NEW

SMART IO MODULES
DATA ACQUISTION MODULES

Features

- ❖ Portable low-cost IO modules addition to existing PLC/SCADA system
- ❖ Modbus RTU connectivity on RS485 Network
- ❖ Wide range of baud rates for communication from 1200 BPS to 115.2K BPS
- ❖ IO modules used with third party software via Modbus RTU protocol
- ❖ Interface with field devices to provide real-time data for SCADA/PLC/HMI
- ❖ Simple setup and easy handling
- ❖ Simple DaisyChain Connection without wiring
- ❖ Various types of IO Modules AI, AO, DI, DO, RTD, thermocouples are available
- ❖ Availability of universal Input (Current/Voltage/Thermocouple) Modules
- ❖ High resolution analog input modules
- ❖ Wide power input range from 10V to 60V DC
- ❖ Over voltage protection and 3000V DC isolation for communication
- ❖ User friendly setup software for configuration and troubleshooting
- ❖ Data acquisition software for data storage and Real-Time analysis on PC
- ❖ LEDs on every module for digital IO status, communication and power supply
- ❖ Hot swap and auto configuration

PRISMA
Instruments
& Gauge Bourdon France

Smart IO Modules

This new generation Smart IO Modules based on RS485 Modbus communication is available now for data acquisition and other applications. These IO Modules offer good reliability, easy for installation and maintenance, wide range of operating input power, communication isolation of 3000VDC, watchdog timer to monitor remote host. Analog input modules are available with universal inputs also. They can accept voltage, current and thermocouple signals. The analog inputs are isolated between channels. Special modules are available with high interchannel isolation between channels and high isolation betweeen channel and ground for special applications.

Smart IO Studio

This is a windows based standard PC Software used to configure Smart IO Modules on the network. The Software will automatically detect the modules connected. It is possible to retrieve the IO module parameters to the PC by using this PC. The module will be connected to PC by using RS485 communication. The module address can be set by two rotary switches on the module. This user friendly setup software helps the user for the easy configuration and troubleshooting.

Analog Input Modules

Model No	SIO-8AIU-H	SIO-16AIU-H	SIO-8AIU	SIO-16AIU	SIO-8AII	SIO-16AII	SIO-8AIV	SIO-16AIV	SIO-8TC	SIO-16TC
No of Channels	8	16	8	16	8	16	8	16	8	16
Power Consumption	1.6W	2.8W	1.6W	2.8W	1.6W	2.8W	1.6W	2.8W	1.6W	2.8W
Type of Input	Universal (Current, Voltage, Thermocouple)				Current		Voltage		Thermocouple	
Voltage Input Range	± 100mV,± 500mV,±1V, ± 5V, ±10V,0~100mV,0~500mV,0~1V,0~5V,0,10V				N.A.		±1V, ±5V, ±10V, 0 - 1V, 0 - 5V, 0 - 10V		N.A.	
Current Input Range	± 20mA,4~ 20mA,0~20mA (Dip Switch)				± 20mA,4~ 20mA,0~20mA (Dip Switch)		N.A.		N.A.	
Thermocouple Type	J,K,T,E,R,S,B,N				N.A.		N.A.		J,K,T,E,R,S,B,N	
Burnout Detection	Yes. All Voltage & Thermocouple Inputs , 4~20mA Input				Yes. 4~20 mA only		No		Yes	
Resolution	16 Bit				16 Bit					
Sampling Rate	2.5 Samples / Second per Channel				2.5 Samples / Second per Channel					
Independent Channel Configuration	Yes				Yes					
Accuracy	± 0.1% FSR				± 0.1% FSR					
Input Impedance	Voltage:2MΩ,Current:120Ω				120Ω		1MΩ		N.A.	
Span Drift	± 25 ppm /°C				± 25 ppm /°C					
Zero Drift	± 6μV/°C				± 6μV/°C					
CMRR@50/60Hz	120 dB				120 dB					
NMRR@50/60Hz	100 dB				100 dB					
Input Voltage Protection	240V AC	±35V DC			±10V DC		±35V DC		±35V DC	
Common Mode Voltage (Isolation between Channel and Ground)	240V DC	10V DC			2.5V DC		10V DC		2.5V DC	

Analog Output Module

Model No	SIO-8AOU
No of Channels	8
Power Consumption	1.6W
Type of Output	Current, Voltage
Voltage Output Range	±5V,±10V,0-5V,0-10V
Current Output Range	4~20mA, 0~20mA
Resolution	12 Bit
Output Response Time	10ms per Channel
Independent Channel Configuration	Yes
Open Wire Detection	Yes . For 4~20 mA only
Accuracy	± 0.1% FSR
Programmable output Slope	Voltage : 0.0625~512V/sec, Current : 0.125~1024mA/sec
Voltage Output Capacity	10V @ 10mA
Current Output Capacity	500 Ω
Indicators	8 LED Indicators for Analog Output and Fault indication
Power ON Value	Yes. Programmable
Safe Value	Yes. Programmable

Digital Input / Output Modules

Model No	SIO-16DI	SIO-32DI	SIO-16DO	SIO-32DO	SIO-8RO	SIO-16RO	SIO-16DIO	SIO-16DI8RO
No of Channels	16 Digital Inputs	32 Digital Inputs	16 Digital Outputs	32 Digital Outputs	8 Relay Outputs	16 Relay Outputs	16 Digital Inputs + 16 Digital Outputs	16 Digital Inputs + 8 Relay Outputs
Dry Contact Input	Logic Level 0 : Open		N.A.		N.A.		Logic Level 0 : Open	
	Logic Level 1: Close		N.A.		N.A.		Logic Level 1: Close	
Wet Contact Input	Logic Level 0 : +3 V Maximum		N.A.		N.A.		Logic Level 0 : +3 V Maximum	
	Logic Level 1: +10 to +50 V		N.A.		N.A.		Logic Level 1: +10 to +50 V	
Input Resistance	10 KΩ		N.A.		N.A.		10 KΩ	
Isolation between Field and Logic	2500V DC		2500V DC		N.A.		2500V DC	
Over Voltage Protection between Channel Input and Ground	±70V DC		N.A.		N.A.		±70V DC	
Counter Function	Yes (16 Bit)		N.A.		N.A.		Yes (16 Bit)	
Maximum Input Frequency	100 Hz		N.A.		N.A.		100 Hz	
Latch Value Read	Yes		N.A.		N.A.		Yes	
Output Type	N.A.		Open Collector Transistor		Relay		Open Collector Transistor	Relay
Output Specification	N.A.		SinK (NPN)		4 * Form A / 4 *Form C	8 * Form A / 8 *Form C	SinK (NPN)	4 * Form A,4* Form C
Output Voltage	N.A.		3.5V ~ 30V DC		250 V AC/30V DC		3.5V ~ 30V DC	250 V AC/30V DC
Load Current	N.A.		500mA		5A		500mA	5A
Power ON Value	N.A.		Yes		Yes		Yes	Yes
Safe Value	N.A.		Yes		Yes		Yes	Yes
Frequency Output	N.A.		8 *		N.A.		8 *	N.A
Mazimum Frequency Output	N.A.		2.5 KHz *		N.A.		2.5 KHz *	N.A
Dielectric Strength	N.A.		N.A.		3000 V		N.A.	3000 V
Operate Time	N.A.		N.A.		10 ms Max		N.A.	10 ms Max
Release Time	N.A.		N.A.		5 ms Max		N.A.	5 ms Max
Relay Life Cycle	N.A.		N.A.		1x10^5 operations @3A 250VAC/30VDC		N.A.	1x10^5 operations @3A 250VAC/30VDC

RTD Input Module

Model No	SIO-6RTD		
No of Channels	6		
Power Consumption	1.6W		
Type of Input	RTD		
RTD Type	Type	Temperature Co-efficient (α)	Range
	Platinum 100	α= 0.00385 (IEC)	-200 ~ 600°C
	Platinum 100	α= 0.00392 (JIS)	-200 ~ 600°C
	Platinum 1000	α= 0.00385 (IEC)	-200 ~ 600°C
	Cu 100 @ 0°C	α= 0.00421	-20 ~ 150°C
	Cu 1000 @ 0°C	α= 0.00421	-20 ~ 150°C
	Cu 50 @ 0°C		-0 ~ 200°C
	Nickel 100Ω	α= 0.00618	-60 ~ 180°C
	Nickel 120Ω	α= 0.00672	-80 ~ 260°C
	Nickel 507.5Ω	α= 0.00520	-80 ~ 260°C
	Nickel 604Ω	α= 0.00518	-200 ~ 200°C
	BALCO 500		-40 ~ 150°C
Open Wire Detection	Yes		
Resolution	16 Bit		
Sampling Rate	2.5 Samples / Second per Channel		
Independent Channel Configuration	Yes		
Accuracy	± 0.05% FSR		
Span Drift	±25 ppm/°C		
Zero Drift	±6 μV/°C		
CMRR@50/60Hz	120 dB		
NMRR@50/60Hz	100 dB		
Isolation between Channels and Ground	±55V DC		

*For PTO/PWM Frequency Output applications contact supplier for conformation before purchasing

Ordering Code

IO Type	Model No	Description
Analog Input	SIO-8AIU-H	8 Channel Isolated Universal Analog Inputs (3 in 1) Module
	SIO-16AIU-H	16 Channel Isolated Universal Analog Inputs (3 in 1) Module
	SIO-8AIU	8 Channel Universal Analog Inputs (3 in 1) Module
	SIO-16AIU	16 Channel Universal Analog Inputs (3 in 1) Module
	SIO-8AII	8 Channel Current Inputs Module
	SIO-16AII	16 Channel Current Inputs Module
	SIO-8AIV	8 Channel Voltage Inputs Module
	SIO-16AIV	16 Channel Voltage Inputs Module
	SIO-8TC	8 Channel Thermocouple Inputs Module
	SIO-16TC	16 Channel Thermocouple Inputs Module
	SIO-6RTD	6 Channel RTD Inputs Module
Analog Output	SIO-8AOU	8 Channel Universal Analog Outputs Module
Digital Input	SIO-16DI	16 Channel Isolated Digital Inputs Module
	SIO-32DI	32 Channel Isolated Digital Inputs Module
Digital Output	SIO-16DO	16 Channel Isolated Digital Outputs (Sink or NPN Transistor) Module
	SIO-32DO	32 Channel Isolated Digital Outputs (Sink or NPN Transistor) Module
Relay Output	SIO-8RO	8 Channel Relay Outputs Module
	SIO-16RO	16 Channel Relay Outputs Module
Combination Module	SIO-16DIO	16 Channel Isolated Digital Inputs Module + 16 Channel Isolated Digital Outputs (Sink or NPN Transistor) Module
	SIO-16DI8RO	16 Channel Isolated Digital Inputs Module + 8 Channel Relay Outputs Module

General Specifications

Power Supply voltage	**10 to 60 V DC**
Reverse Polarity Protection	**Yes**
Watchdog Timer	System:1.6 Seconds Fixed
	Communication: Programmable
Connector Type	#16~30AWG plug in Terminal Block
Dimension (L*W*H) mm	115.2*47.2*134.7 mm
Operating Temperature	-25°C to 70°C
Storage Temperature	-30°C to 75°C
Humidity	5 to 95%
Communication Interface	RS485
Communication Protocol	Modbus RTU
Baudrate	1200, 2400, 4800, 9600, 19200, 38400, 57600 BPS and 115.2 KBPS
Communication Isolation Protection	**3000V DC**

Dimension:

134.7 mm

115.2 mm

47.2 mm

126.1 mm

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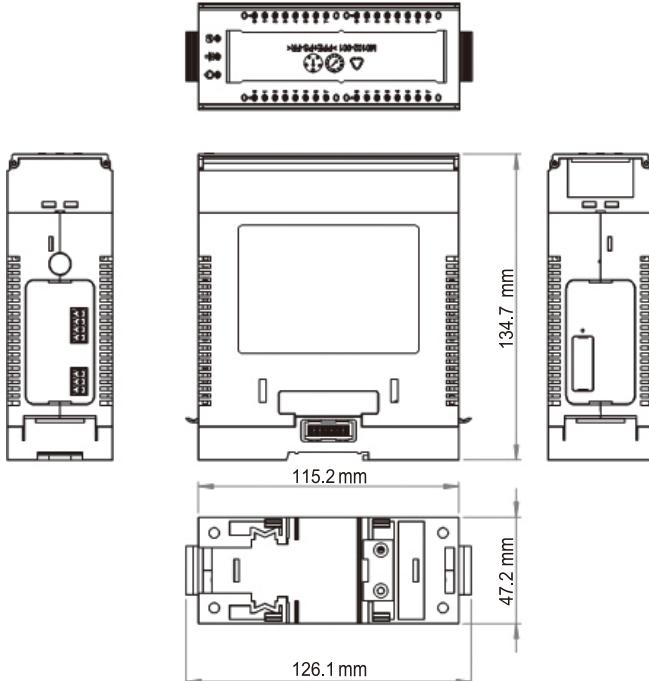
Data Acquisition Studio (DAQ)

DAQ Studio is a single software for data acquisition from recorders, temperature controllers, IO Modules, HMI and 3rd party devices with Modbus protocol.

Real Time Viewer Features

- ❖ Maximum tags: 2048
- ❖ Real time trends, Real time bar graphs, Real time digital values
- ❖ Real Time Alarms & Historical Alarms
- ❖ Number of display pages: 200 Maximum
- ❖ Number of Pens (Tags) display per page: 1 to 24 Configurable
- ❖ Timers: 100, Counters: 50 & Totalizers: 50
- ❖ Log Speed: 1, 2, 5 10, 30, 60 and 120 Sec
- ❖ Log trigger type: By time, By value change
- ❖ Log Methods: Instant, Average, Minimum & Maximum
- ❖ Project Auto configuration option available for Temperature Controllers, Recorders, IO Modules and HMI
- ❖ Mathematic channels to write expression or formulae
- ❖ Data Types: 2 byte, 4 byte and 8 byte, Decimal: 0 to 4
- ❖ Alarms by Email and 100 customized comments for Alarms
- ❖ Event Types: H, HH, L, LL, Rate of increase(R), Rate of decrease(r),Dev+,Dev- and Error
- ❖ Number of events per Analog Channel: 5, Number of Jobs/event: 2
- ❖ Four Communication Banks via serial and Ethernet Ports for Modbus RTU & Modbus TCP Protocols
- ❖ Support Dynamic Data Exchange(DDE) for Excel
- ❖ Available Jobs: Log Alarm, Log Event, Log Alarm (Auto ack.), send email,Sound buzzer, DO Latch ON, DO Latch
- ❖ Available Math functions:SIN, COS, EXP, SQRT, LN, LOG, ABS, POW, ROUND, HI,LO, INV, TG, CTG, ASIN,ACOS and ATG
- ❖ Display languages:20 Languages. Brazil Portuguese, Czech, Danish, Dutch, English, French, German, Greek,Italian, Japanese, Korean, Polish, Portuguese, Russian, Simplified Chinese, Spanish, Swedish, Thai, Traditional, Chinese, Turkish

Historical Viewer Features

- ❖ Display Historical trend,Display Historical alarms/Events
- ❖ Display Reports (Daily, Weekly & Monthly)
- ❖ Display Historical values in tabular column
- ❖ Mark Remarks on data
- ❖ Search data by Time, Time Period, Event/Alarm, Tag wise and Remark
- ❖ View trends both Horizontally and Vertically
- ❖ Zoom out & Zoon In
- ❖ Display view options available at 100msec/dot,1 sec/dot, 2 sec/dot, 5 sec/dot, 10 sec/dot, 20 sec/dot, 30 sec/dot,1min/dot, 2 min/dot, 5 min/dot, 10 min/dot, 30 min/dot,10 min/page, 30 min/page, 1 hr/page, 2 hr/page, 4hr/page, 8 hrs/page, day/page, week/page and Month/page
- ❖ Display white back ground/black background
- ❖ Print trend view, Event/Alarm list, Reports & Tag Values
- ❖ Export data and alarms/events to CSV files. (Specify time or time period or all)
- ❖ Automatic import and export option
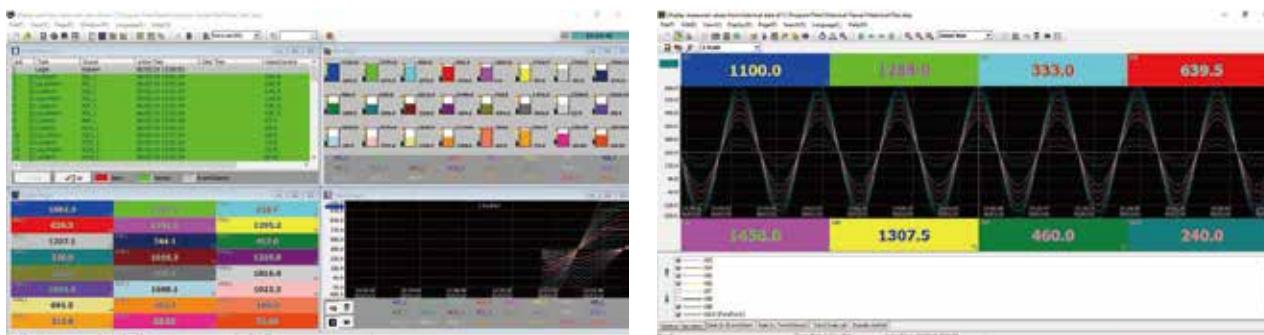
Applications

Data Acquisition using SIO Modules and Data Aquisition Studio

RS-485
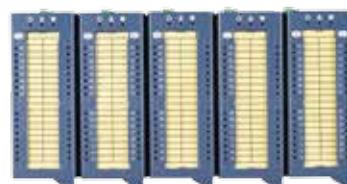
**HMI with SIO Modules**

RS-485
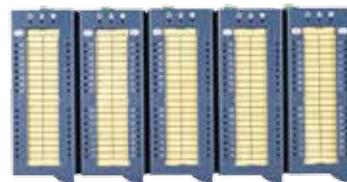
vPLC with SIO Modules
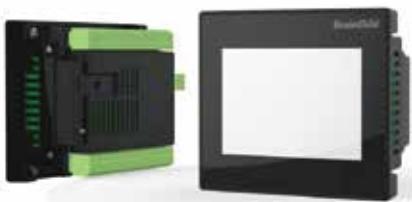
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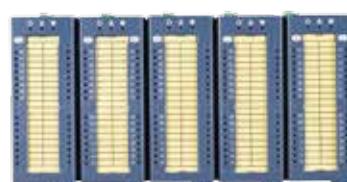
SIO Modules as External channel in PR Paperless Recorder

RS-485
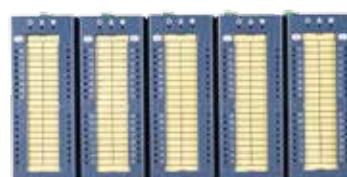
SIO Modules with SCADA

RS-485