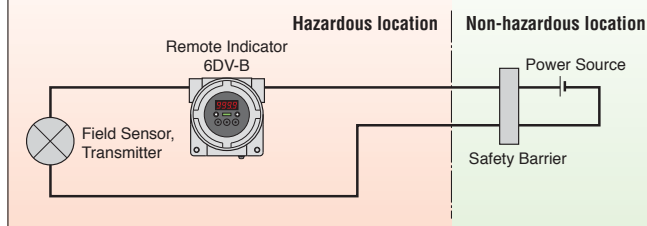
6DV-B



6DV



The 6DV-B can be inserted in a two-wire loop as a remote indicator without needing an extra power source.







## Head-mount, HART

### 27HU / 27HU-B

- HART programmable
- User's temperature table and Callendar-Van Dusen approximation formula
- 4-digit LED indicator optional
- Stainless steel enclosure optional
- ATEX / FM approval
- Classified SIL 2



27HU



## Head-mount, PC Programmable

### 27 Series

- PC Programmable
- Function monitor LED optional for RTD input
- ATEX / FM approval
- Classified SIL 2



## DIN Rail Mount, HART & PROFIBUS

### B3HU / B3PU

- 18 mm (0.71 in) wide thin profile module
- AMS software version 6.0 or higher
- SIMATIC PDM
- ATEX / FM approval (B3HU)



B3HU



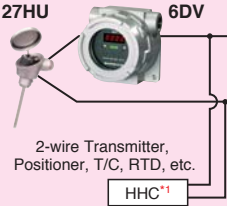
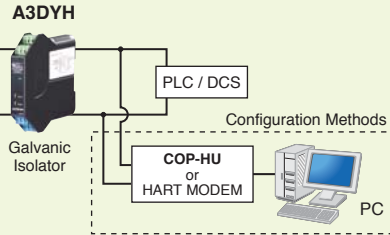
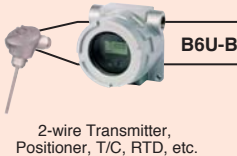
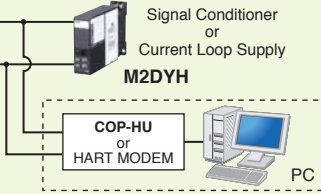
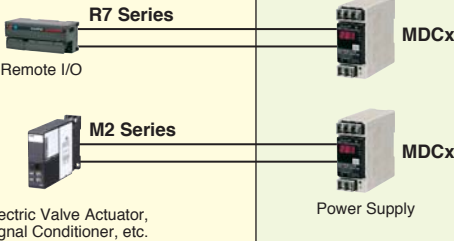
## Head-mount, Fixed Range Type

### 26 Series

- Linearization, sensor burnout detection, cold junction compensation (T/C input) standard
- Optional 25 msec. response time selectable (26TS1, 26RS)
- ATEX approval (26REX)



## HAZARDOUS LOCATION PRODUCTS GUIDE

Hazardous Location			Non-Hazardous Location
Division 1		Division 2	
Zone 0	Zone 1	Zone 2	
<b>Intrinsically Safe products</b>  <p>27HU 6DV</p> <p>2-wire Transmitter, Positioner, T/C, RTD, etc.</p> <p>HHC*1</p> <p>Intrinsic Safety is applicable in most variable zones.</p> <p>Only 'ia' is applicable in IEC Zone 0.</p> <p>*1: HHC used in hazardous location must be certified as IS.</p>			<b>A3DYH</b>  <p>PLC / DCS</p> <p>Galvanic Isolator</p> <p>Configuration Methods</p> <p>COP-HU or HART MODEM</p> <p>PC</p>
<b>Explosion-proof or Flameproof products</b>  <p>B6U-B</p> <p>2-wire Transmitter, Positioner, T/C, RTD, etc.</p>			 <p>Signal Conditioner or Current Loop Supply</p> <p>M2DYH</p> <p>COP-HU or HART MODEM</p> <p>PC</p>
<b>UL &amp; C-UL Nonincendive products</b>  <p>R7 Series</p> <p>Remote I/O</p> <p>M2 Series</p> <p>Electric Valve Actuator, Signal Conditioner, etc.</p> <p>MDCx</p> <p>MDCx</p> <p>Power Supply</p>			

# DIP Switch Configurable Two-wire Transmitters

B3

SERIES

- Input type and range selectable with the internal DIP switches and fine calibration using the front potentiometers
- Wide supply voltage range 12-45 Vdc
- Eliminates noise and prevents ground loops with 1500 Vac isolation between input and output
- CE marking and UL approval



M-System's B3 Series are DIN rail mounted, field-configurable two-wire transmitters with 1500 Vac isolation between input and output.

The input type and range are easily programmable with internal DIP switches and front potentiometers, not needing any special computer knowledge to program.

For example, after setting the internal switches for selecting an overall range, gain and offset, using a DC input simulator as a reference, the B3FV could be adjusted to 0 to 10 V range by simply applying desired minimum and maximum input levels and turning the respective front potentiometer.

Typical applications include eliminating ground loops in temperature, flow and level measurement applications and providing an isolated interface to data acquisition and control systems.

For the most basic isolation applications, the model B3VS/2 dual channel isolator is an economical solution. It houses two transmitters in the series' standard housing, accepting and providing independently isolated 4-20 mA signals.

## PANEL-MOUNT ACCESSORIES

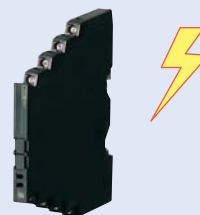
### M6SSN / M6NSN / M6DSN Input Loop Powered Isolator

- No external power source required
- Dual channels in an ultra slim housing



### MD7 Series Surge Protectors

- Only 7 mm wide ultra-slim design
- Excellent protection with multi-stage SPD



### A3DYH Galvanic Isolator

- Isolated intrinsically safe associated apparatus – No need of grounding
- Isolates and relays HART signal bidirectionally



### MDC5 / MDC6 / MDC7 DC Power Supply

- 100-240 Vac input, regulated 24 Vdc output
- 60 W, 120 W or 240 W
- Maintenance forecast monitor function





# Interfacing with More Field Signals ....

## MX Series Field Configurable Pulse Transmitters

- Configurable via the front Up/Down buttons with a help of two displays
- Sensor excitation, linearization, averaging non-uniform pulses (MXPA)
- Pulse totalizing function with manual/auto reset (MXAP)



FUNCTION	MODEL
Frequency to DC transmitter	CE MXPA
DC to Frequency converter	CE MXAP

## JX Series High Performance Pulse Transmitters

- Programming by a hand-held programmer or by PC software
- Programmable I/O type and range
- Built-in excitation



FUNCTION	MODEL
Frequency to DC transmitter	JPA2
Pulse accumulator	JPQ2
Encoder speed transmitter	JRP2
Encoder position transmitter	JRQ2
DC to 2-phase pulse converter	JARP
DC to Frequency converter	JAPD
Pulse scaler	JPR2
Two-input pulse adder	JPS3
Frequency scaler	JFR2
Pulse duration receiver	JTY2

See also models M3LPA2, M2XPA3, M2XRP2

## High Performance Pulse Isolators

- Reducing noise interference
- Converting pulse device type (e.g. dry contact to 5 V pulse)
- Built-in excitation



FUNCTION	MODEL
Pulse isolator	YPD, KYPD
Pulse splitter	WYPD, KWYPD
Rotary encoder pulse isolator	CE RPPD

## Pneumatic Transducers

- Semiconductor pressure sensor in the feedback circuit (HVPN)
- Max. air capacity 60 Nl /minute (HVPN)



FUNCTION	MODEL
Pressure to current, output loop powered	CE BPV
Current to pressure, input loop powered	CE HVPN

See also models M2PV, W2PV

## BCD Transducers

- Handling BCD, binary, two's complement signals
- 16-bit converter
- Display can be scaled in convenient engineering unit



FUNCTION	MODEL
Analog to digital	CE AD3V
Digital to analog	CE DA3

## High Current Output Transmitters

- Driving actuators used in turbines, speed governors, hydraulic machinery
- Retrofitting 10-50 mA loop



99SVA

FUNCTION	MODEL
10-50 mA output	VA
200 mA output	CE SVA
1 A output	99SVA

## Potentiometer Output

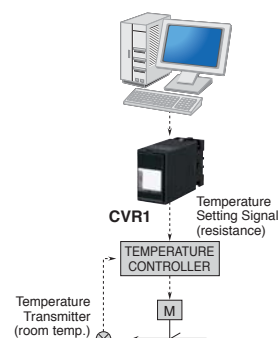
- Remote setting for dampers, inverters, motors and other devices with potentiometer settings
- DC voltage/current input
- 135 to 100k  $\Omega$  output



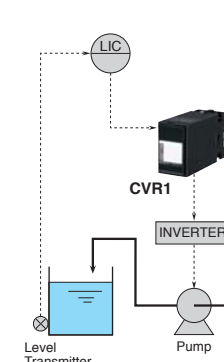
FUNCTION	MODEL
DC to potentiometer converter	CVR1

## APPLICATION EXAMPLES

### Damper Operation for Air Conditioning



### Motor Speed Setting



## Split Range Transmitters

- Manipulating and balancing multiple valves/final control elements with single input
- V-shape and parallel characteristics

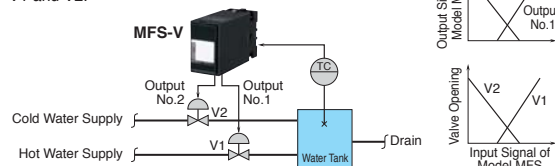


FUNCTION	MODEL
Split range, two outputs	MFS
Split range, four isolated outputs	MFS2

## APPLICATION EXAMPLE

### V-Shape Output Characteristics (Model: MFS-V)

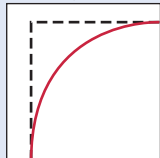
The relationship between the valve control signal and the actual opening of the valve is the same for both V1 and V2.



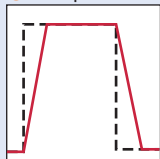
# Function Modules

## I/O CHARACTERISTICS

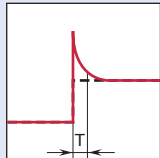
### 1 Delay buffer



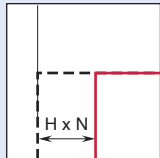
### 2 Ramp buffer



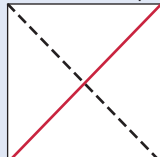
### 3 Lead time



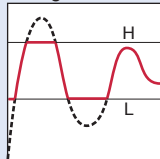
### 4 Dead time



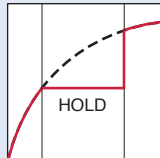
### 5 Inverted output



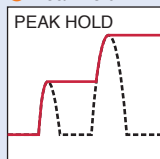
### 6 High/low limiting



### 7 Track/hold



### 8 Peak hold



SERIES	M2	M6S	M6N	M6D
Enclosure/Mounting Type	Plug-in base socket, DIN rail or surface mount	Ultra-slim housing, DIN rail mount		
Electric Wiring	M3 screw	Tension clamp	M3 screw	Euro terminal
I/O Range, Function Parameters	Specified when ordering	PC programmable		
Power Input	AC/DC	DC		
Isolation	2000V AC	2000V AC		
Operating Temperature	-5 to +55°C (23 to 131°F)	-20 to +55°C (-4 to +131°F)		
Standards & Approval	CE / UL / C-UL	CE / UL / C-UL		
FUNCTION	M2	M6S	M6N	M6D
Temperature/pressure compensation		M6SXF2	M6NXF2	M6DXF2
Addition $X_0 = X_1 + X_2$	M2ADS	M6SXF2	M6NXF2	M6DXF2
Subtraction $X_0 = X_1 - X_2$	M2SBS	M6SXF2	M6NXF2	M6DXF2
Multiplication $X_0 = X_1 \times X_2$	M2MLS	M6SXF2	M6NXF2	M6DXF2
Division $X_0 = X_1 \div X_2$	M2DIS	M6SXF2	M6NXF2	M6DXF2
Ratio function $X_0 = KX_1 + B$	M2REB			
Ratio function $X_0 = K(X_1 + B)$	M2RTS			
Delay buffer ①	M2CDS	M6SXF1	M6NXF1	M6DXF1
Ramp buffer ②	M2CRS	M6SXF1	M6NXF1	M6DXF1
Moving average		M6SXF1	M6NXF1	M6DXF1
Lead time / dead time ③④		M6SXF1	M6NXF1	M6DXF1
Linearization	M2XF2 (PC programmable)	M6SXF1	M6NXF1	M6DXF1
Square root extraction	M2FLS	M6SXF1	M6NXF1	M6DXF1
Palmer-Bowlus flume, Parshall flume, triangular/v-notch/rectangular weir		M6SXF1	M6NXF1	M6DXF1
Inverted output ⑤	M2UDS, M2UDS2	M6SXF1	M6NXF1	M6DXF1
High/low limiting ⑥	M2LMS	M6SXF1	M6NXF1	M6DXF1
Track/hold ⑦	M2AMS, M2AMS2	M6SXF3	M6NXF3	M6DXF3
Peak hold ⑧	M2PHS, M2PHS2	M6SXF3	M6NXF3	M6DXF3
High/low selecting	M2SES, M2SES2	M6SXF2	M6NXF2	M6DXF2
Switching two channels	M2MNV			
Parameter generator	M2MST			

## Manual Loading Stations

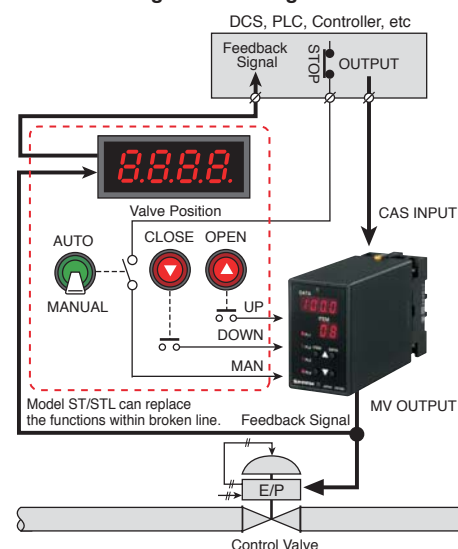


- Holding control signals in case of computer or DCS failure
- Manual control with an external Up/Down contact signal or with the front manual loader
- Ramp rate adjustable

FUNCTION	MODEL
ON/OFF signal input	CB2
ON/OFF signal input, programmable output	MXCB
Analog signal input	AB2
Analog signal input, programmable output	MXAB
Analog signal input, front manual loader	ABF3

## APPLICATION EXAMPLE

### Manual Loading Station Using the MXAB





- True RMS sensing
- Surface or DIN rail mounting
- M4 screw terminal
- Conform to IEC 60688
- Optional terminal cover
- Additional pulse rate output for totalizing counter (watt transducer)



FUNCTION	MODEL
AC current input, self-powered	LTCNE
AC current input	LTCE
AC current input, clamp-on current sensor	LTCEC
AC voltage input	LTPE
Watt transducer	LTWT
Watt transducer, self-powered	LTWTN
Var transducer	LTRP
Var transducer, self-powered	LTRPN
Power factor transducer	LTPF, LTPFU
Power factor transducer, self-powered	LTPFN, LTPFUN
Phase angle transducer	LTPA, LTPAU
Phase angle transducer, self-powered	LTPAN, LTPAUN
Frequency transducer	LTHZ
Frequency transducer, self-powered	LTHZN

### Clamp-on Current Sensor CLSE

- Easy-to-install, spring-loaded current sensor
- Primary up to 600 A / 480 V
- Over-voltage clamp element for safety in open circuit
- Wide frequency band
- Screw terminal connection



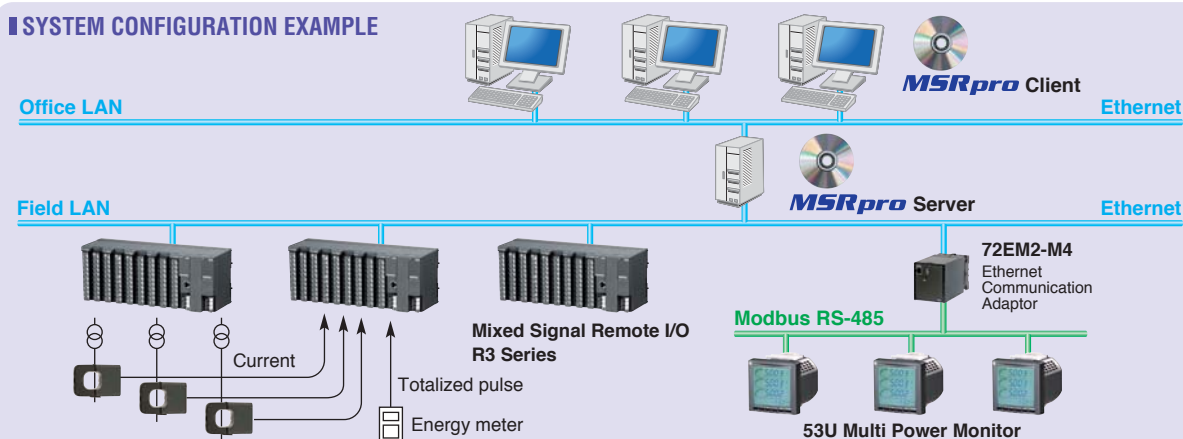
### Remote I/O Modules for Energy Consumption Monitoring

- Data from power distribution panels scattered throughout a building or a field site can be monitored using the local area Ethernet data network.
- Can handle CT, VT, ZCT, active power, totalizing pulse and all computed energy parameters.
- Integrating utility and process monitoring (e.g. flow, temperature, discrete signals)

FUNCTION	MODEL
AC current input, 4 points	R3-CT4x
AC current input, 8 points	R3-CT8x
Zero-phase current input, 4 points	R3-CZ4
AC voltage input, 4 points	R3-PT4x
AC voltage input, 8 points	R3-PT8x
AC power input, 4 circuits	R3-WT4x
Pulse totalizing input, 4 points	R3-PA4x
Multi power input, 1 or 2 circuits	R3-WTU

See P. 23 for all R3 Series modules

### SYSTEM CONFIGURATION EXAMPLE



# Multi Power Monitor

53U

- Single-phase/2-wire and 3-wire, three-phase/3-wire, 4-wire systems
- Three line measured value/bargraph indicators plus energy count/info display
- IP 50 front panel
- Modbus, Ao, Do options
- Standard accuracy type: voltage/current  $\pm 0.3\%$ , energy  $\pm 1\%$
- High accuracy type: voltage/current  $\pm 0.2\%$ , energy  $\pm 0.5\%$



53U

M-System's model 53U is a 96-mm-square Multi LCD Power Monitor mounted on a panel surface.

One model can be used for single-phase/2-wire and 3-wire, three-phase/3-wire and 4-wire systems. Users can freely choose and program major variables in heavy-current power systems, such like AC voltage/current, active/reactive power, power factor, AC frequency deviation, apparent power, active/reactive energy and up-to-the-31st harmonic distortions.

Measured variables also include the maximum/minimum/average values, in total of 500 types. Up to 1800 patterns of display combinations are available.

All measured variables can be transmitted to the host PC via RS-485/Modbus RTU. Conversion factors, system configuration, interval times are programmable using the front keys, or the PC Configurator Software locally or remotely. Measured values, counter values, display mode, setting data are stored in the non-volatile memory at the power off.

An open collector output can be used for energy count pulse or limit alarm trip. Pulse rate for energy count can be specified.

The contact output can be simulated for testing the connected device.

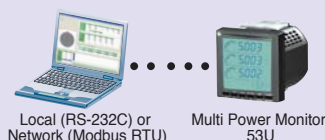
External open collector input is typically used to reset energy count memory. The signal can be also monitored at the host system via Modbus, so that the host can start/stop monitoring according to ON/OFF status of a load (e.g. motor running or not).

## User-Friendly PC Software Setting

Save yourself much time using the free PC Configurator software to create, save and download your own parameter settings.



Monitoring window for real-time, instantaneous values, max/min values, energy and harmonic distortions



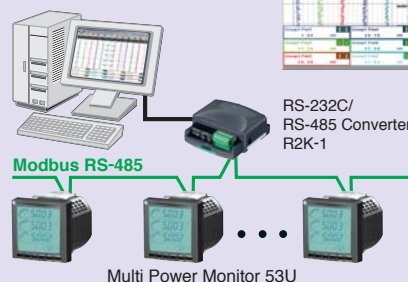
Local (RS-232C) or Network (Modbus RTU)



Configuration window for quick and easy viewing/setting of basic parameters

## Monitoring and Storing Measured/Computed Values on the PC

The PC Recorder Light MSR128LU dedicated for the 53U is free for downloading from our web site.



Modbus RS-485

RS-232C/  
RS-485 Converter  
R2K-1

Multi Power Monitor 53U

## Screw Terminal Type 54U / 54UC



- 110-mm-square panel flush mounted
- Two line measured value indicators, energy count/info display plus 60-segment bargraph
- Modbus or CC-link, Ao, Do options
- Infrared interface to connect with PC Configurator



## Multi Power Transducer LSMT3

- Measures AC current, voltage, active/reactive/apparent power and power factor
- AC/DC universal power input
- Conforms to IEC 60688







## Bargraph Indicators 48N Series

- 9/64 DIN size
- 101-segment, 3 mm wide LED
- Red, amber, green and blue colors
- Custom scale with no extra cost
- IP 65 front panel
- Separable terminal block



SERIES	48NV	48NA	48ND
Bargraph	101-segment LED, 100 mm (3.96 in) long, 3 mm (.12 in) wide		
Bar color	Red, Amber, Green, Blue		
Digital meter	---	---	4 digits, Red LED
Alarm output	---	2 or 4 points	2 or 4 points
Mounting direction	Vertical / Horizontal		Vertical
Degree of protection	IP 65 front panel		
Standards & Approval	CE		
FUNCTION	48NV	48NA	48ND
DC input, single channel	48NV-1	48NAV	48NDV
DC input, dual channel	48NV-2		
DC input, analog output		48NAVA	48NDVA
4-20 mA input, excitation supply		48NAVD	48NDVD
Thermocouple input		48NAT	48NDT
RTD input		48NAR	48NDR
Potentiometer input		48NAM	48NDM

## Digital Panel Meters 47 Series

- 1/8 DIN size
- IP 66 front panel
- Separable terminal block
- Bright and colorfull display (red, orange, green, bluegreen, blue, white) (47L Series)



### Six LED Colors – 47L Series



SERIES	47D	47L
Display	5 1/2 digit LCD	4- or 4 1/2 digit LED
Color	Red, Green	Red, Orange, Green, Bluegreen, Blue, White
Alarm output	Optional, 2 or 4 points	
DC output	Optional, programmable range	Optional
Excitation supply output	12 V or 24 V	---
Network interface	Optional, RS-485/Modbus RTU	---
Degree of protection	IP 66 front panel	
Standards & Approval	---	CE
FUNCTION	47D	47L
DC input, indication only		47LYV
DC input	47DV	47LV
Thermocouple input	47DT	47LT
RTD input	47DR	47LR
Potentiometer input	47DM	47LM
Strain gauge input		47LLC
AC input		47LAC
VT input		47LPT
CT input		47LCT
Frequency input (AC line voltage)		47LHZ
Frequency input		47LPA
Pulse input totalizer, 6 digits LED		47LPQ

# High-performance Dual / Quad Limit Alarms

The AS4 Series limit alarms are provided with two displays on the front face: 4-digit DATA display and 2-digit ITEM display. Using Up/Down buttons, configuration is simple by calling parameters' ID numbers (ITEM) and choosing values (DATA). The M7E Series limit alarms are provided with a multi-line LCD display, which shows the parameters and selections in text to guide you through the programming procedure: intuitive, easy programming just like operating your mobile phone. You won't need to consult the instruction manual.

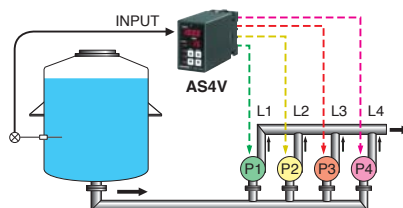
These displays indicate process values once commissioned at the field site, and the software's "programmable" mode can be locked out in order to prevent unwanted changes in the setting.







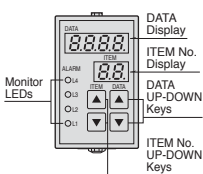
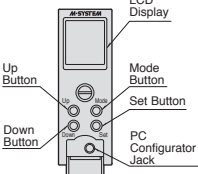
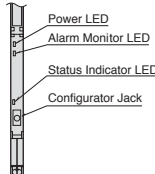
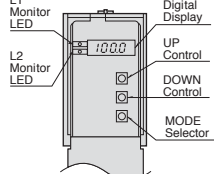
## APPLICATION EXAMPLE

### Staging Four Pumps Smoothly





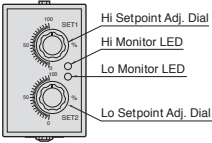
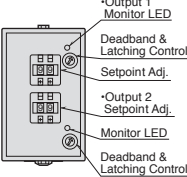
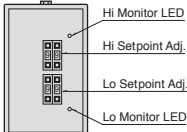
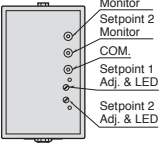
The Quad Alarm AS4V can be used to control the level of liquid in a tank by staging four pumps connected in parallel. Using multiple small pumps is an economical solution without needing an expensive equipment for complicated speed control of a single big and expensive pump.





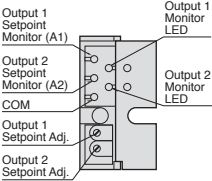
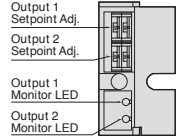
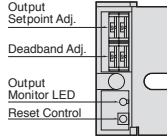
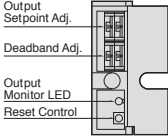
In addition, setting deadband for each control setpoint eliminates unwanted pump cycling ON and OFF sporadically around the setpoint, even when the water level changes continuously.



						
SERIES	AS4	M7E	M6S	M6N	M6D	MSEF
Front View						
Enclosure/Mounting Type	50 mm wide plug-in base socket, DIN rail or surface mount	29.5 mm wide plug-in base socket, DIN rail or surface mount	Ultra-slim housing, DIN rail mount			50 mm wide plug-in base socket, DIN rail or surface mount
Electric Wiring	M3.5 screw	M3 screw	Tension clamp	M3 screw	Euro terminal	M3.5 screw
Input Range, Alarm Setting	Front key programming	Front control buttons or PC software	PC software			Front control buttons
No. of Alarm Point	2, 4	2, 4	1			2
Relay Form	Dual SPDT or Quad NO or NC	Dual SPDT or Quad NO or NC	SPDT			SPDT
Alarm Setpoint	0 to 100%	0 to 100%	-2 to 102%			-14 to +113.5%
Deadband (Hysteresis) Adj.	FS	FS	0 to 99.9999%			0.5 to 15%
Latching Output	Yes	Yes	---			Yes
Setpoint Accuracy	±0.1% FS	±0.1% FS	±0.05% FS			±0.5%
Alarm Test	---	Yes	Yes			---
Power Input	AC/DC	AC/DC	DC			AC/DC
Operating Temperature	-5 to +55°C (23 to 131°F)	-5 to +55°C (23 to 131°F)	-20 to +55°C (-4 to +131°F)			-5 to +55°C (23 to 131°F)
Standards & Approval	CE / UL / C-UL	CE	CE			CE / UL / C-UL
FUNCTION	AS4	M7E	M6S	M6N	M6D	MSEF
DC input	AS4V	M7EASV	M6SXAS	M6NXAS	M6DXAS	MSEF
Thermocouple input	AS4T		M6SXAST	M6NXAST	M6DXAST	
RTD input	AS4R		M6SXASR	M6NXASR	M6DXASR	
Potentiometer input	AS4M					
4-20 mA input, excitation supply		M7EASDY				
Strain gauge input	AS4LC					
CT input	AS4CT					

# Analog Limit Alarms

				
MODEL	KSE	ASD1	KSED	AYDV
Front View				
Enclosure/Mounting Type	50 mm wide plug-in base socket, DIN rail or surface mount			
Electric Wiring	M3.5 screw			
Input Range Selectability	Specified when ordering			
No. of Alarm Point	1, 2	2	2	2
Relay Form	SPDT	SPDT	SPDT	SPDT
Alarm Setting	Dial	Thumbwheel switch	Thumbwheel switch	Multi-turn screwdriver (deviation of two inputs)
Alarm Setpoint	-15 to +120%	0 to 99%	0 to 99%	-50 to +50%
Deadband (Hysteresis) Adj.	---	14%	---	---
Latching Output	---	Yes	---	---
Setpoint Accuracy	±0.3%	±0.5%	±0.5%	±0.5%
Power Input	AC	AC	AC	AC/DC
Operating Temperature	-5 to +55°C (23 to 131°F)	-5 to +60°C (23 to 140°F)	-5 to +55°C (23 to 131°F)	-5 to +60°C (23 to 140°F)
Standards & Approval	CE	CE / UL / C-UL	CE / UL / C-UL	---

				
MODEL	M2AVS	M2SED	M2AS	M2AS1
Front View				
Enclosure/Mounting Type	29.5 mm wide plug-in base socket, DIN rail or surface mount			
Electric Wiring	M3 screw			
Input Range Selectability	Specified when ordering			
No. of Alarm Point	2	2	1	1
Relay Form	NO	SPDT	DPDT	SPDT
Alarm Setting	Multi-turn screwdriver	Thumbwheel switch	Thumbwheel switch	Thumbwheel switch
Alarm Setpoint	0 to 100%	0 to 99%	0 to 99%	0 to 99%
Deadband (Hysteresis) Adj.	---	---	FS	FS
Latching Output	---	---	Yes	Yes
Setpoint Accuracy	±0.5% (monitor 0-1V)	±0.5%	±0.5%	±0.5%
Power Input	AC/DC	AC/DC	AC/DC	AC/DC
Operating Temperature	-5 to +55°C (23 to 131°F)	-5 to +55°C (23 to 131°F)	-5 to +55°C (23 to 131°F)	-5 to +55°C (23 to 131°F)
Standards & Approval	CE	CE / UL / C-UL	CE	CE



# Hot Swappable, Fully Isolated Remote I/O

M-System's Remote I/O is designed to support DCS/PLC systems by expanding their I/O flexibility and capabilities in addition to providing all full channel-to-channel isolation. The Remote I/O communicates directly to the PLC and DCS via industry standard open-protocol networks.

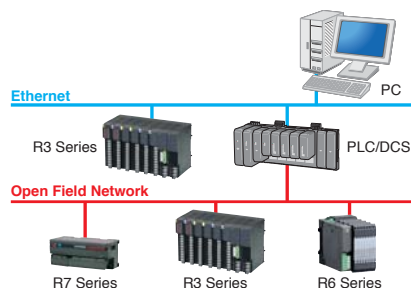
M-System's Remote I/O also can be used as stand-alone distributed I/O communicating with popular HMI software.

The Remote I/O can be located remotely in the field, or within an instrumentation cabinet such as test stands.

The flexibility and scalability of M-System's 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. Isolated analog I/O modules provide high-performance signal conversion/conditioning and complete three-way plus channel-to-channel isolation. This ensures you a highly dependable system.

Applications include: signal concentrator, data collection in flow and level monitoring, metalization sputtering machine monitoring and control, injection molding monitoring and control, test stands and prototyping, glass furnace temperature control, assembly line discrete ON/OFF, paint booth environment reporting, pharmaceutical processes.

## Remote I/O Replacement for PLC and DCS



## Ultra-Slim, Mixed Signal Remote I/O R6 Series

- Only 78 mm (3.07 in) wide with the minimum system of 8 modules
- Extension by 8 module units — Max. 31 I/O modules
- 2 fully-isolated analog I/O per module
- 4-point discrete I/O per module
- Low power consumption
- 1500 Vac isolation

NEW



78 mm or 3.07 in. for R6D / R6S  
91 mm or 3.59 in. for R6N

### Three Terminal Connection Styles Selectable



Tension-Clamp R6S Series



Screw Terminal R6N Series



Euro Terminal R6D Series

## 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.
- 1500 Vac isolation



CE cULus

### Extension Module

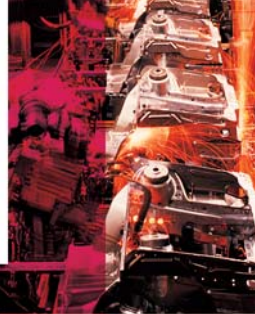


- 8 or 16 discrete input/output module can be attached to the base module.
- Analog and discrete signals can be mixed by combining a discrete I/O extension with an analog I/O module.

### 1500 Vac Isolation for Analog Modules



- Fully isolated between I/O, network and power input.
- Channel-to-channel isolation is also provided.



## Multi-channel, Mixed Signal 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
- 1500 Vac isolation



M3 screw terminal block is used for I/O modules. The removable terminal block is convenient for maintenance.



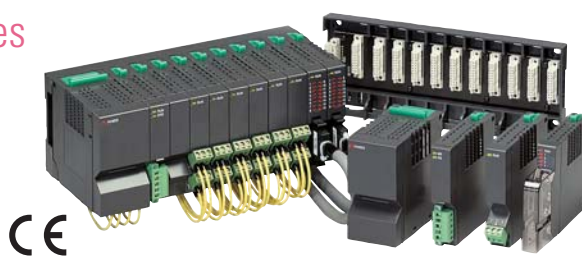
Network Module and Power Supply Module can be in one housing.



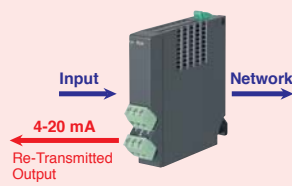
One I/O module plus one Network Module with power supply is the minimum unit: Space-saving and economical solution.

## Compact, Mixed Signal Remote I/O R5 Series

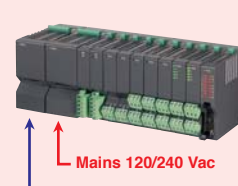
- 2 fully-isolated analog I/O per module
- Re-transmitted output modules suitable for extra field monitoring
- Dual redundant communication networks and power supplies
- 1500 Vac isolation



The slanted I/O terminals are easily accessible with high-density wiring.



Re-transmitted 4 to 20 mA output is optional for local monitoring or recording.



Add another power module for a backup power source.

## Compact, Multi-point Remote I/O R1 Series

- Economical all-in-one module for Modbus, CC-Link and DeviceNet
- 8-point (isolated) or 16-point (non-isolated) DC/TC input module
- 8-point RTD/Pot input module
- 4-point totalized counter input, 8 contact I/O module
- 12-point universal input module
- 32-point discrete I/O modules
- Trigger contact input and alarm contact output



# Great Flexibility in Number and Type of I/O Signals

## R6 Series NEW

FUNCTION		MODEL
8 I/O Slot Base		x=S, N or D
Base (8 I/O slots+ Network Module (18mm wide))		R6x-BS8A
Base (8 I/O slots+ Network Module (36.5mm wide))		R6x-BS8B
Base (8 I/O slots for extension)		R6x-BS8P
Power Module		
DC Power Supply Module		R6x-PF1
AC Power Supply Module		Future Plan
Network Module		
Modbus	32 ch.	R6-NM1
	64 ch.	R6-NM2
Modbus/TCP (Ethernet)	32 ch.	R6-NE1
	64 ch.	R6-NE2
DeviceNet	64 ch.	R6-ND1
PROFIBUS-DP	16 ch.	R6-NP1
CC-Link	Ver. 1; Analog 16 ch.	R6-NC1
	Ver. 2; Analog 64 ch.	R6-NC3
T-Link		R6-NF1

FUNCTION	CH	MODEL
<b>Analog Input Module (isolated)</b> <span>x=S, N or D</span>		
DC Voltage Input	2	R6x-SV2
DC Current Input	2	R6x-SS2
Thermocouple Input	2	R6x-TS2
RTD Input	2	R6x-RS2
<b>Analog Output Module (isolated)</b>		
DC Voltage Output	2	R6x-YV2
DC Current Output	2	R6x-YS2
<b>Discrete Input Module</b>		
Discrete Input	Di 4	R6x-DA4
<b>Discrete Output Module</b>		
NPN Transistor Output	Do 4	R6x-DC4A
PNP Transistor Output	Do 4	R6x-DC4B

## R7 Series

FUNCTION	MODEL						
	Modbus	Ethernet	DeviceNet	CC-Link	LONWORKS	MECHATROLINK	FLEX NETWORK
<b>Basic Module</b> <span>NEW</span>							
Discrete Input, 16 points	R7M-DA16	R7E-DA16	R7D-DA16	R7C-DA16	R7L-DA16*1	R7ML-DA16	R7FN-DA16
NPN Transistor Output, 16 points	R7M-DC16A	R7E-DC16A	R7D-DC16A	R7C-DC16A	R7L-DC16A*2	R7ML-DC16A	R7FN-DC16A
PNP Transistor Output, 16 points	R7M-DC16B	R7E-DC16B	R7D-DC16B	R7C-DC16B	R7L-DC16B*2	R7ML-DC16B	R7FN-DC16B
Relay Contact Output, 8 points	R7M-DC8C	---	R7D-DC8C	R7C-DC8C	---	---	R7FN-DC8C
Discrete Input & NPN Transistor Output, 8 points each	---	---	---	---	R7L-DAC16*3	---	R7FN-DAC16A
Discrete Input & PNP Transistor Output, 8 points each	---	---	---	---	---	---	R7FN-DAC16B
DC Voltage/Current Input, 4 points	R7M-SV4	R7E-SV4	R7D-SV4	R7C-SV4	R7L-SV4	R7ML-SV4	---
Thermocouple Input, 4 points	R7M-TS4	R7E-TS4	R7D-TS4	R7C-TS4	R7L-TS4	R7ML-TS4	---
RTD Input, 4 points	R7M-RS4	R7E-RS4	R7D-RS4	R7C-RS4	R7L-RS4	R7ML-RS4	---
Potentiometer Input, 4 points	R7M-MS4	R7E-MS4	R7D-MS4	R7C-MS4	---	---	---
AC Current Input, 4 points (clamp-on current sensor CLSE use)	R7M-CT4E	R7E-CT4E	R7D-CT4E	R7C-CT4E	---	---	---
DC Voltage Output, 2 points	R7M-YV2	R7E-YV2	R7D-YV2(A)	R7C-YV2	R7L-YV2	R7ML-YV2	---
DC Current Output, 2 points	R7M-YS2	R7E-YS2	R7D-YS2(A)	R7C-YS2	R7L-YS2	R7ML-YS2	---
Remote Control Relay Control Output, 8 points	---	---	---	---	R7L-RR8	---	---
<b>Extension Module</b>							
Discrete Input, 8 points	R7M-EA8	R7E-EA8	R7D-EA8	R7C-EA8	R7L-EA8	R7ML-EA8	---
Discrete Input, 16 points	R7M-EA16	R7E-EA16	R7D-EA16	R7C-EA16	R7L-EA16	R7ML-EA16	---
NPN Transistor Output, 8 points	R7M-EC8A	R7E-EC8A	R7D-EC8A	R7C-EC8A	R7L-EC8A	R7ML-EC8A	---
NPN Transistor Output, 16 points	R7M-EC16A	R7E-EC16A	R7D-EC16A	R7C-EC16A	R7L-EC16A	R7ML-EC16A	---
PNP Transistor Output, 8 points	R7M-EC8B	R7E-EC8B	R7D-EC8B	R7C-EC8B	R7L-EC8B	R7ML-EC8B	---
PNP Transistor Output, 16 points	R7M-EC16B	R7E-EC16B	R7D-EC16B	R7C-EC16B	R7L-EC16B	R7ML-EC16B	---

\*1: Momentary or totalized pulse input

\*2: One-shot output available

\*3: Momentary or totalized pulse input, one-shot output available

## R1 Series

FUNCTION	MODEL		
	Modbus	DeviceNet	CC-Link
Universal Input Module (12 points; isolated)	RZMS-U9	---	---
Thermocouple & DC Input Module (8 points; isolated)	R1MS-GH3	---	---
Thermocouple & DC Input Module (16 points)	R1M-GH	R1D-GH2	R1C-GH
RTD & Potentiometer Input Module (8 points)	R1M-J3	---	---
Contact I/O Module (4 totalized counter inputs, 8 contact inputs and outputs)	R1M-P4	---	---
Contact Input Module (32 points)	R1M-A1	---	---
Contact Output Module (32 points)	R1M-D1	---	---





		R3 Series		R5 Series	
FUNCTION		CH	MODEL	CH	MODEL
<b>Base</b>					
Installation Base		R3-BS		R5-BS	
Installation Base (free I/O address)		R3-BSW		---	
Extender Power Module Base		---		R5-EX1	
<b>Power Module</b>					
Power Supply Module	750mA	R3-PS1		---	
	1.5A	---		R5-PS	
	2A	R3-PS3		---	
<b>Network Module</b>					
Modbus		R3-NM1		R5-NM1	
Modbus/TCP (Ethernet)		R3-NE1		R5-NE1	
DeviceNet	Analog 16 ch.	R3-ND1		R5-ND1	
	Analog 32 ch.	R3-ND2		R5-ND2	
	Analog 64 ch.	R3-ND3		---	
PROFIBUS	DPV1	R3-NP1		---	
	Analog 16 ch.	---		R5-NP1	
	Analog 32 ch.	---		R5-NP2	
CC-Link	Ver. 1; Analog 16 ch.	R3-NC1		R5-NC1	
	Ver. 1; Analog 32 ch.	R3-NC2		R5-NC2	
	Ver.2	R3-NC3		---	
LONWORKS		R3-NL1		---	
		R3-NL2		---	
T-Link		R3-NF1		R5-NF1	
FL-net		R3-NFL1	NEW	---	
<b>Analog Input Module (isolated)</b>					
DC Voltage Input	4	R3-SV4	1	R5(T)-SV1	
	4 millivolt Input	R3-SV4A	2	R5(T)-SV2	
	4 wide span voltage	R3-SV4B R3-SV4C	---	---	
	8	R3(Y)-SV8	---	---	
	8 millivolt Input	R3-SV8A	---	---	
	8 wide span voltage	R3-SV8B R3-SV8C	---	---	
	8 (non-isolated)	R3(Y)-SV8N	---	---	
	16 (non-isolated)	R3(Y)-SV16N	---	---	
DC Current Input	4	R3-SS4	1	R5(T)-SS1	
	8	R3(Y)-SS8	2	R5(T)-SS2	
	8 (non-isolated)	R3(Y)-SS8N	---	---	
	16 (non-isolated)	R3-SS16N	---	---	
Thermocouple Input	4	R3-TS4	1	R5(T)-TS1	
	8	R3-TS8	2	R5(T)-TS2	
RTD Input	4	R3-RS4	1	R5(T)-RS1	
	8	R3(Y)-RS8	2	R5(T)-RS2	
	8	R3-RS8A	1	R5-RSA1	
	---	---	2	R5-RSA2	
Potentiometer Input	4	R3-MS4	1	R5-MS1	
	8	R3(Y)-MS8	2	R5-MS2	
4-20mA Input with Excitation	4	R3-DS4	1	R5(T)-DS1	
	4	R3-DS4A	2	R5(T)-DS2	
	8 (non-isolated)	R3-DS8N	---	---	
Strain Gauge Input	2	R3-LC2	---	---	
CT Input	4	R3-CT4	1	R5T-CT1	
	---	---	2	R5T-CT2	
Zero-phase Current Input	4	R3-CZ4	---	---	
AC Current Input (clamp-on current sensor use)	4	R3-CT4A	1	R5T-CTA1	
	4	R3-CT4B	2	R5T-CTA2	
	4	R3-CT4C	---	---	
	8	R3-CT8A	1	R5T-CTB1	
	8	R3-CT8B	2	R5T-CTB2	
	8	R3-CT8C	---	---	

		R3 Series		R5 Series	
FUNCTION		CH	MODEL	CH	MODEL
AC Voltage Input		4	R3-PT4	1	R5T-PT1
		---	---	2	R5T-PT2
AC Power Input	4 input circuits	R3-WT4	---	---	
AC Power Input (clamp-on current sensor use)	4 input circuits	R3-WT4A	---	---	
	4 input circuits	R3-WT4B	---	---	
Multi Power Input	1 system	R3-WT1	---	---	
Multi Power Input (clamp-on current sensor use)	1 system	R3-WT1A	---	---	
	1 system	R3-WT1B	---	---	
	1 or 2 system	R3-WTU	---	---	
<b>Analog Output Module (isolated)</b>					
DC Voltage Output	4	R3-YV4	1	R5(T)-YV1	
	8	R3(Y)-YV8	2	R5(T)-YV2	
DC Current Output	4	R3(Y)-YS4	1	R5(T)-YS1	
	---	---	2	R5(T)-YS2	
<b>Pulse I/O Module (isolated)</b>					
Totalized Pulse Input	Pi 16	R3(Y)-PA16	Pi 2	R5(T)-PA2	
High Speed Totalized Pulse Input	Pi 4	R3-PA4A	---	---	
Low Speed Totalized Pulse Input	Pi 4	R3-PA4B	---	---	
High Speed Pulse Input	Pi 4	R3-PA4	---	---	
Encoder Input	Pi 2	R3-PA2	---	---	
Pulse Output	Po 16	R3-PC16A	Po 2	R5(T)-PC2	
<b>Analog Input Module with Transmitter Output (isolated)</b>					
DC Voltage Input	---	---	1	R5-SV1A	
DC Current Input	---	---	1	R5-SS1A	
Thermocouple Input	---	---	1	R5-TS1A	
RTD Input	---	---	1	R5-RS1A	
Potentiometer Input	---	---	1	R5-MS1A	
4-20mA Input with Excitation	---	---	1	R5-DS1A	
<b>Alarm Module (isolated)</b>					
DC Voltage Input	4	R3-AV4	---	---	
	8	R3-AV8	---	---	
DC Current Input	4	R3-AS4	---	---	
	8	R3-AS8	---	---	
Thermocouple Input	4	R3-AT4	---	---	
RTD Input	4	R3-AR4	---	---	
4-20mA Input with Excitation	4	R3-AD4	---	---	
<b>Discrete Input Module</b>					
Discrete Input	---	---	Di 4	R5(T)-DA4	
	Di 16	R3(Y)-DA16	Di 16	R5-DA16	
Discrete Input (with excitation supply)	Di 16	R3(Y)-DA16A	---	---	
	Di 32	R3-DA32A	---	---	
	Di 64	R3-DA64A	---	---	
AC Contact Input	Di 16	R3-DA16B	---	---	
<b>Discrete Output Module</b>					
Relay Contact Output	Do 16	R3(Y)-DC16	Do 4	R5(T)-DC4	
	Do 16	R3-DC16A	Do 16	R5-DC16	
Open Collector Output	Do 32	R3-DC32A	---	---	
	Do 64	R3-DC64A	---	---	
Triac Output	Do 16	R3-DC16B	---	---	
<b>BCD Code I/O Module</b>					
BCD Code Input	7-digit BCD	R3-BA32A	---	---	
BCD Code Output	7-digit BCD	R3-BC32A	---	---	

R3Y: connector type  
R5T: screw terminal block type

# Paperless Recorder

M-System's 73VR Series are panel mount paperless recorders with a 5.5 inch TFT color LCD display. Fitting into DIN standard 144 mm square panel cutout, they can easily replace existing small-size paper recorders.

The 73VR features a widely scalable input capability with three different I/O interfaces: the 73VR2100 with built-in universal inputs up to 12 points, the 73VR3100 with selectable input modules mounted at the rear side, and the 73VR1100 with remote I/O modules networked via Modbus RTU. The 73VR3100 can also communicate directly to major PLC via DeviceNet, Modbus and PROFIBUS-DP.

Measured data are locally stored in a CF card but can be transferred in real time to the host PC via Ethernet, viewed and stored on the MSR128 PC Recorder program. The MSR128 and the dedicated 73VRWV Data Viewer can retrieve data stored in the card via Ethernet FTP without interrupting local data recording.

Thanks to the versatility of I/Os and the compatibility with the PC Recorder and PLC systems, a wide range of applications are conceivable: from a simple temperature monitoring for a furnace/refrigerator to multi-point data logging, power and utility monitoring/recording in a building/factory. The IP 65 front panel is also suitable for use in food plants/sanitary installations.

## Remote I/O Acquisition: 73VR1100

- Recording up to 128-point data transmitted from independent I/O located remotely in the field, or inside an instrumentation or control cabinet.
- Instead of using expensive sensor cables, reduce wiring runs by using field networks.
- I/O separated 73VR1100 provides an installation flexibility, fitting in the tight space of a control panel or machinery chassis.



## Built-in Universal Input: 73VR2100

- DC current/voltage, thermocouple and RTD inputs from 2 to 12 points
- Independent input type and range selectable for each channel
- 100 msec. storing rate up to 6 points



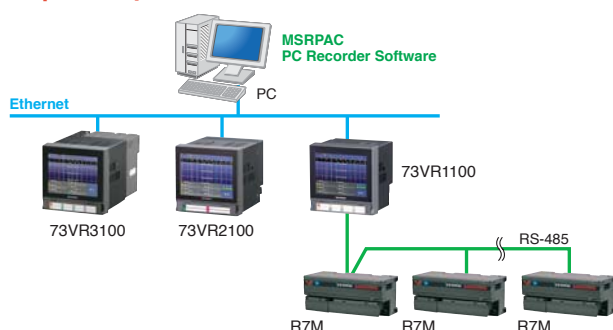
## Selectable I/O Modules: 73VR3100

- Up to four R3 Series I/O modules (max. 64 points) can be selected and mounted at the rear of the recorder.
- Compatible with various open networks to communicate with major PLC: the 73VR3100 used as remote I/O with local display and recorder, integrated in a PLC control system
- 20 msec. storing rate with the combination of 8 analog and 8 discrete inputs



### SYSTEM CONFIGURATION EXAMPLE

#### ■ Expanded System via Ethernet



### 1/4 DIN Size: 71VR1

**NEW**

- 1/4 DIN size (96 x 96 mm) panel mount, IP 65 protection
- 3.5 inch TFT color LCD
- Max. 8-point analog and 8-point discrete inputs are stored, displayed and alerted.
- Built-in input terminals (Ai2, Di2, Do2) and optional remote inputs
- Data can be transferred to PC via the front IR port



# Remote Data Acquisition Hardware and Software PC Recorder



- Data collected by PC Recorder Software: PC Recorder Light, MSR128 and MSRpro
- Modbus RTU or Modbus TCP/IP (Ethernet) network
- Full featured PC Recorder Software MSR128 for monitoring up to 128 channels simultaneously
- High speed sampling 50 ms / 8 ch with the basic software PC Recorder Light
- Client/Server System MSRpro for monitoring up to 2048 channels
- Complete lines of M-System's remote I/O products are available to accept a wide variety of field signal

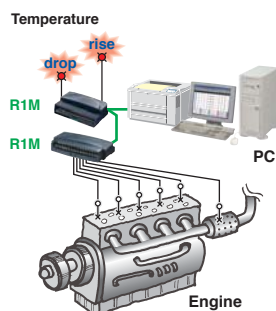
M-System's PC Recorder Series provides a low cost industrial grade data acquisition system using free combinations of remote I/O hardware and monitoring/recording software.

Field I/Os connect directly to the remote I/O modules and data is transmitted via Modbus RTU protocol over an RS-485 network. Ethernet network, Modbus TCP/IP protocol, is also usable either directly by Ethernet I/O modules or via a protocol converter by Modbus RTU I/O modules.

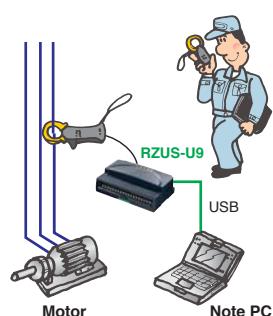
Complete M-System's remote I/O lines including R1, R3, R5, R7 Series, are available for PC Recorder applications. They can handle not only temperature, millivolt/voltage/current or discrete signals, but also other field sensors such as strain gauge and pulse generating pickups. Furthermore, a wide variety of power measuring modules for AC voltage/current, watt/var and energy inputs are ideal to monitor and analyze energy consumption trends in detail by production line to build up a new energy saving scheme.

The R1M, R2M and RZMS/RZUS modules are shipped with the free MSRPAC software package which includes the MSR128 and the PC Recorder Light. These economical modules are ideal for small scale temperature scanning applications such for silos, furnaces, ovens in many industrial fields, greenhouses, hydroponics plants, machine test benches and weather monitors. By using the universal input module RZMS/RZUS, other types of sensors signals, e.g. vibration, can be monitored together for failure analysis applications.

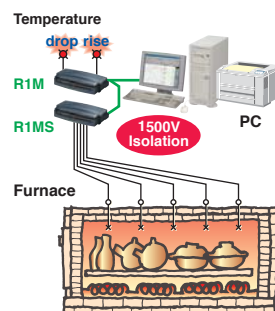
## APPLICATION EXAMPLES



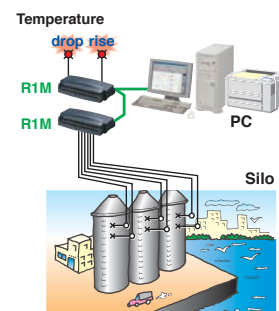
Engine Performance Testing



Data Logging for Energy Management



Furnace Temperature Monitoring



Silo Temperature Regulation

## PC RECORDER HARDWARE — Complete M-System's Remote I/O Lines are Available for PC Recorder Applications

Usable I/O modules depend upon the software type.



R2M Series



RZ Series



R5 Series



R1M Series



R7M Series



R3 Series



53U



73VR Series



# MSRPAC PC Recorder Software Package

## Log, Trend, Analyze and Profile Process Signals with Your PC MSRPAC PC Recorder Software Package

### MSR128LS / MSR128LV – PC Recorder Light

- Ideal for basic logging and trending purposes
- Maximum sampling rate of 50 ms for 8 channels, 500 ms to 1 minute for the total of 120 channels

The MSR128-Light is designed to operate on a PC of relatively low performance, even a Windows 98 PC, though certain functions of the MSR128 which require the PC's high performance, are not available. The data used for the recorder is saved in CSV format allowing easy export to other Windows programs such as Microsoft Excel. Two models are available to run on low resolution screens.

- MSR128LV for VGA (Screen area: 640 x 480 pixels)
- MSR128LS for SVGA (Screen area: 800 x 600 pixels)



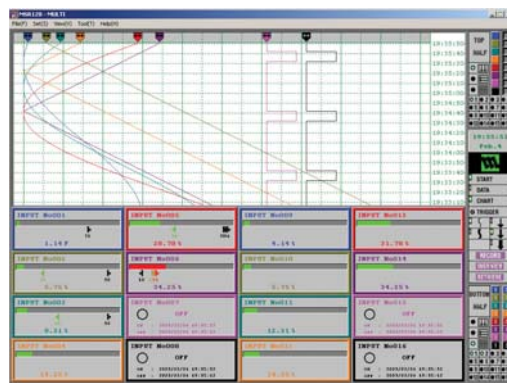
### MSR128 – Full Featured PC Recorder Software

- Ideal for logging, trending and analyzing continuous process and batch applications
- Up to 128 channels can be monitored simultaneously
- Maximum sampling rate of 500 ms for 128 channels
- High speed sampling 100 ms with R3 series TCP/IP module

The MSR128 works with all PC Recorder modules. The MSR128 software polls data from the input module, plots the value on the screen and stores it to the PC's hard drive.

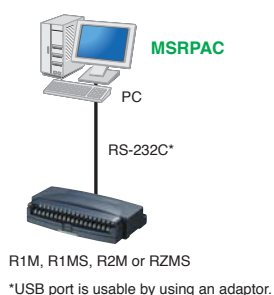
The data is polled, plotted and stored at a maximum rate of 500 ms for 128 channels. Historical trends can be recalled, edited and used to be printed as hard copies or to be exported to spreadsheets for further analysis.

Data can be exported in CSV format to popular spreadsheet software packages such as Microsoft Excel. Data can be directly imported allowing the user to take full advantage of spreadsheet software features.

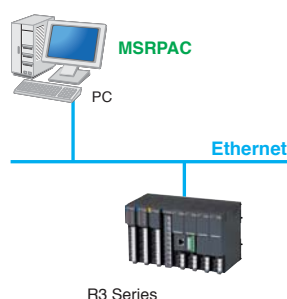


#### SYSTEM CONFIGURATION EXAMPLES

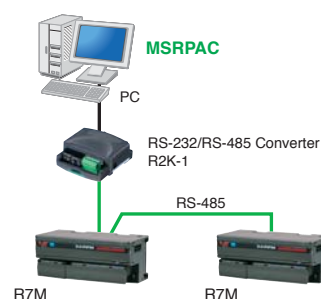
##### ■ Minimum Configuration



##### ■ Expanded System via Ethernet



##### ■ Expanded System via Modbus RTU



# MSRpro Client/Server System

## MSRpro Client/Server System High Performance PC Recorder

- **Max. 2048 points**
- **High speed 100 msec. mode up to 256 points**
- **Active trend view to compare in real time past and present data overlapped on each other**
- **Arithmetic and logic functions, including the ones performed between channels**
- **Alarm history and data search functions**

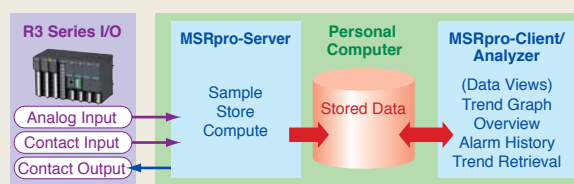
The MSRpro is a 'paperless pen-type' recording system for PC-based data acquisition and analysis. By communicating with I/O modules that have a LAN card communication interface, the MSRpro reads in input signals and stores them in a hard disk as digital data.

By sharing viewing and storing tasks by 'Client' and 'Server,' the MSRpro realizes the recording and operating functions of large number of input signals in high speed.

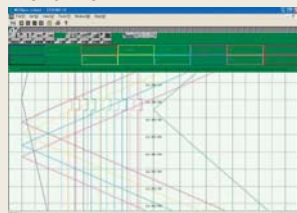
M-System's remote I/O modules, R3 Series, offer a wide variety of input signals including DC and AC signals, temperature, potentiometer, strain gauge and others.

### The MSRpro is a suite of three programs :

- MSRpro-Server** → Collects and stores input measurement data and executes arithmetic computation to it.
- MSRpro-Client / Analyzer** → Used to view, analyze and print measurement data.
- MSRpro-BUILDER** → Creates and modifies configurations for either program.



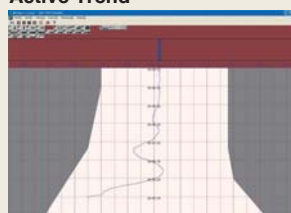
**Trend View**



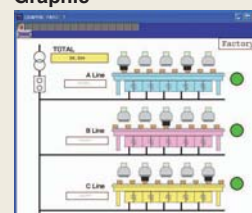
**Overview**



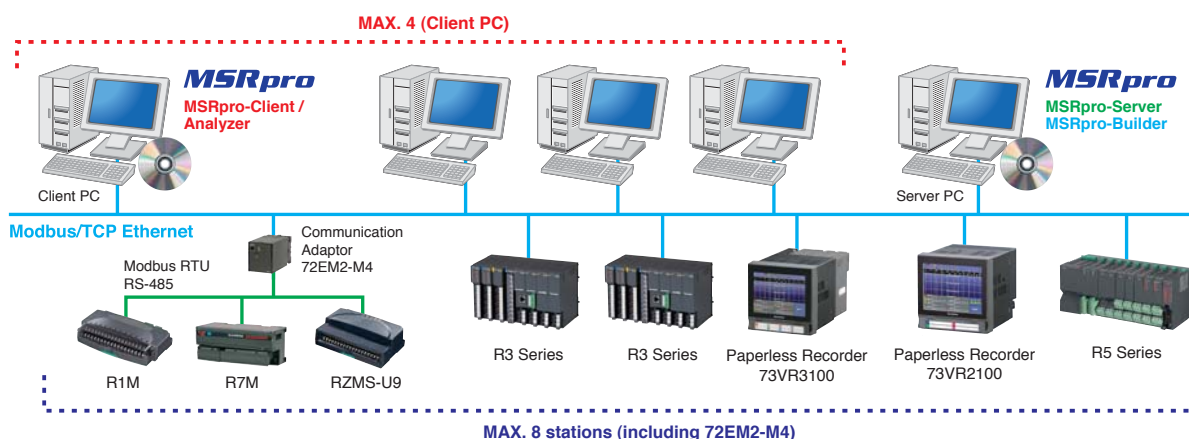
**Active Trend**



**Graphic**



### SYSTEM CONFIGURATION EXAMPLE



# Lightning Surge Protectors

M-RESTER  
SERIES

M-System Lightning Surge Protectors absorb only the lightning surges with no interruption of the instrumentation signal.

- Protecting sensor, signal and power lines
- Excellent protection by multi-stage SPD
- Superior selection across a wide range of applications

- ✓ 4-20 mA & pulse signals
- ✓ Thermocouple
- ✓ RTD
- ✓ Potentiometer
- ✓ Strain gauge
- ✓ Frequency pickup
- ✓ RS-485 / RS-422
- ✓ Ethernet, DeviceNet, PROFIBUS, LONWORKS
- ✓ AC/DC power supply lines up to 30 amps
- ✓ Life monitor function



Every year lightning destroys many millions of dollars of sensitive electronic equipment. Millions more are lost through extended down time and the loss of production or mission-critical information. That's why companies around the world depends on in-line M-RESTER Lightning Surge Protectors to protect both signal and power wires.

Why choose M-System? M-System is a specialist of signal conditioning, developing a variety of electronic devices interfacing field sensors and control rooms since 1972. This gives us a great advantage in understanding and minimizing interference and maximizing protection by surge protectors on the instrumentation signal lines.

M-System's surge protectors are identified by specific sensors or devices to be protected, such as 4-20 mA loop, RTD, pulse transducers, DC power line. Specifications of each model is carefully chosen so to provide maximum protection.

To protect sensor and signal lines, the MDP and MD7 Series are available. They are multi-stage SPD, which, in addition to the discharge element at the first stage, provide an extra protection by a series resistance with diodes to limit current flow. The maximum discharge current capacity is as high as 20 kA for an impulse wave of 8/20 microseconds for the MD7 Series.

The MDP Series module is separable in two parts: the head element and the base socket. The head element can be removed and tested without disconnecting wires, and the base socket connects input/output signals when the head element is removed, providing rudimentary protection even during maintenance work.

The MD7 Series, only 7 mm wide ultra slim module, is designed for multi-point, ultra-high density installation. DIN rail mounting/grounding and slanted terminal block help installation and wiring work in such tight space. When the DIN rail is grounded at single point, surge protectors mounted on it are automatically connected to the earth. There is no need of cross-wiring individual modules. Independent set of shield terminals are provided, therefore it is possible to choose 'Floating' or 'Grounding' shield terminals to suit users' application needs. Floating mode is effective to prevent a ground loop.

To protect power lines, a wide variety of multi-stage SPD are available depending on the line's load current capacity. In addition, the model MAKF and the MAT2 one-port surge protectors can be connected in parallel between the power and the ground lines regardless of load current.





## Plug-in Base Mounted MDP Series

- Lightweight, easy-to-handle, plug-in construction
- Head element can be removed and tested without disconnecting wires.
- Base socket connects input/output signals when the head element is removed.



APPLICATION		MODEL
4-20 mA loop, pulse signal, 24 V	CE (L)	MDP-24-1
4-20 mA loop, life monitor		MDPA-24
Thermocouple transmitter		MDP-TC
RTD transmitter	CE	MDP-RB
Potentiometer & transmitter		MDP-PM
Strain gauge & transmitter		MDP-LC
Self-synch & transmitter		MDP-JS
Pulse sensor & transmitter	CE	MDP-SP
DC power supply, 12/24 Vdc, 1A	CE	MDP-D
RS-422 / RS-485		MDP-4R
PROFIBUS-PA, FOUNDATION Fieldbus		MDP-PA
LONWORKS (FTT-10A)		MDP-LWA

## Battery Powered Health Testing

### MDPA-24

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



## Life Monitor & Surge Counter

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

- Protects 120 Vac / 240 Vac power supply lines for up to 5 amps load current
- Life monitor function helps you to decide when you should replace the surge protector, reducing maintenance and preventing downtime.
- Alarm contact output to alert externally the surge protector's health



CE

## One-Port SPD for Power Supply

### MAKF / MAT2 NEW

- Connected in parallel between the power and ground lines regardless of load current
- Thermal breaker ensures degraded head element to be automatically separated from the power lines to prevent overheating.
- MAT2 applicable to three-phase power line in single module



## Ultra-Slim MD7 Series

- High density mounting with 7 mm wide modules
- Max. discharge current 20 kA (8/20  $\mu$ sec.)
- Floating mode for the field to avoid ground loops
- DIN rail mounting / grounding

CE Ex



APPLICATION	MODEL
4-20 mA loop, pulse signal, 24 V	MD7ST
4-20 mA loop, life monitor	MD7AST*
2-wire transmitter loop	MD72W
2-wire transmitter loop, 2 channels	MD72WD
3-wire transmitter loop	MD73W
Thermocouple transmitter	MD7TC
RTD transmitter	MD7RB
Potentiometer & transmitter	MD7PM
Strain gauge & transmitter	MD7LC
Self-synch & transmitter	MD7JS*
Pulse signal, 2 channels	MD7PL
DC power supply, 12/24 Vdc, 1A	MD7DP*
RS-422 / RS-485	MD74R
PROFIBUS-PA	MD7PA
FOUNDATION Fieldbus	MD7FB
LONWORKS (FTT-10A)	MD7LWA

\* No ATEX approval

## Field Transmitter Cable Conduit Mount

### MD6N-24 / MD6T-24 / MD6P-24

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



CE Ex FM APPROVED

## PoE / 1000BASE-T Ethernet Use

### MDCAT NEW

- Power-over-Ethernet compatible
- 1000BASE-T / 100BASE-TX / 10BASE-T
- Ideal to protect network devices powered from Ethernet such as webcams
- Conforms to IEC 61643-21, Categories C1, C2



CE

## 8-port Ethernet Switch

### SHSP

- 8-port Ethernet switch with surge protector for each port
- Protects Ethernet devices from surges entering through LAN cables
- Surge protector life monitor function with LED and contact output alarm
- Data transfer rate can be fixed.



CE

# Electronic Actuators

- High resolution positioning for superior valve control
- Brushless DC stepping motor assures long-life operation
- Built-in overload protection

M-System's Model PSN Series is a micro-processor based valve actuator employing a constant torque DC stepping motor. A wide variety of features are supplied with the unit for maximum application flexibility. The PSN incorporates a non-contact angle sensor that eliminates failures such as, dirty or corroded contacts that are common with mechanical contact feedback sensing. Field-programmable for full-open/closed positions, split ranges, deadband, opening/closing speed and restart limiting timers using hand-held programmer Model PU-2A.

The PSN includes built-in fuse for over-current protection, error detection for stuck valve and temperature sensing to prevent servo motor overheating. Alarm indication is provided for fault conditions. In cold climates, the PSN will apply a small current to warm the servo motor.

For failsafe operations, the PSN includes internal battery backup power. Additionally, discrete inputs on the unit can be used to force open or close the valve manually or from a remote PLC/DCS. In many instances, this can eliminate the need for a separate shutdown valve.







Applications include: chemical injecting/mixing, fuel valve control and other petrochemical, pharmaceutical, wastewater flow control, HVAC damper positioning and food machines.

The MSP and MRP Series linear and rotary actuators employ also a DC stepping motor with a high resolution feedback positioner and electronic limiters. In addition, the high reliability electronics can be combined with network communications to simplify installation and ensure long-life operation. The DeviceNet or CC-Link interface allows valves and dampers to be precisely controlled and their position monitored using the industry standard network interface. Networking multiple actuators greatly reduce the analog requirements of PLC and DCS systems in addition to the point-to-point wire installation costs, for example, in paper cross-direction profiling control in which dozens of actuators are used at once under single controller.









MSP5

## LINEAR MOTION TYPE

						
MODEL	MSP4 C€	MSP5 C€	MSP6 C€	PSN1 C€	PSN3 C€	CSP
DeviceNet MODEL	MSP4D C€	MSP5D C€	MSP6D C€	—	—	—
CC-Link MODEL	MSP4C	MSP5C	MSP6C	—	—	—
Max. stroke (mm / inch)	15 / 0.59	20 / 0.79	40 / 1.57	40 / 1.57	60 / 2.36	75 / 2.95
Max. thrust (N / lbs)	700 / 157	700 / 157	2500 / 562	3000 / 674	5000 / 1124	12000 / 2697
Resolution	1/1000 or 0.015 mm		1/1000 or 0.02 mm	0.04 mm	0.06 mm	Hysteresis 1 mm or less
Motor	Stepping motor			Stepping motor		AC motor
Position detection	Potentiometer			Brushless angle sensor		Potentiometer
Failsafe operation	---			Optional		---

## ROTARY MOTION TYPE

						
MODEL	MRP4 C€	MRP5 C€	MRP6 C€	CRP-0	CRP-1	CRP-2
DeviceNet MODEL	MRP4D C€	MRP5D C€	MRP6D C€	—	—	—
CC-Link MODEL	MRP4C	MRP5C	MRP6C	—	—	—
Max. angle	90°, 180°	90°	90°, 180°	90°		
Max. torque (N·m / ft·lbs)	5 / 3.69	10 / 7.38	33 / 24.3	68.6 / 50.6	196 / 144.7	588 / 434.0
Resolution	1/1000 or 0.09°			0.45°, 0.68°, 0.90°		
Motor	Stepping motor			AC motor		
Position detection	Potentiometer			Potentiometer		

# Visit [www.m-system.co.jp](http://www.m-system.co.jp) for more information about M-System products!

## M-System's Global Home Page

[www.m-system.co.jp](http://www.m-system.co.jp)



### Select Your Language or Region

- Japanese
- Global English
- North America (Canada, Mexico, U.S.A.)
- Simplified Chinese
- Traditional Chinese
- Korean



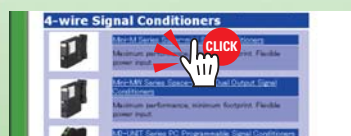
## DATA LIBRARY

Find specifications and instruction manuals no matter how old the product, downloadable at our DATA LIBRARY, updated weekly.



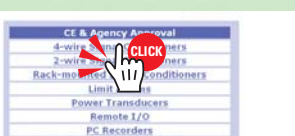
### 1 Search By Product Name and Function

Series Index lists the product categories or series names of signal conditioners and other products.



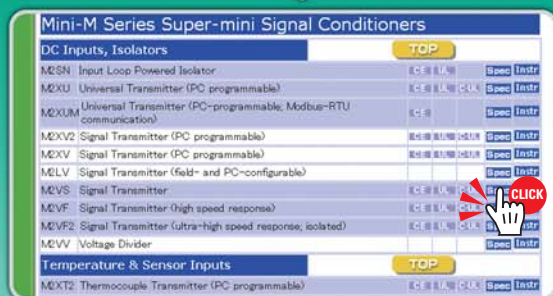
### 2 CE & Agency Approval

For searching products with CE, UL/C-UL or hazardous location approvals.



### 3 Search By Model No.

If you already know Model No. of the product you need, use our Model No. index.





**P4** Four-wire Signal Conditioners

**P10** Two-wire Signal Conditioners

**P15** Power Transducers

**P17** Panel Indicators

**P18** Limit Alarms

**P20** Remote I/O

**P24** Paperless Recorder

**P25** PC Recorder

**P28** Lightning Surge Protectors

**P30** Electronic Actuators



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E-mail: [info@m-system.co.jp](mailto:info@m-system.co.jp)

Specifications are subject to change without notice. When ordering, use the latest data sheets available at M-System web site: [www.m-system.co.jp](http://www.m-system.co.jp).