



PROCESS CONTROL
REMOTE MONITORING
WATER & WASTEWATER
OIL & GAS
BUILDING AUTOMATION

Modular analog & discrete distributed I/O blocks, supported by all popular SCADA/DCS software & PLCs. These modules serve as RTUs in SCADA systems as well as wired & wireless remote I/O & I/O expansion for industrial controllers & PCs.



Distributed I/O Modules

- **Modular I/O, up to 10,000 points**
- **Multiple Protocols**
 - Modbus RTU*
 - DF1 (Allen Bradley)*
 - Bricknet (ICL)*
- **Supported by HMI/DCS systems**
- **Fault & Transient Protected I/O**
- **RS-232 & RS-485 Interfaces**
- **Distributed I/O, up to 5,000 ft.**
- **Some modules w/built-in radios**
- **“Store and Forward” repeating**
- **DI Totalizers, Rate and Runtime**
- **AI Totalizers**
- **Isolated Field Wiring**
- **Dual Watchdog Timers**
- **Wide Temperature Range**
- **Removable Terminal blocks**
- **Hot Swappable**
- **3 Year Factory Warranty**

ICL manufactures four series of distributed I/O modules offering a wide selection of I/O density, functionality, packaging and power ratings to match nearly any application. All serve as distributed input/output modules for SCADA, DCS, data collection and control applications. These modules are ideal for expanding the capacity of ICL's EtherLogic and ScadaFlex Controllers, as well as providing a rugged I/O system for third party PLCs and PC computers.

Modular Universal I/O

ICL's distributed I/O modules eliminate the need for card racks and cages. Each module is network addressable. Up to 254 modules to be connected together in a simple network using low-cost twisted pair wiring, or via radios, leased line or fiber optic modems. Over a 2-wire network, the modules can be distributed up to 5,000 feet at low cost. With the addition of radios, their range is extended

to many miles. Each module supports “Store & Forward” message repeating to maximize coverage in wireless systems.

Open Communications

As open architecture devices, ICL's distributed I/O modules support industry standard protocols including Modbus RTU, DF1 (Allen Bradley) and Bricknet (ICL peer-to-peer). This not only ensures inter-operability with other instrumentation, it also provides compatibility with hundreds of popular SCADA/DCS software packages, PLCs and Process Controllers.

Industrial Strength

For long-term reliability, ICL's distributed I/O modules have an extremely wide operating temperature range, rugged transient and overload protection, and isolated field I/O. A unique dual watchdog system further protects systems in the event of a field fault condition, host shutdown or network communications failure. All ICL distributed I/O modules carry a full 3-year factory warranty, one of the longest in the industry.



Industrial Control Links
(800) 888-1893 www.iclinks.com

Applications

Powerful Networking

ICL distributed I/O modules can be networked together with a simple low-cost twisted pair of wires up to nearly a mile at minimal cost. Distributing these modules over a 2-wire network can save the cost of miles of field wiring back to a central location. Every module supports Modbus, DF1 and ICL Bricknet protocols; truly controller vendor independent I/O! Industry standard Modbus or DF1 protocols are used to create a point to multipoint network where a controller or PC is a master and the I/O modules are remote "slaves". If ICL's Bricknet protocol is used, the I/O modules can operate in a true peer-to-peer multipoint systems, especially valuable for systems with redundant controllers and I/O networks.

Smart I/O

ICL distributed I/O modules have local intelligence for pulse totalization, rate calculation, runtime accumulation and Discrete Output pulsing and flashing, offloading these realtime tasks from Host PLC or PC. Some have built-in operator interfaces to examine and force the state of analog and discrete I/O points to simplify system startup and troubleshooting at remote locations. All modules have a dual watchdog protection system to safely respond to CPU and network failures.

Radio Support

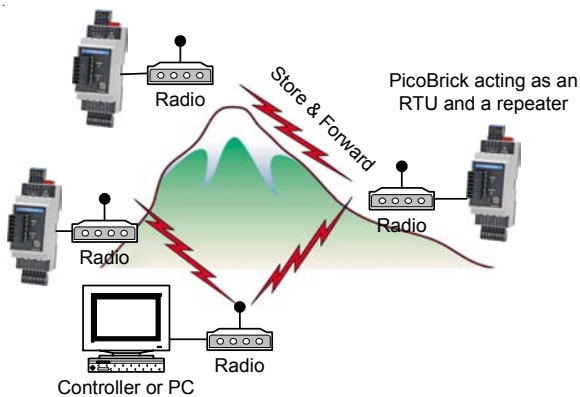
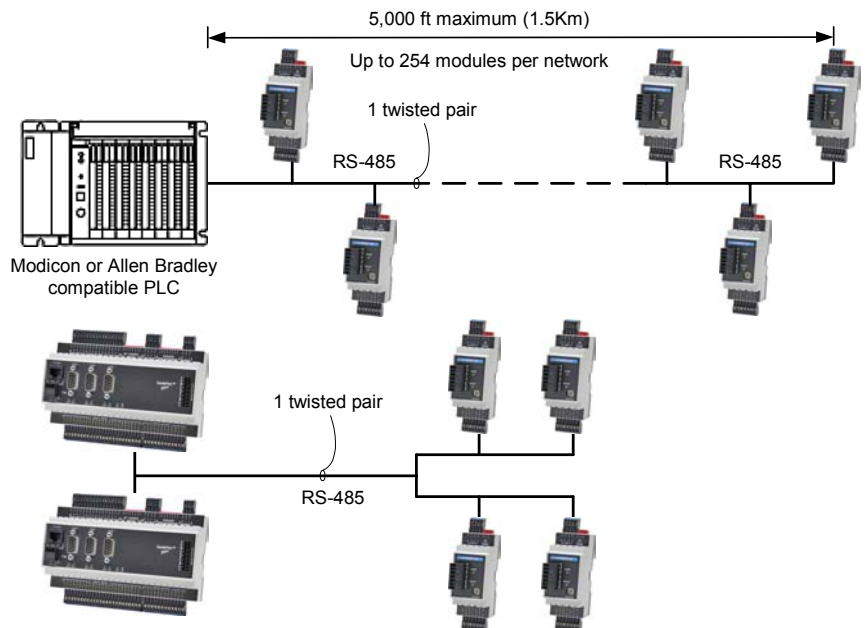
Going wireless? All ICL distributed I/O modules can act as Store-and-Forward digital message repeaters effectively extending the range of radio based networks. When outlying modules (RTUs) don't have direct communications with the sites that need to talk to each other, the modules at intermediate positions can relay the messages digitally at no extra cost.

PLC & PC Distributed I/O

Up to 254 modules; up to 10,000 I/O points on a single network.

Built-in RS-485 2-wire networking keeps wiring costs to a minimum.

Support redundant CPUs and redundant I/O when using ICL controllers.



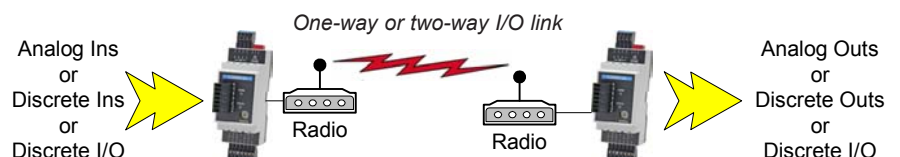
SCADA RTUs

Built-in Store & Forward repeating makes ICL distributed I/O modules ideal for SCADA applications by extending the effective range of wireless systems.

A variety of radios and modems are available for wireless and leased-line applications, some built into the modules.

Point to Point I/O

Some I/O modules with complimentary I/O can be connected in point-to-point links to "mirror" signals over long distances.



Selection Guide



PicoBrick

PicoBricks™ are the smallest I/O modules with the flexibility to add small amounts of I/O right where it's needed. These DIN-rail mount modules provide up to 8 analog points or 12 discrete points per module. A fully (channel-to-channel) isolated analog output module is available in this family.

MicroBrick

MicroBricks™ provide larger blocks of I/O; up to 16 analog points or 32 discrete points per DIN rail mount module. Each has a built-in operator interface for local configuration, level display and forcing. A fully isolated analog module with sensor conditioning (thermocouple, RTD, thermistor) is available.

ScadaFlex RTU

ScadaFlex™ RTUs provide the largest block of I/O; 42 analog and discrete points per module. A built-in operator interface is available for configuration, display of I/O levels, and forcing. A choice of built-in spread spectrum radios is available for compact wireless networking.

MAXIO

MAXIO™ are heavy-duty I/O modules. The Discrete I/O modules have 10A relays and up to 240V inputs. Along with 5V and 20mA sensors, the Universal I/O module supports thermocouples, thermistors, RTDs, and mV, as well as boosted 20mA loop power supply. A built-in radio is available.

	Part#	Model#	Discrete In		Discrete Out		Analog and Universal (sensor) In						Analog Out			Features/Options						
			12/24 Vac/Vdc	120Vac/Vdc	120/240 Vac/Vdc	FET (28 Vdc)	Relay Contact	20mA	5Vdc	Resistance	10K Thermistors	Millivolts	Thermocouples	1K RTDs (2-wire)	100 ohm RTDs	Contact Closure	1mA	20mA	10Vdc	Display/Keypad	Internal radio	I/O Mirror Master
PicoBrick	21-0011	PB-DI12-24	12																		*	
	21-0012	PB-DI12-120	12																		*	
	21-0021	PB-DO12-24			12																	
	21-0031	PB-AI8-5V					8														*	
	21-0032	PB-AI8-20mA					8														*	
	21-0041	PB-AO8-10V															8					
	21-0042	PB-AO6-20mA														6						
	21-0043	PB-AO8-1mA													8							
	21-0051	PB-COMBO-24	3		2		— 3 —															
	21-0052	PB-COMBO-120	3		2		— 3 —															
	21-0055	PB-DIO12-24	6		6																	*
	21-0056	PB-DIO12-120	6		6																	*
MicroBrick	22-0011	MB-DI32-24	32															*			*	
	22-0012	MB-DI32-120	32															*			*	
	22-0021	MB-DO32-24			32													*				
	22-0022	MB-DO16-RLY				16												*				
	22-0031	MB-AI16					— 16 —											*				
	22-0032	MB-UI12								12								*				
	22-0033	MB-UI8I								8/16 *								*				
	22-0051	MB-COMBO-24	10		4		— 6 —											*				
22-0052	MB-COMBO-120	10		4		— 6 —											*					
Scada Flex	25-005x	SF-STD	22		10		— 8 —								2		opt	opt				
	25-015x	SF-OPIO	22		10		— 8 —								2		opt	opt				
MAXIO	61-00xx	MX-D2416-24	24		16														opt			
	61-02xx	MX-D2416-120		24	16														opt			
	61-10xx	MX-U1606							16						6				opt			

PicoBrick Distributed I/O Modules

PicoBricks are the most compact distributed I/O modules, providing the greatest degree of modularity without sacrificing resolution and performance.

PicoBricks can be used as I/O expansion slaves to a PLC or PC Host, as SCADA system RTUs, or to “mirror” analog and discrete signals over long distances.

PicoBricks support radios, leased line modems, RS-232 and RS-485 communications.

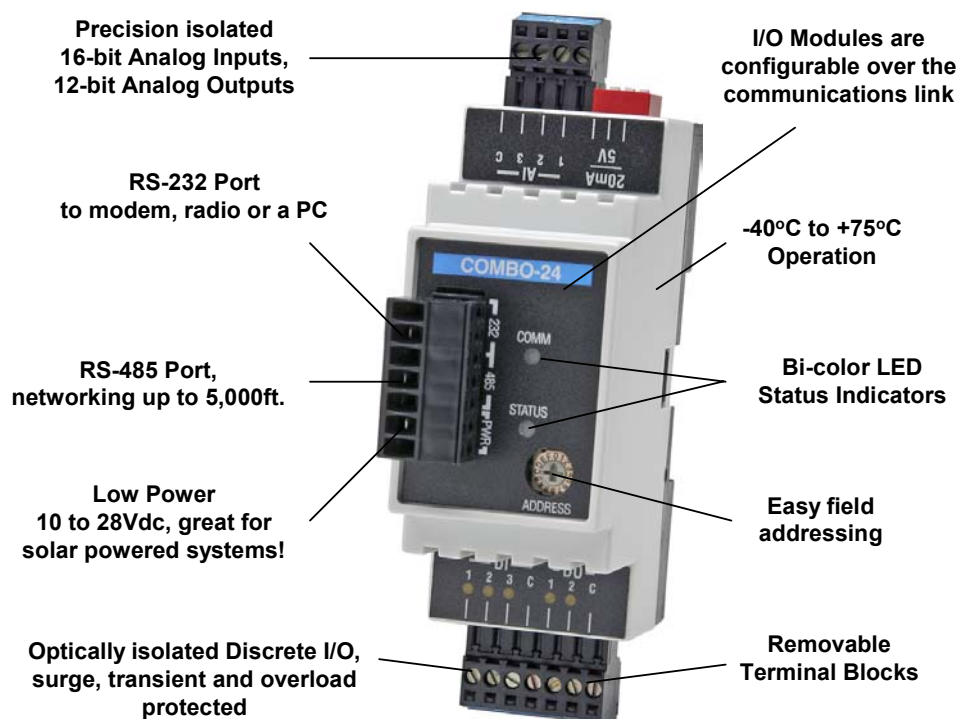
When just a few I/O points are needed, **PicoBricks™** offer the ultimate in flexibility in a tiny footprint and low power. Put only the I/O that you need right where it's needed using wired or wireless networking. As a system grows, simply add I/O blocks - up to 254 per 2-wire network. The discrete I/O modules provide 12 I/O points each, while the analog modules provide from 6 or 8 points a piece. A versatile pair of combination I/O modules provides a convenient mix of analog inputs and discrete I/O, ideal for tank and pump sites in small SCADA systems.

FEATURES

- ✓ Isolated and transient protected I/O
- ✓ Modular, up to 3,000 points
- ✓ Smart I/O functions (averaging, counting, pulsing, etc.)
- ✓ Precision high resolution analogs
- ✓ All electronic calibration
- ✓ Point to Multipoint Networking
- ✓ Point to Point I/O “mirroring”
- ✓ Modbus, DF1 & Bricknet protocols
- ✓ RS-232 & RS-485 links to 115K baud
- ✓ Store & Forward repeater functions
- ✓ No programming required
- ✓ “Over the link” configuration
- ✓ Removable terminal blocks
- ✓ Dual (CPU & comm) watchdog timers
- ✓ Low-power DC operation
- ✓ -40°C to +75°C Temperature Range

BENEFITS

- Survives well in industrial environments*
- Add I/O only as needed for lower cost*
- Reduce realtime demands on PLC/PC*
- Fine readings and tight control*
- Simple and reliable with no trim pots*
- Ideal for SCADA systems*
- Reduces wiring cost and complexity*
- Universal open communications*
- Fast updates for responsive systems*
- Extend radio distances over hills/valleys*
- Easier to support and less cost*
- Eliminates trips to the field*
- Easy installation and maintenance*
- Safe handling of CPU & Comm failures*
- Ideal for solar/battery backed systems*
- Tough I/O eliminates fans and filters*



PicoBrick Distributed I/O Modules

PicoBrick Advantages

Versatile and Rugged Discrete I/O

PicoBrick™ discrete inputs are optically isolated, supporting AC and DC signals. Each input has built-in pulse and runtime totalizers, as well as rate counters. “Combo” PicoBricks™ have programmable filtering on the discrete inputs that can be minimized to accommodate high-speed (5KHz) pulses from devices such as flow meters.

PicoBrick™ discrete outputs are power FET transistors capable of switching 0.5 amps to a common. The outputs are isolated from the communications link and input power, and protected from transients and overloads, including the destructive transients associated with driving inductive loads. Each output can be commanded to turn ON, turn OFF, flash, pulse or provide a proportional Pulse Width Modulated (PWM) output.

Precision Analog I/O

PicoBrick™ analog inputs support 20mA and 5V sensors with exceptional 16-bit resolution, high accuracy and superior noise rejection. Unlike competitive devices, **PicoBrick™** Analog Inputs have their own isolated power and don't require an additional external power supply. All analog inputs have totalizers, ideal for accumulating flow or energy consumption from meters with analog outputs.

PicoBrick™ analog outputs are available with 20mA, 1V and 10V interfaces. The 20mA model has a unique loop-powered design that isolates each individual output from the other. **PicoBrick™** voltage analog outputs are self-powered and electrically isolated with a shared common.

RS-232 & RS-485 Interfaces

PicoBricks™ have a dual communications interface supporting both RS-232 operation for short point-to-point and modem/radio connections, and RS-485 for multipoint networking over a 2-wire link up to 5,000 ft. Both interfaces use a terminal block, eliminating the need to solder connectors onto cables in the field.

Store & Forward Repeating

PicoBricks™ are ideal for use in wireless systems with their ability to act as cost-saving digital message repeaters. If a reliable direct path is not available between the Master site and one or more remote sites, a **PicoBrick™** can be used as a smart repeater in addition to serving as an I/O module or RTU.

Low-power DC Operation

PicoBricks™ are DC powered, from 10Vdc to 28Vdc. They have very low power consumption, ideal for solar, battery-backed and mobile applications.

PicoBrick Modules

Discrete Inputs

12 Discrete Inputs (12/24V or 120V)

Discrete Outputs

12 Discrete Outputs (FET)

Discrete Inputs/Outputs

6 Discrete In + 6 Discrete Out (12/24V or 120V)

Analog Inputs

8 16-bit Analog Inputs (20mA)

8 16-bit Analog Inputs (5Vdc)

Analog Outputs

6 12-bit Analog Outputs (20mA)

6 12-bit Analog Outputs (1Vdc)

6 12-bit Analog Outputs (10Vdc)

Combo (Analog/Discrete) I/O

3 AI (16-bit 5V/20mA), 3 DI, 2 DO (FET)

(12/24V or 120V Discrete Inputs)

Compact DIN Rail Mounting

PicoBricks™ snap onto DIN rail in seconds. Their tiny 1.5” wide footprint means smaller lower cost cabinets.

I/O “Mirroring”

Several **PicoBricks™** have a built-in Master mode so that they can be used to “mirror” analog and discrete signal over a wired or wireless link. The **PicoBrick™** combinations typically used in this configuration include:

12 Discrete Inputs to 12 Discrete Outputs - 1 way

PB-DI12 (12DI) to PB-DO12 (12DO)

A total of 12 12/24 or 120v INPUTS to 12 Isolated FET OUTPUTS

6 Discrete Inputs to 6 Discrete Outputs - 2 way

PB-DIO6/6 (6/6 DIO) to PB-DIO6/6 (6/6 DIO)

A total of 12 12/24 or 120v INPUTS to 12 Isolated FET OUTPUTS, 6 points in each direction

6 Analog Inputs to 6 Analog Outputs - 1 way

PB-AI8 (8 AI) to PB-AO6 (6 AO)

A total of 6 4 to 20mA or 1 to 5Vdc INPUTS to 6 individually isolated 4 to 20mA OUTPUTS (2 Analog Inputs not used)

PicoBrick Specifications

DISCRETE INPUT Module - 12/24V (21-0011)

Quantity of Discrete Inputs, Type	12, Bipolar Optocoupler
Input Voltage, nominal	12/24 Vdc/ac
Input Voltage Range	0 to 60 Vdc/ac
Input Overvoltage Tolerance	85Vdc/Vac
Input Resistance, typical	10,000 ohms
Counting Frequency, AC/DC	10Hz (AC), 50Hz (DC Pulse)
“Smart” Functions (All inputs)	Pulse Totalization, Rate, and Runtime
Power	25mA typical / 45mA maximum

DISCRETE INPUT Module - 120V (21-0012)

Quantity of Discrete Inputs, Type	12, Bipolar Optocoupler
Input Voltage, nominal	120 Vdc/ac
Input Voltage Range	0 to 125 Vdc/ac
Input Overvoltage Tolerance	190Vdc/Vac
Input Resistance, typical	100,000 ohms
Counting Frequency, AC/DC	10Hz (AC), 50Hz (DC Pulse)
“Smart” Functions (All inputs)	Pulse Totalization, Rate, and Runtime
Power	25mA typical / 45mA maximum

DISCRETE OUTPUT Module (21-0021)

Quantity of Discrete Outputs	12
Output Voltage, nominal, max.	12/24 Vdc, 0 to 28 Vdc
Output Type, Configuration	Power FET, Sinking to Common
Output Switch Current Rating	.50A @20°C, derate to .25A @80°C
Overvoltage/Transient Protection	Transorb
Fault Protection/Current	Self Resetting Polyfuse, 750mA
Flash/PWM ON/OFF Timing	0 to 655.53 sec., 10mS. increments
“Smart” Functions (All outputs)	Flash (sync'ed 50% Duty Cycle) Pulse (triggered one-shot) PWM (independent ON/OFF timing)
Power	25mA typical / 45mA maximum

DISCRETE I/O Module - 12/24V (21-0055)

Quantity of Discrete Inputs, Type	6, Bipolar Optocoupler
Input Voltage, nominal	12/24 Vdc/ac
Input Voltage Range	0 to 60 Vdc/ac
Input Overvoltage Tolerance	85Vdc/Vac
Input Resistance, typical	10,000 ohms
Counting Frequency, AC/DC	10Hz (AC), 50Hz (DC Pulse)
“Smart” Functions (All inputs)	Pulse Totalization, Rate, and Runtime
Quantity of Discrete Outputs	6
Output Voltage, nominal, max.	12/24 Vdc, 0 to 28 Vdc
Output Type, Configuration	Power FET, Sinking to Common
Output Switch Current Rating	.50A @20°C, derate to .25A @80°C
Overvoltage/Transient Protection	Transorb
Fault Protection/Current	Self Resetting Polyfuse, 750mA
Flash/PWM ON/OFF Timing	0 to 655.53 sec., 10mS. increments
“Smart” Functions (All outputs)	Flash (sync'ed 50% Duty Cycle) Pulse (triggered one-shot) PWM (independent ON/OFF timing)
Power	25mA typical / 45mA maximum

DISCRETE I/O Module - 120V (21-0056)

Quantity of Discrete Inputs, Type	6, Bipolar Optocoupler
Input Voltage, nominal	120 Vdc/ac
Input Voltage Range	0 to 125 Vdc/ac
Input Overvoltage Tolerance	190Vdc/Vac
Input Resistance, typical	100,000 ohms
Counting Frequency, AC/DC	10Hz (AC), 50Hz (DC Pulse)
“Smart” Functions (All inputs)	Pulse Totalization, Rate, and Runtime
Quantity of Discrete Outputs	6
Output Voltage, nominal, max.	12/24 Vdc, 0 to 28 Vdc
Output Type, Configuration	Power FET, Sinking to Common
Output Switch Current Rating	.50A @20°C, derate to .25A @80°C
Overvoltage/Transient Protection	Transorb
Fault Protection/Current	Self Resetting Polyfuse, 750mA
Flash/PWM ON/OFF Timing	0 to 655.53 sec., 10mS. increments
“Smart” Functions (All outputs)	Flash (sync'ed 50% Duty Cycle) Pulse (triggered one-shot) PWM (independent ON/OFF timing)
Power	25mA typical / 45mA maximum

ANALOG VOLTAGE INPUT Module - 5Vdc (21-0031)

Quantity of Analog Inputs	8
Signal Input Levels, nominal	0 to 5.5Vdc
Resolution	16 bits (1 part in 65, 535)
Input Overvoltage Tolerance	Input voltage limiting starts at 6Vdc
Overload / Transient Protection	Transorb & Self Resetting Polyfuse
Conversion Rate	Approx. 2 samples/sec. per point
Noise Rejection (50/60Hz)	-120dB
Power	30mA typical / 35mA maximum

ANALOG CURRENT INPUT Module - 20mA (21-0032)

Quantity of Analog Inputs	8
Signal Input Levels, nominal	0/4 to 20mA/40mA
Resolution	16 bits (1 part in 65, 535)
Input Overvoltage Tolerance	Input current limited to 50mA
Overload / Transient Protection	Transorb & Self Resetting Polyfuse
Conversion Rate	Approx. 2 samples/sec. per point
Noise Rejection (50/60Hz)	-120dB
Power	30mA typical / 35mA maximum

ANALOG VOLTAGE OUTPUT Module - 10Vdc (21-0041)

Quantity of Analog Outputs	8
Signal Output Levels, nominal	0 to 10Vdc
Resolution	12 bits (1 part in 4095)
Overload / Transient Protection	Transorb & Self Resetting Polyfuse
Power	30mA typical / 35mA maximum

ANALOG CURRENT OUTPUT Module - 20mA (21-0042)

Quantity of Analog Outputs	6, individually isolated
Signal Output Levels, nominal	4 to 20mA
Resolution	12 bits (1 part in 4095)
Overload / Transient Protection	Transorb & Self Resetting Polyfuse
Power	30mA typical / 35mA maximum

“COMBO” I/O Module - 12/24v Discrete Inputs (21-0051)

DISCRETE INPUTS section

Quantity of Discrete Inputs	3
Input Voltage, nominal	12/24 Vdc/ac
Input Voltage Range	0 to 60 Vdc/ac
Input Overvoltage Tolerance	85Vdc/Vac
Input Resistance, typical	10,000 ohms
Counting Frequency, AC/DC	All DIs: 10Hz(AC), 50Hz(DC Pulse) DI1 & 2: 5KHz (filters turned OFF)
“Smart” Functions (All inputs)	Pulse Totalization, Rate, and Runtime

DISCRETE OUTPUTS section

Quantity of Discrete Outputs	2
Output Voltage, nominal, max.	12/24 Vdc, 0 to 28 Vdc
Output Type, Configuration	Power FET, Sinking to Common
Output Switch Current Rating	.50A @20°C, derate to .25A @80°C
Overvoltage/Transient Protection	Transorb
Fault Protection/Current	Self Resetting Polyfuse, 750mA
Flash/PWM ON/OFF Timing	0 to 655.53 sec., 10mS. increments
“Smart” Functions (All outputs)	Flash (sync’ed 50% Duty Cycle) Pulse (triggered one-shot) PWM (independent ON/OFF timing)

ANALOG INPUTS section

Quantity of Analog Inputs	3
Signal Input Levels, nominal	0/4 to 20mA/40mA, 0 or 1 to 5V
Resolution	16 bits (1 part in 65, 535)
Input Overvoltage Tolerance	Input current limited to 50mA Input limiting starts at 6Vdc
Overload / Transient Protection	Transorb & Self Resetting Polyfuse
Conversion Rate	Approx. 5 samples/sec. per point
Noise Rejection (50/60Hz)	-120dB

COMBO module power

Power	35mA typical / 45mA maximum
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ANALOG INPUTS section

Quantity of Analog Inputs	3
Signal Input Levels, nominal	0/4 to 20mA/40mA, 0 or 1 to 5V
Resolution	16 bits (1 part in 65, 535)
Input Overvoltage Tolerance	Input current limited to 50mA Input limiting starts at 6Vdc
Overload / Transient Protection	Transorb & Self Resetting Polyfuse
Conversion Rate	Approx. 5 samples/sec. per point
Noise Rejection (50/60Hz)	-120dB

COMBO module power

Power	35mA typical / 45mA maximum
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GENERAL SPECIFICATIONS (all PicoBricks)

Serial Ports	1, RS-232 and RS-485
Data Rate	2400 baud to 115K baud
Communications Protocols	Modbus RTU, DF1, and Bricknet
Dimensions	4.64" W x 1.38" L x 2.80" D (118mm x 35mm x 71mm)
Power (Input Voltage Range)	10 to 28Vdc
Temperature, operating	-40°C to 75°C (-40°F to 167°F)
Temperature, storage	-40°C to 100°C (-40°F to 212°F)
Humidity	5 to 85% RH, (non-condensing)
Wiring Terminations	Removable Terminal Blocks
Wire Size	#14 to #26 stranded, #12 solid

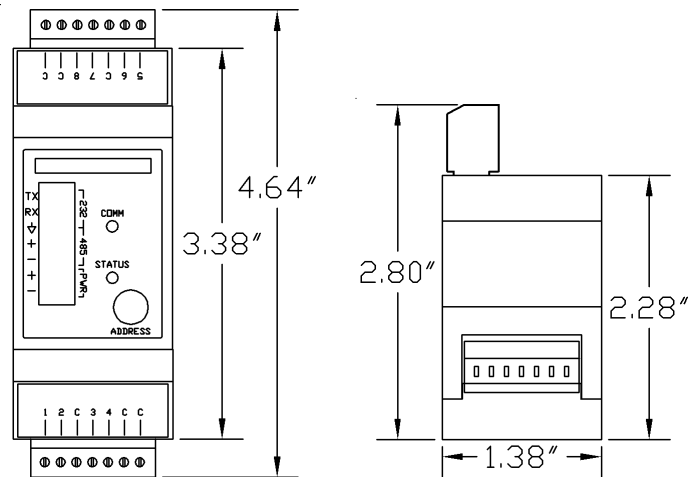
“COMBO” I/O Module - 120v Discrete Inputs (21-0052)

DISCRETE INPUTS section

Quantity of Discrete Inputs	3
Input Voltage, nominal	120 Vdc/ac
Input Voltage Range	0 to 125 Vdc/ac
Input Overvoltage Tolerance	190Vdc/Vac
Input Resistance, typical	100,000 ohms
Counting Frequency, AC/DC	All DIs: 10Hz(AC), 50Hz(DC Pulse) DI1 & 2: 5KHz (filters turned OFF)
“Smart” Functions (All inputs)	Pulse Totalization, Rate, and Runtime

DISCRETE OUTPUTS section

Quantity of Discrete Outputs	2
Output Voltage, nominal, max.	12/24 Vdc, 0 to 28 Vdc
Output Type, Configuration	Power FET, Sinking to Common
Output Switch Current Rating	.50A @20°C, derate to .25A @80°C
Overvoltage/Transient Protection	Transorb
Fault Protection/Current	Self Resetting Polyfuse, 750mA
Flash/PWM ON/OFF Timing	0 to 655.53 sec., 10mS. increments
“Smart” Functions (All outputs)	Flash (sync’ed 50% Duty Cycle) Pulse (triggered one-shot) PWM (independent ON/OFF timing)



PICOBRIK STANDARD DIMENSIONS

MicroBrick Distributed I/O Modules

MicroBricks provide larger blocks of modular distributed I/O in a very compact package. A unique built-in operator interface saves time during installation and system troubleshooting.

MicroBricks can be used as I/O expansion slaves to a PLC or PC Host, as SCADA system RTUs, or to "mirror" analog and discrete signals over long distances.

MicroBricks support radios, leased line modems, RS-232 and RS-485 communications.

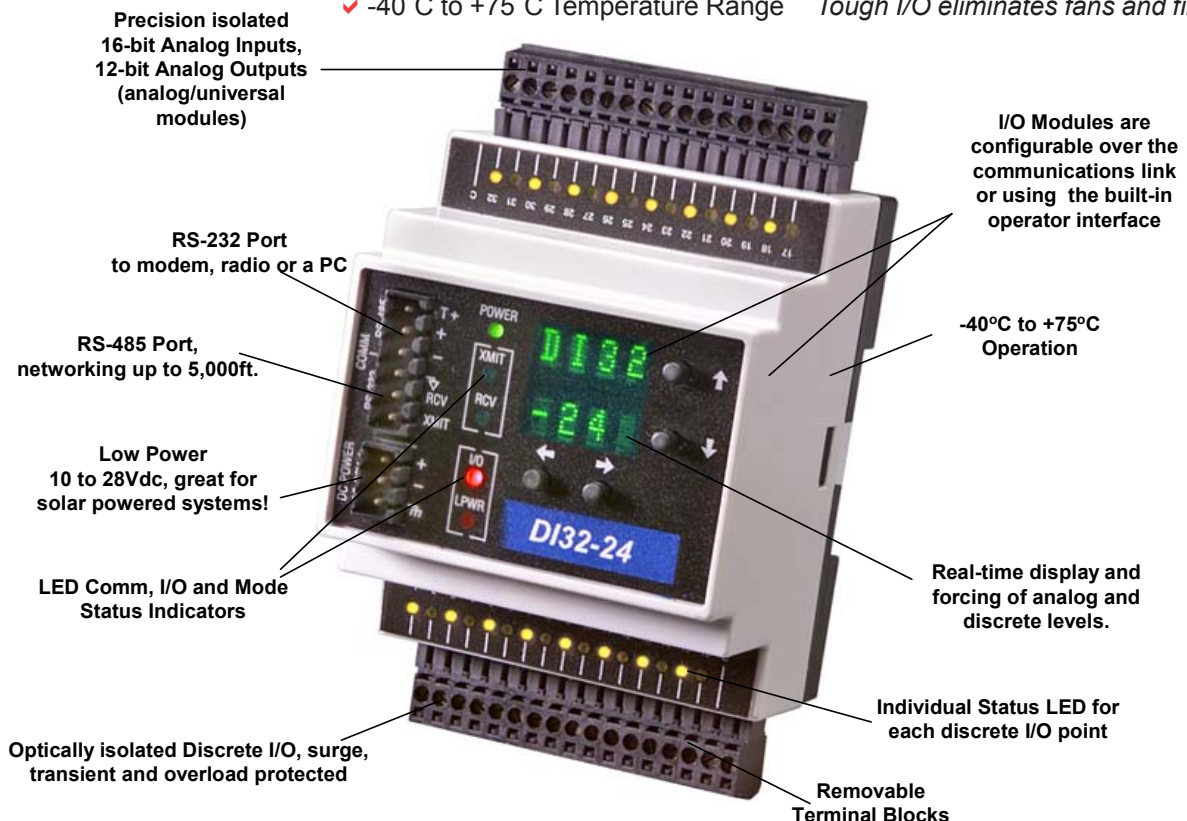
When larger blocks of I/O are needed, **MicroBricks™** offer the most efficient and lowest cost solution in a tiny footprint using wired or wireless networking. As a system grows, simply add I/O blocks. Discrete I/O modules provide 32 I/O points each while the analog modules provide up to 16 points a piece. A built-in operator interface supports local display and forcing of each I/O point as well as local module configuration. A versatile pair of combination I/O modules provides a convenient mix of analog inputs and discrete I/O. A Universal Input Module provides up to 16 inputs, isolated in pairs, that support a variety of signals and sensors including 5V, mV, 20mA, thermocouples, thermistors, and RTDs.

FEATURES

- ✓ Isolated and transient protected I/O
- ✓ Modular, up to 8,000 points
- ✓ Built-in Operator Interface
- ✓ Smart I/O functions (averaging, counting, pulsing, etc.)
- ✓ Precision high resolution analogs
- ✓ All electronic calibration
- ✓ Point to Multipoint Networking
- ✓ Point to Point I/O "mirroring"
- ✓ Modbus, DF1 & Bricknet protocols
- ✓ RS-232 & RS-485 links to 115K baud
- ✓ Store & Forward repeater functions
- ✓ No programming required
- ✓ "Over the link" configuration
- ✓ Removable terminal blocks
- ✓ Dual (CPU & comm) watchdog timers
- ✓ Low-power DC operation
- ✓ -40°C to +75°C Temperature Range

BENEFITS

- Survives well in industrial environments*
- Add I/O only as needed for lower cost*
- Saves installation/troubleshooting time*
- Reduce realtime demands on PLC/PC*
- Fine readings and tight control*
- Simple and reliable with no trim pots*
- Ideal for SCADA systems*
- Reduces wiring cost and complexity*
- Universal open communications*
- Fast updates for responsive systems*
- Extend radio distances over hills/valleys*
- Easier to support and less cost*
- Eliminates trips to the field*
- Easy installation and maintenance*
- Safe handling of CPU & Comm failures*
- Ideal for solar/battery backed systems*
- Tough I/O eliminates fans and filters*



MicroBrick Distributed I/O Modules

MicroBrick Advantages

Versatile and Rugged Discrete I/O

MicroBrick™ discrete inputs are optically isolated, supporting AC and DC signals. Each input has built-in pulse and runtime totalizers, as well as rate counters. “Combo” MicroBricks™ have programmable filtering on the discrete inputs that can be minimized to accommodate high-speed (5KHz) pulses from devices such as flow meters.

Except for the DO16 module, all **MicroBrick™** discrete outputs use power FET transistors that switch 0.5 amps for low power consumption. The outputs are protected from transients and overloads, including the destructive transients associated with driving inductive loads. Each output can be commanded to turn ON, turn OFF, flash, pulse or provide a proportional Pulse Width Modulated (PWM) output. The **MicroBrick™** DO-16 module that has 16 1 Amp isolated relay contact outputs, providing “dry contact” switching to discrete control devices.

Precision Analog & Universal Inputs

MicroBrick™ analog input modules support 16 20mA and 5V sensors with exceptional 16-bit resolution, high accuracy and superior noise rejection. Unlike competitive devices, **MicroBrick™** Analog Inputs have their own isolated power and don't require an additional external power supply. All analog inputs have totalizers, ideal for accumulating flow or energy consumption from meters with analog outputs.

A **MicroBrick™** Universal Input module supports up to 16 sensor inputs; 8 voltage/current type sensors including thermocouples, as well as 5V, millivolt and 20mA devices, and 8 resistance type sensors including RTDs, thermistors and pots (Note: 3-wire RTDs use a pair of voltage and current inputs). Resistance inputs can also be used with contact closure type discrete input devices.

Each pair of voltage/resistance inputs is electrically isolated from each of the other pairs of inputs providing much greater isolation and common-mode range than other multiplexed differential input modules.

Built-in Operator Interface

MicroBricks™ have a built-in operator interface consisting of an alphanumeric display and a 4-key keypad. The Operator Interface may be used for local configuration, displaying signal input levels, and to selectively “force” the readings of I/O points to simulate or override their values. A built-in power saving feature can be configured to dim the display and discrete I/O status LEDs, as well as to turn the display off completely when there is no keyboard activity.

MicroBrick Modules

Discrete Inputs

32 Discrete Inputs (12/24V or 120V)

Discrete Outputs

32 Discrete Outputs (FET)

16 Discrete Outputs (Relay)

Analog Inputs

16 16-bit Analog Inputs (5V/20mA)

Universal (Sensor) Inputs

8/16 16-bit Universal Ins (5V, mV, 20mA, ohms, Thermocouple, Thermistor, RTD, contact)

Combo (Analog/Discrete) I/O

6 AI (16-bit 5V/20mA), 10 DI, 4 DO (FET)
(12/24V or 120V Discrete inputs)

I/O “Mirroring”

Discrete Input **MicroBricks™** have a built-in Master mode so that they can be used to “mirror” up to 32 discrete signals over a wired or wireless link.

RS-232 & RS-485 Interfaces

MicroBricks™ have a dual communications interface supporting both RS-232 operation for short point-to-point and modem/radio connections, and RS-485 for multipoint networking over a 2-wire link up to 5,000 ft. Both interfaces use a terminal block, eliminating the need to solder connectors onto cables in the field.

Store & Forward Repeating

MicroBricks™ are ideal for use in wireless systems with their ability to act as cost-saving digital message repeaters. If a reliable direct path is not available between the Master site and one or more remote sites, a **MicroBrick™** can be used as a smart repeater in addition to serving as an I/O module/RTU.

Compact DIN Rail Mounting

MicroBricks™ snap onto DIN rail in seconds. Their tiny 3.0” wide footprint means smaller lower cost cabinets.

MicroBrick Specifications

DISCRETE INPUT Module - 12/24V (22-0011)

Quantity of Discrete Inputs, Type	32, Bipolar Optocoupler
Input Voltage, nominal	12/24 Vdc/ac
Input Voltage Range	0 to 60 Vdc/ac
Input Overvoltage Tolerance	85Vdc/Vac
Input Resistance, typical	10,000 ohms
Counting Frequency, AC/DC	10Hz (AC), 50Hz (DC Pulse)
“Smart” Functions (All inputs)	Pulse Totalization, Rate, and Runtime
Power, Typical/Maximum	0.75 Watts / 1.5 Watts

DISCRETE INPUT Module - 120V (22-0012)

Quantity of Discrete Inputs, Type	32, Bipolar Optocoupler
Input Voltage, nominal	120 Vdc/ac
Input Voltage Range	0 to 125 Vdc/ac
Input Overvoltage Tolerance	190Vdc/Vac
Input Resistance, typical	100,000 ohms
Counting Frequency, AC/DC	10Hz (AC), 50Hz (DC Pulse)
“Smart” Functions (All inputs)	Pulse Totalization, Rate, and Runtime
Power, Typical/Maximum	0.75 Watts / 1.5 Watts

DISCRETE OUTPUT Module - FET (22-0021)

Quantity of Discrete Outputs	32
Output Voltage, nominal, max.	12/24 Vdc, 0 to 28 Vdc
Output Type, Configuration	Power FET, Sinking to Common
Output Switch Current Rating	.50A @20°C, derate to .25A @80°C
Overvoltage/Transient Protection	Transorb
Fault Protection/Current	Self Resetting Polyfuse, 750mA
Flash/PWM ON/OFF Timing	0 to 655.53 sec., 10mS. increments
“Smart” Functions (All outputs)	Flash (sync'ed 50% Duty Cycle) Pulse (triggered one-shot) PWM (independent ON/OFF timing)
Power, Typical/Maximum	0.75 Watts / 2.0 Watts

DISCRETE OUTPUT Module - Relay (22-0022)

Quantity of Discrete Outputs	16
Output Voltage, nominal, max.	12/24Vdc, 120Vac
Output Type, Configuration	Form A (N.C.) Relay
Output Switch Current Rating	1.0A AC/DC, General Purpose
Flash/PWM ON/OFF Timing	0 to 655.53 sec., 10mS. increments
“Smart” Functions (All outputs)	Flash (sync'ed 50% Duty Cycle) Pulse (triggered one-shot) PWM (independent ON/OFF timing)
Power, Typical/Maximum	0.75 Watts / 2.5 Watts

ANALOG VOLTAGE INPUT Module - 5Vdc/20mA (22-0032)

Quantity of Analog Inputs	16
Signal Input Levels, nominal Resolution	0 to 5.5Vdc, 0/4 to 20mA/40mA 16 bits (1 part in 65, 535)
Input Overvoltage Tolerance	Input voltage limiting starts at 6Vdc
Overload / Transient Protection	Transorb & Self Resetting Polyfuse
Conversion Rate	Approx. 2 samples/sec. per point
Noise Rejection (50/60Hz)	-120dB
Power, Typical/Maximum	0.75 Watts / 1.5 Watts

UNIVERSAL INPUT Module (22-0033)

Quantity of Analog Inputs	8 Voltage/Current/Millivolt/TC 8 Resistance/Contact Closure Note: 3-wire RTDs use 1 of each
Analog Input Signal Ranges	
Current	20mA (0mA to 46mA)
Voltage	5Vdc (0Vdc to 5.625Vdc)
Millivolts	+/-300mV (-300mV to +300mV)
Resistance	65,000 ohms (0 to 65,535 ohms)
Thermocouples	Type J, K, T, E, R, S, B, N
Thermistors	10K Ω - II & Type III
RTD	100 Ω - 385 & 392, 1K Ω - 385
Accuracy @ 25°C (% Full Scale)	
Current & Millivolts	+/- 0.01%
Voltage	+/- 0.005%
Resistance	+/- 0.01% < 25K Ω > +/- 0.3%
Thermistors & RTDs	+/- 0.01%
Thermocouples	+/- 0.03% + CJ (+/- 1°C)
Noise Rejection (50/60Hz)	-120dB
Power, Typical/Maximum	0.75 Watts / 1.5 Watts

“COMBO” I/O Module - 12/24v Discrete Inputs (22-0051)

DISCRETE INPUTS section

Quantity of Discrete Inputs	10
Input Voltage, nominal	12/24 Vdc/ac
Input Voltage Range	0 to 60 Vdc/ac
Input Overvoltage Tolerance	85Vdc/Vac
Input Resistance, typical	10,000 ohms
Counting Frequency, AC/DC	All DIs: 10Hz(AC), 50Hz(DC Pulse) DI1 & 2: 5KHz (filters turned OFF)
“Smart” Functions (All inputs)	Pulse Totalization, Rate, and Runtime

DISCRETE OUTPUTS section

Quantity of Discrete Outputs	4
Output Voltage, nominal, max.	12/24 Vdc, 0 to 28 Vdc
Output Type, Configuration	Power FET, Sinking to Common
Output Switch Current Rating	.50A @20°C, derate to .25A @80°C
Overvoltage/Transient Protection	Transorb
Fault Protection/Current	Self Resetting Polyfuse, 750mA
Flash/PWM ON/OFF Timing	0 to 655.53 sec., 10mS. increments
“Smart” Functions (All outputs)	Flash (sync'ed 50% Duty Cycle) Pulse (triggered one-shot) PWM (independent ON/OFF timing)

ANALOG INPUTS section

Quantity of Analog Inputs	6
Signal Input Levels, nominal Resolution	0/4 to 20mA/40mA, 0 or 1 to 5V 16 bits (1 part in 65, 535)
Input Overvoltage Tolerance	Input current limited to 50mA Input limiting starts at 6Vdc
Overload / Transient Protection	Transorb & Self Resetting Polyfuse
Conversion Rate	Approx. 5 samples/sec. per point
Noise Rejection (50/60Hz)	-120dB
COMBO module power	
Power, Typical/Maximum	0.75 Watts / 1.5 Watts

“COMBO” I/O Module - 120v Discrete Inputs (22-0052)

DISCRETE INPUTS section

Quantity of Discrete Inputs	10
Input Voltage, nominal	120 Vdc/ac
Input Voltage Range	0 to 125 Vdc/ac
Input Overvoltage Tolerance	190Vdc/Vac
Input Resistance, typical	100,000 ohms
Counting Frequency, AC/DC	All DIs: 10Hz(AC), 50Hz(DC Pulse) DI1 & 2: 5KHz (filters turned OFF)
“Smart” Functions (All inputs)	Pulse Totalization, Rate, and Runtime

DISCRETE OUTPUTS section

Quantity of Discrete Outputs	4
Output Voltage, nominal, max.	12/24 Vdc, 0 to 28 Vdc
Output Type, Configuration	Power FET, Sinking to Common
Output Switch Current Rating	.50A @20°C, derate to .25A @80°C
Overvoltage/Transient Protection	Transorb
Fault Protection/Current	Self Resetting Polyfuse, 750mA
Flash/PWM ON/OFF Timing	0 to 655.53 sec., 10mS. increments
“Smart” Functions (All outputs)	Flash (sync’ed 50% Duty Cycle) Pulse (triggered one-shot) PWM (independent ON/OFF timing)

ANALOG INPUTS section

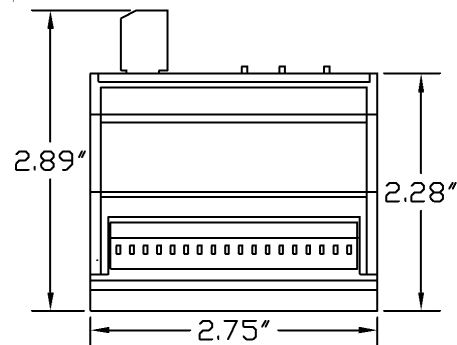
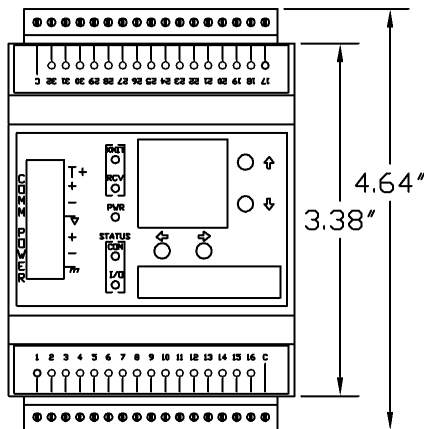
Quantity of Analog Inputs	6
Signal Input Levels, nominal	0/4 to 20mA/40mA, 0 or 1 to 5V
Resolution	16 bits (1 part in 65, 535)
Input Overvoltage Tolerance	Input current limited to 50mA Input limiting starts at 6Vdc
Overload / Transient Protection	Transorb & Self Resetting Polyfuse
Conversion Rate	Approx. 5 samples/sec. per point
Noise Rejection (50/60Hz)	-120dB

COMBO module power

Power, Typical/Maximum	0.75 Watts / 1.5 Watts
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GENERAL SPECIFICATIONS (all MicroBricks)

Serial Ports	1, Isolated RS-232 and RS-485
Data Rate	2400 baud to 115K baud
Communications Protocols	Modbus RTU, DF1, and Bricknet
Dimensions	4.64" W x 2.75" L x 2.89" D (118mm x 70mm x 73mm)
Power (Input Voltage Range)	10 to 28Vdc
Temperature, operating	-40°C to 75°C (-40°F to 167°F)
Temperature, storage	-40°C to 100°C (-40°F to 212°F)
Humidity	5 to 85% RH, (non-condensing)
Wiring Terminations	Removable Terminal Blocks
Wire Size	#14 to #26 stranded, #12 solid



MICROBRICK STANDARD DIMENSIONS

ScadaFlex RTU Distributed I/O Modules

ScadaFlex RTUs are combination distributed I/O modules providing the largest complement of analog and discrete I/O. An optional built-in operator interface saves time during installation and system troubleshooting.

ScadaFlex RTUs can be used as I/O expansion slaves to a PLC or PC Host.

ScadaFlex RTUs support radios, leased line modems, RS-232 and RS-485 communications. A built-in spread spectrum radio is available as an option.

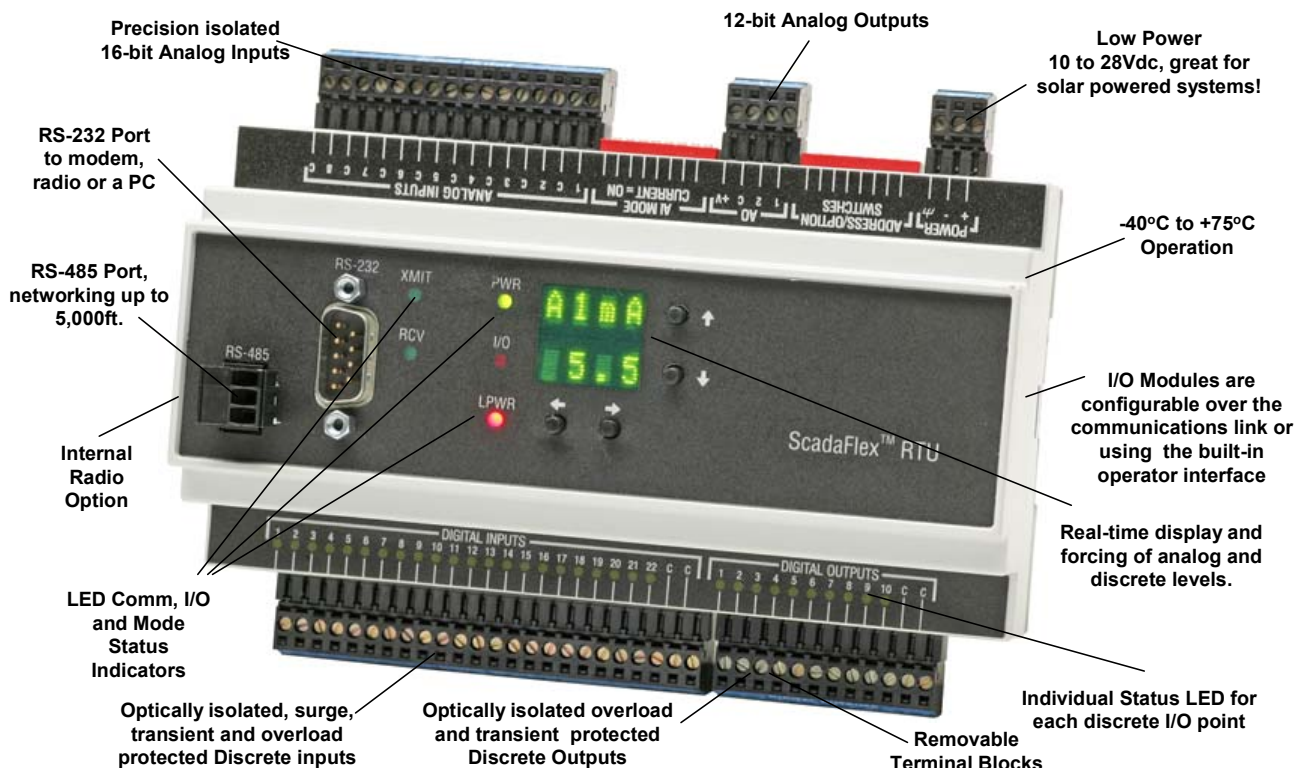
When large mixed blocks of analog and discrete I/O are needed, especially in larger wireless SCADA systems, **ScadaFlex™ RTUs** offer a versatile mixture of rugged, isolated, analog and discrete I/O in a very small footprint. These RTU modules are optimal for both wired or wireless networks with isolated RS-232 and RS-485 ports and a choice of optional built-in spread spectrum radios.

FEATURES

- ✓ Isolated and transient protected I/O
- ✓ Modular, up to 8,000 points
- ✓ Built-in Operator Interface
- ✓ Internal Spread Spectrum radio (opt)
- ✓ Smart I/O functions (averaging, counting, pulsing, etc.)
- ✓ Precision high resolution analogs
- ✓ All electronic calibration
- ✓ Point to Multipoint Networking
- ✓ Point to Point I/O "mirroring"
- ✓ Modbus, DF1 & Bricknet protocols
- ✓ RS-232 & RS-485 links to 115K baud
- ✓ Store & Forward repeater functions
- ✓ No programming required
- ✓ "Over the link" configuration
- ✓ Removable terminal blocks
- ✓ Dual (CPU & comm) watchdog timers
- ✓ Low-power DC operation
- ✓ -40°C to +75°C Temperature Range

BENEFITS

- Survives well in industrial environments*
- Add I/O only as needed for lower cost*
- Saves installation/troubleshooting time*
- All-in-one: reduced cost & panel space*
- Reduce realtime demands on PLC/PC*
- Fine readings and tight control*
- Simple and reliable with no trim pots*
- Ideal for SCADA systems*
- Reduces wiring cost and complexity*
- Universal open communications*
- Fast updates for responsive systems*
- Extend radio distances over hills/valleys*
- Easier to support and less cost*
- Eliminates trips to the field*
- Easy installation and maintenance*
- Safe handling of CPU & Comm failures*
- Ideal for solar/battery backed systems*
- Tough I/O eliminates fans and filters*



ScadaFlex RTU Distributed I/O Modules

Discrete I/O

ScadaFlex™ RTU discrete inputs are optically isolated supporting AC and DC signals. Each input has built-in pulse and runtime totalizers as well as rate counters. Two of the discrete inputs have programmable filtering that can be minimized to accommodate high-speed (5KHz) pulses from devices such as flow meters.

ScadaFlex™ RTU discrete outputs are power FET transistors capable of switching 0.5 amps to a common. The outputs are protected from transients and overloads including the destructive transients associated with driving inductive loads. Each output can be commanded to turn ON, turn OFF, or flash.

Analog I/O

ScadaFlex™ RTU analog inputs support 20mA and 5V sensors with exceptional 16-bit resolution, high accuracy and superior noise rejection. Unlike some competitive devices, **ScadaFlex™** Analog Inputs have their own isolated power and don't require an additional external power supply. All analog inputs have totalizers, ideal for accumulating flow or energy consumption from meters with analog outputs.

ScadaFlex™ RTU analog outputs support 20mA loops. The analog outputs are self-powered; no DC supply is needed.

Operator Interface

ScadaFlex™ RTU has a built-in operator interface consisting of an alphanumeric display and a 4-key keypad. The Operator Interface may be used to configure the I/O module, display signal levels, and "force" the readings of I/O points to simulate or override their values. A power saver feature can be configured to dim the display and discrete I/O status LEDs, and to turn the display off completely when there is no keyboard activity.

ANALOG INPUTS

Quantity of Analog Inputs, Type	8, 20mA or 5V, individually settable
Resolution	16 bits (1 part in 65,535)
Input Overvoltage Tolerance	Input limited to 6Vdc/50mA
Overload / Transient Protection	Transorb/Self Resetting Polyfuse
Conversion Rate	Approx. 2 samples/sec. per point
Noise Rejection (50/60Hz)	-120dB

ANALOG OUTPUTS

Quantity 2	
Output Type	0 or 4 to 20mA
Resolution	12 bits (1 part in 4096),

DISCRETE INPUTS

Quantity of Discrete inputs, Type	22, Bipolar Optically isolated
Input Voltage, nominal	12/24Vac/Vdc
input Voltage Range	0 to 60Vdc/Vac
input Overload Tolerance	85Vdc/Vac
DI Pulse Counting Rate	
DI #1 and #2	up to 5 KHz
DI #3 and #22	up to 40Hz (50% Duty cycle)

DISCRETE OUTPUTS

Quantity of Discrete Outputs	10
Output Voltage, nominal, max.	12/24 Vdc, 0 to 28 Vdc
Output Type, Configuration	Power FET, Sinking to Common
Output Switch Current Rating	.50A @20°C, derate to .25A @80°C
Overvoltage/Transient Protection	Transorb
Fault Protection/Current	Self Resetting Polyfuse, 750mA
Flash ON/OFF Timing	0 to 655.53 sec., 10mS. inc.

COMMUNICATIONS

Serial Ports	1, Isolated RS-232 and RS-485
Data Rate	2400 baud to 115K baud
Communications Protocols	Modbus RTU, DF1 & ICL Bricknet

OPERATOR INTERFACE

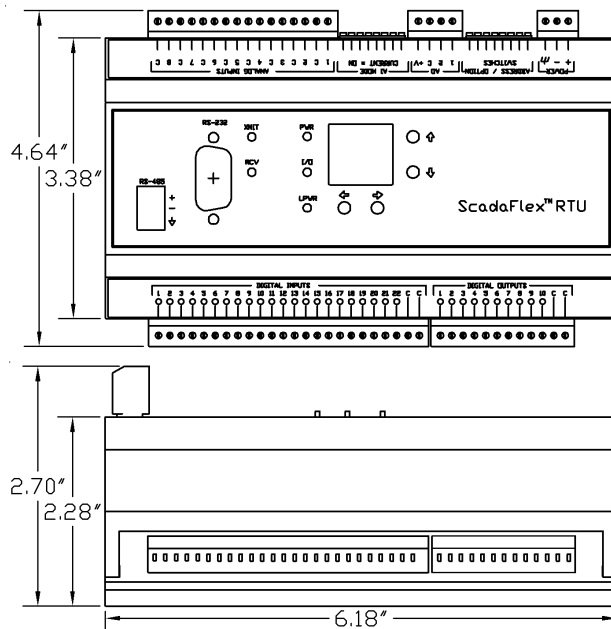
Display Technology	Alphanumeric LED, wide temp.
Display/Keypad Configuration	2 lines x 4 char, 4 keys

COMMUNICATIONS OPTIONS

Internal Spread Spectrum Radios	900MHz, 1W, up to 115Kbaud 2.4GHz, 0.5W, up to 115Kbaud
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GENERAL SPECIFICATIONS

Dimensions	4.64" W x 6.18" L x 2.70" D (118mm x 157mm x 69mm)
Power (Input Voltage Range)	10 to 28Vdc
Temperature, operating	-40°C to 75°C (-40°F to 167°F)
Temperature, storage	-40°C to 100°C (-40°F to 212°F)
Isolation, Field to Logic & Comm	1500 volts
Humidity	5 to 85% RH, (non-condensing)
Wiring Terminations	Removable Terminal Blocks
Wire Size	#14 to #26 stranded, #12 solid



MAXIO Distributed I/O Modules

MAXIO I/O modules provide larger blocks of EtherLogic style distributed I/O.

MAXIO I/O modules can be used as I/O expansion slaves to a PLC or PC Host, and as SCADA system RTUs. They may be ordered with an internal spread spectrum radio.

MAXIO I/O modules support radios, leased line modems, RS-232 and RS-485 serial communications. There are two serial ports for fully redundant communications paths.

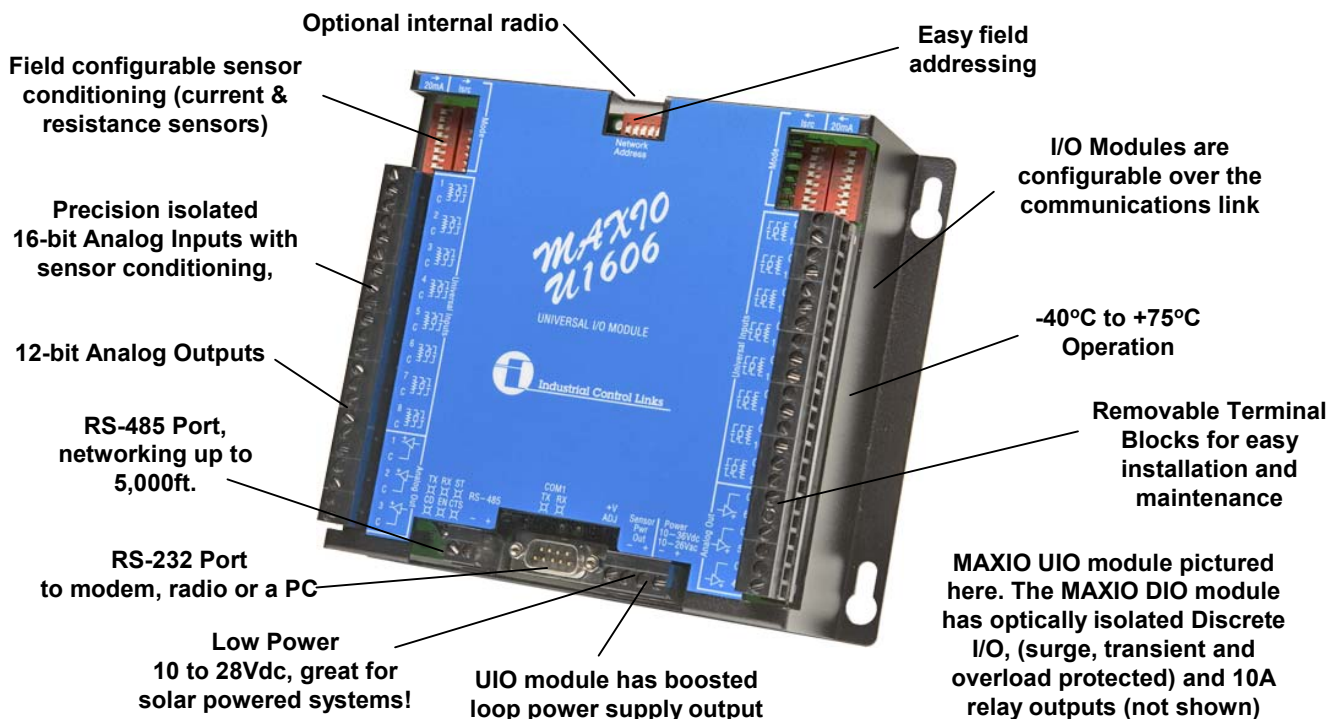
When additional EtherLogic style I/O is needed, MAXIO™ I/O modules are the best fit. There are three MAXIO modules, two Discrete I/O (12/24V and 120/240V), and a Universal I/O module. The MAXIO Discrete I/O modules have the same high-isolation inputs and heavy-duty 10A relay outputs as the EtherLogic controllers - 24 inputs and 16 outputs per module. The Universal I/O module has 16 EtherLogic style sensor conditioning inputs (supporting thermocouples, thermistors and 2-wire RTDs) and 6 precision analog outputs, as well as a regulated sensor power supply for current loops that provides up to 30Vdc out regardless of the input voltage. All MAXIO I/O modules have dual serial ports that can be used simultaneously for redundancy and I/O expansion. As a system grows, add MAXIO modules over a 2-wire network or go wireless with a built-in spread spectrum radio (option).

FEATURES

- ✓ Isolated and transient protected I/O
- ✓ Modular, up to 10,000 points
- ✓ Smart I/O functions (averaging, counting, pulsing, etc.)
- ✓ Precision high resolution analogs
- ✓ Optional spread spectrum radio
- ✓ All electronic calibration
- ✓ Point to Multipoint Networking
- ✓ Modbus, DF1 & Bricknet protocols
- ✓ RS-232 & RS-485 links to 115K baud
- ✓ Dual communications ports
- ✓ Store & Forward repeater functions
- ✓ No programming required
- ✓ "Over the link" configuration
- ✓ Removable terminal blocks
- ✓ Dual (CPU & comm) watchdog timers
- ✓ -40°C to +75°C Temperature Range

BENEFITS

- Survives well in industrial environments
- Add I/O only as needed for lower cost
- Reduce realtime demands on PLC/PC
- Fine readings and tight control
- Eliminate wires for long distances
- Simple and reliable with no trim pots
- Ideal for SCADA systems
- Universal open communications
- Fast updates for responsive systems
- Redundancy for critical systems
- Extend radio distances over hills/valleys
- Easier to support and less cost
- Eliminates trips to the field
- Easy installation and maintenance
- Safe handling of CPU & Comm failures
- Tough I/O eliminates fans and filters



MAXIO UIO module pictured here. The MAXIO DIO module has optically isolated Discrete I/O, (surge, transient and overload protected) and 10A relay outputs (not shown)

MAXIO Distributed I/O Modules

MAXIO Universal I/O

UNIVERSAL INPUTS

Number of Universal Inputs	16, 16 bits
Input Resistance	
Voltage & Thermocouple	>1 Million Ohms
Current	121 ohms
Resistance & Contacts	20,000 ohms
Analog Input Signal Ranges	
Current	20mA (0mA to 46mA)
Voltage	5Vdc (0Vdc to 5.625Vdc)
Millivolts	+/-300mV (-300mV to +300mV)
Resistance	65,000 ohms (0 to 65,535 ohms)
Thermocouples	Type J, K, T, E, R, S, B, N
Thermistors	10K Ω - II & Type III
RTD	100 Ω - 385 & 392, 1K Ω - 385
Accuracy @ 25°C (% Full Scale)	
Current & Millivolts	+/- 0.01%
Voltage	+/- 0.005%
Resistance	+/- 0.01% < 25K Ω > +/- 0.3%
Thermistors & RTDs	+/- 0.01%
Thermocouples	+/- 0.03% + CJ (+/- 1°C)
Noise Rejection (50/60Hz)	-120dB

Input Overload Clamping	Inputs limited to 50mA and 6Vdc
Overload / Transient Protection	Transorb/Self Resetting Polyfuse

ANALOG OUTPUTS

Quantity	6
Output Range	0 or 4 to 20mA (0 to 21mA)
Resolution	12 bits (1 part in 4096)
Maximum Load Resistance	250 Ω @ 10Vdc loop power 1000 Ω @ 25Vdc loop power
Accuracy @ 20°C (% Full Scale)	+/- 0.05%
Temperature Coefficient	+/- 75ppm/°C maximum
Ripple & Noise	0.01% maximum

POWER	10 to 26Vac, 10 to 36Vdc
(no radio option)	0.25W (w/sensor power OFF)

Sensor Power Supply Out	7 to 32Vdc, 0.5A maximum
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MAXIO Discrete I/O

DISCRETE INPUTS

Quantity of Discrete Inputs, Type	24, Optically isolated,
Signal ranges - 12/24V models	
Input Voltage, Nominal	12/24 Vdc/Vac (0 to 60 Vdc/Vac)
Input Overvoltage Tolerance	85 Vdc/Vac
Signal ranges - 120/240V models	
Input Voltage, Nominal	120/240 Vdc/ac
Input Overvoltage Tolerance	300 Vdc/Vac
Pulse Counting	All: 10Hz(AC), 50Hz(DC Pulse) Dis 1 to 4: 5KHz (filters OFF)
"Smart" Functions (All inputs)	Pulse Totalization, Rate, and Runtime

DISCRETE OUTPUTS

Quantity, Type	16, Relay Contacts, Form A
Output Rating	10A@125Vac, 5A@250Vac/30Vdc
Contact Protection	Internal RC Snubber

POWER

10 to 26Vac, 10 to 36Vdc	
All I/O OFF (no radio option)	0.36W @12vdc, 0.54W @24vdc
Add per Discrete Input ON	4mW w/o LEDs, 48mW w/LEDs
Add per Discrete Output ON	0.2W w/o LEDs, 0.24W w/LEDs
All Inputs/Outputs/LEDs ON	5.2W @12vdc, 5.5W @24vdc

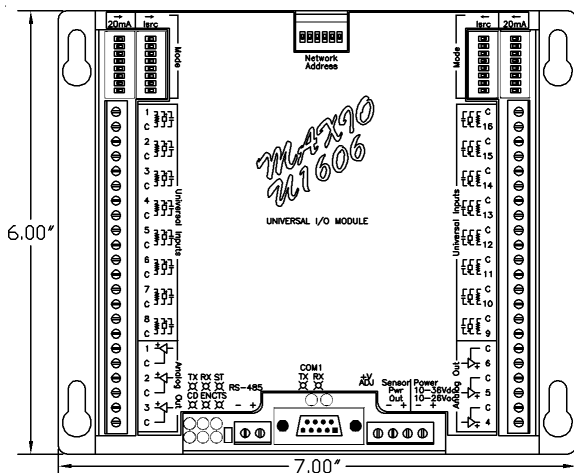
MAXIO COMMON SPECIFICATIONS

COMMUNICATIONS

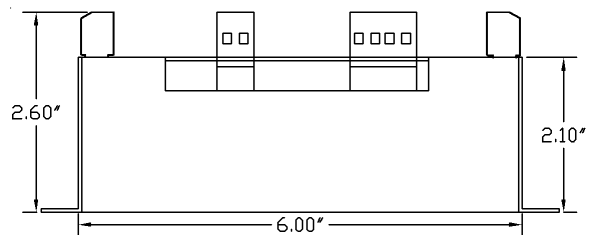
Serial Port Interfaces	2
Baud Rates	2400 to 115,200 baud
Protocols	Modbus RTU, DF1 & ICL Bricknet
COM #1	RS-232 / RS-485
COM #2	Internal modem/radio (option)

GENERAL SPECIFICATIONS

Field I/O Wiring Terminations	Removable Terminal Blocks
Wire Size	#14 to #26 stranded or solid #12 stranded only
Dimensions	7.0" W x 6.0" L x 2.5" D (178mm x 152mm x 64mm)
Temperature	-40°C to 75°C (-40°F to 167°F)
Humidity	5 to 95% RH (non-condensing)



Dimensions for the all MAXIO models are identical. The MAXIO Universal I/O model is pictured here.



MAXIO STANDARD DIMENSIONS

Distributed I/O Modules

Remote Pump Control



Wireless solar-powered
Tank Level Monitoring



Distributed I/O for
Process Control

Distributed I/O Part Numbering

PicoBrick

21-0011	DI12-24 - 12 Discrete Inputs, 12/24 Vac/Vdc
21-0012	DI12-120 - 12 Discrete Inputs, 120 Vac/Vdc
21-0021	DO12-24 - 12 Discrete Outputs, (FET)
21-0031	AI8-5V - 8 16-bit Analog Inputs, 5Vdc
21-0032	AI8-20mA - 8 16-bit Analog Inputs, 20mA
21-0041	AO8-10V - 8 12-bit Analog Outputs, 10V
21-0042	AO6-20mA - 6 12-bit Analog Outputs, 20mA
21-0043	AO8-1mA - 8 12-bit Analog Outputs, 1mA
21-0051	COMBO-24 - 3 DI (12/24Vac/Vdc), 2 DO (FET), 3 16-bit AI (5V/20mA)
21-0052	COMBO-120 - 3 DI (120Vac/Vdc), 2 DO (FET), 3 16-bit AI (5V/20mA)
21-0055	DIO6/6-24 - 6 Discrete In (12/24 Vac/Vdc), 6 Discrete Out (FET)
21-0056	DIO6/6-120 - 6 Discrete In (120 Vac/Vdc), 6 Discrete Out (FET)

MicroBrick

22-0011	DI32-24 - 32 Discrete Inputs, 12/24 Vac/Vdc
22-0012	DI32-120 - 32 Discrete Inputs, 120 Vac/Vdc
22-0021	DO32-24 - 32 Discrete Outputs, (FET)
22-0022	DO16-RLY - 16 Discrete Outputs, (Relay)
22-0031	AI16 - 16 16-bit Analog Inputs, 20mA/5Vdc
22-0032	UI8I - 8 16-bit Indiv. Iso. Analog Ins (20mA, 5Vdc, mV, ohms, TC, RTD)
22-0051	COMBO-24 - 6 16-bit AIs (20mA/5V), 10 DIs (12/24V), 4 DOs
22-0052	COMBO-120 - 6 16-bit AIs (20mA/5V), 10 DIs (120V), 4 DOs

ScadaFlex RTU

25-0050	Standard (no internal radio option)
25-0051	Freewave 900MHz Radio
25-0052	Standard I/O, Freewave 2.4GHz Radio
25-0150	Operator Interface, Standard (no internal radio option)
25-0151	Operator Interface, Freewave 900MHz Radio
25-0152	Operator Interface, Freewave 2.4GHz Radio

MAXIO Discrete I/O

61-0001	MAXIO D2416-24, 12/24V DIs, standard (no internal modem or radio)
61-0011	MAXIO D2416-24, 12/24V DIs, Freewave 900MHz Radio
61-0021	MAXIO D2416-24, 12/24V DIs, Freewave 2.4GHz Radio
61-0041	MAXIO D2416-24, 12/24V DIs, Maxstream 900MHz Radio
61-0091	MAXIO D2416-24, 12/24V DIs, extra RS-232/RS-485 port
61-0201	MAXIO D2416-120, 120V DIs, standard (no internal modem or radio)
61-0211	MAXIO D2416-120, 120V DIs, Freewave 900MHz Radio
61-0221	MAXIO D2416-120, 120V DIs, Freewave 2.4GHz Radio
61-0241	MAXIO D2416-120, 120V DIs, Maxstream 900MHz Radio
61-0291	MAXIO D2416-120, 120V DIs, extra RS-232/RS-485 port

MAXIO Universal I/O

61-1001	MAXIO U1606, 16 UI, 6 AO, standard (no internal modem or radio)
61-1011	MAXIO U1606, 16 UI, 6 AO, Freewave 900MHz Radio
61-1021	MAXIO U1606, 16 UI, 6 AO, Freewave 2.4GHz Radio
61-1041	MAXIO U1606, 16 UI, 6 AO, Maxstream 900MHz Radio
61-1091	MAXIO U1606, 16 UI, 6 AO, extra RS-232/RS-485 port

DIN Rail Mounting Kit

99-0001	DIN Rail Mounting Kit for MAXIO I/O modules
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Starter Kit

91-1011	ScadaFlex I/O Toolbox software, cables, and documentation for test, configuration and calibration support for all ICL distributed I/O modules.
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