CLIPBOARD
M-System Newsletter

May 2007

No.149

The "CLIPBOARD" is a newsletter from M-System.

It introduces to you new products, literature, product applications and other important information we pick up in our daily business correspondence.

Your comments, views and contribution are especially welcome.

INSIDE

PRE-RELEASE INFO

CC-Link communicable electronic actuator

CC-Link communicable electronic actuator, MSP4C, MSP5C, MSP6C, MRP4C, MRP5C and MRP6C will be released.

We are pleased to introduce additional products to MINI-TOP series. The newly electronic actuators will be released as linear motion type and rotary motion type and they are available to connect to CC-Link capable PLC and other devices on the same network. Easy wired and remote configuration via CC-Link is applicable. As for each specification, please refer below listed chart.

	Linear type					
Model	**MSP4D**	**MSP5D**	**MSP6D**	**MSP4C**	**MSP5C**	**MSP6C**
Network	DeviceNet			CC-Link Ver.1.10		
Position detection	Potentiometer					
Stroke/Span	15mm	20mm	40mm	15mm	20mm	40mm
Thrust/Torque	700N	700N	2500N	700N	700N	2500N
Max. operation time	24sec/10mm	12sec/10mm	9sec/10mm	5sec/10mm	5sec/10mm	5sec/10mm
Motor	Stepping motor					
Circuit connection						
• Communication	5-core mictro-style connector, male			5-core mictro-style connector, male		
• Power	4-core micro-style connector, male			4-core micro-style connector, male		
Standard	CE	CE	CE	N/A	N/A	N/A

	Rotary type					
Model	**MRP4D**	**MRP5D**	**MRP6D**	**MRP4C**	**MRP5C**	**MRP6C**
Network	DeviceNet			CC-Link Ver.1.10		
Position detection	Potentiometer					
Stroke/Span	180deg	90deg.	180deg.	180deg.	90deg.	180deg.
Thrust/Torque	5N.m	10N.m	33N.m	5N.m	10N.m	33N.m
Max. operation time	12sec/90deg.	22sec/90deg.	7sec/90deg.	7sec/90deg.	13sec/90deg.	4sec/90deg.
Motor	Stepping motor					
Circuit connection						
• Communication	5-core mictro-style connector, male			5-core mictro-style connector, male		
• Power	4-core micro-style connector, male			4-core micro-style connector, male		
Standard	CE	CE	CE	N/A	N/A	N/A

Paperless recorder for the sterilizer system at food manufacturing plant

M-System's 7xET series is a Windows CE based touch-panel display installed with simplified on-site PC Recorder software. Data from PC Recorder I/O modules can be transferred via Ethernet in real time to the PC Recorder Software (MSR128) installed in a host PC. It can also function as an independent local site recorder in conjunction with I/O modules connected via RS-232C or RS-485. Data can be then stored in a CF card, retrieved and edited on the MSR128 separately. A wide selection of Modbus I/O modules compatible with M-System's PC Recorder series are also available.

M-System's MSR128 series is a Windows PC-based recorder software program, which connects to economical I/O modules such as models RZUS, RZMS, R1M, R2M, R3 and R5 and has inputs of DC mV, mA, thermocouple, RTD/potentiometer and discrete I/Os. The MSR128 is fully featured enabling the logging, trending, acquisition and analysis of application data. Combined with I/O modules, the MSR128 provides a low cost, industrial grade data acquisition system.

Success Story - Data acquisition from sterilizer system at food manufacturing plant

The customer was using a paper based chart recorder previously but wanted to more easily log and trend his data in a more economical method. The application was to record temperature input and the elapsed time of processing powder; to heating it to specific temperature and sterilize it. Their sterilizing system is to process food product materials (powders), including such items as curry powder.

The customer was looking for a solution-solving product that could meet their requirements:

1) To reduce the constant mechanical troubles the existing chart recorder was having due to vibrations caused by the sterilizer unit used to blend powders.

2) To reduce paper waste caused by existing paper recorders.

M-System's 7xET series is a chartless recorder, storing data into a CF card. Stored data in a CF card is portable and usable on an independent PC for further analysis. The 7xET has an Ethernet interface, which provides access from an office based PC or one residing on a LAN.

Ethernet communication transmits data of specific channels stored in real time to a host PC installed with the PC Recorder Software Model MSR128. Data stored in the CF Card can be uploaded to the MSR128 using FTP protocol.

By using MSR128, data transferred to a PC can be recalled, edited and used to be printed as hard copies or to be exported to spreadsheets for further analysis. Data is stored in binary format and exportable to CSV format, which can be further converted to popular spreadsheet software packages, such as Microsoft Excel.

The 7xET is a touch panel display, installed with M-System's Paperless Recorder Software, recording 128 points maximum. Various types of I/O modules are selectable to connect to the 7xET. The R1M/R2M is connected via a RS-232C cable, or extended via RS-485 by inserting a RS-232C/RS-485 converter (model: R2K-1). The R5-NM1 or R3-NM1 and other modules, up to 15 in total, can be connected via RS-485 twisted-pair cable.

The 7xET system is highly regarded by customers for easy maintenance compared to traditional chart recorders, due to its ability to significantly reduce the running cost of supplies and labor. It also provides data analysis by a PC allowing for improved efficiency of their work.

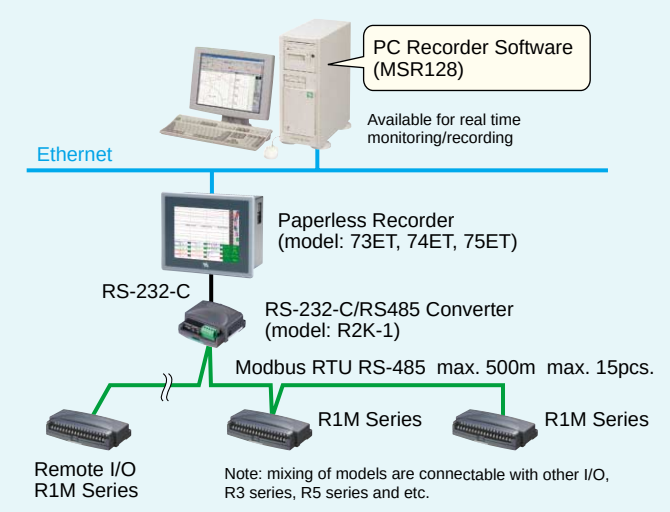


Figure 1. System configuration

The M6D Series is a new addition to M-System's variety of signal conditioners.

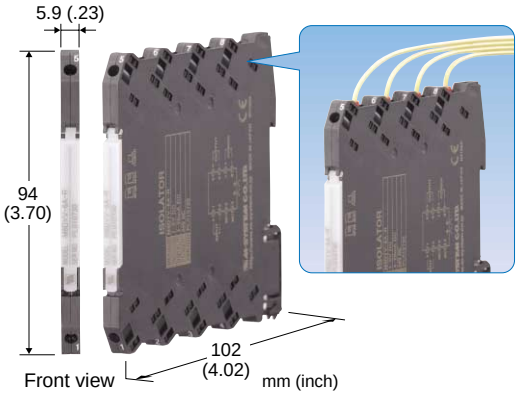


Figure 1. Appearance and dimensions of M6DVS and M6DYV

1. Shape

The stylish M6D's housing is ultra-slim 5.9-mm-wide. Top and bottom of its housing are provided with each four terminals which are slanted for ease of wiring.

DIN rail mounting provides easy installation.

Ultra-slim 5.9 mm width improves space saving efficiently. The M6D fits effectively into tight space in the panel.

Zero and Span adjustors are equipped at the front, operable same as other M-System signal conditioners.

2. Specifications

Input, output, and power specifications of M6DVS and M6DYV are as shown in Table 1.

In addition to its slim design, the M6D Series provides superb low power consumptions. In order to enable the high density mounting, the M6D Series adopted the energy saving design with fundamental reviews of electronics circuit and components.

With the energy-saving design, the power consumption of the M6DYV for 4 to 20 mA DC output is a maximum of 250 mW with 50 ohm load resistance, 350 mW with 250 ohm, and 450 mW with 550 ohm. (see Figure 4).

A power consumption of 500 mW is half the power consumption of the M3SYV Isolator and 1/6 the power consumption of the M2YV, both of which are M-System's conventional models.

Besides, the other specifications are as follows.

The operating temperature range is as wide as -20°C to +55°C.

2,000 V AC isolation is provided between input to output to power to ground.

The standard response time is 0.5 s and the optional fast response is approximately 25 ms, that responds to a variety of needs.

Figure 2. Interior of M6DVS and M6DYV

Table 1. Specifications of M6DVS and M6DYV

M6DVS		M6DYV	
Input		**Input**	
◆ Current 4 to 20 mA DC 2 to 10 mA DC 1 to 5 mA DC 0 to 20 mA DC 0 to 16 mA DC 0 to 10 mA DC 0 to 1 mA DC 10 to 50 mA DC Specified current range	◆ Voltage 0 to 1 V DC 0 to 10 V DC 0 to 5 V DC 1 to 5 V DC -10 to +10 V DC -5 to +5 V DC Specified voltage range	◆ Current 4 to 20 mA DC	◆ Voltage 1 to 5 V DC -10 to +10 V DC
Output		**Output**	
◆ Current 4 to 20 mA DC 0 to 20 mA DC 0 to 1 mA DC Specified current range	◆ Voltage 0 to 1 V DC 0 to 10 V DC 0 to 5 V DC 1 to 5 V DC -10 to +10 V DC -5 to +5 V DC Specified voltage range	◆ Current 4 to 20 mA DC	◆ Voltage 1 to 5 V DC -10 to +10 V DC
Power supply		**Power supply**	
24 V DC at approx. 0.5 W		24 V DC at approx. 0.45 W	

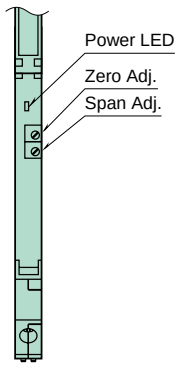


Figure. 3 Front panel of M6DVS and M6DYV

Power LED indicator is provided.

As mentioned above, the M6D Series is ultra-slim yet it demonstrates sufficient performance as a signal conditioner.

3. Safety standards & approvals

The M6D Series is CE marked.

The M6D Series is conforming with Electromagnetic Compatibility (EMC) Directive 89/336/EEC and designed to comply with UL3111-1 (Electrical Measuring and Test Equipment).

Table 2. M6D series Lineup Plan

Product	Model
Signal Transmitter	M6DVS
Isolator	M6DYV
Signal Transmitter (PC programmable)	M6DXV
RTD Transmitter (PC programmable)	M6DXR
Thermocouple Transmitter (PC programmable)	M6DXT
Potentiometer Transmitter (PC programmable)	M6DXM
Signal Transmitter (two isolated outputs)	M6DWVS
Current Loop Supply	M6DDY
Frequency Transmitter (isolated)	M6DPA
Input Loop Powered Isolator	M6DSN
Single trip DC Alarm (PC programmable)	M6DAS

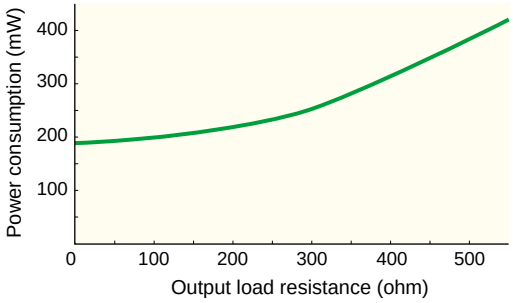


Figure 4. Power consumption of M6DYV

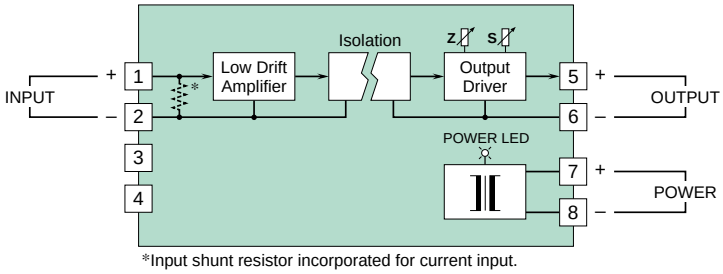


Figure 5. Block Diagram of M6DVS

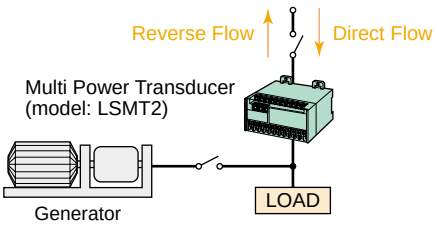
APPLICATION NOTES

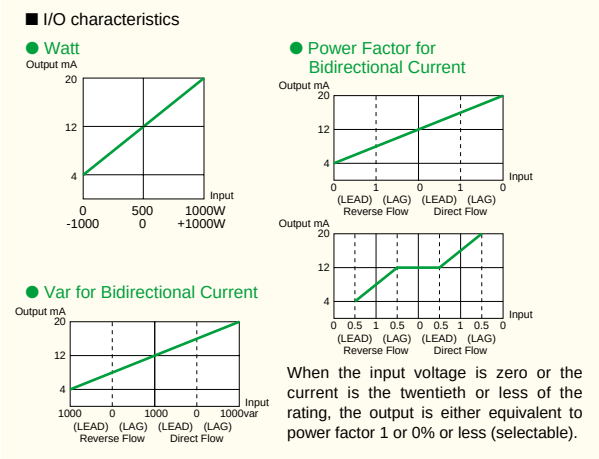
How to measure both power selling and power buying.

QUESTION

Our factory has a private electric generator and we do power selling as well as power buying. From a viewpoint of power management, we'd like to measure each item of Line current (A), Line voltage (V), Watt (W), Var (var) and Power factor (PF).

As for W, var and PF, we are looking for the transducer, which enables to distinguish power buying from power selling with 4-20mA output proportionally. Does M-System have any suitable power transducer?





ANSWER

M-System has a solution with the multi power transducer, model LSMT2. The LSMT2 has an analog output which is proportional to bidirectional current for Watt, Var and Power factor. It provides 4-12mA DC as selling power and 12-20mADC as buying power. The LSMT2 is multi type power transducer, so 10 analog outputs and 1 Wh pulse output or Modbus output are available. Measurable 10 analog outputs are Line current x 3, Line voltage x 3, Watt, Var, Power factor and Frequency.

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