

i-7000 Remote I/O Modules

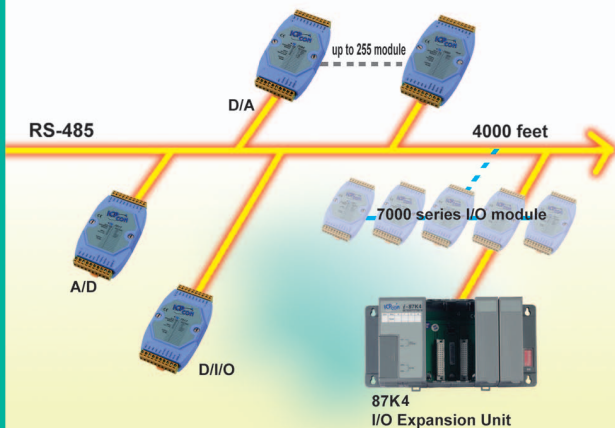
SERIES

i-7000

Controller



Remote Data Acquisition



Introduction

The I-7000 series provides cost-effective protection and conditioning for a wide range of valuable industrial control signals and systems. Our product line includes sensor-to-computer, computer-to-sensor, digital I/O, timer/counter, USB to RS-232 converter, USB to RS-485/422 converter, RS-232 to RS-485/422 converter, RS-485/422 repeater, RS-485 Hub, man machine interface, data display and application software. The I-7000 modules are good for small I/O channels, while I-87K I/O expansion units are good for middle-size I/O channels.



Piggy Back

Features

- More than 100 modules are provided and more new modules are coming
- Industrial Quality
- Self-Tuner Design
- Dual Watchdog Design
- High Speed Isolated Repeater
- "Smart" Device Design
- I/O Range Programmable
- Wide Range Power Input
- Easy Mounting and Connection
- Complete Software Environment



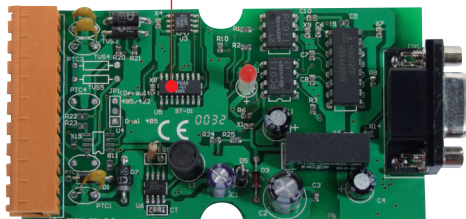
DIN-Rail Mounting

i-7000 "Self Tuner" Innovative Design SERIES

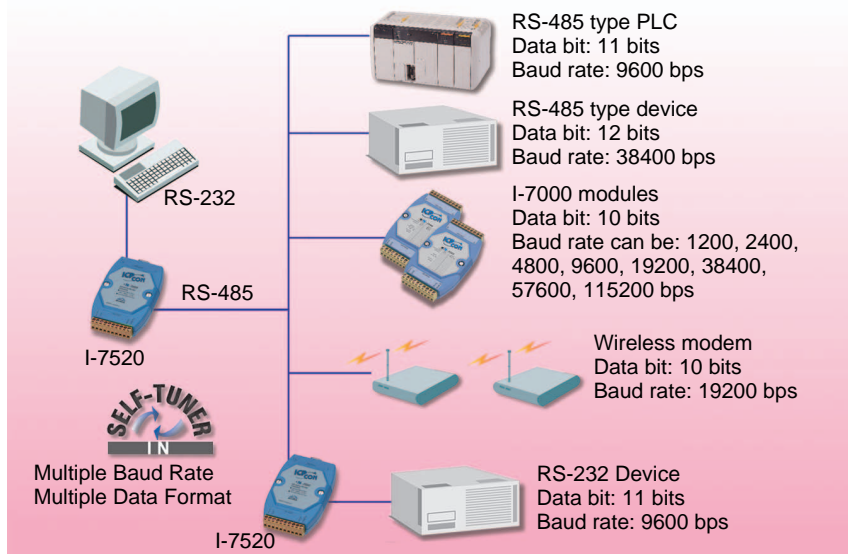
"Self Tuner" A New Technology You Should Know !

U.S. Patent, US 6,401,159 B1
P.R.O.C.PAT NO.
PAT No. 086674
PAT No. 132457

Self Tuner Chip



A conventional RS-232 to RS-485 converter uses the DIP switch to select the baud rate and data format for the whole RS-485 network. All modules, devices and equipment in the network should be configured to the same baud rate and data format. Unfortunately most real world applications can't be implemented in such a simple way. The "Self Tuner" is an innovative chip designed to solve this problem. Every converter contains a "Self Tuner" chip. This chip can auto-tune the baud rate and data format to the whole network. Therefore the I-7520 can connect to different baud rates and different data formats with devices in the same network.



i-7000 **RS-485 Repeater / Hub**

SERIES

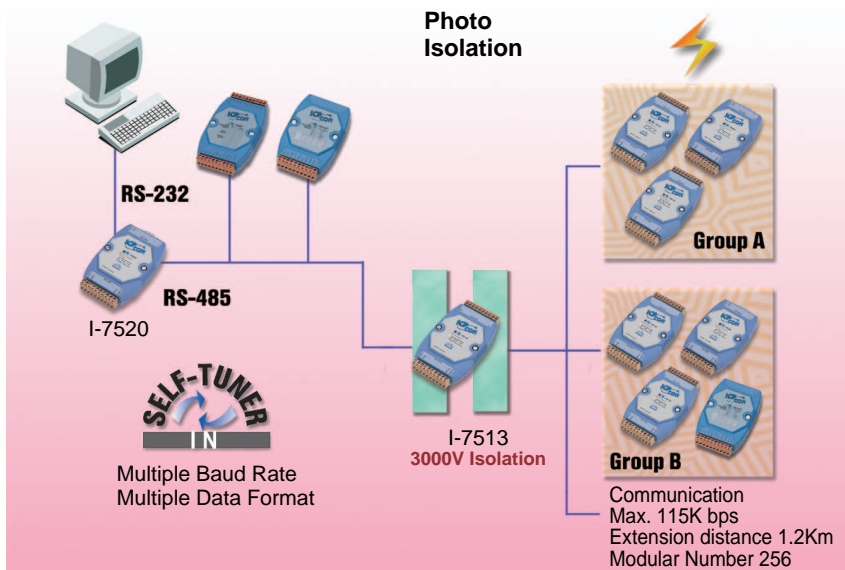
High Speed & High Quality Isolated RS-485 Repeater / Hub

Drop the Low-end Repeater / Hub Save Your RS-485 Network



A conventional RS-485 repeater / hub uses the DIP switch to select the baud rate and data format for the whole RS-485 network. Our repeater / hub contains an innovative "Self Tuner" chip. This chip auto-tunes the baud rate and the data format to the whole network and makes the network very stable. Due to the superior design, every repeater can extend the communication to another 1.2 Km at 9600bps speed. If the speed is lower than 9600bps, the extended distance can be up to 2.1 Km or 3.4Km. Some low-end repeaters can't repeat signals well and cause the whole network to become unstable. Those low-end repeaters don't have isolation. The whole network could be destroyed by lighting or transient high voltage. If your RS-485 is unstable, please change the converter and repeater / hub.

Do you have any RS-485 wiring problems? Our new module I-7513 is one to three ports RS-485 hub. Each channel has its own RS-485 driver IC on it, so it can support wiring in star topology. Refer to section 5-14 for more repeater / hub modules.

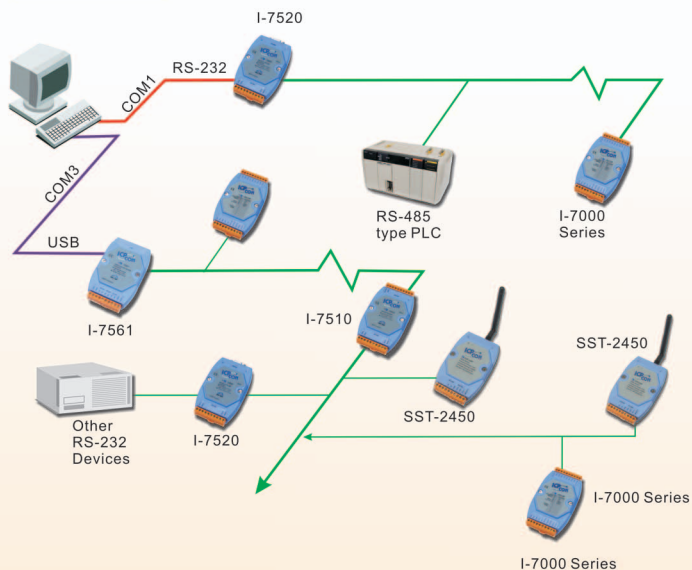


i-7000 *The Most Flexible RS-485 Network*

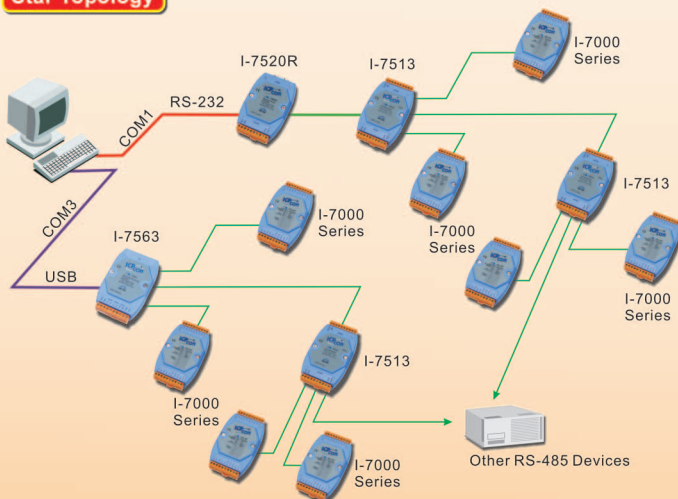
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I-7000 Series RS-485 Network Configuration

Bus Topology



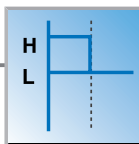
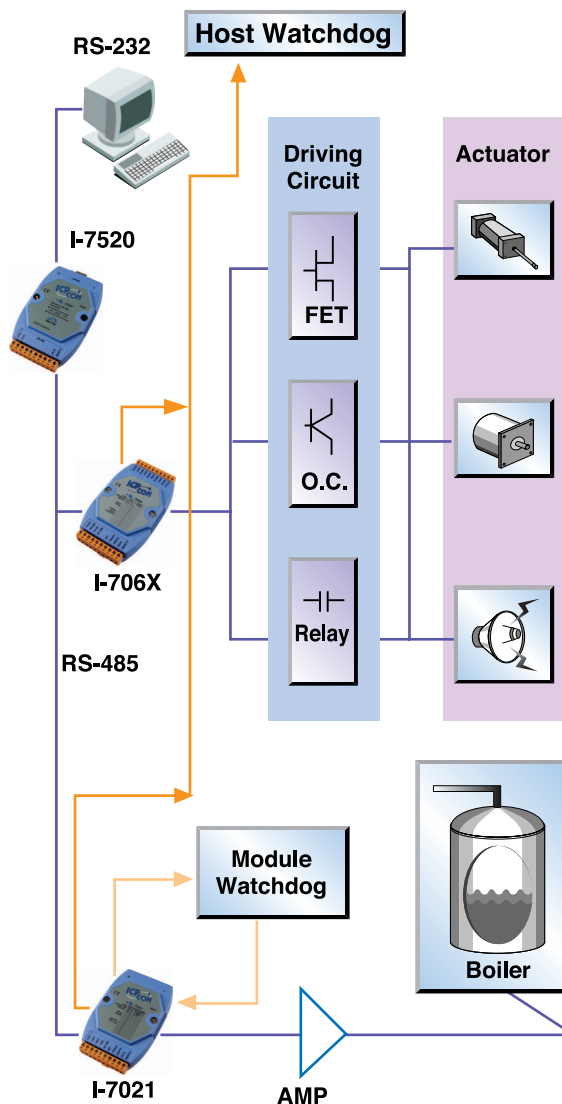
Star Topology



i-7000 "Dual Watchdog" SERIES

i-7000

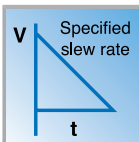
Network Control Made Reliable



Active host watchdog
Output state goes to safe state: L



Active host watchdog
Output state goes to safe state: H



Active host watchdog
D/A output goes to safe state

Why "Dual Watchdog"

Some company's remote I/O modules don't have the "Dual Watchdog", it may cause unrecoverable damage to the whole control system.

What is "Dual Watchdog"

I-7000 provides Module and Host Watchdogs. The module watchdog is a hardware watchdog. The host watchdog is a software watchdog. The module watchdog is designed to automatically reset the μp when the module fails. The host watchdog monitors the host controller (PC or PLC). The output of module can go to a safe state, if the host fails.

Example 1

When the host watchdog is active, the output of Digital I/O will go to a safe state, logical high or low. The user can specify the logical state.

Example 2

When the host watchdog is active, the output of D/A is stepped down until the final (safe) value is reached and a gradual controlled output slew rate is followed. The user can specify the slew rate of the output voltage.

i-7000 SERIES

Analog Input Modules Selection Guide

Analog Input Modules Selection Guide

Module		I-7005	I-7011/ I-7011D/	I-7011P/ I-7011PD	I-7012/ I-7012D	I-7012F/ I-7012FD	I-7013/ I-7013D	I-7014D	I-7015	I-7033 I-7033D
Analog Input	Resolution	16 bit	16 bit	16 bit	16 bit	16/12 bit	16 bit	16 bit	16 bit	16 bit
	Input channel	8 diff.	1 diff.	1 diff.	1 diff.	1 diff.	1 diff.	1 diff.	6 diff.	3 diff.
	Sampling rate	8Hz	10Hz	10Hz	10Hz	10/100Hz	10Hz	10Hz	12Hz	10Hz
	Voltage input	–	+/-15mV +/-50mV +/-100mV +/-500mV +/-1V +/-2.5V	+/-15mV +/-50mV +/-100mV +/-500mV +/-1V +/-2.5V	+/-150mV +/-500mV +/-1V +/-5V +/-10V	+/-150mV +/-500mV +/-1V +/-5V +/-10V	–	+/-150mV +/-500mV +/-1V +/-5V +/-10V	–	–
	Current input	–	+/-20mA	+/-20mA	+/-20mA	+/-20mA	–	+/-20mA	–	–
	Sensor input	Thermistor (2 wire)	J.K.T.E.R. S.B.N.C Thermocouple	J.K.T.E.R. S.B.N.C L.M Thermocouple	–	–	Pt Ni-RTD (2/3/4 wire)	–	Pt/Ni/Cu RTD (2/3 wire)	Pt Ni-RTD (2/3/4 wire)
	4 1/2 digit LED Display	–	Yes for I-7011D	Yes for I-7011PD	Yes for I-7012D	Yes for I-7012FD	Yes for I-7013D	Yes for I-7014D	–	Yes for I-7033D
	Isolated loop power	–	–	–	–	–	–	Yes +15V	–	–
	Input Linear scaling	–	–	–	–	–	–	Yes	–	–
	Isolation Voltage	3000V	3000V	3000V	3000V	3000V	3000V	3000V	3000V	3000V
Digital Input & Digital Output	Digital input channels	–	1	1	1	1	–	1	–	–
	Digital output channels	6	2	2	2	2	–	2	–	–
	Event counter	–	Yes	Yes	Yes	Yes	–	Yes	–	–
	High/Low Alarm	Yes	Yes	Yes	Yes	Yes	–	Yes	–	–
Individual Channel Configurable		Yes	–	–	–	–	–	–	Yes	–
Dual Watchdog Timer		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Frame Ground		Yes	–	–	–	–	–	–	Yes	–
Availability		Call	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Analog Input Modules Selection Guide

Module		I-7016/ I-7016D	I-7016P/ I-7016PD	I-7017	I-7017F	I-7017C	I-7017FC	I-7017R	I-7017RC
Analog Input	Resolution	16 bit	16 bit	16 bit	16/12 bit	16 bit	16/12 bit	16/12 bit	16/12 bit
	Input channel	2 diff.	1 diff.	8 diff.	8 diff.	8 diff.	8 diff.	8 diff.	8 diff.
	Sampling rate	2/10Hz	10Hz	10Hz (total)	10/60Hz (total)	10Hz (total)	10/60Hz (total)	10/60Hz (total)	10/60Hz (total)
	Fast Mode (12bit)	–	–	–	Yes	–	Yes	Yes	Yes
	Voltage input	+/-15mV +/-50mV +/-100mV +/-500mV +/-1V +/-2.5V	+/-15mV +/-50mV +/-100mV +/-500mV +/-1V +/-2.5V	+/-150mV +/-500mV +/-1V +/-5V +/-10V	+/-150mV +/-500mV +/-1V +/-5V +/-10V	–	–	+/-150mV +/-500mV +/-1V +/-5V +/-10V	–
	Current input	+/-20mA	+/-20mA	+/-20mA	+/-20mA	+/-20mA	+/-20mA	+/-20mA	+/-20mA
	Sensor input	4-wire Strain gauge Input	6-wire Strain gauge Input	–	–	–	–	–	–
	4 1/2 digit LED Display	Yes for I-7016D	Yes for I-7016PD	–	–	–	–	–	–
	Input Linear scaling	Yes	Yes	–	–	–	–	–	–
	Isolation Voltage	3000V	3000V	3000V	3000V	3000V	3000V	3000V	3000V
Digital Input & Digital Output	Digital input channels	1	1	–	–	–	–	–	–
	Digital output channels	4	4	–	–	–	–	–	–
	Event counter	Yes	Yes	–	–	–	–	–	–
	High/Low Alarm	Yes	Yes	–	–	–	–	–	–
Dual Watchdog Timer		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Over voltage protection		–	–	+/-35V	+/-35V	+/-35V	+/-35V	240 Vrms	240 Vrms
Frame Ground		–	–	–	–	Yes	Yes	Yes	Yes
Availability		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

i-7000 SERIES Analog Input Modules Selection Guide

Analog Input Modules Selection Guide

Module		I-7018	I-7018P	I-7018R	I-7018BL	I-7019R
Analog Input	Resolution	16 bit	16 bit	16 bit	16 bit	16 bit
	Input channel	8 diff.	8 diff.	8 diff.	8 diff.	8 diff.
	Sampling rate	10Hz (total)	10Hz (total)	10Hz (total)	10Hz (total)	8Hz (total)
	Voltage input	+/-15mV +/-50mV +/-100mV +/-500mV +/-1V +/-2.5V	+/-15mV +/-50mV +/-100mV +/-500mV +/-1V +/-2.5V	+/-15mV +/-50mV +/-100mV +/-500mV +/-1V +/-2.5V	+/-15mV +/-50mV +/-100mV +/-500mV +/-1V +/-2.5V	+/- 15mV +/- 50mV +/- 100mV +/- 150mV +/- 500mV +/- 1V +/- 2.5V +/- 5V +/- 10V
	Current input	+/-20mA	+/-20mA	+/-20mA	+/- 20mA	+/-20mA
	Sensor input	J. K.T.E.R.S.B N.C. thermocouple	J.K.T.E.R.S.B N.C.L.M. thermocouple	J.K.T.E.R.S.B N.C.L.M. thermocouple	J.K.T.E.R.S.B. N.C.L.M. thermocouple	J.K.T.E.R.S.B. N.C.L.M.L2 (DIN43710) thermocouple
	4 1/2 digit LED Display	–	–	–	–	–
	Isolation Voltage	3000V	3000V	3000V	3000V	3000V
Break Line Detection				Yes	Yes	Yes
Individual Channel Configurable		–	–	–	–	Yes
Dual Watchdog Timer		Yes	Yes	Yes	Yes	Yes
Over voltage protection		+/- 35V	+/- 35V	240 Vrms	+/- 35V	240 Vrms
Frame Ground		–	–	Yes	–	Yes
Availability		Yes	Yes	Yes	Yes	Yes

I-7017 Series Selection Guide

Module	I-7017	I-7017F*1	I-7017C*2	I-7017FC	I-7017R*3	I-7017RC
Input Channels	8	8	8	8	8	8
Resolutions	16 bits	16/12 bits	16 bits	16/12 bits	16/12 bits	16/12 bits
Input Type	mV, V mA*4	mV, V mA*4	mA	mA	mV, V mA*4	mA
Sampling Rate	10 Samples/sec	10 Samples/sec (Normal) 60 Samples/sec (Fast)	10 Samples/sec	10 Samples/sec (Normal) 60 Samples/sec (Fast)	10 Samples/sec (Normal) 60 Samples/sec (Fast)	10 Samples/sec (Normal) 60 Samples/sec (Fast)
Fast Mode (12bits)		Yes		Yes	Yes	Yes
Voltage Input	+/-150mV +/-500mV +/-1V +/-5V +/-10V	+/-150mV +/-500mV +/-1V +/-5V +/-10V			+/-150mV +/-500mV +/-1V +/-5V +/-10V	
Current Input	+/-20mA*1	+/-20mA*1	+/-20mA	+/-20mA	+/-20mA*1	+/-20mA
Accuracy	±0.1%	±0.1% (Normal) ±0.5%(Fast)	±0.1%	±0.1% (Normal) ±0.5%(Fast)	±0.1% (Normal) ±0.5%(Fast)	±0.1% (Normal) ±0.5%(Fast)
Input Impedance	20MΩ	20MΩ	125Ω	125Ω	1MΩ	125Ω
Voltage Overload Protection	±35V	±35V	±35V	±35V	±240V	±240V
Isolation	3000 VDC	3000 VDC	3000 VDC	3000 VDC	3000 VDC	3000 VDC
Dual Watchdog Timer	Yes	Yes	Yes	Yes	Yes	Yes
Frame Ground			Yes	Yes	Yes	Yes

1. 'F' means "Fast". It supports 60samples/second fast mode. The resolution is 12 bits and the accuracy is 0.5% in fast mode.
2. 'C' means the module is for +/-20mA "Current" inputs. No external resistor required.
3. "R" means "Robust". It has 240V high voltage overload protection. It also supports the fast mode as 'F' model.
4. Requires optional external 125Ω resistor.

I-7018 Series Selection Guide

Module	I-7018	I-7018P ^{*1}	I-7018R ^{*2}
Resolutions	16 bits	16 bits	16 bits
Channels	8 diff.	8 diff.	8 diff.
Sampling Rate	10Hz	10Hz	10Hz
Voltage Input	+/-15mV +/-50mV +/-100mV +/-500mV +/-1V +/-2.5V	+/-15mV +/-50mV +/-100mV +/-500mV +/-1V +/-2.5V	+/-15mV +/-50mV +/-100mV +/-500mV +/-1V +/-2.5V
Current Input	+/-20mA ^{*3}	+/-20mA ^{*3}	+/-20mA ^{*3}
Thermocouple Input	J, K, T, E, R, S, B, N, C	J, K, T, E, R, S, B, N, C L, M	J, K, T, E, R, S, B, N, C
Accuracy	±0.1%	±0.1%	±0.2%
Open Thermocouple Detection	-	-	Yes
Input Impedance	20MΩ	20MΩ	1MΩ
Isolation	3000 VDC	3000 VDC	3000 VDC
Voltage Overload Protection	±35V	±35V	±240V
Dual Watchdog Timer	Yes	Yes	Yes
Frame Ground	-	-	Yes

1. 'P' means supporting two more thermocouple types L and M
2. 'R' means "Robust". It has 240V high voltage over load protection. It also supports open thermocouple detection.
3. Requires optional external 125Ω resistor.

Digital I/O, Relay and Counter Selection Guide

Module		I-7041/ I-7041D	I-7042/ I-7042D	I-7043/ I-7043D	I-7044/ I-7044D	I-7045 I-7045D
Digital input and Digital output	Digital input channels	14 Isolation (3750V)	–	–	4 Isolation (3750V)	–
	Digital output channels (open collector)	–	13 Isolation (3750V)	16	8 Isolation (3750V)	16 Isolation (3750)
	Alarm Setting	–	–	–	–	–
Counter	Channels	14	–	–	4	–
	Input frequency	100Hz	–	–	100Hz	–
LED Display		Yes for I-7041D	Yes for I-7042D	Yes for I-7043D	Yes for I-7044D	Yes for I-7045D
Safe Value (When Host Fail or communication fail)		–	Yes	Yes	Yes	Yes
Power-on Preset Value		–	Yes	Yes	Yes	Yes
Dual Watchdog Timer		Yes	Yes	Yes	Yes	Yes
Availability		Yes	Yes	Yes	Yes	Yes

Digital I/O, Relay and Counter Selection Guide

Module		I-7050/ I-7050D	I-7051/ I-7051D	I-7052/ I-7052D	I-7053/ I-7053D	I-7055/ I-7055D	I-7058/ I-7058D
Digital input and Digital output	Digital input channels	7	16 Isolation (3750V)	8 Isolation (5000V)	16	8 Isolation (3750V)	8 Isolation (5000V)
	Digital output channels (open collector)	8	–	–	–	8 Isolation (3750V)	–
	Alarm Setting	–	–	–	–	–	–
Counter	Channels	7	16	8	16	8	8
	Input frequency	100Hz	100Hz	100Hz	100Hz	100Hz	100Hz
LED Display		Yes for I-7050D	Yes for I-7051D	Yes for I-7052D	Yes for I-7053D	Yes for I-7055D	Yes for I-7058D
Safe Value (When Host Fail or communication fail)		Yes	–	–	–	Yes	–
Power-on Preset Value		Yes	–	–	–	Yes	–
Dual Watchdog Timer		Yes	Yes	Yes	Yes	Yes	Yes
Availability		Yes	Yes	Yes	Yes	Yes	Yes

i-7000 SERIES Digital I/O Modules Selection Guide

Digital I/O, Relay and Counter Selection Guide

Module		I-7060/ I-7060D	I-7063/63D/63A/63AD/ I-7063B/63BD	I-7065/65D/65A/65AD/ I-7065B/65BD
Digital input and Digital output	Digital input channels	4 Isolation (3750V)	8 Isolation (3750V)	4 Isolation (3750V)
	Digital output channels	4 Channel Relay Form A x 2 Form C x 2	3 Channel Relay I-7063: Form A; AC 250V5A; DC 30V/5A I-7063A: AC type SSR I-7063B: DC type SSR	5 Channel Relay I-7065: Form A; AC 250V5A; DC 30V/5A I-7065A: AC type SSR I-7065B: DC type SSR
	Alarm Setting	—	—	—
Counter	Channels	4	8	4
	Input frequency	100Hz	100Hz	100Hz
LED Display		Yes for I-7060D	Yes for 7063D/7063AD/7063BD	Yes for 7065D/7065AD/7065BD
Safe Value (When Host Fail or communication fail)		Yes	Yes	Yes
Power-on Preset Value		Yes	Yes	Yes
Dual Watchdog Timer		Yes	Yes	Yes
Availability		Yes	Yes	Yes

Digital I/O, Relay and Counter Selection Guide

Module		I-7066/ I-7066D	I-7067/ I-7067D	I-7080/ I-7080D
Digital input and Digital output	Digital input channels	—	—	—
	Digital output channels	7 Channel Photo Mos Relay	7 Channel Relay Form A	2 Channel
	Alarm Setting	—	—	—
Counter	Channels	—	—	2
	Input frequency	—	—	100 KHz
LED Display		Yes for I-7066D	Yes for I-7067D	Yes for I-7080D
Safe Value (When Host Fail or communication fail)		Yes	Yes	Yes
Power-on Preset Value		Yes	Yes	Yes
Dual Watchdog Timer		Yes	Yes	Yes
Availability		Yes	Yes	Yes

Analog Output Module Selection Guide

Module		I-7021	I-7021P	I-7022	I-7024
Analog Output	Resolution	12 bit	14 bit	12 bit	14 bit
	Output Channels	1	1	2 (* 1)	4
	Voltage Output	0-10V	0-10V	0-10V	+/-10V, 0-10V, +/-5V, 0-5V
	Current Output	0-20mA 4-20mA	0-20mA 4-20mA	0-20mA 4-20mA	0-20mA 4-20mA
Safe Value (When Host Fail or communication fail)		Yes	Yes	Yes	Yes
Power-on Preset Value		Yes	Yes	Yes	Yes
Dual Watchdog Timer		Yes	Yes	Yes	Yes
Availability		Yes	Yes	Yes	Yes

* 1: channel to channel isolation

Touch Panel Selection Guide

Module	Touch 506L	Touch 506T	Touch 510T
Display	5.7" STN LCD	5.7" TFT LCD	10.4" TFT LCD
Max colors	4-Gray	256 color	256 color
Resolution	320 x 240	320 x 234	640 x 480
Touch Type	Resistive	Resistive	Resistive
Back light	CCFL x 1	CCFL x 1	CCFL x 2
Interface Port	RS-232/RS-485	RS-232/RS-485	RS-232/RS-485
Power Consumption	0.5A max. @ 24VDC	0.5A max. @ 24VDC	430 mA @ 24VDC
Dimension	204x150x48mm	204x150x48mm	315x238x62mm
Weight	Approx. 0.8Kg	Approx. 0.8Kg	Approx. 2.0Kg

i-7000 USB Converter & Hub

SERIES

What is USB?

USB, or Universal Serial Bus is a connectivity specification developed by computer and telecommunication industry members for attaching peripherals to computers.

USB is designed to free all the troubles when installing external peripherals. It eliminates the hassle to open computer case for installing cards needed for certain devices.

It is designed to meet Microsoft Plug and Play (PnP) specification, meaning users can install, and hot-swap devices without long installation procedures and reboots.

I-7560



I-7560:

USB to RS-232 Converter

- Compatibility: USB 1.1 standard
- Input port : USB
- Output port: 9-wire RS-232
- RS-232 Signals: Tx/D, Rx/D, RTS, CTS, DSR, DTR, DCD, RI and GND
- Driver Supported:
Windows 98/ME/2000/XP/Linux

I-7561



U.S. Patent,
US 6,401,159 B1

I-7561:

USB to RS-232/422/485 Converter

- Compatibility : USB 1.1 standard
- Input Port : USB
- Output : RS-232/422/485
- "Self Tuner" inside
- 3000V DC-to-DC Power Isolation.
- Driver Supported:
Windows 98/ME/2000/XP/Linux

I-7563

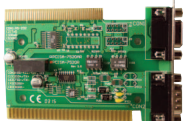


U.S. Patent,
US 6,401,159 B1

I-7563:

USB to one channel RS-485 converter with a three way RS-485 Hub

- Compatibility: USB 1.1 standard
- Input port: USB.
- Output port: Three RS-485.
- "Self Tuner" inside.
- 3000V DC-to-DC Power Isolation.
- Driver supported:
Windows 98/ME/2000/XP/Linux

PCISA-7520R

U.S. Patent, US 6,401,159 B1

PCISA-7520R:**PCI / ISA Bus RS-232 to RS-485 Card**

- PCI/ISA Bus interface
- Input: RS-232
- Output: RS-485
- "Self Tuner" inside
- Speed: 300 ~115,200 bps
- 3000 V isolation
- Multiple Baud Rate; Multiple Data Format

PCISA-7520AR

U.S. Patent, US 6,401,159 B1

PCISA-7520AR:**PCI / ISA Bus RS-232 to RS-422/485 card**

- PCI/ISA Bus interface
- Input: RS-232
- Output: RS-422/485
- Other spec. same as PCISA-7520R

I-7551**I-7551:****Isolated RS-232 to RS-232 Converter**

- Jumpers JP1 and JP2 select the RS-232 input source type.
- Input: TxD, RxD, CTS, RTS, GND or TxD, RxD, DSR, DTR, GND
- Output: TxD, RxD, CTS, RTS, GND or TxD, RxD, DSR, DTR, GND
- 3000V DC-to-DC Power Isolation.
- 3570Vrms Channel-to-Channel isolation

I-7520**I-7520R**

U.S. Patent, US 6,401,159 B1

I-7520:**RS-232 to RS-485 Converter****I-7520R:****I-7520 with 3000V DC isolation at RS-485 side**

- Input: RS-232 protocol
- Output: RS-485 protocol
- "Self Tuner" inside
- Speed: 300 ~115,200 bps
- 3000 V isolation
- Multiple Baud Rate; Multiple Data Format

I-7520A**I-7520AR**

U.S. Patent, US 6,401,159 B1

I-7520A:**RS-232 to RS-422/RS-485 Converter**

- Input: RS-232 protocol
- Output: RS-422/485 protocol
- Other spec. is the same as I-7520

I-7520AR:**RS-232 to RS-422/RS-485 Converter**

- Same as I-7520A, except the power side is different

i-7000 *Isolated RS-422/485 Repeaters & Hubs*

SERIES

I-7510



U.S. Patent, US 6,401,159 B1

I-7510A

I-7510:

RS-485 Repeater

- "Self-Tuner" inside
- Multiple Baud Rate: 300,...9600,...115200 bps
- Multiple Data Format
- Automatically adjust Baud Rate and Data Format

I-7510A:

RS-422/RS-485 Repeater

- Same as I-7510
- Plus RS-422 repeater

I-7510AR



U.S. Patent, US 6,401,159 B1

I-7510AR:

Three-way isolated RS-422/485 Repeater

- Same as I-7510A
- 3000V DC-to-DC Power Isolation.

I-7513



U.S. Patent, US 6,401,159 B1

I-7513:

Three-way isolated RS-485 to 3 Channels RS-485 Hub

- Input port: One RS-485.
- Output port: Three channels RS-485.
- "Self Tuner" inside.
- Speed: 300 ~ 115200 bps.
- 3000V DC-to-DC Power Isolation.

I-2541



I-2541:

RS-232 /422/485 to Fiber Optic Converter

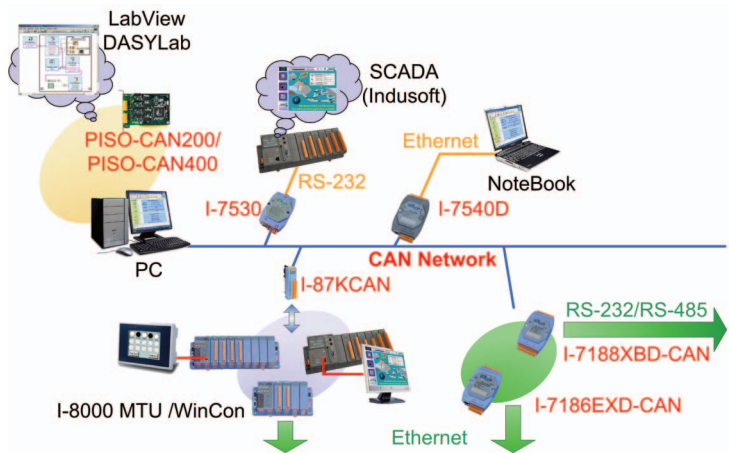
- Fiber Port: ST (Multi-mode)
- Wave Length: 850 nm
- Fiber Cable: 62.5/125 μ m
- Speed: "Self Tuner", auto switching baud rate, 300~115200 bps
- Extend transmission distance up to 2 Km.
- Isolation voltage: 3000V dc
- Optical isolation: 3570Vrms
- Power requirement: Unregulated +10V dc ~ +30V dc.
- Power consumption: 2.0W max.

i-7000 CAN Converter SERIES

i-7000

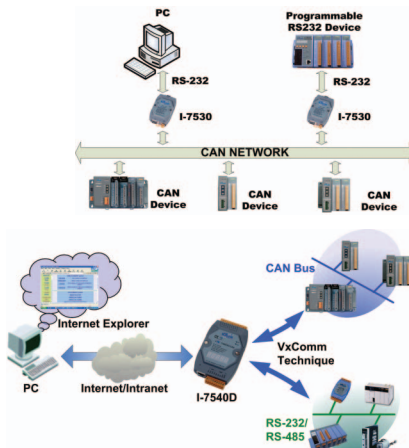
CAN Bus Introduction

The Controller Area Network (CAN) is a serial communication way, which efficiently supports distributed real-time control with a very high level of security. It provides the error process mechanisms and message priority concepts. These features can improve the network reliability and transmission efficiency. Furthermore, CAN supplies the multi-master capabilities, and is especially suited for networking "intelligent" devices as well as sensors and actuators within a system or sub-system.



I-7530 CAN/RS-232 Converter and I-7540 CAN/Ethernet Converter

I-7530 and I-7540D are the CAN/RS-232 and CAN/Ethernet converters. These two converters give solutions to overcome the data exchange between two different field buses. By using them, users can combine the programmable RS-232/Ethernet device into the CAN network if users want to integrate the different filed bus. Besides, Users also can obtain the CAN message on PC or notebook easily by applying the utilities of these converters. These utilities would be useful tools for CAN bus diagnostician in variety application.



i-7000 CAN Converter

SERIES



NEW!!

Ordering Information:

I-7530-G: Intelligent RS-232 to CAN converter

Specifications & Features

- Microprocessor inside with 20MHz
- CAN interface connector: D-Sub 9-pin
- RS-232 interface connector: D-Sub 9-pin
- Software configurable CAN and RS-232 communication parameters
- Support both CAN 2.0A and CAN 2.0B
- 3000Vrms on the CAN side
- Power, data flow and error indicator for CAN and RS-232
- Build-in jumper to select 120 ohm terminal resistor
- Max. CAN baud: 1M bps
- Max. RS-232 baud: 115.2K bps
- Watchdog inside
- Power consumption: 1W
- Unregulated +10VDC to +30VDC
- Operating temperature: -25°C to +75°C
- Storage temperature: -40°C to +80°C
- Dimensions: 119x72x33mm



Available soon

Ordering Information:

I-7540D-G: Intelligent Ethernet to CAN

Specifications & Features

- RDC 80186-80M Embedded CPU, or compatible
- SRAM: 512Kbytes
- Flash Memory: 512 Kbytes
- Supports a variety of TCP/IP features, including TCP, IP, ICMP, ARP
- 10/100 BASE-T DM9000AE compatible Ethernet Controller
- Support one RS-232 port, one RS-485 port and one CAN port
- 2500Vrms photo-isolation protection on CAN side.
- Software configurable CAN and RS-232 communication parameters
- Support both CAN specification 2.0A and 2.0B.
- 7-segment LED display.
- Watchdog inside
- Support Vxcomm technique
- Power Supply: 3.0W
- Unregulated +10VDC to +30VDC
- Operating temperature: -25°C to +75°C
- Storage temperature: -40°C to +80°C
- Dimensions: 119x72x33mm

i-7000 Analog I/O Modules

SERIES

i-7000

I-7005



I-7005:

Digital Output Module

- Analog Input Channels: 8
- Input Type: Precon ST-A3, Type u Fenwell, YSI, User-defined
- Accuracy: $\pm 0.1\%$
- Sampling Rate: 8 samples/second (Total)
- Common Mode Rejection: Typical 86dB
- Voltage Input Impedance: $>1\text{M Ohms}$
- Alarm Output: 6 Open Collector to 30V, 100mA, load (perchannel)
- Isolation Voltage: 3000VDC
- Individual Channel Configurable
- Wire Opening Detection
- Power Consumption: 1.1W

I-7011



I-7011D

I-7011:

Thermocouple Input Module

I-7011D: I-7011 with LED Display

- Analog input types: thermocouple, mV, V or mA (requires optional external 125 Ω resistor)
- Input Ranges: $\pm 15\text{mV}$, $\pm 50\text{mV}$, $\pm 100\text{mV}$, $\pm 500\text{mV}$, $\pm 1\text{V}$, $\pm 2.5\text{V}$, $\pm 20\text{mA}$
- Thermocouple types: J, K, T, E, R, S, B, N, C
- Sampling rate: 10 samples/sec
- Programmable Hi/Low alarm

I-7011P



I-7011PD

I-7011P

I-7011PD: I-7011P with LED Display

- Enhanced version of I-7011
- Thermocouple types: J, K, T, E, R, S, B, N, C, **L**, **M**

i-7000 Analog I/O Modules

SERIES

I-7012



I-7012D



I-7012:
Analog Input Module

I-7012D:

I-7012 with LED Display

- Analog input types: mV, V, mA
(requires optional external 125 Ω resistor)
- Input Ranges: ± 150 mV, ± 500 mV, ± 1 V, ± 5 V, ± 10 V, ± 20 mA
- Sampling rate: 10 samples/sec.

I-7012F



I-7012FD



I-7012F

I-7012FD: I-7012F with LED Display

- High speed version of I-7012
- Can be configured as 12-bit resolution and 100Hz sampling rate
- Other spec. is the same as I-7012

I-7013



I-7013D



I-7013:
RTD Input Module

I-7013D: I-7013 with LED Display

- Analog input types: Pt or Ni RTD
- Sampling rate: 10 samples/sec.
- Input connection: 2, 3, or 4 wires
- Pt 100 input range:
 $\pm 100^{\circ}\text{C}$, 0 – 100°C , 0 – 200°C , 0 – 600°C
- Ni input range: -80 – 100°C , 0 – 100°C

i-7000 Analog I/O Modules

SERIES

i-7000

I-7014D



I-7014D:

Analog/Transmitter Input with LED Display

- Analog input types: V, mV, mA
- Input Ranges: $\pm 150\text{mV}$, $\pm 500\text{mV}$, $\pm 1\text{V}$, $\pm 5\text{V}$, $\pm 10\text{V}$, $\pm 20\text{mA}$
- Sampling rate: 10 samples/sec.
- Isolated loop power: $+15\text{Vdc}$
- Input Linear Scaling
- LED indicator: 4 1/2 digit readout

I-7015



I-7015:

6-channel 3 wire RTD Input Module

- Analog input types: Pt, Ni or Cu RTD
- Sampling rate: 12 samples/sec
- Accuracy: 0.05%
- Input Connection: 2 or 3 wires
- Individual channel configurable
- Wire Opening Detection

I-7016



I-7016D

I-7016/7016D:

Strain Gauge Input Module

- Resolution: 16 bit
- Channels: 2 channel
- Input type: mV, V and mA
- Input range: $\pm 15\text{mV}$, $\pm 50\text{mV}$, $\pm 100\text{mV}$, $\pm 500\text{mV}$, $\pm 1\text{V}$, $\pm 2.5\text{V}$, $\pm 20\text{mA}$
- Isolation: 3000V
- Sampling rate: 10Hz

I-7016P



I-7016PD

I-7016P/7016PD:

Strain Gauge Input Module For Longer Cable Length

- Channel: 1 channel
- Other Spec. is the same as I-7016
- Requires two more cables for remote sensing

i-7000 Analog I/O Modules

SERIES

I-7017

**I-7017:****8-channel Analog Input Module**

- Input types: mV, V, mA (requires optional external 125 Ω resistor)
- Input Ranges: ± 150 mV, ± 500 mV, ± 1 V, ± 5 V, ± 10 V, ± 20 mA,
- Channels: 6 differential, 2 single-ended or 8 differential (jumper selectable)
- Sampling rate: 10 samples/sec total

I-7017C

**I-7017C:****8-channel Current Input Module**

- Input Range : **Only Current Input (± 20 mA)**
- Channels : 8 differential (no external resistor required)
- Sampling rate : 10 samples/sec total

I-7017F

**I-7017F:****8-channel Analog Input Module**

- High speed version of I-7017
- Can be configured as 12-bit resolution and 60 Hz sampling rate
- Other spec. is the same as I-7017

I-7017R

**I-7017R:****8-channel Analog Input Module**

- Input Channels : 8 differential
- Input Types : mV, V, mA (requires optional external 125 Ω resistor)
- Sampling Rate : 10/60 samples/second total
- -3dB BandWidth : 15.7 Hz
- Accuracy : $\pm 0.1\%$
- Common Mode Rejection : Typical 86 dB
- Voltage Input Impedance : > 2 M Ohms
- Overvoltage Protection : 240 VRMS
- Isolation Voltage : 3000 VRms

I-7017RC

**I-7017RC:****8-channel Current Input Module**

- Input Type : **Only Current Input (± 20 mA)**
- Other Spec. is the same as I-7017R (no external resistor required)

i-7000 Analog I/O Modules

SERIES

i-7000

I-7018



I-7018:

8-channel Thermocouple Input Module

- Input type: same as I-7011
- Input Range: same as I-7011
- Channels:
 - 6 differential, 2 single-ended or
 - 8 differential (jumper selectable)
- Sampling rate: 10 samples/sec total

I-7018BL



I-7018BL:

8-channel Thermocouple Input Module

- Break Line Detection
- Other Spec. is the same as I-7018

I-7018P



I-7018P:

8-channel Thermocouple Input Module

- same as 7018
- Add two thermocouple input type: L, M

I-7018R



I-7018R:

8-channel Thermocouple Input Module

- Input Type: mV, V, mA (requires optional external 125 Ω resistor), Thermocouple
- Thermocouple Type: J, K, T, E, R, S, B, N, C, L, M
- Sampling Rate: 10 samples/Second total
- -3d B BandWidth: 15.7Hz
- Accuracy: +/- 0.25%
- Common Mode Rejection: Typical 86dB
- Voltage Input Impedance: >2M Ohms
- Overvoltage Protection: 240 VRMS
- Isolation Voltage: 3000 VDC
- Break Line Detection

i-7000 Analog I/O Modules

SERIES

I-7019R**I-7019R:****8-channel Universal Analog Input Module**

- Input Type: mV, V, mA, Thermocouple,
- Voltage Range: +/-15mV, +/-50mV, +/-100mV, +/-150mV, +/-500mV, +/-1V, +/-2.5V, +/-5V, +/-10V
- Current Range: +/-20mA(jumper selectable)
- Thermocouple Type: J,K,T,E,R,S,B,N,C,L,M,L2
- Sampling Rate: 8 samples/second total
- -3dB BandWidth: 5.24Hz
- Accuracy: +/- 0.15%
- Individual Channel Configurable
- Common Mode Rejection: Typical 86dB
- Voltage Input Impedance: >1M Ohms
- Overvoltage Protection: 240 Vrms
- Isolation Voltage: 3000 VDC

I-7033**I-7033D****I-7033:****3-channel RTD Input Module****I-7033D:****I-7033 with LED Display**

- Input Channel: 3 diff.
- Sampling rate: 15Hz (Total)
- Other Spec. is the same as I-7013

i-7000 *Analog I/O Modules*

SERIES

I-7021



I-7021:

Analog Output Module

- Resolution: 12 bit
- Analog output type: mA, V
- Output Range: 0-20mA, 4-20mA, 0-10V
- Accuracy: $\pm 0.1\%$
- Programmable output slew rate:
0.0625 to 512V/sec. 0.125 to 1024mA/sec.

I-7021P



I-7021P:

Analog Output Module

- Resolution: 14 bit
- High precision version of I-7021
- Current output 0-20mA, 4-20mA
- Voltage output 0-10V

I-7022



I-7022:

2-channel Analog Output Module

- Resolution: 12 bit
- Analog output channel: 2
- Current output: 0-20mA, 4-20mA
- Voltage output: 0-10V
- Channel to channel isolated

I-7024



I-7024:

4-channel Analog Output Module

- Resolution: 14 bit
- Current output 0-20mA, 4-20mA
- Voltage output: $\pm 10V$, 0-10V, $\pm 5V$, 0-5V
- Programmable output slew rate
0.0625 to 1024V/sec
0.125 to 2048 mA/sec

i-7000 Digital I/O Modules

SERIES

I-7041



I-7041D

**I-7041:****Isolated Digital Input Module****I-7041D:****I-7041 with LED Display**

- Input: 14 single-ended
- ON Voltage Level: 4V to 30V.
- OFF Voltage Level: 0 to 1V.
- Isolation voltage: 3750Vrms
- Input resistance: 3K Ohms, 1/4W

I-7042



I-7042D

**I-7042:****Isolated O.C. Output Module****I-7042D:****I-7042 with LED**

- Digital Output channels: 13
- Open collector to 30V, 100mA max load
- Isolation voltage: 3750Vrms
- Direct drive power relay module

I-7043



I-7043D

**I-7043:****Non-isolated O.C. Output Module****I-7043D:****I-7043 with LED**

- Digital Output channels: 16
- Open collector to 30V. 100mA max load
- Direct drive power relay module

I-7044



I-7044D

**I-7044: Isolated Digital Input & Output Module****I-7044D: I-7044 with LED Display**

- Input: 4 single-ended
- ON Voltage Level: 4V to 30V.
- OFF Voltage Level: 0 to 1V.
- Input isolation voltage: 3750Vrms
- Digital Output channels: 8
- Open collector to 30V.
- 375mA max per channel

I-7045



I-7045D

**I-7045: 16 channel Isolated Digital Output Module****I-7045D: I-7045 with LED Display**

- Channels : 16
- External Voltage : 10 to 40V max.
- Output current : 650mA per channel
- Isolation Voltage : 3750Vrms
- Direct drive power relay module
- Power consumption: 0.5W
- Short circuit protection

NEW!!

i-7000 Digital I/O Modules

SERIES

i-7000

I-7050

I-7050D



I-7050: Non-isolated Digital I/O Module

I-7050D: I-7050 with LED Display

- Digital input channels: 7
Level:
OFF Voltage Level: +3.5 ~ +30V
ON Voltage Level: +1V max.
- Digital output channels: 8
Open collector to 30V, 30mA max. load
Power dissipation: 300mW

I-7050A

I-7050AD



I-7050A: Digital I/O Module (Current Source)

I-7050AD: I-7050A LED Display

- Digital Input Channels: 7
OFF Voltage Level: +1V max
ON Voltage Level: +3.5V ~ +30V
- Digital Output Channels: 8
Open Collector to 30V, 50mA(max). load

I-7051

I-7051D



I-7051: Isolated Digital Input Module

I-7051D: I-7051 LED Display

- Digital Input Channels: 16
- Isolation voltage: 3750 Vrms
- Digital input status:
Dry contact:
OFF Voltage Level: open
ON Voltage Level: close to GND
Wet contact:
OFF Voltage Level: +3V max
ON Voltage Level: +10V to +50V
Effective distance for dry contact:
500m max

I-7052

I-7052D



I-7052: Isolated Digital Input Module

I-7052D: I-7052 with LED Display

- Input: 6 differential and 2 single-ended
ON Voltage Level: 3.5V to 30V.
OFF Voltage Level: 0 to 1V.
- Isolation voltage: 5000V rms
- Input resistance: 3K Ohms, 1/4W

I-7053_FG

I-7053D_FG



I-7053_FG:

Non-isolated Digital Input Module

I-7053D_FG:

I-7053 with Display

- Input: 16 single-ended
ON Voltage Level: 4V to 30V.
OFF Voltage Level: 0 to 2V.

i-7000 Digital I/O Modules

SERIES

I-7055



I-7055D



NEW!!

I-7055: Isolated Digital Input Module**I-7055D: I-7055 LED Display**

- Digital Input Channels: 8
- Digital Input status
- Dry contact: OFF Voltage Level: open
- ON Voltage Level: close to GND
- Wet contact: OFF Voltage Level: +3V max
- ON Voltage Level: +10V to +50V
- Effective distance for dry contact: 500m max

I-7058



I-7058D



- Digital Output channels: 8
- Open collector to 40V, 650mA max. load (Short Circuit Protection)
- Optical Isolation: 3750Vrms

I-7058: 8-channel Isolated Digital Input Module**I-7058D: I-7058 with Display**

- Digital input channel : 8 differential
- Operating Voltage: 80~250 VAC peak
- Input Voltage
- ON Voltage Level: AC 80V min.
- OFF Voltage Level: AC 30V max.
- Maximum Input Voltage : AC 250V
- AC frequency : 45Hz(min.)
- Isolation : 5000Vrms

I-7059



I-7059D



NEW!!

I-7059: 8-channel AC Input Module**I-7059D: I-7059 with Display**

- Input Channel: 8 differential
- Operating Voltage: 10 ~ 80VAC Peak
- ON Voltage Level: 10VAC min.
- OFF Voltage Level: 3.0VAC max.
- AC Frequency: 47~400Hz (>45Hz min.)
- Input Impedance: 10K Ohms
- Isolation Voltage: 5000Vrms
- Power Input: +10V to +30V
- Power Consumption: 0.3W max.

I-7060



I-7060D

**I-7060:****Relay Output & Isolated Digital Input Module****I-7060D: I-7060 with LED Display**

- Input: 4 single-ended
- ON Voltage Level: 4V to 30V.
- OFF Voltage Level: 0 to 1V.
- Isolation voltage: 3750Vrms
- Input resistance: 3K Ohms, 1/4W
- Output: 4-channel relay

I-7063



I-7063D

**I-7063: Power Relay & Isolated Digital Input Module****I-7063D : I-7063 with LED Display**

- Input : 8 single-ended
- ON Voltage Level: 4V to 30V.
- OFF Voltage Level: 0 to 1V.
- Input resistance: 3K ohms
- Isolation voltage: 3750Vrms
- Output: 3 Form A power relay
- Contact rating: 5A@250VAC / 5A@30VDC

i-7000 Digital I/O Modules

SERIES

I-7063A

I-7063AD



I-7063A: AC-SSR & Isolated Digital Input Module

I-7063AD: I-7063A with LED Display

- Digital input spec. is the same as I-7063
- Output: 3 AC-SSR , Normal open
- Contact rating: Load voltage: AC 24 to 265Vrms
- Leakage current: 1.5mArms
- Max load current: 1.0Arms

I-7063B

I-7063BD



I-7063B: DC-SSR & Isolated Digital Input Module

I-7063BD: I-7063B with LED Display

- Digital input spec. is the same as I-7063
- Output: 3 DC-SSR , Normal open
- Contact rating: Load voltage: DC 3 to 30V
- Leakage current: 0.1mA
- Max load current: 1.0A

I-7065

I-7065D



I-7065: Power Relay & Isolated Digital Input Module

I-7065D: I-7065 with LED Display

- Input : 4 single-ended
- ON Voltage Level: 4V to 30V.
- OFF Voltage Level: 0 to 1V.
- Input resistance: 3K Ohms
- Output: 5 Form A power relay
- Contact rating: 5A@250VAC
- 5A@30VDC

I-7065A

I-7065AD



I-7065A: AC-SSR & Isolated Digital Input Module

I-7065AD: I-7065A with LED Display

- Digital input spec. is the same as I-7065
- Output: 5 AC-SSR , Normal open
- Contact rating:
- Load voltage: AC 24 to 265Vrms
- Leakage current: 1.5mArms
- Max load current: 1.0Arms
- Isolation voltage: 3750Vrms

i-7000 Digital I/O Modules

SERIES

I-7065B**I-7065BD****I-7065B: DC-SSR & Isolated Digital Input Module****I-7065BD: I-7065B with LED Display**

- Digital input spec. is the same as I-7065
- Output: 5 DC-SSR , Normal open
- Contact rating:
- Load voltage: DC 3 to 30V
- Leakage current: 0.1mA
- Max load current: 1.0A
- Isolation voltage: 3750Vrms

I-7066**I-7066D****I-7066: Photo Mos Relay Output Module****I-7066D: I-7066 with Display**

- 7 form A Photo Mos Relays
- Load voltage : 350V
- Continuous load current: 0.13A
- 5,000V Optional Isolation

I-7067**I-7067D****I-7067: Relay Output Module****I-7067D: I-7067 with Display**

- Relay output: 7 Form A
- Contact rating: AC: 125V @0.5A
- DC: 24V @2A

Counter Modules

I-7080**I-7080D****I-7080: Counter/Frequency Input Module****I-7080D: I-7080 with LED Display**

- Counter input: 2 independent 32 bit counter
- Frequency input: 100K Hz max
- Input: 3750V isolated or non-isolated
- Non-isolated programmable threshold value
- Programmable digital noise filter
- LED indicator: 5 digit readout (I-7080D)



Relay Modules

RM-10X Series Relay Module

- 16A, 1 form C Relay
- RM-104/RM-108/RM-116

RM-20X Series Relay Module

- 5A, 2 form C Relay
- RM-204/RM-208/RM-216

DN-PR4:

- Channels: 4
- Relay Type: Form A
- Load Voltage: 50~250VAC/5A

DN-SSR4:

- Channels: 4
- Relay Type: Form A
- Load Voltage: 50~250VAC/4A

Power Supply

ACE-540A/DIN-540A:

- Inputs: 85~264VAC@47~63Hz
- Output: +24VDC/1.7A
- Over Load protection
- DIN-Rail Mounted(DIN-540A)

KA-52F/DIN-KA52F

- Inputs: 100~250VAC
- Outputs: +24VDC/1A
- DIN-Rail Mounted(DIN-KA52F)

PWR-24/110

- Inputs: 110VAC/60Hz
- Outputs: +24VDC/200mA

PWR-24/220F

- Inputs: 220AC/60Hz
- Outputs: +24VDC/100mA

PWR-24/230R

- Inputs: 230VAC(Round type plugged)
- Outputs: +24VDC/200mA

DP-640/DP-660/DP-665

- Inputs: 85~264VAC@47~63Hz
- Outputs: +24V/1.7A (DP-640); +24VDC/2.5A; +5VDC/0.5A (DP-660/DP-665)

DP-1200

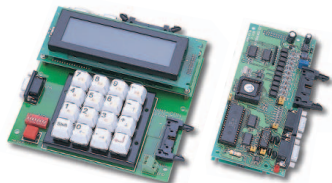
- Inputs: 85~ 264VAC@47~63Hz
- Outputs: +24V/5A
- DIN-Rail Mounted



i-7000 Industrial LCD Display

SERIES

MMICON



Man Machine Interface

MMICON

- Man-Machine interface Control Board
- 240x64 dots Graphics LCD interface
- LCD display area: 107.97x77mm
- 4x4 keyboard interface
- RS-232/RS-485 interface

Touch series



Touch 506L/506T



Touch 510T

Touch 506T

- 5.7" Color TFT Touch Panel Display
- RS-232 / RS-485 Interface
- Connect to I-7188, I-8000, W-8000 or other PAC

Touch 506L

- 5.7" 4-Gray STN Touch Panel Display
- RS-232 / RS-485 Interface
- Connect to I-7188, I-8000, W-8000 or other PAC

Touch 510T

- 10.4" Color TFT Touch Panel Display
- RS-232 / RS-485 Interface
- Connect to I-7188, I-8000, W-8000 or other PAC

i-7000 *Radio Modems and Antennas*

SERIES

i-7000

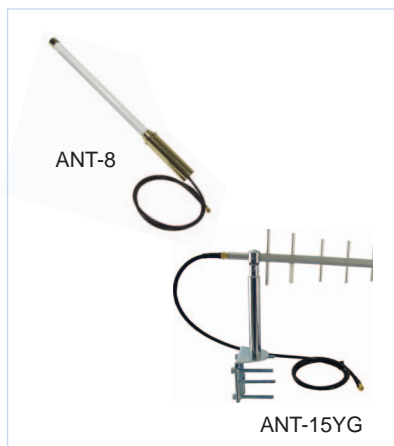


SST-2450:

- Based on DSSS and RF technology
- Operating in 2410~2472MHz, ISM band
- Number of channels: 16
- Transmit Power: 0.05W
- Communication distance: 100~300M (obstacle free environment)
- CE Report No:02AH055E1
- FCC ID:Q6MIT450000

SST-900EXT:

- Based on DSSS and RF technology
- Operating in 902~928MHz, ISM band
- Number of channels: 8
- Transmit Power: 0.1W
- Communication distance: 100~300M (obstacle free environment)



ANT-8

1 Km external antenne for SST-2450 (Omnidirectional)

ANT-15YG

9 Km external antenne for SST-2450 (Directional)



Accessories

I-950-ENC Industrial Enclosure

- IP66 Industrial enclosure
- Built-in DIN-Rail for easy mounting
- Seal design provides anti-leak protection
- Dimensions: 254x180x90mm

I-3625-ENC

- Dimension: 360 x 254 x 165mm

Accessories



Terminal Block cover

CA-5810

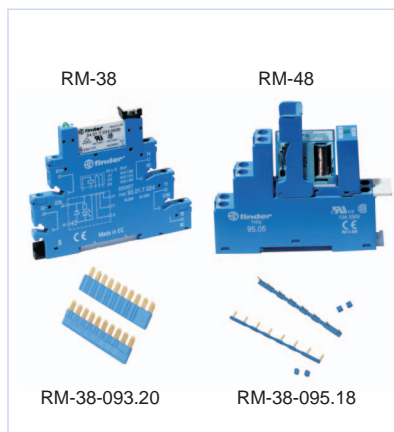
- For 10 pin 5.08mm pitch

CA-3813

- For 13 pin 3.81mm pitch
And 14 pin 3.5 mm pitch

CA-0945

- For 9 pin 3.81 mm pitch with RJ-45 connector



Relay Modules

RM-38 Series Relay Module

- 6.2 mm wide
- Contact configuration : 1 co (SPDT)
- Load Voltage : 12~240VAC/6A

RM-48.61/RM-48.62 Series Relay Module

RM-48.61

- 15.5 mm wide,
- Contact configuration : 1 co (SPDT)
- Load voltage : 12~240VAC/16A

RM-48.62

- 15.5 mm wide
- Contact configuration : 2 co (DPDT)
- Load voltage : 12~240VAC/10A

Installation



Ordering Information

- RM-38 SPDT (5 piece in one box)
- Option: 20-way jumper link for RM-38
- RM-48.61 RM-48 SPDT (4 pieces in one box)
- RM-48.62 RM-48 DPDT (4 pieces in one box)
- Option: 18-way jumper link for RM-48 series