



Making Data Acquisition Easy

CAGE/NCAGE Code: 3FNFO

Industrial Automation and Data Acquisition

Many times people call us wondering how to log data because they think it is difficult. They usually have a sensor which they know can measure or sense their product. To us, this is the hard part. Once you have a sensor, a quick look at the data sheet or specifications will tell you what the output of the sensor is. Common types are NPN, PNP, dry contact, 4-20 mA or voltage outputs. Once you know this and that you can accurately “see” your product or “measure” your product with your sensor; the rest is easy. We have simple data acquisition modules which will allow you to connect to your software package using the industry standard protocol, Modbus or it is Ethernet version, Modbus TCP.

Modbus (sometimes called Modbus RTU) simply means that you want to connect to your PC serially; usually using RS-485. If your PC does not have an RS-485 port, we have a USB converter module (tM-7561).



tM-7561: USB to Isolated RS-485 Converter

Supports Operating Temperatures from -25°C ~ +75°C

Comes with Drivers for Windows 98/ME/2000/XP/Vista (32/64-bit)/7 (32/64-bit) and Linux Operating Systems.

Learn more: http://www.icpdas-usa.com/tm_7561.html



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Then, choose the appropriate “Modbus RTU data acquisition” module from the table below knowing how many inputs you want to count or log and what the sensor outputs type is.

For sensor with NPN, PNP or dry contact outputs, use this table and select the module with the correct number of sensor inputs (or greater) and the matching output style.

Voltage & Current Input		
Model	Input Channels	Voltage & Current Input
M-7017	8	$\pm 150\text{mV} - \pm 10\text{V}$
		$\pm 20\text{ mA}^{***}$
M-7017C	8	0 - 20 mA
		4 - 20 mA
		$\pm 20\text{ mA}^{****}$
M-7017R	8	$\pm 150\text{mV} - \pm 10\text{V}$
		$\pm 20\text{ mA}^{***}$
M-7017R-A5	8	$\pm 50\text{V} \pm 150\text{V DC}$
M-7017RC	8	0 - 20 mA
		4 - 20 mA
		$\pm 20\text{ mA}^{****}$
M-7017Z	10/20	$\pm 150\text{mV} - \pm 10\text{V}$
		$\pm 20\text{ mA}^{***}$
M-7018	8	$\pm 15\text{mV} - \pm 10\text{V}$
		$\pm 20\text{ mA}^{***}$
M-7018R	8	$\pm 15\text{mV} - \pm 2.5\text{V}$
		$\pm 20\text{ mA}^{***}$
M-7018Z	10	$\pm 15\text{mV}, \pm 50\text{mV}, \pm 100\text{mV}, \pm 500\text{mV}, \pm 1\text{V}, \pm 2.5\text{V}, \pm 20\text{ mA}^{***}$
M-7019R	8	$\pm 15\text{mV} - \pm 10\text{V}$
		$\pm 20\text{ mA}$
M-7019Z/S	10	+/- 15mV, +/- 50mV, +/- 100mV, +/- 150mV
		+/- 500mV, +/- 1V, +/- 2.5V, +/- 5V, +/- 10V
		-20 mA ~ +20 mA, 0 ~ 20 mA, 4 ~ 20 mA
M-7019Z/S2	10	+/- 15mV, +/- 50mV, +/- 100mV, +/- 150mV
		+/- 500mV, +/- 1V, +/- 2.5V, +/- 5V, +/- 10V



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For Analog output sensor like 4-20mA or a DC voltage, use the following table:

Model	Input	Input Type	ON Voltage Level	OFF
	Channels			Voltage Level
	(Note1)			
M-7041	14	Common Source	+4 to +30V	+1V Max.
M-7041D	(Sink)			
M-7041-A5	14	Common Source	+68 ~ +150 VDC	+48 VDC Max.
M-7041D-A5	(Sink)			
M-7051	16(Sink/Source)	Common Source or Common Ground	+10 to +50V	+4V Max.
M-7051D				
M-7052	8	6 Differential and 2 Common Ground	+4 to +30V	+1V Max.
M-7052D	(Sink)			
M-7053 FG	16	Dry Contact	+4 to +30V	+1V Max.
M-7053D FG	(Source)			





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Modbus TCP means that you want to connect to your PC via Ethernet. You can directly connect to your PC's Ethernet port or to your Ethernet Switch or router. If you prefer to connect via Ethernet, here are some options.

For sensor with NPN, PNP or dry contact outputs, use this table and select the module with the correct number of sensor inputs (or greater) and the matching output style.

Model	Input Channels	Input Impedance	Power Consumption
 ET-7051	16 Wet Contact (Sink, Source)	10K Ω	0.12A/24V dc Max.
 ET-7053	16 Dry Contact (Source)	10K Ω	0.13A/24V dc Max.



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For Analog output sensor like 4-20mA or a DC voltage, use the following table:

Model	Analog Input	Analog Input Types	Analog Output Channels	Digital Input Channels	Digital Output Channels
	Channels				
 ET-7002	3	+/- 150 mV, +/-500 mV, +/-1 V, +/-5 V, +/-10 V, +/-20 mA, 0~20 mA and 4~20 mA	-	6	-
 ET-7017	8 differential	$\pm 150\text{mV}$, $\pm 500\text{mV}$, $\pm 1\text{V}$, $\pm 5\text{V}$, $\pm 10\text{V}$	-	-	4
		$\pm 20\text{mA}$, 0~20mA, 4~20mA**			(Sink) Isolated Open Collector
 ET-7017-10*	10 differential or 20 single-ended, softw are selectable	$\pm 150\text{mV}$, $\pm 500\text{mV}$, $\pm 1\text{V}$, $\pm 5\text{V}$, $\pm 10\text{V}$	-	-	-
		$\pm 20\text{mA}$, 0~20mA, 4~20mA**			
 ET-7026	6 differential	+/-500 mV, +/-1V, +/-5 V, +/-10 V	2	2	2 (Sink)
		+0 mA ~ +20 mA, +/-20 mA, 4 ~ 20 mA**			
 ET-7019Z	10 Differential Analog	+/-15 mV, +/-50 mV, +/-100 mV, +/-150 mV, +/-500 mV, +/-1 V, +/-2.5 V, +/-5 V, +/-10 V,	-	-	6
		+/-20 mA, 0 ~ 20 mA, 4 ~ 20 mA (Jumper Selectable)			
		Thermocouple (J, K, T, E, R, S, B, N, C, L, M, and LDIN43710)			

To make the job even simpler, we offer a free data acquisition software package called EZ Datalogger for projects with less than 64 I/O points for use with our modules. We have over 40 different IO combinations to choose from.



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If you have another type of sensor output or have some questions, we can certainly help you to choose the best solution. Please call our technical support team at (310)517-9888 x102 or email tech@icpdas-usa.com

[ICP DAS USA](http://www.icpdas-usa.com) is a cost-effective leader in the U.S. industrial market; offering a stunningly competitive price/performance ratio, while catering to the latest solutions for current industrial trends. We seek to provide our customers with cost-effective, flexible, and easy-to-use solutions for their Data Acquisition and Embedded Control Applications. [ICP DAS USA](http://www.icpdas-usa.com) provides a great variety of products with modular and universal solutions for any scale application or projects.

To learn more about the variety of ideas and real projects integrated with ICP DAS hardware, visit our website at www.icpdas-usa.com, or give us a call, toll free, at 1-888-971-9888 and one of our engineers would be happy to assist in reviewing the project requirements, ensuring that the highest quality solution is presented in your final application.

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