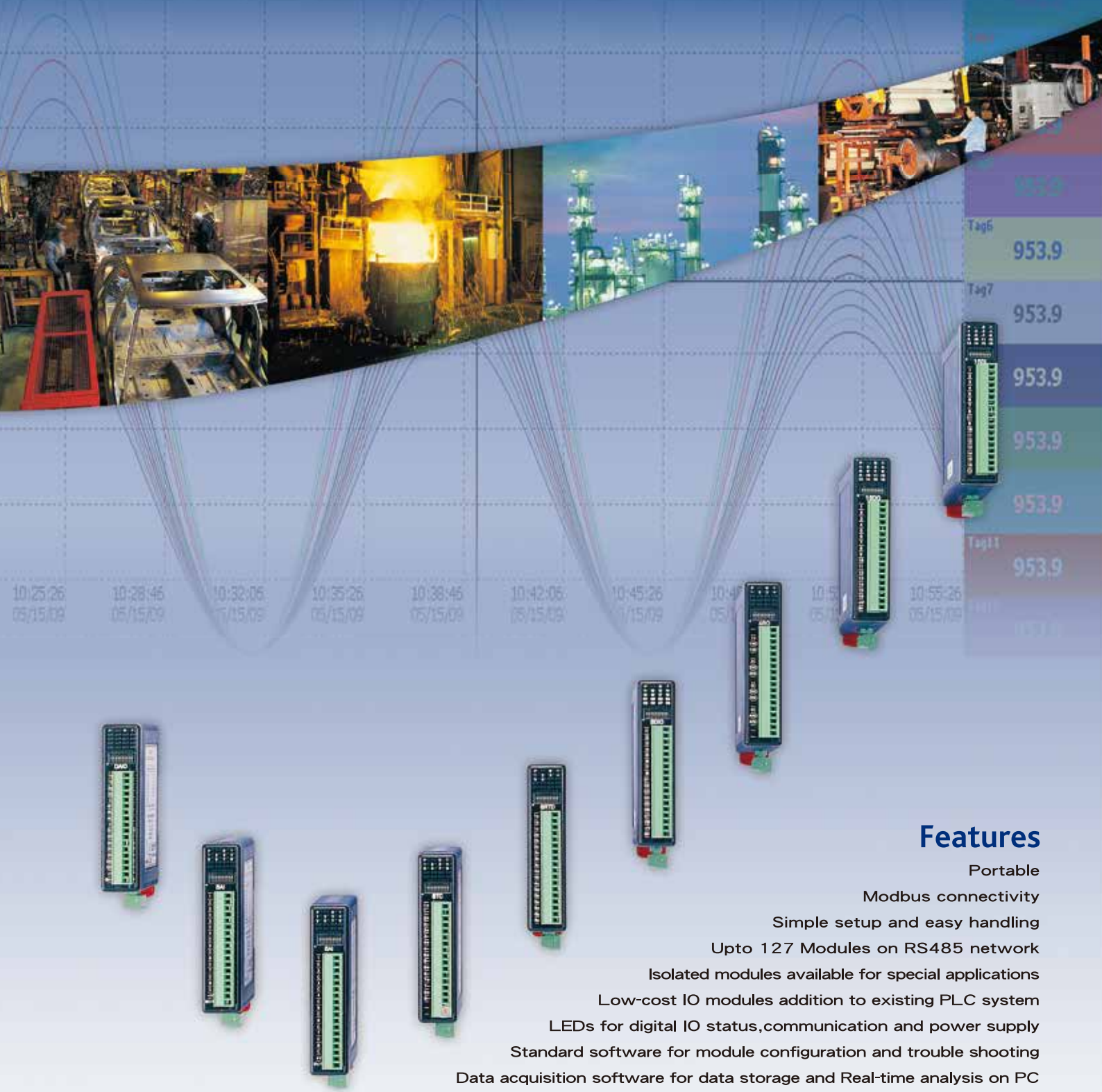
Data Acquisition Modules
Distributed IO Modules



Features

Portable

Modbus connectivity

Simple setup and easy handling

Upto 127 Modules on RS485 network

Isolated modules available for special applications

Low-cost IO modules addition to existing PLC system

LEDs for digital IO status,communication and power supply

Standard software for module configuration and trouble shooting

Data acquisition software for data storage and Real-time analysis on PC

IO modules used with the third party softwares via Modbus RTU Protocol

Interface with field devices to provide real-time data for SCADA/PLC/HMI

Different types of IO Modules AI,AO,DI,DO,RTD,Thermocouples all available

Direct reading of temperature without scaling by using RTD and Thermocouple Modules

BrainChild

IO Modules

A new line of Modbus based IO modules for data acquisition and other applications are available now. These IO modules offer good reliability, low-cost solution for distributed IO applications. They are portable, easy integrated with existing Modbus network, and simple to use for end users. Various types of IO modules are available for different kinds of requirements. All IO modules have LED indications for visualization of IO status (Digital) and fault diagnostic analysis. Some models with high isolation among inputs are also available for special applications. IO Studio software is used to setup communication of IO modules and checks the IO status in PC for diagnosis purpose. With Modbus RTU protocol, these IO modules configured as slaves will be easy to communicate with Modbus master such as SCADA/PLC/HMI. All IO modules have 2 wire RS485 interface with Modbus RTU Protocol.

Environmental & Physical		Communication		Approval Standards	
Operating temperature	-10°C to +50°C	Interface	2 wire, RS485	Safety	IEC 950
Storage temperature	-40°C to +85°C	Modbus address setting	By Dip switch	EMC	IEC 61000-4-2-A1 Level 2
Dimension (WxHxD)	23 x 109 x 98mm	Modbus Max.address	127 only		IEC 61000-4-3-A1 Level 2
Weight	105 grams	Baud rate	2400, 4800, 9600, 19200,		IEC 61000-4-4 Level 3
Mounting	DIN Rail		38400, 57600, 115200		CISPR 11:1997-A1 /
		Parity	None, Even, Odd		EN 55011:1998
		Stop bits	1, 2		Group 1 Class A
		Data Bits	8		

Digital Modules

IO-16DI

IO-16DO

IO-4RO

IO-8DIO

Specifications

	IO-16DI	IO-16DO	IO-4RO	IO-8DIO
Digital Inputs	16	N.A	N.A	8
No.of Counters	16	N.A	N.A	8
Counter Resolution	32 Bit	N.A	N.A	32 Bit
Counter frequency	1 KHz	N.A	N.A	1 KHz
Counter Mode	UP/Down	N.A	N.A	UP/Down
Pulse width	Minimum 500 Micro sec	N.A	N.A	Minimum 500 Micro sec
Input Impedance	2200 ohms	N.A	N.A	2200 ohms
Isolation (Field&Logic)	1500 V RMS	N.A	N.A	1500 V RMS
Status Indication	LED for each channel	N.A	N.A	LED for each channel
Digital Outputs	0	16	4	8
Type of Digital output	N A .	Open collector	Relay, Form C	Open collector
Maximum load current	N A .	100 mA/channel	0.5A / 1 A each ch.	100 mA/channel
Maximum load Voltage	N.A	36 V DC	220 V AC/ 28 V DC	36 V DC
Isolation (Field&Logic)	N A .	1500 V RMS	1000 V RMS	1500 V RMS
Status Indication	N.A	LED for each channel	LED for each channel	LED for each channel
Power supply	12 to 24 V DC	12 to 24 V DC	24 V DC	12 to 24 V DC

Combination Module

Specifications

Analog Inputs	2	0-20 mA/0-10 V DC, Resolution: 12 bit, I/P Impedance: 250 Ohms for current I/P, 190 K Ohms for Voltage I/P
Analog Outputs	1	0(4)-20 mA/0(2)-10 V DC, Resolution: 12 bit, Drift: 100 PPM/Deg.C, Accuracy: 0.05 % of span, Load: 1000 ohms @ 24 V for Current, 2000 Ohms for voltage output.
Digital Inputs	4	Counter, 32 bit, Frequency: 50 Hz, Pulse width: 20 ms, Voltage:10-26 V DC
Digital Outputs	2	Open collector, 36 V DC (Max), 100 mA/Output
RTD Inputs	2	Connection:2/3 wire, Types: PT100/Ni120/PT1000, Resolution: 0.1 deg.C, Isolation: 1500 V RMS
Power supply		12 V to 24 V DC

IO-DAIO

***For IO-DAIO module, LED is available for power on and communication status only.**

Analog Modules RTD and Thermocouple Inputs

IO-6RTD

IO-8TC

IO-8TCS

Specifications

Input	6, RTD Inputs	8, Thermocouple Inputs	8, Isolated Thermocouple Inputs
Type	PT100, Ni 120, PT1000, Ni1000 -DIN, NI1000 Landys & Gyr 10-400 Ohs, 100-4000 Ohms	J,K,E,T,N,B,S,R,mV,C,D and G	J,K,E,T,N,B,S,R,mV,C,D andG
Connection	2/3 wire	2 wire	2 wire
Resolution	0.1 Deg.C	0.1 Deg.C	0.1 Deg.C
Sample rate	31 samples/ min	42 samples/ min	37 samples/ min
Drift	100 PPM/Deg.C	100 PPM/Deg.C	100 PPM/Deg.C
Isolation (Field&Logic)	1500 V RMS	1500 V RMS	1500 V RMS 350 V (P-P) between channels
Power supply	12 V to 24 V DC	12 V to 24 V DC	12 V to 24 V DC

Current & Voltage Inputs

IO-8AII

IO-8AIV

IO-8AIIS

IO-8AIVS

Specifications

Analog Inputs	8	8	8	8
Type	Single-Ended	Single-Ended	Differential	Differential
Voltage	N.A	0 - 10 V DC/ 0 - 5V DC	N.A	0(2) - 10 V / 0(1) - 5V DC
Current	0-20 mA	N.A	0-20 mA	N.A
Offset by switch	4 mA	2 V DC (0-10)/ 1 V DC(0-5)	4 mA	2 V DC (0-10)/ 1 V DC(0-5)
Resolution	12 bit (0-4095)	12 bit (0-4095)	12 bit (0-4095)	12 bit (0-4095)
Sample rate	12.5 samples/sec	12.5 samples/sec	12.5 samples/sec	12.5 samples/sec
I/P Impedance	250 Ohms	20 K Ohms	250 Ohms	110 Kohms
Isolation(Ch-Ch)	N.A	N.A	350 V (P-P)	350 V (P-P)
Drift	50 ppm/deg.C	50 ppm/deg.C	100 ppm/deg.C	100 ppm/deg.C
Accuracy	0.2 % of span	0.2 % of span	0.2 % of span	0.2 % of span
Isolation (Field&Logic)	1500 V RMS	1500 V RMS	1000 V RMS	1500 V RMS
Power supply	12 V to 24 V DC	12 V to 24 V DC	12 V to 24 V DC	12 V to 24 V DC

Analog Outputs

Specifications

	IO-8AOI	IO-8AOV
Analog Outputs	8	8
Voltage	N.A	0-10V DC
Current	0-20 mA	N.A
Offset	4 mA	2 V DC
Resolution	12 bits (0-4095)	12 bits (0-4095)
Drift	100 ppm/deg.C	100 ppm/deg.C
Accuracy	0.05 % of span	0.05 % of span
Load	1000 Ohms @ 24 V DC	2000 Ohms
Isolation (Field&Logic)	1500 V RMS	1500 V RMS
Power supply	12 V to 24 V DC	12 V to 24 V DC

IO-8AOI

IO-8AOV

Data Acquisition Studio

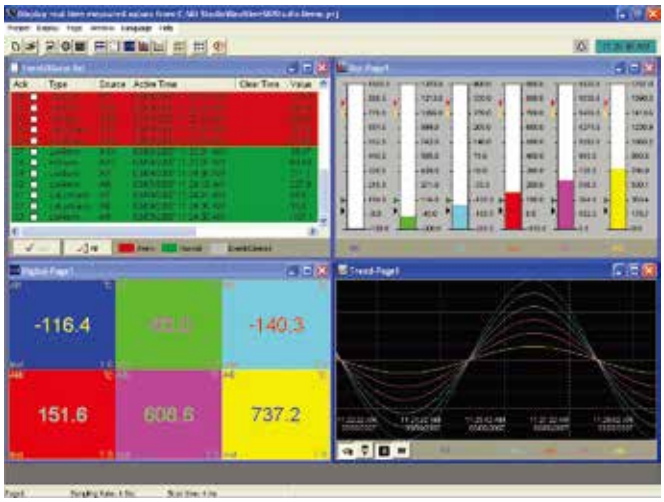
Single PC software for recorders, controllers, IO modules and third party devices by Modbus Protocol. User friendly PC based data logging and acquisition software.

Features

1. Maximum tags :2048
2. Real time trends, Bar graphs, Digital values
3. Real Time Alarms & Historical Alarms
4. Number of display pages: 200 maximum
5. Number of pens/page: 1 to 24 (Configurable)
6. Timers: 100, Counters: 50 & Totalizers: 50
7. Log Speed: 1, 2, 5 10, 30, 60 and 120 Sec
8. Log trigger type: By time, By value change
9. Log Methods: Instant, Average, Minimum & Maximum
0. Project Auto configuration with IO modules to create data base
1. Mathematic channels to write expressions or formula
2. Data Types: 2 byte, 4 byte and 8 byte, Decimal: 0 to 4
3. Alarms by email and 100 customized comments for Alarms
4. Event Types: H, HH, L, LL, Rate of increase, Rate of decrease and Error
5. Number of events per Analog Channel: 5, Number of Jobs/event: 2
6. Available Jobs: Log Alarm, Log Event, Log Alarm (Auto ack.), send email, Sound buzzer, DO Latch ON, DO Latch OFF, DO Process, Enable Timer, Disable Timer, Preset Totalizer, Reset Totalizer, Enable Totalizer, Disable Totalizer, Preset Counter, Reset Counter, Increase Counter, Decrease Counter, Log Report, Reset Min/Max/Avg and Log Message
7. Math functions: SIN, COS, EXP, SQRT, LN, LOG, ABS, POW, ROUND, HI, LO, INV, TG, CTG, ASIN, ACOS and ATG
8. Display languages: English, French, German, Italian, Japanese, Korean, Polish, Portuguese, Russian, Spanish, Thai and Czech, Chinese (Traditional) and Chinese (Simplified)
9. Four communication banks (Serial/Ethernet) Modbus RTU & TCP master protocols
20. Support dynamic data exchange (DDE)

Historical viewer features

1. Display Historical trend, Historical alarms/Event
2. Display Historical values in tabular column
3. Mark Remarks on data (Comments)
4. Search data by Time, Timer Period, Event/Alarm wise and Remark
5. View trends both Horizontally and Vertically
6. Zoom out & Zoon In
7. Display view options available at 1 sec/dot, 2 se 5 sec/dot, 10 sec/dot, 20 sec/dot, 30 sec/dot, 1 2 min/dot, 5 min/dot, 10 min/dot, 30 min/dot, 10 30 min/page, 1 hr/page, 2 hr/page, 4 hr/page, 8 day/page, week/page and Month/page
8. Display white back ground/black background
9. Print trend view, Event/Alarm list, Reports & Tag
10. Export data and alarms/events to CSV files. (Sp or time period or all)



IO Studio

t is standard PC software used to configure the communication settings for IO modules on the Modbus network. Once a module is detected, it is possible to view real-time data of the module directly on PC and it can be used for diagnostic purpose as well. All IO modules support RS485 communication. A RS232 to RS485 converter should be used between module and PC for configuration purpose. The address of each module is set up by using dip switches available on the module itself.

Networking Accessories

PC-E: Serials to Ethernet converter

Application	Connect IO modules (RS-485) to PC via Ethernet, 10/100 Base-T
	Modbus RTU to Modbus TCP, UDP, transparant modes
Sockets	Multisocket, share data to maximum 4 masters on Ethernet side
Power supply	12 to 24VDC
Interfaces	RS-232, RS-485 (2 wire)
Connection	Screw type terminal block (RS-232, RS-485)
Baud Rate	2400, 4800, 9600, 19.2K, 38.4K, 57.6K and 115.2K
Protection	Input fault protection to 70VDC, 16Kv HBM protection
Operating Temperature	-10℃ to 50℃
Installation	Din rail mount
Dimension	70 (L) X 59.5 (W) X 106 (H) mm
Weight	105 grams

SW5502 : Serials + Ethernet to Ethernet wireless converter

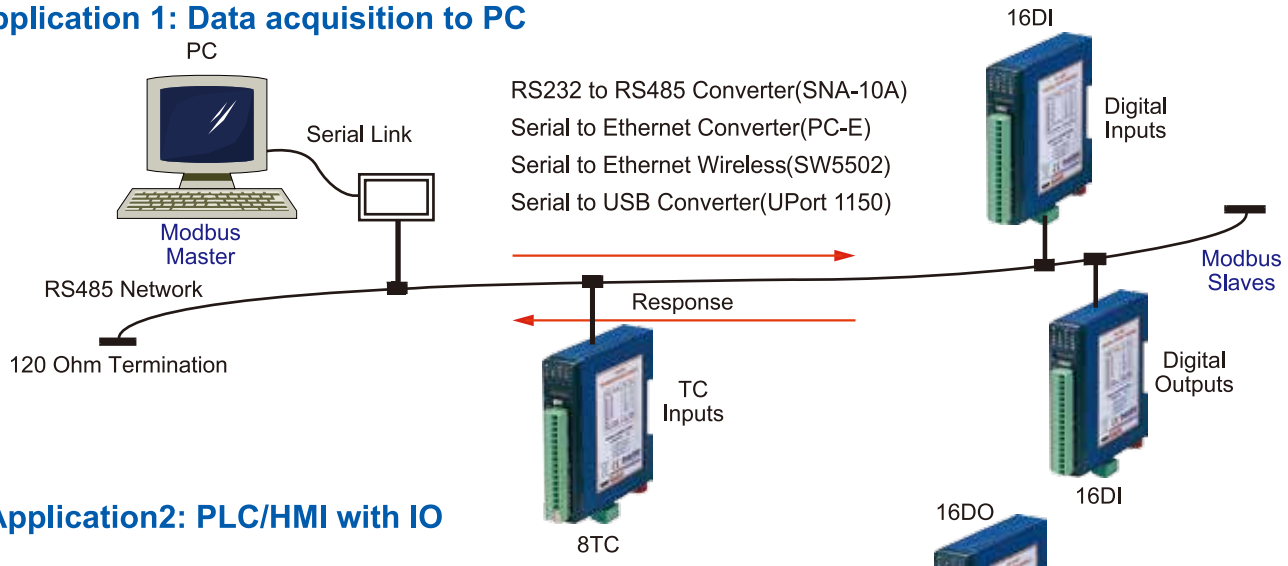
Application	Connect IO modules (RS-485) to PC via wireless
Protocols	**IPv4, ICMP, TCP, UDP, DHCP Client, SNMP, SMTP, HTTP, DNS, NTP, RADIUS, RFC2217, WPS**
Wireless	**IEEE 802.11a/b/g/n, upto 54Mbps wireless network connectivity**
Wireless security	**WEP, WPA, WPA2, TKIP, AES, 802.1x**
Link modes	**TCP Server, TCP Client, UDP**
Antenna	**5GHz frequency supports to reduce interference on 2.4 GHz with other wireless devices, 3/5 dBi dual antenna design, SMA(R) female connector, optional 9dBi high-gain antenna**
Transmission distance	**250 meters for 3dBi antenna, 800 meters for 9dBi (optional)**
Power supply	**9 to 48VDC,0.65A, Approx. 5.85W (max)**
Interfaces	**Two serial ports (RS-232/422/485), one RJ45 Ethernet IEEE802.3ab 10/100/1000Mbps**
Connection	**D-Sub 9-pin connector (RS-232/422/485)**
Baud Rate	**110~921600Kbps**
Operating temperature	**-10°C ~ 60°C (14°F ~ 140°F)**
Installation	Din rail mount
Dimension	**47(H) x 110(W) x 90(D) mm**
Weight	**500 grams**
Housing	**Metal housing with IP50 protection**

SNA-10A: RS-485/422 to RS-232 converter

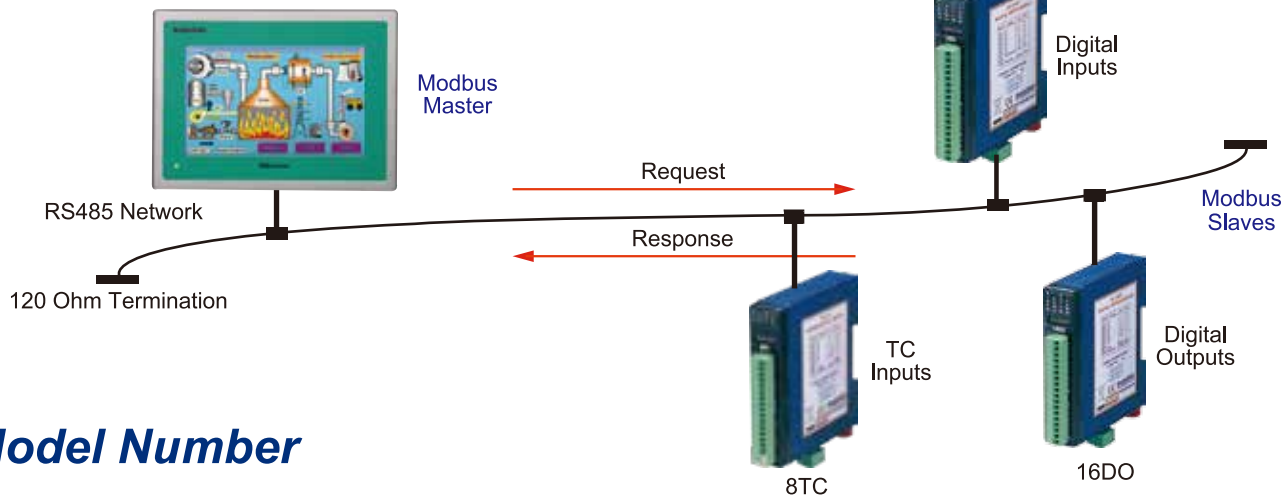
Application	Connect IO modules (RS-485) to PC(RS-232)
Power supply	90 to 264VAC, 47-63 Hz, 10VA
Interfaces	RS-232, RS-422 (4 wire) / RS-485 (2 wire)
Connectors	9-pin female D-SUB (RS-232) Screw type terminal block (RS-485/422)
Baud Rate	300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400
Breakdown Voltage	2500VAC, 1 minute (power to RS-232, RS-485/422) 400 VAC, 1 minute (between RS-232 and RS-485/422)
Isolation resistance	>500 Mohm, 500 VDC
Operating Temperature	0 to 50℃
Installation	Din rail mount, wall mount
Dimension	102.5 (L) X 80 (W) X 30 (H) mm
Weight	120 grams

Applications

Application 1: Data acquisition to PC



Application2: PLC/HMI with IO



Model Number

Model Number	Description
IO-16DI	16 DIGITAL INPUT MODULE INCLUDING COUNTERS
IO-16DO	16 DIGITAL OUTPUT MODULE
IO-4RO	4 RELAY OUTPUT MODULE
IO-8DIO	8 DIGITAL INPUT / 8 DIGITAL OUTPUT MODULE
IO-8TC	8 THERMOCOUPLE INPUT MODULE INCL. 0 - 50mV & ±100mV I/P
IO-8TCS	8 TC INPUT MODULE INCL. 0 - 50mV & ±100mV I/P FULLY ISOLATED
IO-6RTD	6 RTD INPUT MODULE - PT100, Ni120, PT1000, Ni1000, Ni1000LG & Ohms
IO-8AII	8 ANALOG INPUT 0 - 20mA / 4 - 20mA
IO-8AIV	8 ANALOG INPUT 0 - 5V / 1 - 5V / 0 - 10V / 2 - 10V
IO-8AIIS	8 ANALOG INPUT 0 - 20mA / 4 - 20mA / ±20mA FULLY ISOLATED
IO-8AIVS	8 ANALOG INPUT 0 - 1V / 0 - 10V / ±1V / ±10V FULLY ISOLATED
IO-8AOI	8 ANALOG OUTPUT MODULE 0(4) - 20mA
IO-8AOV	8 ANALOG OUTPUT MODULE 0(2) - 10V
IO-DAIO	2 RTD I/P, 2 ANALOG INPUT 0(4) - 20mA / 0(2) - 10V, 1 ANALOG OUTPUT 0(4) - 20mA / 0(2) - 10V, 4 DIGITAL INPUTS, 2 DIGITAL OUTPUTS
PC-E	RS-232/485 TO ETHERNET CONVERTER
SW5502	RS-232/422/485 TO ETHERNET WIRELESS CONVERTER
SNA-10A	RS-232 TO RS-485 CONVERTER
Data Acquisition Studio	PC BASED DATA LOGGING SOFTWARE FOR IO MODULES

BrainChild

***BRAINCHILD* Electronic Co., Ltd.**

No. 209, Chung Yang Rd., Nan Kang Dist.,
Taipei, Taiwan
Tel: 886-2-27861299 Fax: 886-2-27861395
E-mail : sales@brainchild.com.tw
Website : http://www.brainchild.com.tw

2014.10