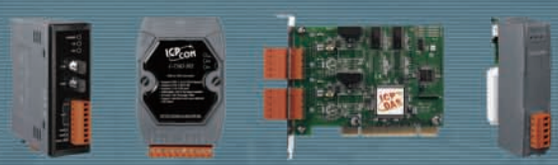
Industrial CAN Bus Products Catalog

2011 Product Catalog Vol. ICPC1105



CAN

CANopen

DevicrNet

J1939

http://www.icpdas.com

Professional Provider of High Quality Industrial Data Acquisition and Control Products

About Company

ICP DAS, established in 1993, focuses on innovation and improving the industrial automation technology. It strives for advanced remote I/O controllers, distributed I/O modules, and I/O data acquisition boards. To provide a total industrial automation solution and a complete after service, recently, ICP DAS enthusiastically endeavors to develop a series of programmable automation controller, webrelated products and motion-control systems.

ICP DAS offers an efficient and comprehensive automation solution for the application of industrial control, real-time data, warning system of earthquakes and hydrology, the power-monitoring, and video game consoles. ICP DAS has successfully gained worldwide recognition in the field of industrial control and automation. In factory automation part, the head of semiconductor, the LCD panel, and the petrol-chemical industries adopt our products to monitor equipments. In the intelligent building part, the highest skyscraper in the world-Taipei 101 uses our products to enhance its fire safety system. In traffic management segment, Taiwan Fisheries Administration takes our products as travel-recording devices. More applications such as on-line pollution-monitoring systems for JianGsu province and ZheJiang province in China, battery recharging systems for LG in Korea, the piers monitoring of Megami Bridge in Japan, the monitoring whole factory system in a well-known automobiles and jets companies and etc. ICP DAS is proud to provide versatile application solutions all over the world.

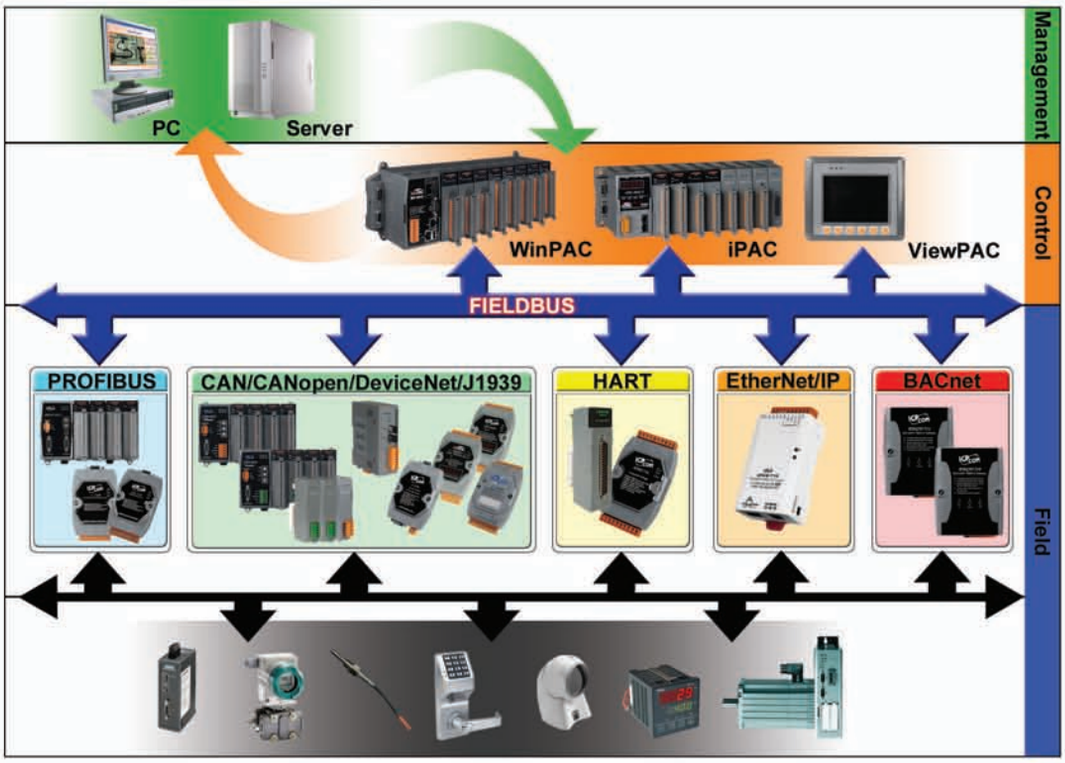
To maintain the position of technology-leading platform provider, ICP DAS invests heavily in R&D and has excellent R&D team. Over 110 software and hardware engineers provide the best solutions and innovative products to upgrade the development of the automation industry. Moreover, we offer a comprehensive set of service in U.S., Europe, China and etc. ICP DAS always maintains our high-quality and reliable products to get worldwide clients' affirmation and support.

No. 111, Kuang-Fu N. Rd., Hsin-Chu Industrial Park, HuKou Shiang, Hsinchu 303, Taiwan.
TEL:886-3-5973366 FAX:886-3-5973733
E-MAIL:service@icpdas.com Website: http://www.icpdas.com

Fieldbus Solutions

Fieldbus is known as a family of industrial network protocol for real-time distributed control. An automated industrial system usually needs Fieldbus solutions to overcome the connection problems among all of the components such as controllers, sensors, and actuators. Fieldbus works on a network structure which typically allows daisy-chain, star, ring, branch, and tree network topologies with many major advantages to all applications of automation.

In order to provide various solutions of Fieldbus, ICP DAS has devoted a lot of resource for many years to develop the Fieldbus products with different protocols. Beside the Modbus TCP, Modbus RTU and Modbus ASCII, these products comprehensively cover majority of industrial communication protocols for process and factory automations. They are shown below.



Moreover, we also provide the great diversity of PACs with different size and features. These powerful PACs give a way to assemble private protocols based on RS-232, RS-485, industrial Ethernet, CAN bus, Wi-Fi, 2.5G and 3G interfaces. Through them, it is possible to integrate various communication protocols in one controller, and to construct an multi-function automation system becomes more easily and quickly.

Fieldbus Solutions

The Best Choice

Solutions for various Fieldbus applications:

ICP DAS provides a lot of converters, gateway, PC-based, and PAC solutions for rich communication protocols. You can get the proper solutions depending on the application field. In any case, we completely offer the total solutions for various systems.

PC-based solutions

PAC solutions

Converter solutions

Gateway solutions

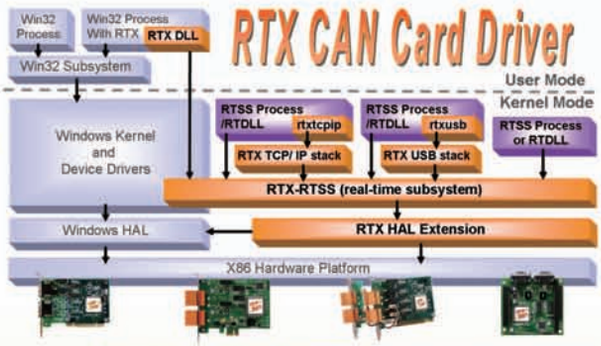
Remote I/O solutions

SBC solutions

Friendly software and tools

ICP DAS has developed various friendly and convenient library and development tools in VB, VC, BCB and Delphi, VB.Net, C#.Net for users to develop their applications by these Fieldbus products. For SCADA software, we also provide InduSoft, LabVIEW, DASYLab drivers. In real time application, the RTX driver is useful. These rich tools help you to establish or debug the system more efficiently.

Linux



DASYLab
Data Acquisition System Laboratory

Microsoft Windows

Microsoft .net

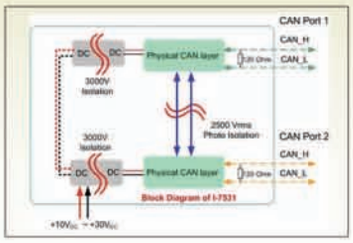
InduSoft
Tools for Automation
TM

NATIONAL INSTRUMENTS
LabVIEW
Certified Associate Developer

Fieldbus Solutions

High protection hardware design

In order to against the harsh environment, many protections are built-in the hardware such as galvanic isolation, photo isolation, power reverse polarity protection, over-voltage brown-out protection, EMI, ESD, EFT, surge, and so forth. Meanwhile, all products of ICPDAS pass CE and FCC.



DIN-Rail Mounting

ODM and Technology Service

ICP DAS has focused on Fieldbus products for several years and has been accumulating the rich development experience on Fieldbus applications. We also have announced various Fieldbus projects for different applications. For the software and hardware, we always provide the best to our customers.

WIN-WIN

ODM & Best Service

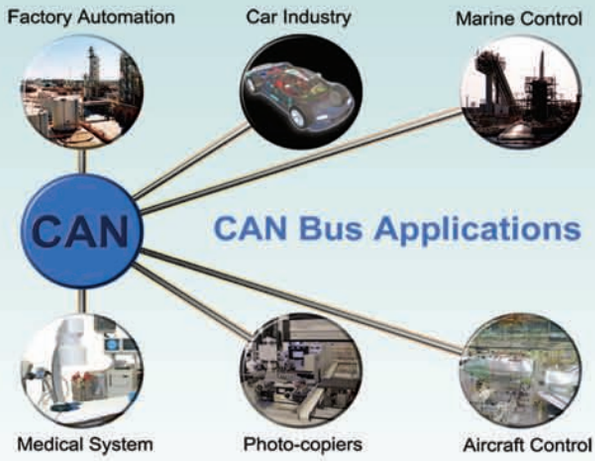
Good in Harsh Environment

Products by ICP DAS can be operated in a wide range of temperature & humidity, which provides high reliability.

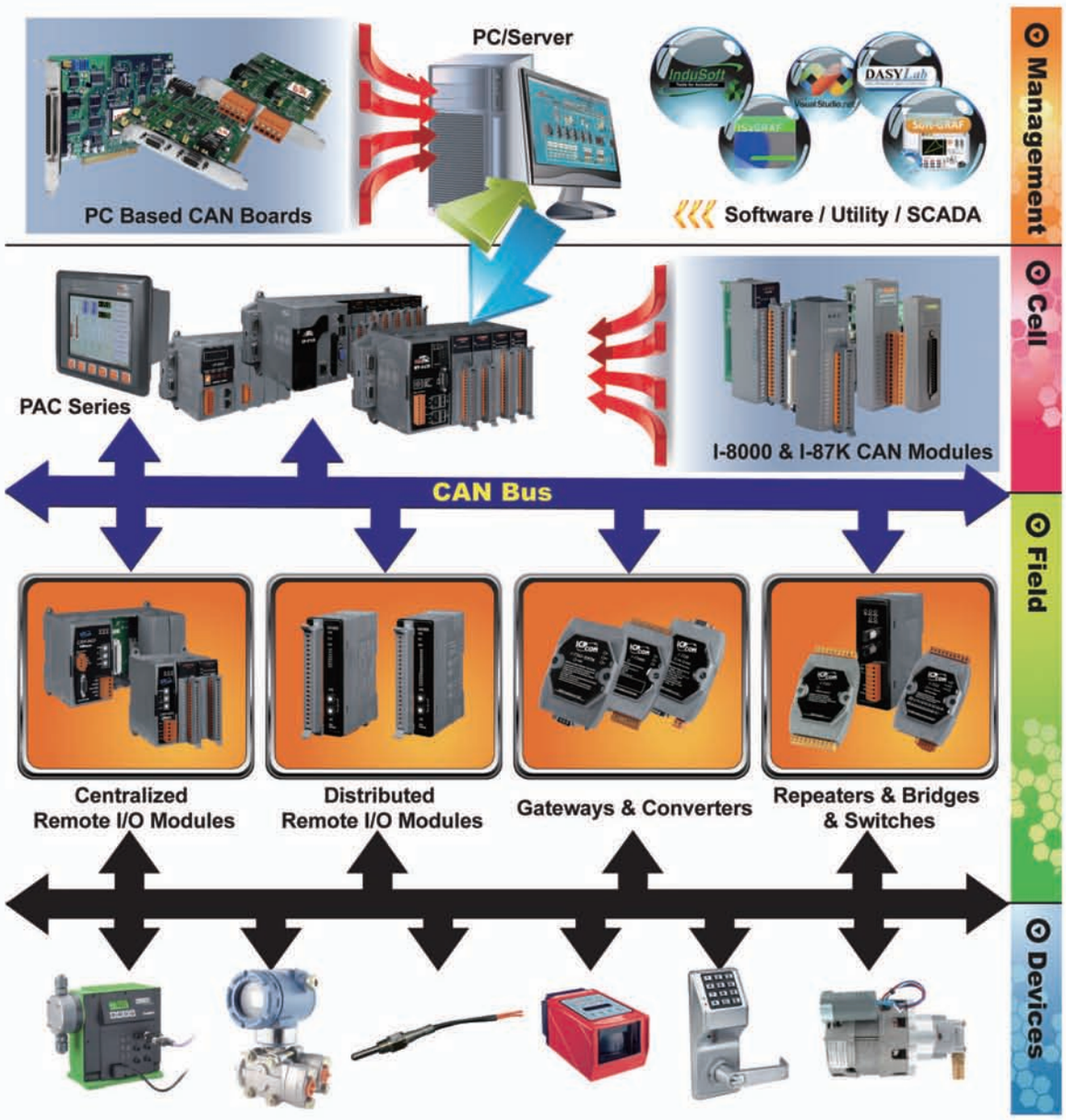
RoHS and WEEE Directive

ICP DAS supports customers by providing RoHS compliant products for many existing products together with new products. However in some OEM cases outside the scope of the RoHS Directive, we will also maintain normal supplies of lead-based products for customers who place their electrical and electronic equipment onto the market without EU. ICP DAS identifies lead-free RoHS compliant products by using a unique part number and by adding a CR to the product name.

CAN Bus Total Solutions



ICP DAS has been developing rich CAN-based / DeviceNet / CANopen / J1939 products for several years, include PCI interface card, field bus converter, PAC, gateway, and remote I/O module. We provide complete hardware solutions to satisfy various CAN-based applications. It can effectively solve the problems in data acquisition and calculation, working distance extension, network topology limitation, communication interface transformation, and noise resistance. Moreover, a lot of software resource, such as utility tools, APIs, demo programs, OPC, ActiveX and third-party drivers, help users build their complex control and monitor system more easily and quickly. In some special applications, we also offer flexible OEM / ODM projects to match the customers' different requirements. Through fast and good services, you can finish your tough CAN-based projects easily.



CAN Bus

Chapter 1

The Controller Area Network (CAN) is a serial communication interface. It provides several mechanisms, such as error process mechanism, message priority, CRC check, etc., to guarantee the stability, reliability and transmission efficiency. Because of these features, you can see a lot of devices used in industrial control, automation applications, marine electronic devices, factory automation, and machine automation. No matter what kinds of applications and requirements you need, ICP DAS can provide the integral and complete CAN bus solutions to solve your problems.

CANopen

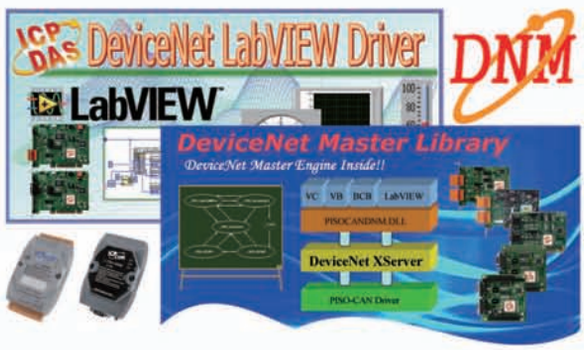
Chapter 2

CANopen is a kind of CAN-based application layer protocols. It was developed as a standardized embedded network with highly flexible configuration capabilities. It is widely used all over the world, and has successfully applied in many fields, such as medical equipment, machine automation, off-road vehicles, public transportation, motion control, etc. In these applications, we provide the CANopen remote I/O modules, various CANopen master interfaces, and the communication gateways between the CANopen protocol and another fieldbus protocol.

DeviceNet

Chapter 3

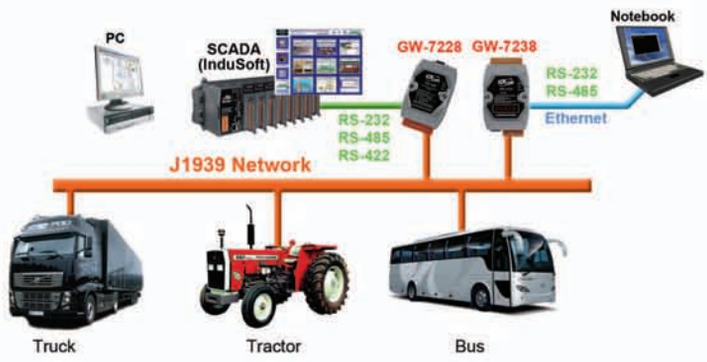
The DeviceNet network is a flexible open and low-cost option which you can use to connect industrial devices to a network and eliminate costly and time-consuming hardwiring. Direct connectivity improves communication and provides device-level diagnostics or easy access though hardware I/O interfaces. ICP DAS has supplied a lot of remote I/O modules, master interfaces, gateways and software utility tools in this field. These products are usually applied in semi-conductor automation, machine automation, and factory automation.



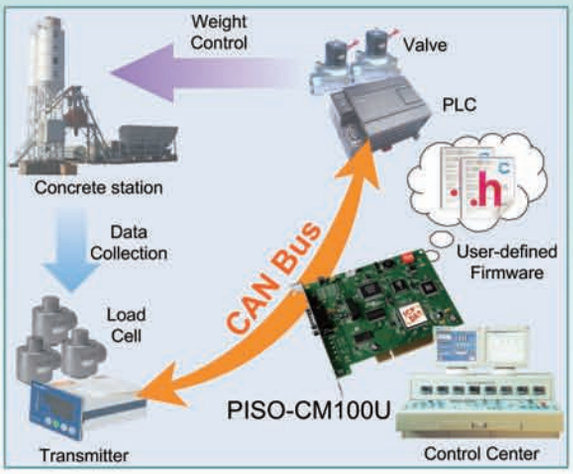
J1939

Chapter 4

Originally, the J1939-based protocol, a kind of CAN-based application layer protocols, is the vehicle bus standard used for communication and diagnostics among vehicle components. Afterwards, it has gradually become the accepted industry standard and the vehicle network technology of choice for off-highway machines in applications such as construction, material handling, and forestry machines. The J1939 Modbus gateway from ICP DAS can economically help you to obtain the J1939 data on the SCADA software. More J1939 related products are coming soon.

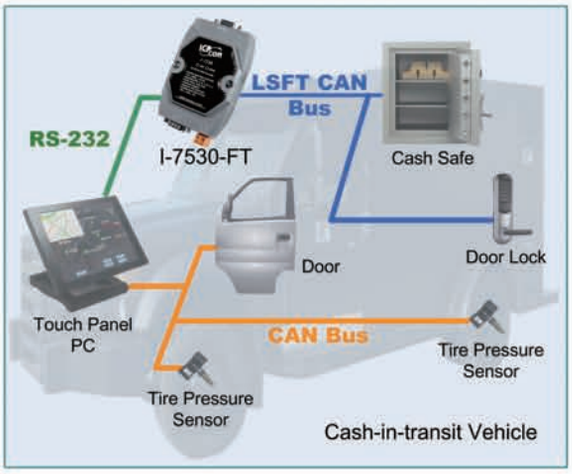


Application Stories



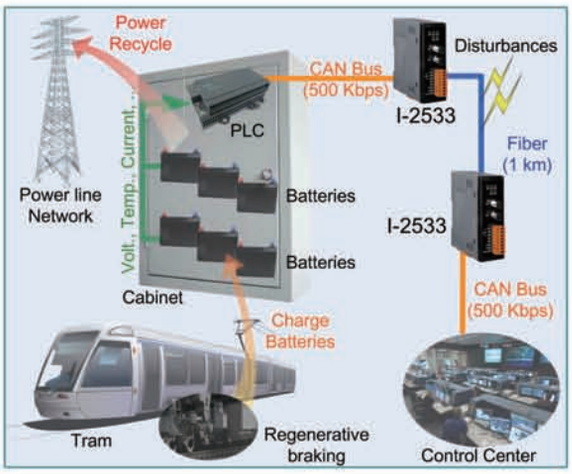
Concrete Station Monitor & Control System

- **Location**: Hunan, China
- **Product**: PISO-CM100U
- **Description**: The result of the quantity control of each recipe material seriously affects the quality of the concrete. In order to adjust each quantities promptly, CAN bus is applied. In this system, the PISO-CM100U is used to monitor the weight of each material from the load cells, and sends the recipe to the PLC. Meanwhile, the PC updates all the data to the screen. By using the user-defined firmware in the CPU of the PISO-CM100U, the PC loading can be effectively reduced, and the system becomes more smooth and reliable.



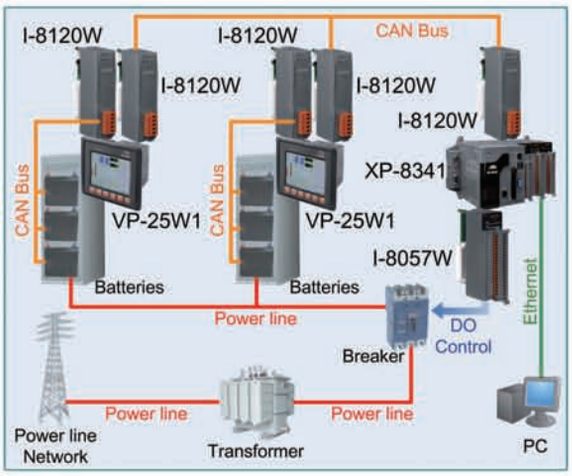
Cash-in-transit Vehicle

- **Location**: England, United Kingdom
- **Product**: I-7530-FT
- **Description**: A telematics and vehicle control system need to be closely integrated with each other by some data-exchange interfaces. LSFT (Low speed fault tolerance) CAN is a kind of familiar interfaces in the autotronics applications. An I-7530-FT is specially designed for solving the interface transformation between LSFT CAN and RS-232. Through it, the cash-in-transit of the manufacturer can control the door of the cash safely and monitor the conditions of the back door directly and reliably on the telematics.



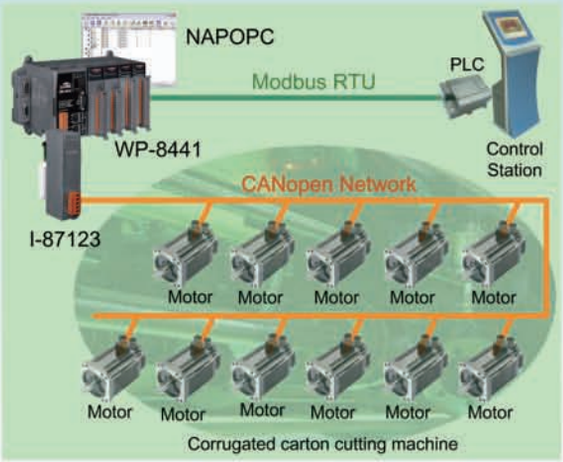
Tram Energy Recycle System

- **Location**: Hyogo, Japan
- **Product**: I-2533
- **Description**: Energy saving and carbon reduction has become what every country has to strive for. Therefore, the customer applies the regenerative braking to recycle the kinetic energy of the tram while it is braking. In order to resistant environment disturbances, extend CAN bus working distance and provide the higher CAN transmission speed, a couple of I-2533s are used. By means of them, the transmission distance of CAN bus is extended via 1 km fiber optics while using 500 kbps CAN baud rate.



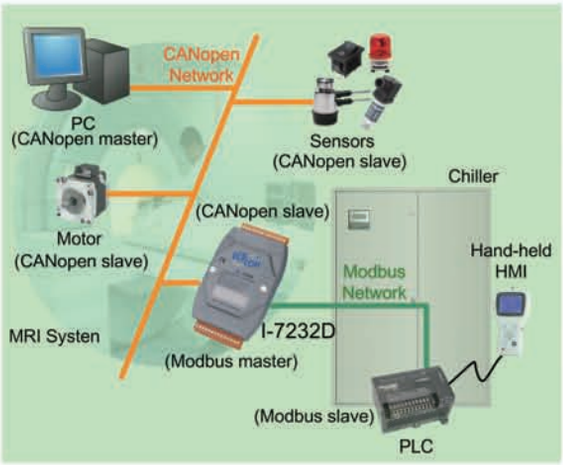
Energy Storage System

- **Location**: Guangdong, China
- **Product**: I-8120W, I-8057W, VP-25W1, XP-8341
- **Description**: This system can improve the usage efficiency of the electrical power. During the off-peak time of the electricity use, the unused electricity can be stored in the battery. When the peak time is coming, these batteries supply the power to the electric grid. The customer utilizes one of the I-8120Ws in VP-25W1 to monitor the battery status, and another is used to feedback these data to the XP-8341. The XP-8341 transmits the status to the PC via Ethernet and control the charge time by the breaker.



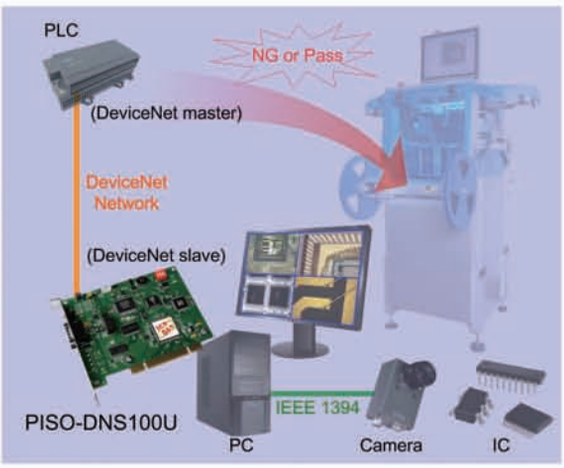
Corrugated Carton Cutting Machine

- **Location**: Taichung, Taiwan
- **Product**: WP-8441, I-87123
- **Description**: In this case, the orientation and cutting speeds seriously affect the quantity of output. Because all of the cutting knives and rollers must be controlled by 31 motors, the customer selects the CANopen motors to do that. The WP-8441 and I-87123 play the role of a CANopen master to control all of the motors simultaneously by the CANopen features of the synchronization and high speed. By using this architecture, all of the motors can quickly move to the target position at the same time by just sending one command.



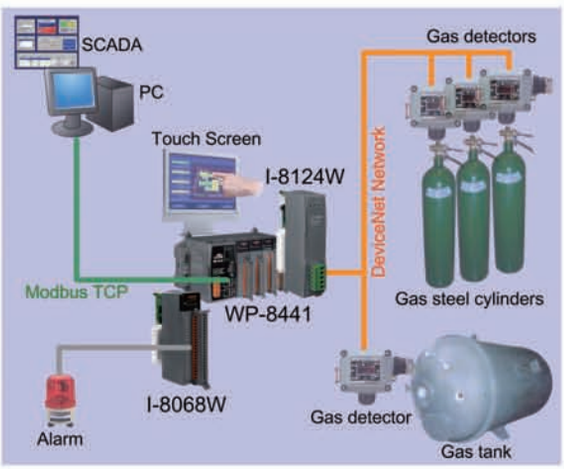
MRI Cooling System

- **Location**: Guangdong, China
- **Product**: I-7232D
- **Description**: In order to reduce the cost, a MRI manufacturer use the chiller made in China instead of German product. However, the customer gets into trouble with the different communication interface. By using the I-7232D, this problem is solved. I-7232D can be the Modbus RTU master while talking with the chiller. In the CANopen network, I-7232D is a CANopen slave. Therefore, I-7232D can easy bypass the information of the chiller to the CANopen master, and transfer the CANopen commands to the chiller.



IC Inspection Machine

- **Location**: Hsinchu, Taiwan
- **Product**: PISO-DNS100U
- **Description**: The IC inspection process is necessary for a good quality control. Though the PLC is cheap and stable, the IC inspection is a tough work for a PLC. The customer uses PC+ camera + PISO-DNS100U to do the IC inspection, and uses PLC to control the mechanism for rejecting the defective ICs. After finishing the inspection, the PC writes the result to the PISO-DNS100U. Because the PLC is a DeviceNet master, it can easily get the information from the PISO-DNS100U via DeviceNet network.



Semiconductor Gas Detection System

- **Location**: Kaohsiung, Taiwan
- **Product**: WP-8441, I-8124W
- **Description**: In semiconductor factory, a lot of poison and inflammable gas are widely used in various processes. In order to keep the employees safe, the gas detectors are general applied to detect the concentration of the poison and inflammable gas in the semiconductor. The customer uses WP-8441+I-8124W to be the DeviceNet master for obtaining the concentration information from the gas detectors. Besides, the present employees can immediately understand the air quality via the touch screen of the WP-8441.

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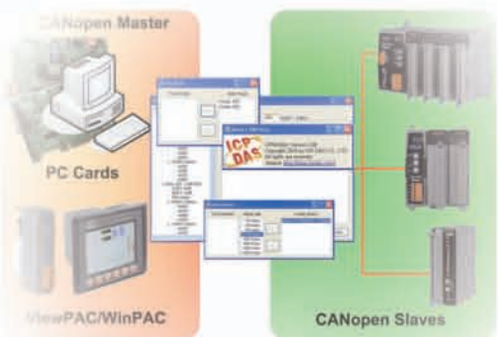

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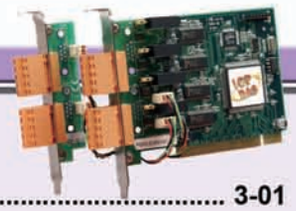

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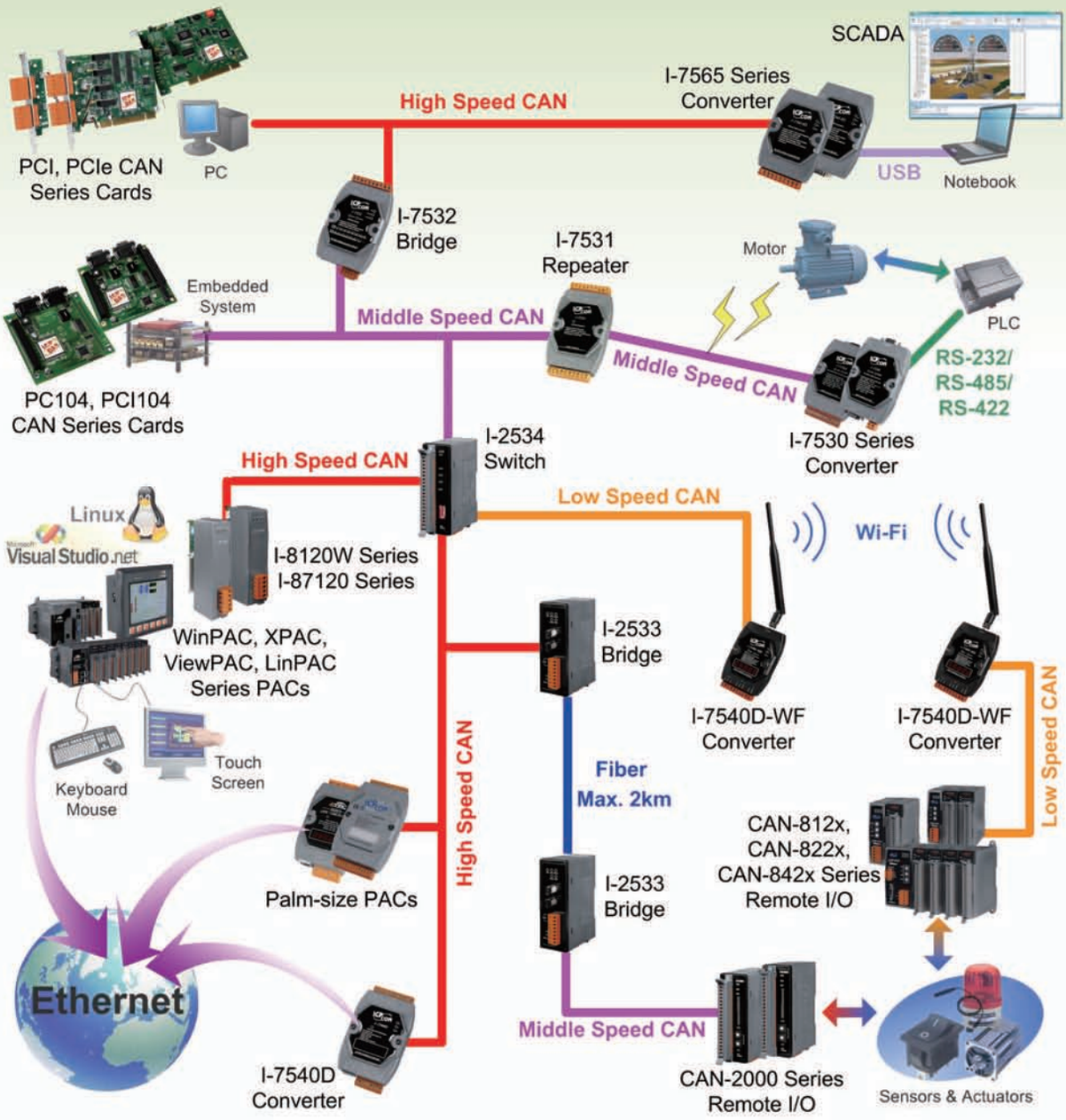
CAN Series

ICP DAS has been developing various CAN products for several years, including PCI interface cards, converters, PACs and expansion modules. ICP DAS holds CAN conference, exhibition and training course all of the world. We also help customers to resolve various CAN technology problems. In addition, we can provide CAN bus solution for our customers.



CAN Bus Features

Multi-master

When the CAN bus is free, any unit may transmit a message. When the bus is free any unit may start to transmit a message. The unit with the message of highest priority to be transmitted gains bus access.

Safety

In order to achieve the utmost safety of data transfer, powerful measures for error detection, signaling and self-checking are implemented in every CAN node.

Speed & Distance

Basically, a CAN network follows daisy-chain topology. A branch by T-connector will affect the working distance of the trunk. In ideal case, the speed and working distance of a CAN network are inverse relationship. The higher CAN baud causes the shorter working distance. The condition is shown in the right-hand-side table. Besides, the driver capability, bus resistance, wire gauge and noise also have the decisive influences of the working distance. There are some rules between the wire gauge and the numbers of nodes in a CAN network. Roughly speaking, more nodes need bigger wire gauge. Using twice-paired shielding wire to be the CAN bus line and applying a 120 ohm terminator resistances on each end of the CAN network are recommended.

Baud (bit/sec)	Ideal Bus Length
1M	25
800K	50
500K	100
250K	250
125K	500
50K	1000
20K	2500
10K	5000

Arbitration

If two or more nodes start transmitting messages at the same time, the arbitration mechanism is applied to guarantee that one of these messages can be sent successfully according to the priority.

Priorities

The CAN IDENTIFIER defines a static message priority during bus access.

CAN Series Selection Guide

	Product	CPU	Interface	Tools	Description	Page
Converter	I-7530	8-bit, 20 MHz	CAN <--> RS-232	VC6, VB6, VS.Net	CAN to RS-232 converter	1-03
	I-7530A-MR	32-bit, 96 MHz	CAN <--> RS-232/ 485/ 422	VC6, VB6, VS.Net	CAN to RS232/485/422 converter with Modbus RTU	1-05
	I-7530A	8-bit, 20 MHz	CAN <--> RS-232/ 485/ 422	VC6, VB6, VS.Net	CAN to RS232/485/422 converter	1-07
	I-7530-FT	8-bit, 20 MHz	CAN <--> RS-232	VC6, VB6, VS.Net	Fault tolerance low speed CAN to RS-232 converter	1-09
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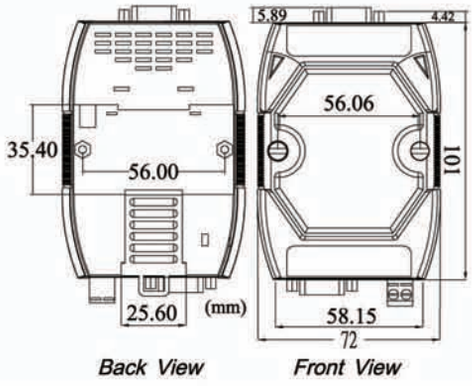
	I-7540D	---	CAN <--> Ethernet	VC6, VB6, VS.Net	CAN to Ethernet converter	1-17
	I-7540D-WF	---	CAN <--> Wi-Fi	VC6, VB6, VS.Net	CAN to Wi-Fi converter	1-19
	I-2532	---	CAN <--> Fiber	---	CAN to fiber converter	1-21
	I-2533	---	CAN <--> Fiber	---	CAN to fiber bridge	1-23
	I-7565	8-bit, 20 MHz	CAN <--> USB	VC6, VB6, VS.Net	CAN to USB converter	1-25
	I-7565-H1	32-bit 72 MHz	CAN * 1 <--> USB	VC6, VB6, VS.Net	High performance 1-port CAN to USB converter	1-27
	I-7565-H2	32-bit 72 MHz	CAN * 2 <--> USB	VC6, VB6, VS.Net	High performance 2-port CAN to USB converter	1-29
uPAC Moudle	I-7188XBD-CAN	80186, 40 MHz Built-in MiniOS7	RS-232 and RS-485 DI * 1 and DO * 1 CAN * 1	* Turbo C/C++ * Borland C/C++ * MiniOS7 Studio	Stand along programmable CAN module	1-31
	uPAC-7186EXD-CAN	80186, 80 MHz Built-in MiniOS7	RS-232 and RS-485 Ethernet port CAN * 1		Stand along programmable CAN module	1-33
CAN Module	I-87120	80186, 80 MHz Built-in MiniOS7	Backplane COM port CAN * 1	Firmware Tools : * Turbo C/C++ * Borland C/C++ * MiniOS7 Studio MCU Tools : * eVC++ , VS .NET	I-87K programmable CAN module	1-35
	I-8120W	80186, 80 MHz Built-in MiniOS7	Dual Port RAM CAN * 1		I-8K programmable CAN module	1-37
CAN PC-based Board	PEX-CAN200i	---	PCI-E x1 CAN * 2	VC6, VB6, VS.Net, OPC, ActiveX, RTX, DASYLab, LabVIEW	2-CAN PCI-Express board	1-39
	PISO-CAN 200U/400U	---	Universal PCI bus CAN * 2 / CAN * 4		2-CAN/4-CAN universal PCI board	1-41 1-43
	PCM-CAN100	---	PCI-104 CAN * 1		1-CAN PCI-104 board	1-45
	PCM-CAN200	---	PCI-104 CAN * 2		2-CAN PCI-104 board	1-47
	PCM-CAN200P	---	PCI-104+ CAN * 2		2-CAN PCI-104+ board	1-47
	PISO-CM100U	80186, 80 MHz Built-in MiniOS7	Universal PCI bus CAN * 1	Firmware Tools : MiniOS7 Studio PC Tools : VC6, VB6, VS.NET	1-CAN programmable universal PCI board	1-49

CAN bus Converter

Intelligent RS-232 to CAN Converter

I-7530



Dimensions

The PC can be the CAN host, monitor or HMI to access/control the CAN device through the CAN network by the I-7530 converter. The programmable RS-232 device (For example: PACs of ICP DAS) can use the serial port to connect to the CAN network via the I-7530 module. The I-7530 is designed to unleash the power of CAN bus via RS-232 communication method. It accurately converts messages between CAN and RS-232 networks. This module let you communicate with CAN devices easily from any PC or devices with RS-232 interface.

Features

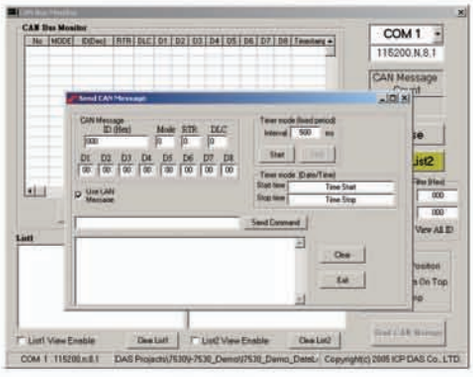
- Compatible with CAN specification 2.0A and B
- Fully compatible with ISO 11898-2 standard
- Support various baud rate from 10K bps to 1M bps
- Jumper for 120 Ω terminator resistor
- Software configurable CAN and RS-232 communication parameters
- 1000 frames in CAN received buffer, 900 frames in RS-232 received buffer
- Watchdog inside
- Support transparent communication mode

Utility Features

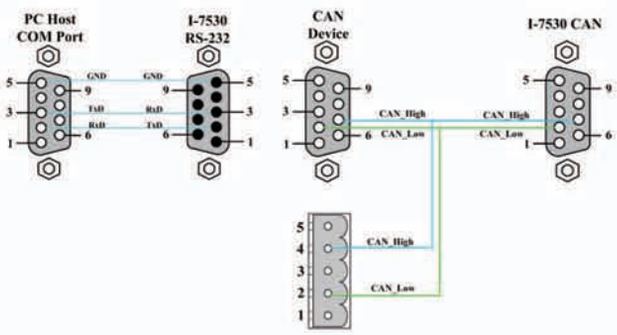
- CAN bus baud rate configuration
- CAN acceptance filter configuration
- CAN 2.0A or 2.0B specific selection
- Serial COM baud rate and data bit setting
- Serial COM command error response selection
- Utility tool for transmitting / receiving CAN messages

CAN Monitor & Data log Tools

- Show CAN messages by hex or decimal format
- CAN messages with timestamp
- Easy-to-use data logger for the diagnosis of the CAN networks and recording of the received data
- Send the predefined CAN messages manually or cyclically



Wire Assignments



Hardware Specifications

CAN Interface	
Controller	Microprocessor inside with 20 MHz
Transceiver	NXP 82C250
Channel number	1
Connector	9-pin male D-Sub (CAN_L, CAN_H, N/A for others)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 Mbps
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Selectable 120 Ω terminator resistor by jumper
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Receive Buffer	1000 data frames
UART Interface	
COM	RS-232
COM Connector	9-pin female D-Sub (TxD, RxD, GND, N/A for others)
Baud Rate (bps)	110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Data bit	5, 6, 7, 8
Stop bit	1, 2
Parity	None, Even, Odd
Receive Buffer	900 data frames
LED	
Round LED	ON LED: Power and Data Flow; ERR LED: Error
Power	
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	1 W
Mechanism	
Installation	DIN-Rail
Dimensions	72mm x 118mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application

Pair connection application 1

Pair connection application 2

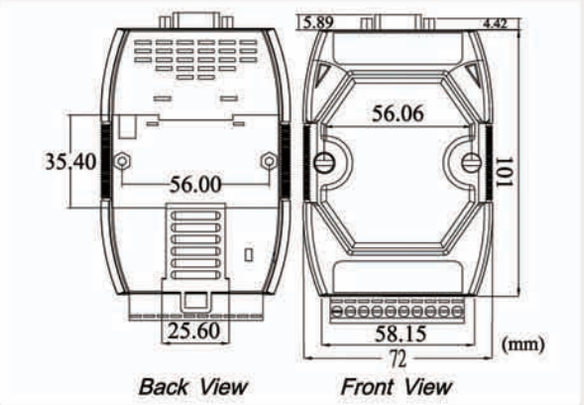
Ordering Information

I-7530-G	Intelligent RS-232 to CAN converter
I-7530-G CR	Intelligent RS-232 to CAN converter (RoHS)

CAN bus Converter

Intelligent Modbus RTU to CAN Converter

I-7530A-MR



Dimensions

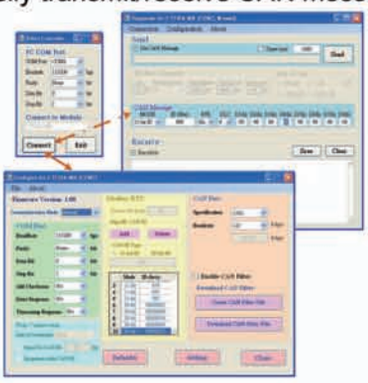
The I-7530A-MR is designed to unleash the power of CAN bus via RS-232/485/422 communication method. It accurately converts messages between CAN and RS-232/485/422 networks. This module let you communicate with CAN devices easily from any PC or devices with RS-232/485/422 interface. The programmable RS-232/485/422 device (For example: PC, PLC or PAC) or Modbus RTU master device can use the serial port to connect to the CAN network via the I-7530A-MR.

Features

- RoHS Design
- Fully compatible with ISO 11898-2 standard
- Programmable CAN bus baud rate from 10 kbps to 1Mbps or user-defined baud rate
- Support CAN bus acceptance filter configuration
- Support firmware update via RS-232
- Provide utility tool for users module setting and CAN bus communication testing conveniently
- Built-in jumper to select 120Ω terminal resister
- Provide 128 data frames in the CAN buffer and 256 bytes in the UART buffer
- Power, data flow and error indicator for CAN and UART
- Hardware Watchdog design
- Convert CAN message to specific ASCII command string (Normal mode)
- Convert specific ASCII command string to CAN message (Normal mode)
- Provide the transparent communication between the RS-232/485/422 devices via CAN bus (Pair-connection mode)
- Support function code 0x03/0x04/0x10 of Modbus RTU functions for reading and writing CAN message (Modbus RTU mode)

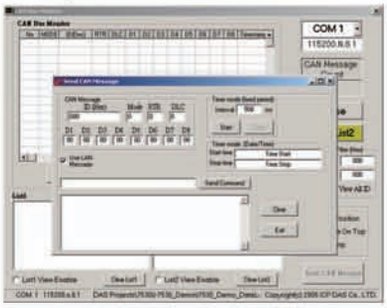
Utility Features

- CAN bus baud rate configuration
- CAN acceptance filter configuration
- RS-232/485/422 baud rate and data format configuration
- RS-232/485/422 communication with checksum function selection
- Communication mode setting
- Easily transmit/receive CAN messages



CAN Monitor & Data log Tools

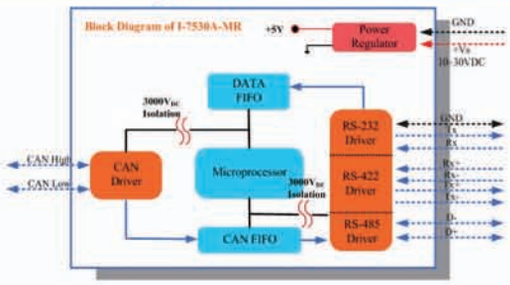
- Show CAN messages in hex or decimal format
- CAN messages with timestamp
- Easy-to-use data logger for the diagnosis of the CAN networks and recording of the received data
- Send the predefined CAN messages manually or cyclically



Hardware Specifications

CAN Interface	
Controller	Microprocessor inside with 96 MHz
Transceiver	NXP 82C250
Connector	9-pin male D-Sub (CAN_L, CAN_H, N/A for others)
Channels	1
Baud Rate(bps)	10 k, 20 k, 50 k, 100 k, 125 k, 250 k, 500 k, 800 k and 1 M (allow user-defined baud rate)
Protection	3000V_{DC} power protection and 3750Vrms photo-couple isolation on CAN side
Terminator Resistor	Selectable 120Ω terminator resistor by jumper
Support Protocol	ISO-11898-2, CAN 2.0A and CAN 2.0B
Pin Assignment	C.I.A. DS-102 (CAN_H=7, CAN_L=2)
UART Interface	
Connector	14-pin terminal connector
COM	RS-232: TxD, RxD, GND; RS-422: TxD+, TxD-, RxD+, RxD-; RS-485: DATA+, DATA-
Baud rate(bps)	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400
Protection	3000V_{DC} power protection and 2500Vrms photo-couple isolation on UART side
LED	
Round LED	PWR / CAN / UART
Power	
Power supply	+10 ~ +30 V_{DC}
Power Consumption	1.5W
Dip Switch	Init (Firmware Update, Module Configuration)/Normal (Firmware Operation)
Mechanism	
Installation	DIN-Rail
Dimensions	72mm x 118mm x 35mm (W x L x H)
Environment	
Operating Temp.	-25 to 75 °C
Storage Temp.	-30 to 80 °C
Humidity	10~90% non-condensing

Block Diagram



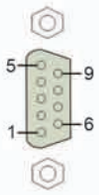
Pin Assignments

Table 1 : RS-232/485/422 Connector (CN1)

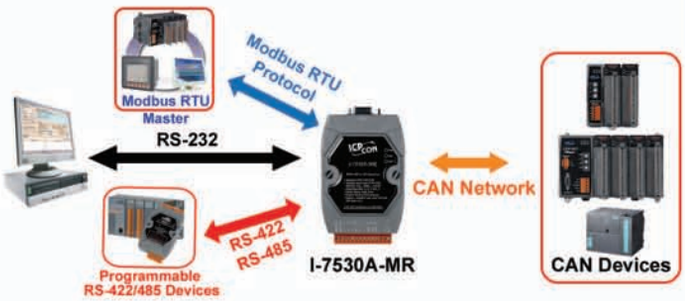
Terminal	RS-232/485/422
1	DATA+ (RS-485)
2	DATA- (RS-485)
3	N/A
4	TxD+ (RS-422)
5	TxD- (RS-422)
6	RxD+ (RS-422)
7	RxD- (RS-422)
8	N/A
9	RXD (RS-232)
10	TXD (RS-232)
11	GND (RS-232)
12	N/A
13	+Vs
14	GND

Table 2 : CAN DB9 Male Connector (CN2)

Terminal	2-wire CAN
1	Not Connect
2	CAN Low
3	Not Connect
4	
5	
6	
7	CAN High
8	Not Connect
9	



Application



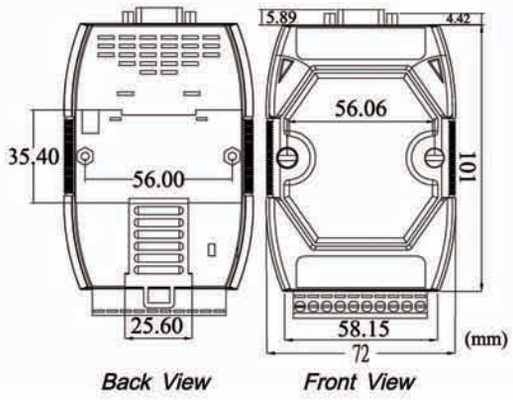
Ordering Information

I-7530A-MR-G CR	Intelligent Modbus RTU to CAN converter (RoHS)

CAN bus Converter

Intelligent RS-232/485/422 to CAN Converter

I-7530A



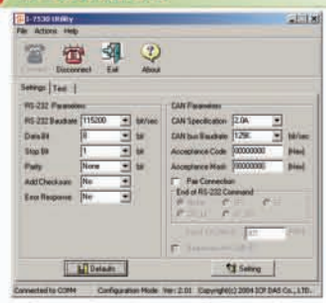
Dimensions

The I-7530A is designed to unleash the power of CAN bus via RS-232/485/422 communication method. It accurately converts messages between CAN and RS-232/485/422 networks. This module let you communicate with CAN devices easily from any PC or devices with RS-232/485/422 interface. The programmable RS-232/485/422 device (For example: PC, PLC or PAC) can use the serial port to connect to the CAN network via the I-7530A.

Features

- Compatible with CAN specification 2.0A and 2.0B
- Fully compatible with ISO 11898-2 standard
- Support various baud rate from 10 kbps to 1 Mbps
- Jumper for 120 Ω terminator resistor
- Software configurable CAN and RS-232/RS-422/ RS-485 communication parameters
- 1000 frames in CAN received buffer, 900 frames in RS-232/RS-422/RS-485 received buffer
- Watchdog inside
- Provide the transparent communication between the RS-232/RS-485/RS-422 devices via CAN bus
- Enable different RS-232/RS-485/RS-422 devices into an individual group in CAN bus network. (Full-duplex communication mode of RS-232/ RS-422 devices is not supported)

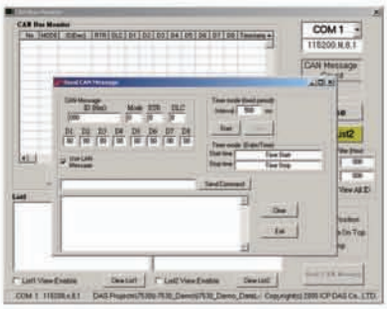
Utility Features



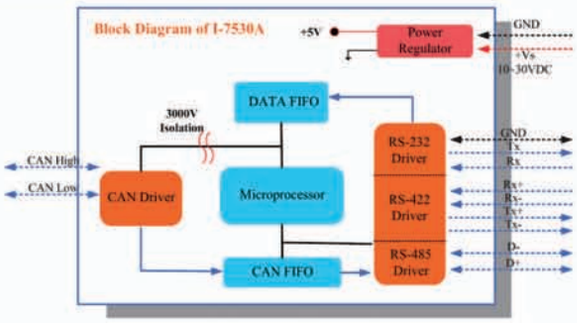
- CAN bus baud rate configuration
- CAN acceptance filter configuration
- CAN 2.0A or 2.0B specific selection
- Serial COM baud rate and data bit setting
- Serial COM command error response selection
- Utility tool for transmitting / receiving CAN messages

CAN Monitor & Data log Tools

- Show CAN messages by hex or decimal format
- CAN messages with timestamp
- Easy-to-use data logger for the diagnosis of the CAN networks and recording of the received data
- Send the predefined CAN messages manually or cyclically



Block Diagram



Hardware Specifications

CAN Interface	
Controller	Microprocessor inside with 20MHz
Transceiver	NXP 82C250
Connector	9-pin male D-Sub (CAN_L, CAN_H, N/A for others)
Port Channels	1
Buad Rate	10 k, 20 k, 50 k, 100 k, 125 k, 250 k, 500 k, 800 k and 1 Mbps
Protection	3000 V_{DC} power protection on CAN side, 2500Vrms photo-couple isolation on CAN bus
Terminator Resistor	Selectable 120 Ω terminator resistor by jumper
Support Protocol	CAN 2.0A/2.0B
Receive Buffer	1000 data frames
UART Interface	
COM	RS-232、RS-485、RS-422
Connector	14-pin terminal connector RS-232 : TxD, RxD, GND RS-422 : Tx+, Tx-, Rx+, Rx- RS-485 : D+, D-
Baud Rate	110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Data Bits	5, 6, 7, 8
Stop Bits	1,2
Parity	None, Even, Odd
Receive Buffer	900 data frames
Power	
Power Consumption	1W
Power Requirement	Unregulated +10V_{DC} ~ +30V_{DC}. Power reverse protection, Over-Voltage brown-out protection
LED	
Round LED	ON LED: Power and Data Flow; ERR LED: Error
Mechanism	
Installation	DIN-Rail
Dimensions	72mm x 118mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10~90% non-condensing

Application

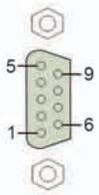
Pin Assignments

Table 1 : RS-232/485/422 Connector (CN1)

Terminal	RS-232/485/422
1	(Y)DATA+ (RS-485)
2	(G)DATA- (RS-485)
3	Not Connect
4	Tx+ (RS-422)
5	Tx- (RS-422)
6	Rx+ (RS-422)
7	Rx- (RS-422)
8	Not Connect
9	RXD (RS-232)
10	TXD (RS-232)
11	(B)GND (RS-232)
12	Not Connect
13	+Vs (Power)
14	(B)GND (Power)

Table 2 : CAN DB9 Male Connector (CN2)

Terminal	2-wire CAN
1	Not Connect
2	CAN Low
3	Not Connect
4	
5	
6	
7	CAN High
8	Not Connect
9	



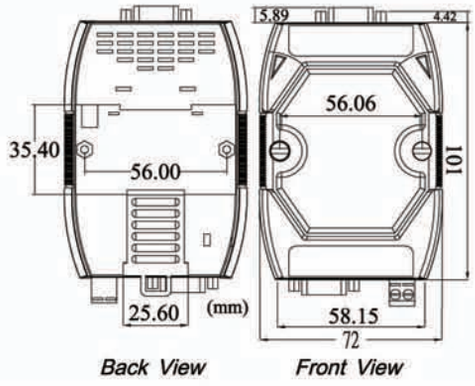
Ordering Information

I-7530A-G CR	Intelligent RS-232/RS-485/RS-422 to CAN converter (RoHS)

CAN bus Converter

RS-232/CAN Low speed Fault Tolerance Converter

I-7530-FT



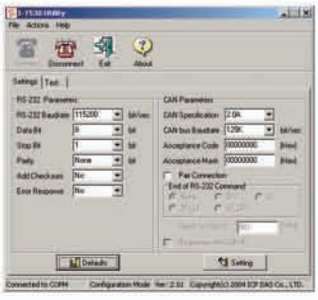
Dimensions

I-7530-FT is a RS-232/CAN low speed fault tolerant converter and can accurately convert messages between CAN and RS-232 communication media. It can resist more noise in harsh environment, and even access CAN messages with single line of CAN bus. In order to use the CAN network with traditional programmable RS-232 devices, we provide an easy way to achieve this purpose by several of user function call. It can be used in the application of CAN bus monitoring, building automation, remote data acquisition, environment control and monitoring, laboratory equipment & research, factory automation, etc.

Features

- Microprocessor inside with 20MHz
- Built-in CAN/RS-232 converter firmware
- Fully compatible with ISO 11898-3 standard
- Max transmission speed up to 125 kbps for CAN and 115.2 kbps for RS-232
- Support both CAN 2.0A and CAN 2.0B
- Build-in RS-232/CAN FIFO buffers
- Power, data flow and error indicator for CAN and RS-232
- Hardware watchdog design

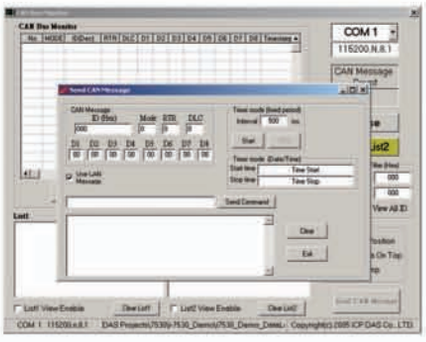
Utility Features



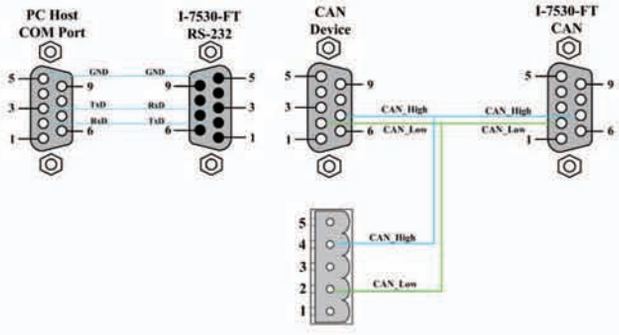
- CAN bus baud rate configuration
- CAN acceptance filter configuration
- CAN 2.0A or 2.0B specific selection
- Serial COM baud rate and data bit setting
- Serial COM command error response selection
- Utility tool for transmitting / receiving CAN messages

CAN Monitor & Data log Tools

- Show CAN messages by hex or decimal format
- CAN messages with timestamp
- Easy-to-use data logger for the diagnosis of the CAN networks and recording of the received data
- Send the predefined CAN messages manually or cyclically



Wire Assignments

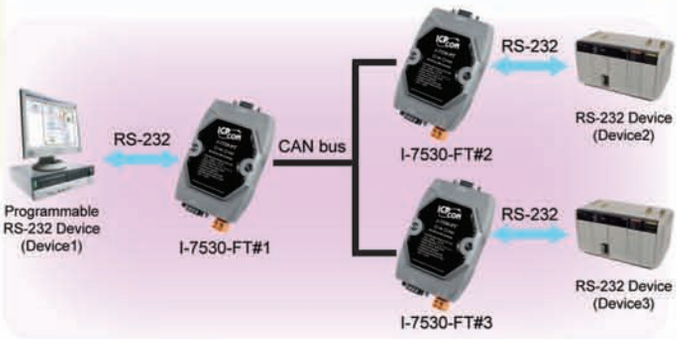


Hardware Specifications

CAN Interface	
Controller	Microprocessor inside with 20MHz
Transceiver	AMIS 41682
Channel number	1
Connector	9-pin male D-Sub (CAN_L, CAN_H, N/A for others)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 kbps
Terminator Resistor	1 kΩ for CAN_H and CAN_L
Specification	ISO-11898-3, CAN 2.0A and CAN 2.0B
Receive Buffer	1000 data frames
UART Interface	
COM	RS-232
COM Connector	9-pin female D-Sub (TxD, RxD, GND, N/A for others)
Baud Rate (bps)	110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Data bit	5, 6, 7, 8
Stop bit	1, 2
Parity	None, Even, Odd
Receive Buffer	900 data frames
LED	
Round LED	ON LED: Power and Data Flow; ERR LED: Error
Power	
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	1 W
Mechanism	
Installation	DIN-Rail
Dimensions	72mm x 118mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application

Pair connection application 1



Pair connection application 2

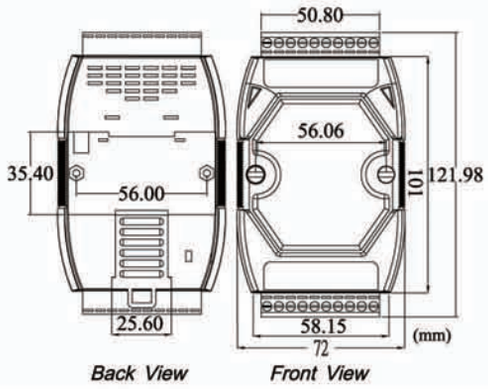
Ordering Information

I-7530-FT-G	Intelligent RS-232/CAN low speed fault tolerant converter
I-7530-FT-G CR	Intelligent RS-232/CAN low speed fault tolerant converter (RoHS)

CAN bus Converter

Two-channel CAN Bus Isolated Repeater

I-7531



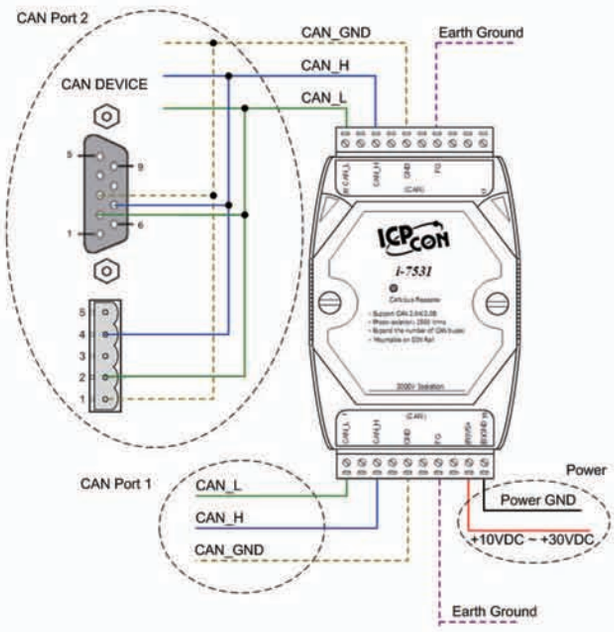
Dimensions

The I-7531 is a CAN repeater used to establish a physical coupling of two or more segments of a CAN bus system. Users can implement tree or star topologies as well as the long drop lines with the I-7531. Users can also increase the maximum number of bus nodes by using the I-7531. The I-7531 is an optically isolated CAN repeater which provides 2500Vrms of optical isolation. This feature helps you to separate and protect critical segments of the system from the rest of the CAN network. And its galvanic protection isolates among two both CAN segments and the power supply.

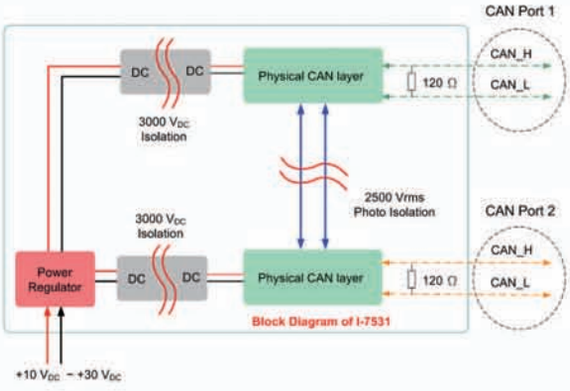
Features

- Compatible with CAN specification 2.0A and 2.0B
- Fully compatible with the ISO 11898-2 standard
- Maximum communication baud : 800 kbps
- 2500 Vrms photo-couple isolation on the CAN side
- 3 kV galvanic isolation among the power supply and 2 CAN ports
- Jumper for 120 Ω terminator resistor of the CAN bus
- Two CAN channels
- Detect baud rate automatically
- up to 100 nodes on each CAN port
- Removable terminal block
- Mount easily on DIN-rail

Pin Assignments



Block Diagram



CAN Bus Speed & Distance

Baud Rate [bit/sec]	Ideal Bus Length without I-7531 [m]
800 k	50
500 k	100
250 k	250
125 k	500
50 k	1000
20 k	2500
10 k	5000

Hardware Specifications

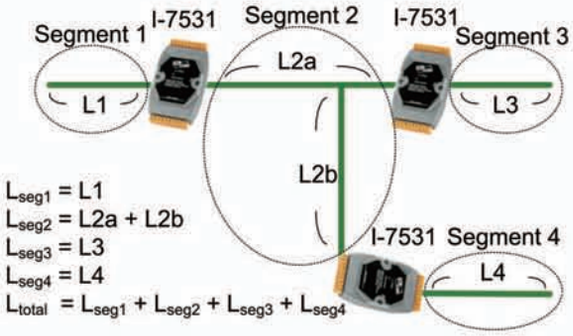
CAN Interface	
Transceiver	NXP 82C250
Channel number	2
Connector	3-pin screwed terminal block (CAN_GND, CAN_L, CAN_H)
Baud Rate (bps)	5 k ~ 800 k
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	2 W
Mechanism	
Installation	DIN-Rail
Dimensions	72mm x 118mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Baud Rate & Bus Length

Applying the I-7531 into a CAN network, the ideal total bus length will reduce because of the signal propagation delay.

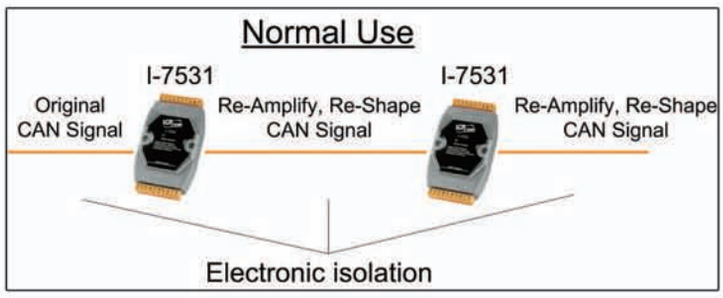
Users can use the following table to know the maximum node number in each segment and the maximum segment length when using different type of wire.

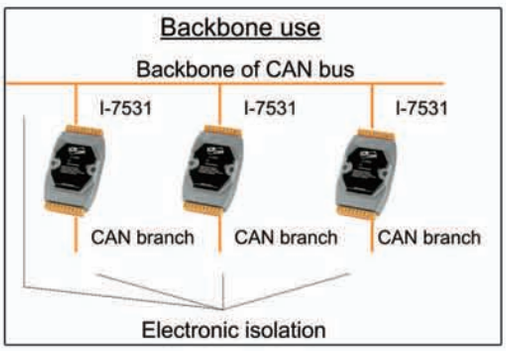
Wire Cross-Section [mm2]	The maximum segment length [m] under the case of specific node number in this segmen		
	32 Nodes	64 Nodes	100 Nodes
~0.25 (AWG23)	<200 m	<170 m	<150 m
~0.5 (AWG20)	<360 m	<310 m	<270 m
~0.8 (AWG18)	<550 m	<470 m	<410 m
~1.3 (AWG16)	<900 m	<780 m	<670 m



The definition of segment and the relationship between segment length (Lseg1, Lseg2 ...) and ideal total bus length (Ltotal) are shown in the figure.

Applications





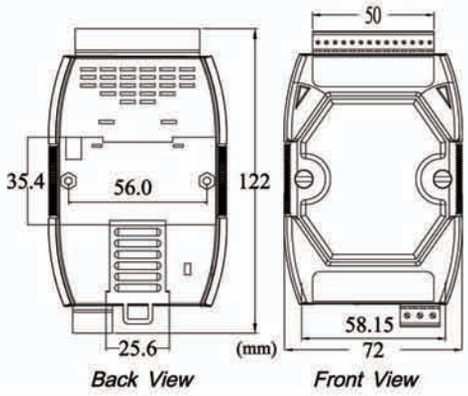
Ordering Information

I-7531-G	Two-channel CAN Bus Isolated Repeater
I-7531-G CR	Two-channel CAN Bus Isolated Repeater (RoHS)

CAN bus Converter

Two-channel CAN Bus Isolated Bridge

I-7532



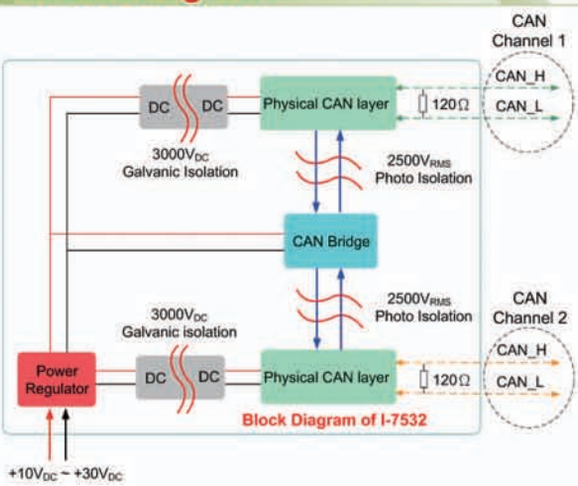
Dimensions

I-7532 is a CAN bridge used to establish a connection between two CAN bus systems in a CAN network and more functions are equipped than I-7531 (CAN Repeater). Three powerful features are provided by I-7532. First, the transmission distance limitation of the CAN bus system on each side of I-7532 are independent, which means the total CAN network distance can be extended. Second, when some errors (e.g. bit error) happened on one side of I-7532 of the CAN bus system; the other side can still work correctly. Last one, the baud rate and filter setting of these two CAN channels on I-7532 can be different for highly flexibility and efficiency.

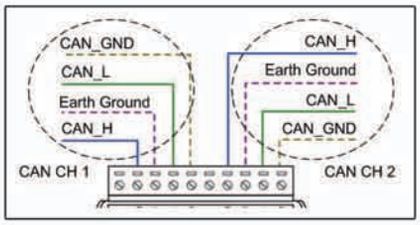
Features

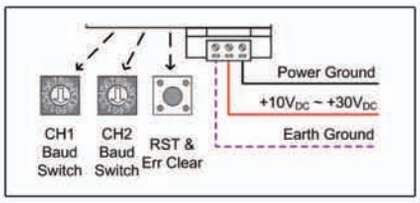
- 82C250 CAN transceiver
- 2500 Vrms photo coupler isolation on CAN side
- 3 kV galvanic isolation among the power supply and 2 CAN channels
- Support both CAN 2.0A and CAN 2.0B
- Fully compatible with the ISO 11898-2 standard
- Built-in jumper to select 120Ω terminal resister
- Watchdog inside
- Up to 100 CAN nodes on each channel
- 768-frame buffer for each CAN channel
- Adjustable CAN bus baud rate from 5K bps to 1M bps or programmable user-defined baud rate
- Support CAN bus message acceptance filter configuration

Block Diagram



Pin Assignments





Baud Rate Selection

Switch Value	0	1	2	3
Baud [bps]	Config Mode	5k or User-defined CAN baud	10 k	20 k
Switch Value	4	5	6	7
Baud [bps]	40 k	50 k	80 k	100 k
Switch Value	8	9	A	B
Baud [bps]	125 k	200 k	250 k	400 k
Switch Value	C	D	E	F
Baud [bps]	500 k	600 k	800 k	1 M

Hardware Specifications

CAN Interface	
Controller	Microprocessor inside with 72MHz
Transceiver	NXP 82C250
Channel number	2
Connector	4-pin screwed terminal block (CAN_GND, CAN_L, CAN_SHLD, CAN_H)
Baud Rate (bps)	Adjustable CAN bus baud rate from 5Kbps to 1Mbps or programmable user-defined baud rate
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	2 W
Mechanism	
Installation	DIN-Rail
Dimensions	72mm x 122mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

LED Indication

PWR LED	
ON	Comm. Mode
FLASH	Config. Mode
OFF	Power off

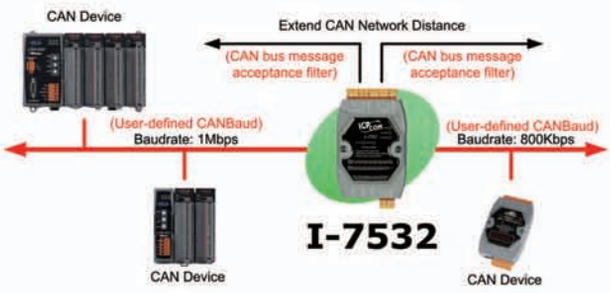
Rx LED	
Flashing	Transmission
ON (config. mode)	Configuration via this CAN Ch.
OFF	Bus idle

ERR LED	
Flashing (100ms)	Transmission fail
Flashing (1sec)	Buffer overflow
ON	Bus off
OFF	No error

RST & Err Clear Button

Reset & Error Clear button	
Click	Error clear
Push (3sec)	Module reset

Applications



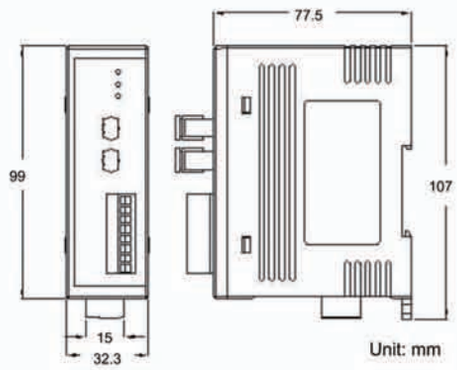
Ordering Information

I-7532 CR	Two-channel CAN Bus Isolated Bridge (RoHS)

CAN bus Converter

4-port Intelligent CAN bus Switch

I-2534



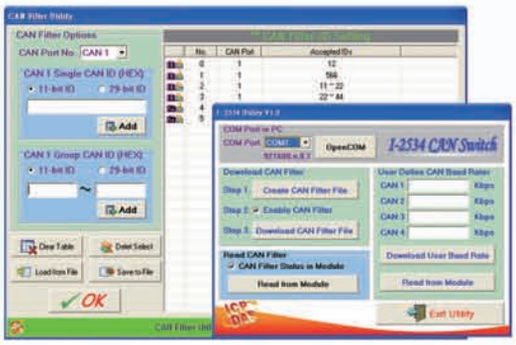
Dimensions

The I-2534 is one kind of CAN bus switch. There are four independent CAN channels which offer a flexible design of the start or tree network topology. This new topology could resolve the complex CAN bus application, like industrial machinery, building automation, vehicle automation, and etc. Furthermore the I-2534 integrates and exchanges data between different CAN network which has different baud rate. It helps users to extend the CAN network system. The I-2534 could increase the maximum CAN node count in a CAN network by splitting the CAN network into several subnets. In additional, the user-defined CAN baud rate and CAN filter configuration are also supported.

Features

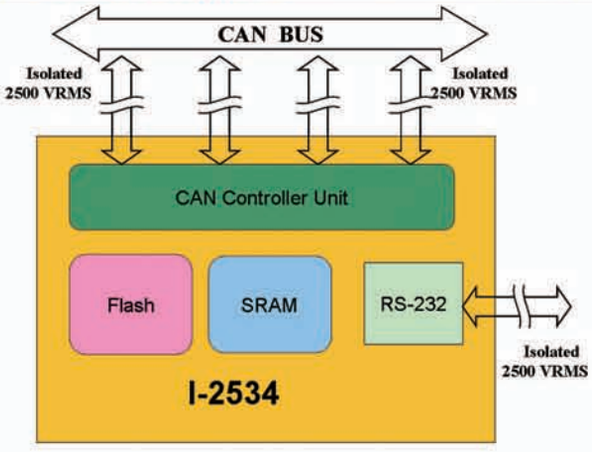
- 4 CAN communication ports
- Compatible with CAN specification 2.0A and 2.0B
- Fully compatible with the ISO 11898-2 standard
- Baud rate : 5 k, 10 k, 20 k, 33.3 k, 50 k, 62.5 k, 83.3 k, 125 k, 250 k, 500 k, 800 k, 1 M bps and user-defined
- CAN bus filter is configurable
- 100 data frames buffer for each CAN channel
- Max data flow up to 2500 fps for all CAN channel
- Selectable baud rate by rotary switch
- Selectable 120Ω terminator resistor by DIP switch
- LED for CAN status

Utility Features

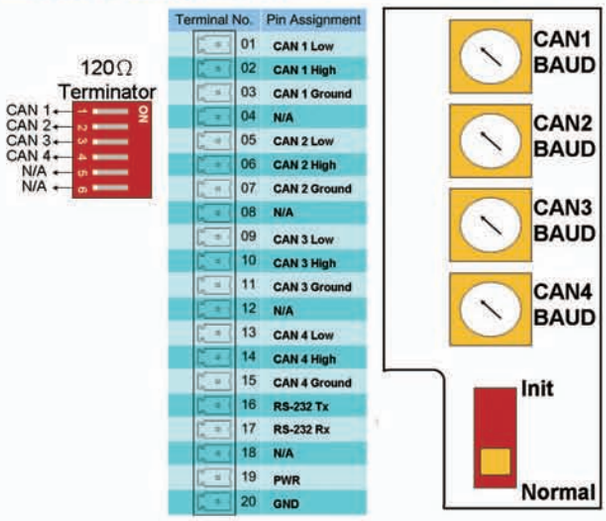


This utility configures the CAN filter and user-defined CAN baud rate. It can save the CAN filter configuration as file and would be import to another I-2534.

Block Diagram



Pin Assignments

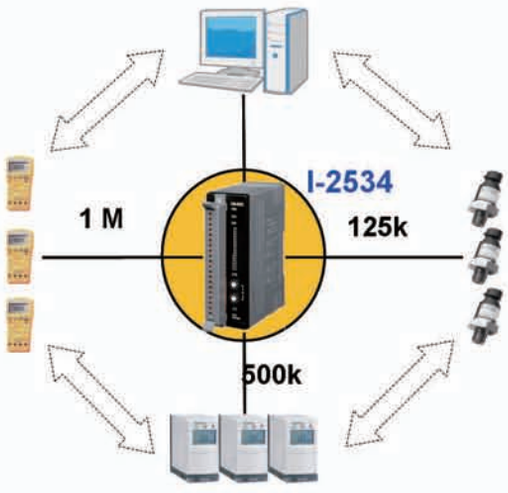


Hardware Specifications

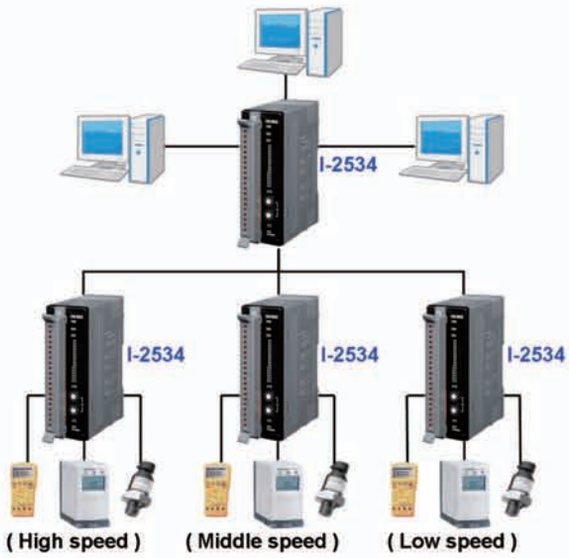
Hardware	
Controller	32-bit Microcontroller, 60MHz
RTC (Real Time Clock)	No
Watchdog	Watchdog IC
ESD Protection	4 kV Contact for each channel
CAN Interface	
Transceiver	NXP TJA1042
Channel number	4
CAN Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Baud Rate (bps)	5k, 10 k, 20 k, 33.3 k, 50 k, 62.5 k, 83.3 k, 125 k, 250 k, 500 k, 800 k, 1 M bps and user-defined
Baud Rate Selection	Selectable by rotary switch
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Selectable 120Ω terminator resistor by DIP switch
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)
CAN Filter	Configurable by user
UART Interface	
RS-232	1 port
RS-232 Connector	3-pin screwed terminal block (TxD, RxD, GND)
LED	
Round LED	CAN status LED x 4 , Power LED x 1
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	3W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application

CAN bus with Star Topology



CAN bus with Tree Topology



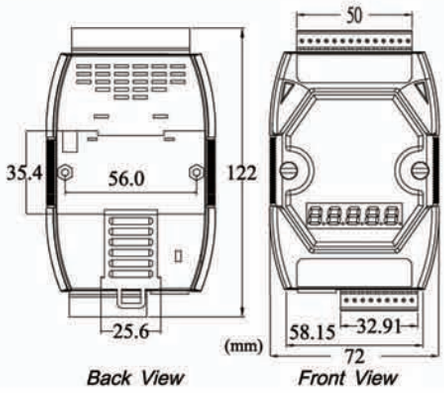
Ordering Information

I-2534	4-port Intelligent CAN bus Switch

CAN bus Converter

Intelligent CAN to Ethernet Gateway

I-7540D



Dimensions

The I-7540D by ICP DAS is a solution that enables CAN networks to be integrated into the Inter-net/Ethernet, whereby remote monitor and control is possible. The I-7540D controls networked com-munication and makes a transparent CAN-based application interface available to the user. The device supports not only a transparent and protocol-independent transfer of the CAN messages, but virtual COM technology. Thus it allows to be implemented into a various applications.

Features

- 80186, 80 MHz CPU, or compatible
- 10/100 Base-TX Ethernet controller
- Message transmitted by using TCP/IP protocol
- COM driver support interrupt and 1K QUEUE input & output buffer
- Use one RS-232 port, one RS-485 port and one CAN port simultaneously
- 2500Vrms photo-isolation protection on CAN side.
- Jumper for 120Ω terminator resistor for CAN channel
- NXP 82C250 CAN Transceiver
- Support both CAN specification 2.0A and 2.0B.
- Max transmission speed up to 1M bps for CAN and 115.2kbps for RS-232 & RS-485
- Max transmission distance of CAN over 1000m (follow CAN specification)
- 7-segment LED display
- Software configuration for CAN and RS-232 communication parameters
- Firmware updated from COM 1 or Ethernet port
- Web Configuration
- Provide maximum 25 Ethernet client connections
- Support Virtual COM technology

CAN Monitor & Data log Tools

- Show CAN messages by hex or decimal format
- CAN messages with timestamp
- Easy-to-use data logger for the diagnosis of the CAN networks and recording of the received data
- Send the predefined CAN messages manually or cyclically

Utility Features

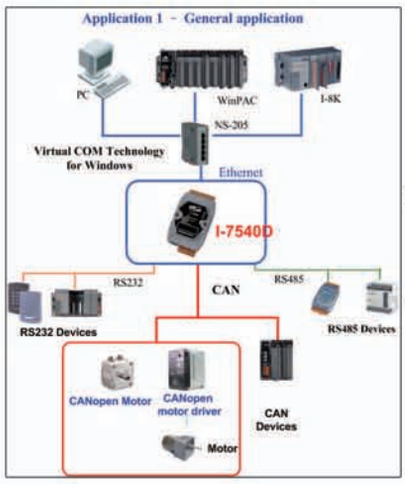
- IP、Gateway and Mask configuration
- CAN bus baud rate configuration
- CAN BTR0 and BTR1 configuration
- CAN acceptance filter configuration
- CAN 2.0A or 2.0B specific selection
- Error code response selection
- Utility tool for transmitting / receiving CAN messages

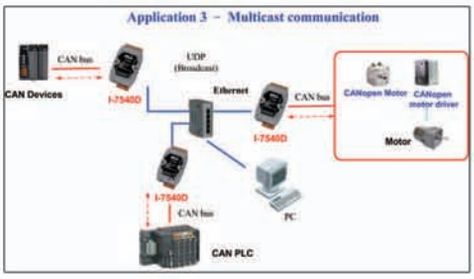
Wire Assignments

Hardware Specifications

CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Channel number	1
Connector	2-pin screwed terminal block (CAN_L, CAN_H)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
UART Interface	
COM 1	RS-232
COM 1 Connector	5-pin screwed terminal block (TxD, RxD, RTS, CTS, GND)
COM 2	RS-485 (Self-turner inside)
COM 2 Connector	2-pin screwed terminal block (DATA+, DATA-)
Baud Rate (bps)	110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Data bit	7, 8
Stop bit	1
Parity	None, Even, Odd
Ethernet Interface	
Controller	10/100Base-TX Ethernet Controller (Auto-negotiating, Auto_MDIX)
Connector	RJ-45 with LED indicator
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	2.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	72mm x 122mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application





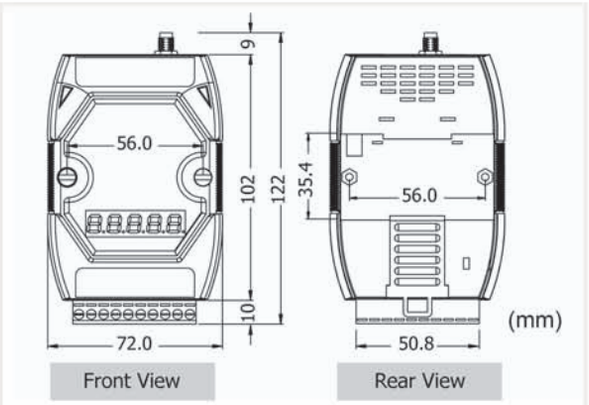
Ordering Information

I-7540D-G	Intelligent CAN to Ethernet Gateway
I-7540D-G CR	Intelligent CAN to Ethernet Gateway (RoHS)

CAN bus Converter

Industrial CAN to Wi-Fi Converter

I-7540D-WF

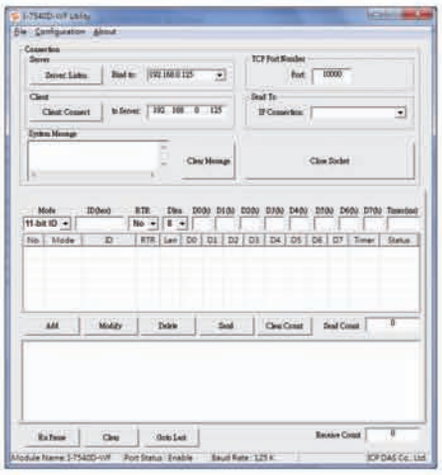


Dimensions

The I-7540D-WF supports the wireless transmission of CAN data between a CAN network and a WLAN network according to the 802.11b/g standard. The I-7540D-WF is highly suitable for connecting mobile (e.g., vehicles or machines) or stationary CAN networks and is often used for short ranges up to 100 or 300 m. There are two operating modes in the I-7540D-WF: In the access point mode, the data connection takes place over one or several WLAN access points that are often part of the company's internal IT infrastructure. In the ad-hoc mode, a direct connection is established between a single I-7540D-WF device and a PC or laptop (with an integrated WLAN interface), or with a second I-7540D-WF device.

Features

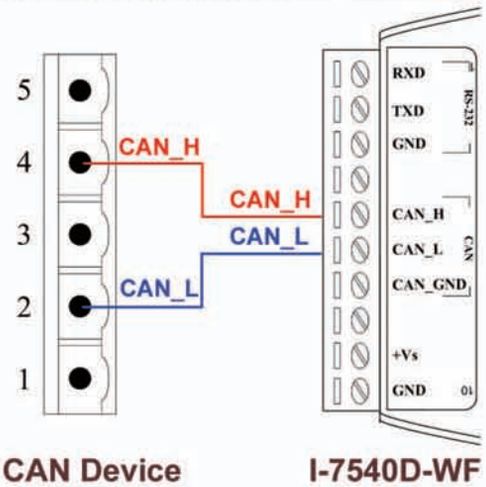
- IEEE 802.11b/g compliant
- Wireless data transmission via WLAN
- Two different operation modes: infrastructure and ad-hoc
- Point to point or point to multi-points connection via wireless LAN
- Supports WEP, WPA and WPA2 encryption for wireless LAN
- CAN 2.0A/2.0B compliant
- Communication efficiency: one-way is up to 700 fps (client->server, server->client)，two-way 350 fps (client<=>server)
- Wireless communication: 100m(Without PA) / 300m(With PA)



Utility Features

- IP、Gateway and Mask configuration.
- CAN bus baud rate configuration.
- Provide wireless LAN configuration interface.
- Provide encryption configuration for wireless LAN
- Utility tool for transmitting / receiving CAN messages

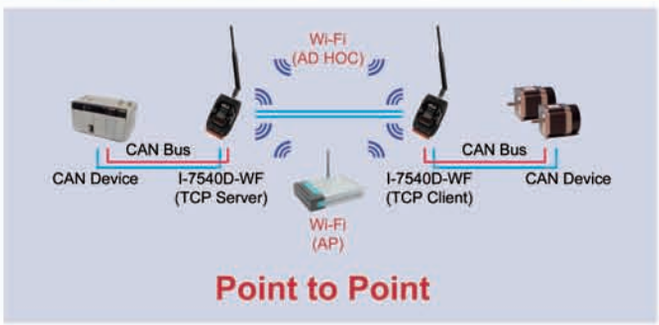
Wire Assignments



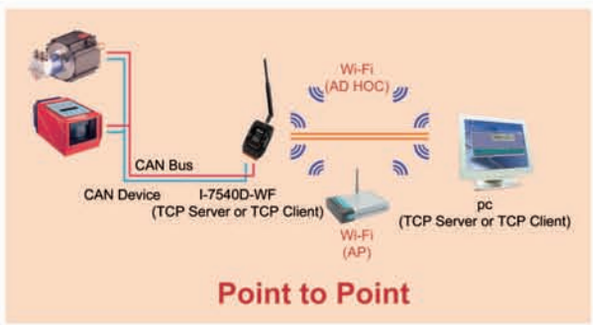
Hardware Specifications

Hardware	
CAN Port Channels	1
CAN Interface	
Controller	CAN Controller inside
Transceiver	NXP 82C250
Connector	10-pin screw terminal connecter
Baud Rate (bps)	5K ~ 1Mbps
Isolation	3000 V_{DC} power protection on CAN side, 2500Vrms photo-couple isolation on CAN bus
Terminator Resistor	Selectable 120Ω terminator resistor by jumper
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Pin Assignment	CAN_H, CAN_L
Max Data Flow	700 fps(one-way)
UART Interface	
Connector	10-pin screw terminal connecter
COM1	RS-232(TXD, RXD, GND)
Baud Rate (bps)	115200
Wi-Fi Interface	
Module	MLiS WiFi Module 802.11b/g
Wi-Fi Channels	1
LED	
Round LED	PWR / Wi-Fi / CAN / CNT / WLAN
Power	
Power supply	+10 ~ +30 V_{DC}
Power Consumption	1.5 W
Dip Switch	Init (Firmware Update) / Normal (Firmware Operation)
Mechanism	
Installation	DIN-Rail
Dimensions	122mm x 72mm x 35mm (H x W x D)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-40 ~ 80 °C
Humidity	5 ~ 95% RH, non-condensing

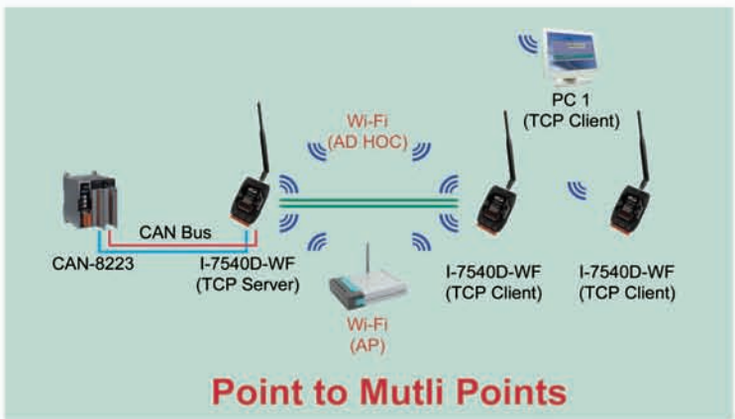
Application



Point to Point



Point to Point



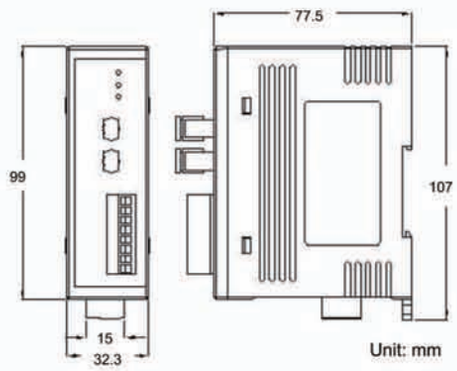
Point to Mutli Points

Ordering Information

I-7540D-WF CR	CAN to Wi-Fi Converter (RoHS)

CAN bus Converter

Industrial CAN to Fiber Converter



I-2532

Dimensions

The I-2532 is a CAN to fiber optic converter which secures CAN data transmission via fiber optic for providing immunity from EMI/RFI interference. It is used in CAN applications for transferring CAN bus signal from wire to fiber optic and vice versa, and is the perfect solution for applications where transmission must be protected from electrical exposure, surges, lightning or chemical corrosion.

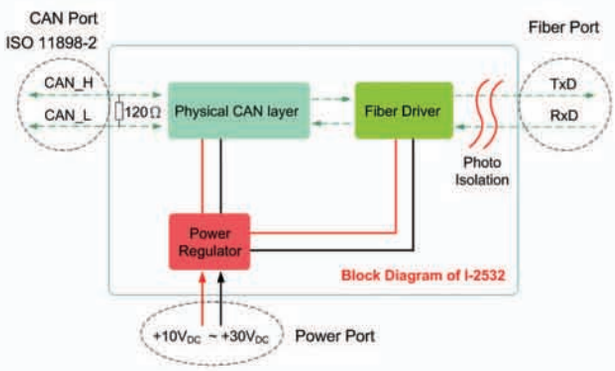
Features

- Compatible with CAN specification 2.0A and 2.0B
- Fully compatible with the ISO 11898-2 standard
- Support baud rate up to 500 kbps
- Jumper for 120 Ω terminator resistor of the CAN bus
- Fiber Port: ST (Multi-mode)
- Wave Length: 850 nm
- Detect baud rate automatically
- up to 100 nodes on CAN port
- Removable terminal block
- Mount easily on DIN-rail

Pin Assignments

NO.	Pin name
TxD	Fiber TxD
RxD	Fiber RxD
1	N/A
2	N/A
3	N/A
4	N/A
5	N/A
6	CAN_L
7	CAN_H
8	CAN_GND

Block Diagram



Maximum Fiber Length

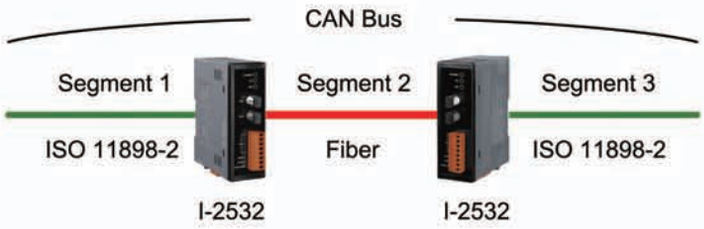
Baud rate [bps]	Maximum Fiber Length. [m]	
	Attenuation < 2.8 dB/km	Attenuation < 4 dB/km
500 k	50	50
250 k	200	200
125 k	450	400
50 k	950	400
10 k, 20 k	1400	400

Hardware Specifications

CAN Interface	
Connector	8-pin screwed terminal block (CAN_GND, CAN_L, CAN_H, N/A for others)
Baud Rate (bps)	10 k ~ 500 k
Transmission Distance (m)	Depend on baud rate
Terminator Resistor	Switch for 120Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Fiber Interface	
Connector	ST (Multi-mode)
Wave Length	850 nm
Fiber Cable	62.5 / 125 μm
Propagation Delay	125ns max (125ns delay shortens bus line length by ~ 25 m)
Transmission Distance (m)	1.4 km max (in 62.5/125 μm fiber cable)
LED	
Round LED	PWR LED, TD LED, RD LED
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	0.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3mm x 77.5mm x 99.0mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application

The definition of segment in a CAN bus system are shown as following figure. The segment 2 is fiber cable. Generally, the segment 1 and segment 3 are copper cable. The copper cable is a balanced (differential) 2-wire interface. It may be a Shielded Twisted Pair (STP), Un-shielded Twisted Pair (UTP), or Ribbon cable.



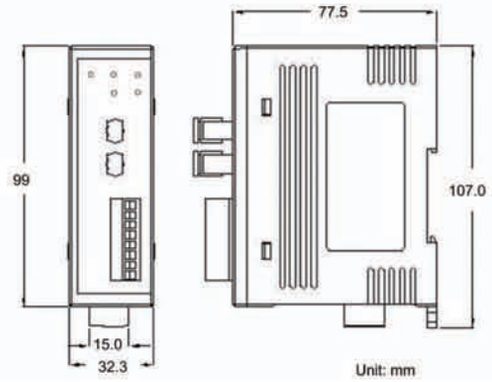
Ordering Information

I-2532 CR	CAN to Fiber Converter (RoHS)

CAN bus Converter

CAN to Fiber Converter

I-2533



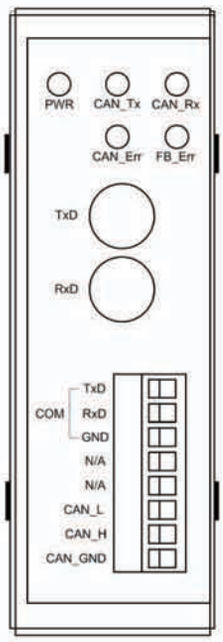
Dimensions

The I-2533 is a local CAN bridge used to establish a connection between two CAN bus systems via fiber optic transmission medium. By using I-2533, the transmission distance limitation of the fiber optic system will not decrease due to the higher CAN baud rate. It means that the total network distance can be extended. Moreover, the bus error on one CAN network don't affect the operation of another CAN network. The two CAN network can communicate with each other by using different CAN baud rate for highly flexibility. These features help users' applications more powerful and flexible.

Features

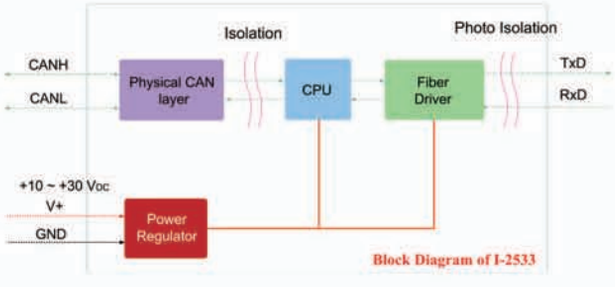
- Fiber Port: ST (Multi-mode)
- Maximum transmission distance up to 2 km at any CAN baud rate
- 82C250 CAN transceiver
- 2500 Vrms iCoupler isolation on the CAN side
- Support both CAN 2.0A and CAN 2.0B specification
- Fully compatible with the ISO 11898-2 standard
- Build-in switch for 120 Ω terminator resistor
- Up to 100 CAN nodes on the CAN channel
- Removable terminal block
- Mount easily on DIN-Rail
- Rotary switch for CAN baud rate configuration
- Allow user-defined baud rate
- Fiber broken line detection
- Utility tool for message filter configuration

Pin Assignments



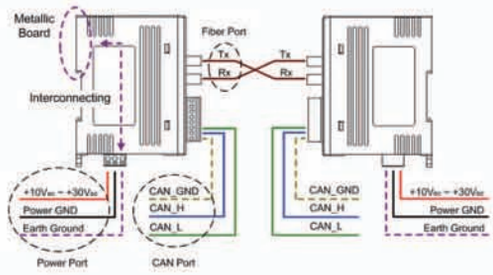
NO.	Pin name
TxD	Fiber TxD
RxD	Fiber RxD
1	COM TxD
2	COM RxD
3	COM GND
4	N/A
5	N/A
6	CAN_L
7	CAN_H
8	CAN_GND

Block Diagram



Block Diagram of I-2533

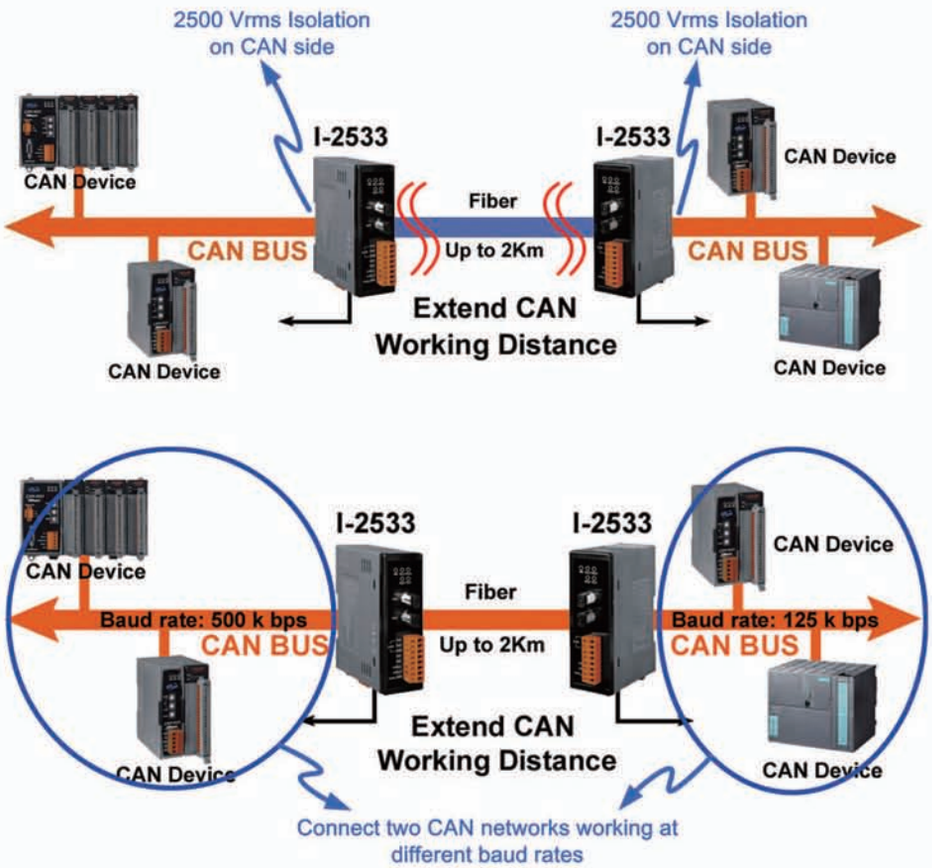
Wire Connection



Hardware Specifications

CAN Interface	
Connector	Screwed terminal block (CAN_GND, CAN_L, CAN_H)
Baud Rate (bps)	10 k ~ 1 M
Transmission Distance (m)	Depend on baud rate
Terminator Resistor	Switch for 120Ω terminator resistor
Isolation	3000 VDC for DC-to-DC, 2500 Vrms for photo-couple
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Time Delay	120us max (CAN to fiber or fiber to CAN)
Fiber Interface	
Connector	ST (Multi-mode)
Wave Length	850 nm
Fiber Cable	50 / 125 µm , 62.5 / 125 µm, 100 / 140 µm (62.5 / 125µm is recommended)
Transmission Distance (m)	2 km max (in 62.5 / 125 µm fiber cable) at any CAN baud rate
LED	
Round LED	PWR LED, CAN_Tx LED, CAN_Rx LED, CAN_Err LED, FB_Err LED
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	3 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3mm x 77.5mm x 99.0mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



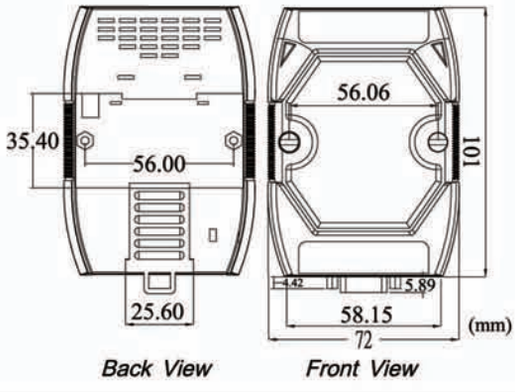
Ordering Information

I-2533 CR	CAN to fiber bridge (RoHS)

CAN bus Converter

Intelligent USB to CAN Converter

I-7565



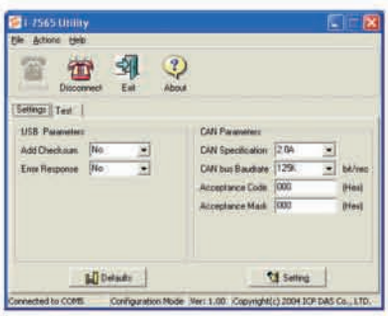
Dimensions

The I-7565 is a cost-effective device for integrating the CAN bus to the PC by using the standard USB interface. Nowadays the interface is present in every new PC and is supported by the Windows 98, Me, 2000, XP and Linux operating systems. If you establish the connection between the I-7565 and the PC during the runtime of the computer, the PC automatically loads the relevant device driver (plug & play). After installing the I-7565, the PC can access/control the CAN device by the utility tool or users' application, and be the CAN host, network monitor or CAN-interface HMI. This module let your PC communicate with CAN devices easily by using USB interface.

Features

- Microprocessor inside with 20MHz
- RoHS design
- Fully compliant with USB 1.1/2.0(Full Speed)
- Fully compatible with the ISO 11898-2 standard
- Powered by the USB bus
- 82C250 CAN transceiver
- Transmission speed up to 1M bps for CAN and 921.6 kbps for USB
- Support both CAN 2.0A and CAN 2.0B
- Built-in jumper to select 120 Ω terminal resister
- Power, data flow and error indicator for CAN and USB
- Watchdog inside
- Support Windows 98/ME/2000/XP, and Linux OS

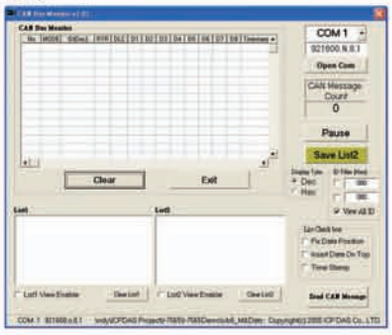
Utility Features



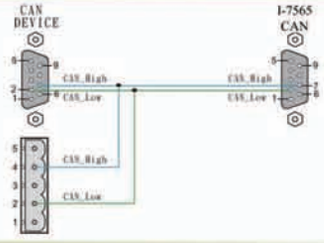
- CAN bus Baud rate configuration
- CAN acceptance filter configuration
- CAN 2.0A or 2.0B specific selection
- Error code response selection
- Utility tool to transmitting / receiving CAN messages

CAN Monitor & Data log Tools

- Show CAN messages by hex or decimal format
- CAN messages with timestamp
- Easy-to-use data logger for the diagnosis of the CAN networks and recording of the received data
- Send the predefined CAN messages manually or cyclically



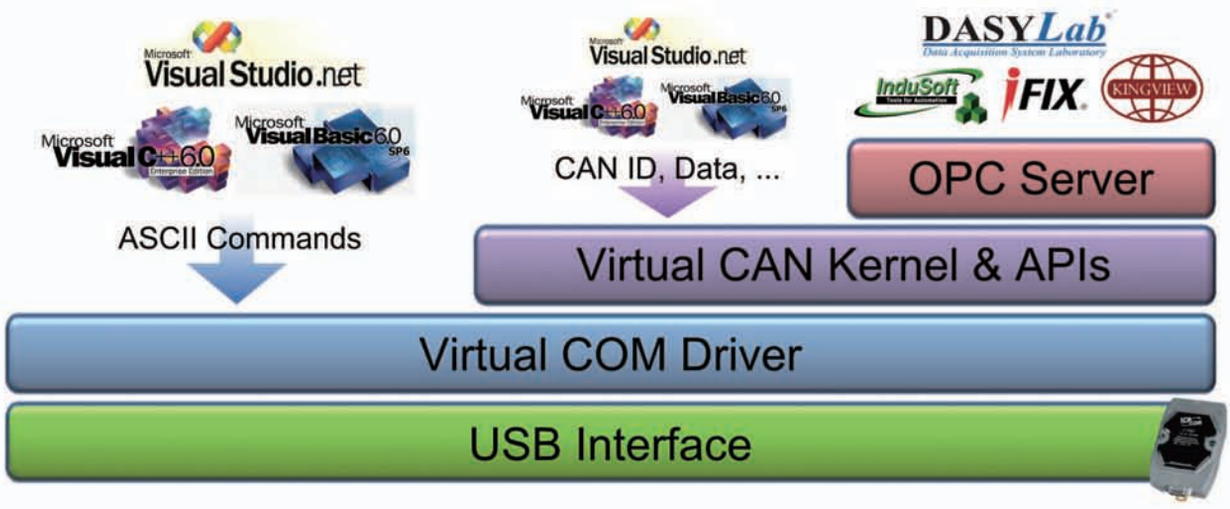
Wire Assignments



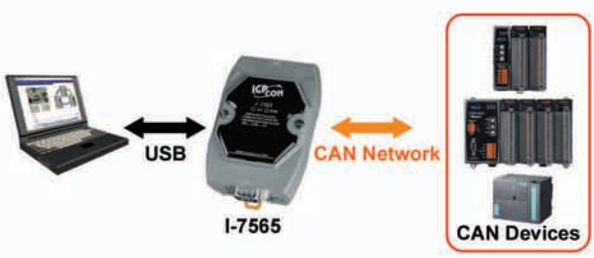
Hardware Specifications

CAN Interface	
Controller	Microprocessor inside with 20 MHz
Port Channels	1
Transceiver	Philips 82C250
Connector	9-pin male D-Sub (CAN_L, CAN_SHLD, CAN_H, N/A for others)
Baud Rate	10 k, 20 k, 50 k, 100 k, 125 k, 250 k, 500 k, 800 k and 1 Mbps
Isolation	3000 Vrms on the CAN side
Terminator Resistor	Selectable 120 Ω terminator resistor by jumper
Support Protocol	CAN 2.0A/2.0B
Receive Buffer	1000 data frames
Max Data Flow	250 fps
UART Interface	
Connector	USB Type B
Baud Rate	921.6 kbps fixed
Compatibility	USB 1.1 and 2.0 standard
Receive Buffer	900 data frames
Power	
Power Consumption	1.5W
LED	
Round LED	ON LED: Power and Data Flow; ERR LED: Error
Mechanism	
Installation	DIN-Rail
Dimensions	72mm x 112mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

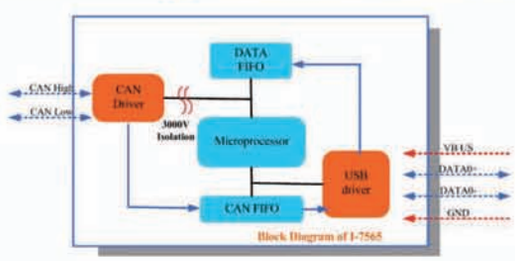
Software Architecture



Application



Block Diagram



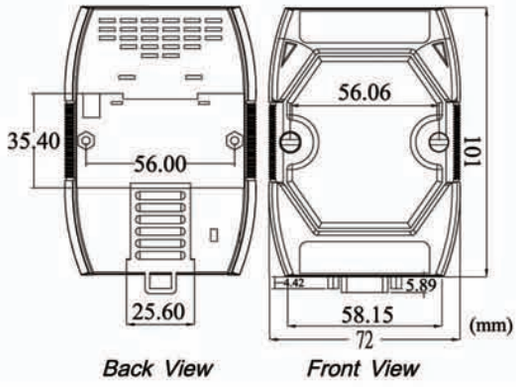
Ordering Information

I-7565-G CR	Intelligent USB to CAN converter (RoHS)

CAN bus Converter

High Performance USB to 1-port CAN bus Converter

I-7565-H1



Dimensions

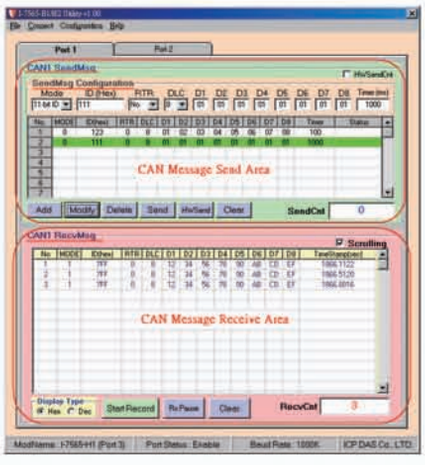
I-7565-H1 is a high performance intelligent USB to CAN converter. It provides faster CAN bus communication performance than I-7565. I-7565-H1 supports CAN2.0A/2.0B protocol and different baud rates from 5 Kbps to 1 Mbps. The important feature of I-7565-H1 is to support the user-defined baud rate function no matter what the baud rate is. When connecting I-7565-H1 to PC, PC will load the relevant device driver automatically (hot plug & play). Therefore, users can make data collection and processing of CAN bus network easier and quicker by applying I-7565-H1.

Features

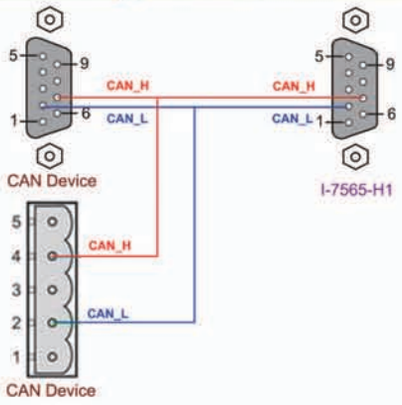
- RoHS design
- Fully compliant with USB 1.1/2.0(Full Speed)
- Fully compatible with the ISO 11898-2 standard
- Support both CAN 2.0A and CAN 2.0B
- Powered by USB bus
- Programmable CAN bus baud rate from 5Kbps to 1Mbps or user-defined baud rate
- Support CAN bus acceptance filter configuration
- Time-stamp of CAN message with ±1ms precision
- Support firmware update via USB
- Provide API library for user program development
- Built-in jumper to select 120 ohm terminal resister
- PWR / RUN / ERR indicator for CAN and USB
- Watchdog inside
- Support Windows 2000/XP, Win7(32 & 64 bit), Linux and WinCE (available soon)

Utility Features

- Provide CAN bus user-defined baud rate / acceptance filter configuration
- Easily transmit/ receive CAN messages for testing and display time-stamp of each received CAN message
- Provide saving the CAN message as “TXT” file for data log
- Provide sending CAN message by using the internal timer of module for high precision transmission
- Check / Reset module status remotely and get current CAN bus message flow



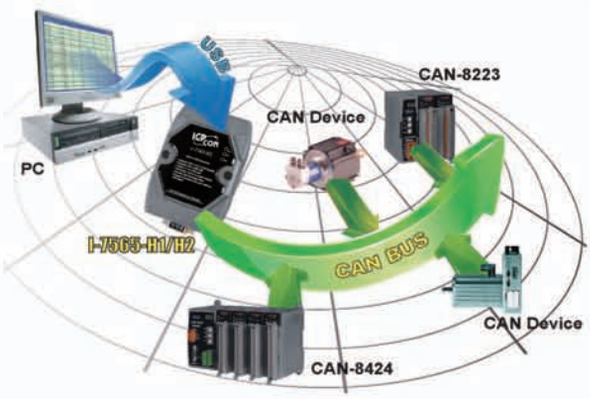
Wire Assignments



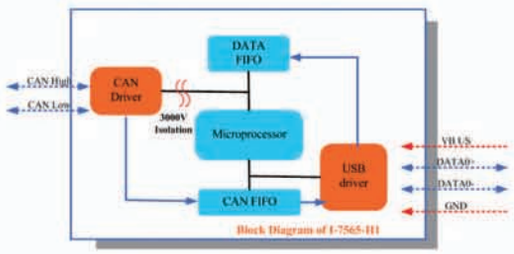
Hardware Specifications

Hardware	
CAN Port Channels	1
CAN Interface	
Controller	Microprocessor inside with 72MHz
Transceiver	NXP 82C250
Connector	9-pin D-sub connector
Baud Rate (bps)	5K ~ 1Mbps or User-defined baud rate
Transmission Distance (m)	Depends on baud rate (for example, max. 1000 m at 50 kbps)
Isolation	3000V_{DC} for DC-to-DC, 2500Vrms for photo-couple
Terminator Resistor	Selectable 120Ω terminator resistor by jumper
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Pin Assignment	C.I.A. DS-102 (CAN_H=7, CAN_L=2)
Receive Buffer	256 data frames
Max Data Flow	3000 fps
USB Interface	
Connector	USB Type B
Transmission speed	12M bps
Specification	USB 1.1 and USB 2.0 standard
Receive Buffer	100 data frames
LED	
Round LED	PWR / RUN /ERR LED
Software	
Driver	Windows 2000/XP, Win7(32 & 64 bit), Linux and WinCE (available soon)
Power	
Power supply	By USB interface
Power Consumption	1.5 W
Dip Switch	Init (Firmware Update) / Normal (Firmware Operation)
Mechanism	
Installation	DIN-Rail
Dimensions	108mm x 72mm x 35mm (H x W x D)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-40 ~ 80 °C
Humidity	5 ~ 95% RH, non-condensing

Application



Block Diagram



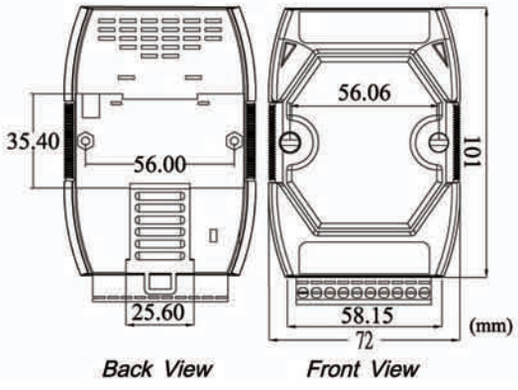
Ordering Information

I-7565-H1 CR	High Performance Intelligent USB to 1-port CAN bus converter (RoHS)

CAN bus Converter

High Performance USB to 2-port CAN bus Converter

I-7565-H2



Dimensions

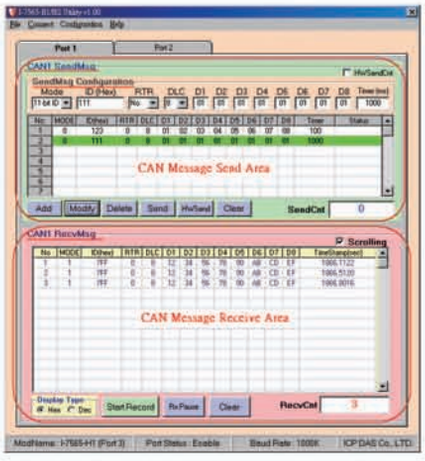
I-7565-H2 is a high performance intelligent USB to CAN converter and provides two CAN channels. It provides faster CAN bus communication performance than I-7565. I-7565-H2 supports CAN2.0A/2.0B protocol and different baud rates from 5 Kbps to 1 Mbps. The important feature of I-7565-H2 is to support the user-defined baud rate function no matter what the baud rate is. When connecting I-7565-H2 to PC, PC will load the relevant device driver automatically (hot plug & play). Therefore, users can make data collection and processing of CAN bus network easier and quicker by applying I-7565-H2.

Features

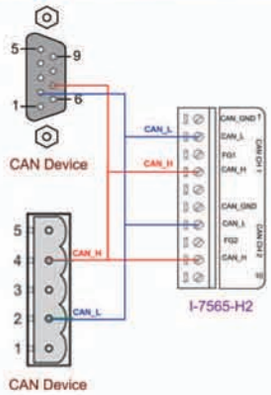
- RoHS design
- Fully compliant with USB 1.1/2.0(Full Speed)
- Fully compatible with the ISO 11898-2 standard
- Support both CAN 2.0A and CAN 2.0B
- Powered by the USB bus
- Integrated with two CAN bus channels
- Programmable CAN bus baud rate from 5Kbps to 1Mbps or user-defined baud rate
- Support CAN bus acceptance filter configuration
- Time-stamp of CAN message with ±1ms precision
- Support firmware update via USB
- Provide API library for user program development
- Built-in jumper to select 120 ohm terminal resister
- PWR / RUN / ERR indicator for CAN and USB
- Watchdog inside
- Windows 2000/XP, Win7(32 & 64 bit), Linux and WinCE (available soon)

Utility Features

- Provide CAN bus user-defined baud rate / acceptance filter configuration
- Easily transmit/ receive CAN messages for testing and display time-stamp of each received CAN message
- Provide saving the CAN message as "TXT" file for data log
- Provide sending CAN message by using the internal timer of module for high precision transmission
- Check / Reset module status remotely and get current CAN bus message flow



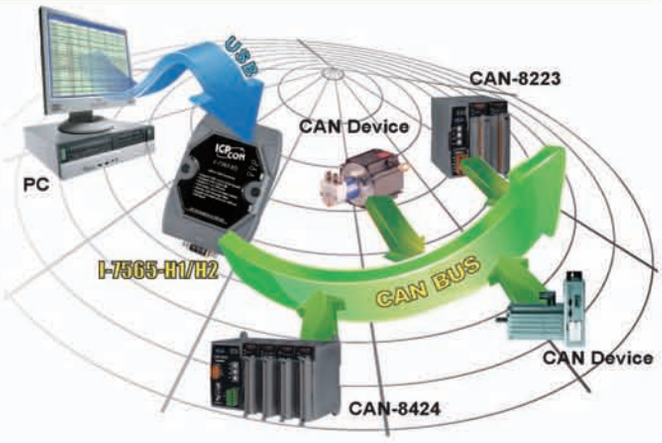
Wire Assignments



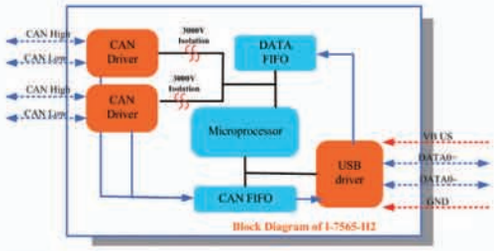
Hardware Specifications

Hardware	
CAN Port Channels	2
CAN Interface	
Controller	Microprocessor inside with 72MHz
Transceiver	NXP 82C250
Connector	10-pin terminal-block connector
Baud Rate (bps)	5K ~ 1Mbps or User-defined baud rate
Transmission Distance (m)	Depends on baud rate (for example, max. 1000 m at 50 kbps)
Isolation	3000V_{DC} for DC-to-DC, 2500Vrms for photo-couple
Terminator Resistor	Selectable 120Ω terminator resistor by jumper
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Pin Assignment	(CAN1: CAN_H=4, CAN_L=2) / (CAN2: CAN_H=9, CAN_L=7)
Receive Buffer	128 data frames for each CAN port
Max Data Flow	3000 fps for total CAN ports
USB Interface	
Connector	USB Type B
Transmission speed	12M bps
Specification	USB 1.1 and USB 2.0 standard
Receive Buffer	100 data frames
LED	
Round LED	PWR / RUN /ERR LED
Software	
Driver	Windows 2000/XP, Win7(32 & 64 bit), Linux and WinCE (available soon)
Power	
Power supply	By USB interface
Power Consumption	1.5 W
Dip Switch	Init (Firmware Update) / Normal (Firmware Operation)
Mechanism	
Installation	DIN-Rail
Dimensions	108mm x 72mm x 35mm (H x W x D)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-40 ~ 80 °C
Humidity	5 ~ 95% RH, non-condensing

Application



Block Diagram



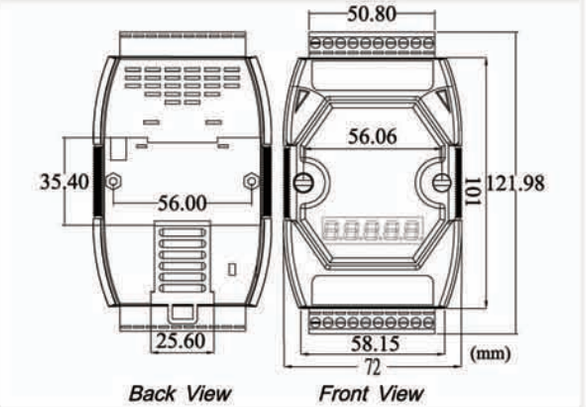
Ordering Information

I-7565-H2 CR	High Performance Intelligent USB to 2-port CAN bus converter (RoHS)

CAN bus uPAC

CAN bus series Programmable Automation Controller

I-7188XBD-CAN



Dimensions

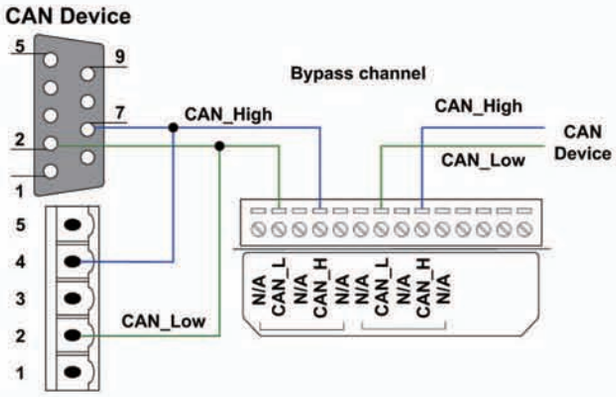
The I-7188XBD-CAN series PACs (Programmable Automation Controller) are powered by 80188-40 processor with 512 KB of static RAM, and 512 KB of Flash memory. All of them provide several communication interfaces to adapt to various applications, such as CAN port, RS-232 port and RS-485 port. Uses can program their application program flexibly with C/C++ language because of the built-in MiniOS7 operation system. Besides, the I-7188XBD-CAN series PACs have different I/O types for users to match their requirement.

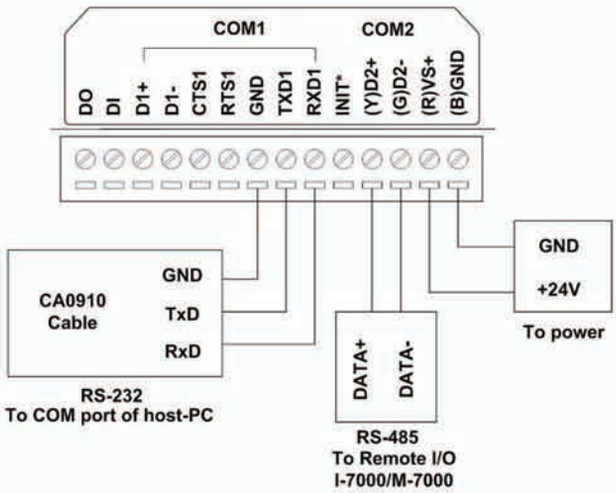
Features

- 2500 Vrms photo-isolation protection. on CAN bus
- Compatible with CAN specification 2.0 parts A and B
- Programmable transfer rate up to 1 Mbps
- Jumper for 120 Ω terminator resistor for CAN channel
- 64-bit hardware unique serial number inside
- COM driver support interrupt & 1KB QUEUE input buffer
- COM port: COM1, COM2
- Built-in RTC, NVRAM, EEPROM
- One digital Input channel and one open collector output channel
- Built-in self-tuner ASIC controller on RS-485 port
- 7-segment LED display
- Built-in ICP DAS's MiniOS7
- Support the CAN bus instead of the X-bus, so it can not be add-on any X-board

Application

Wiring and Pin Assignments





Hardware Specifications

Hardware	
CPU	80186, 40 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 2 KB
NVRAM	31 bytes (battery backup, data valid for up to 10 years)
RTC (Real Time Clock)	Yes
Watchdog	CPU built-in
Hardware Serial No.	64-bit hardware serial No.
ESD Protection	4 kV class A
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Channel number	1
Connector	5-pin screwed terminal block (CAN_L, CAN_H, N/A for others)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
UART Interface	
COM 1	RS-485/RS-232 (can't be used simultaneously)
COM 1 Connector	2-pin screwed terminal block (DATA+, DATA-) 5-pin screwed terminal block (TxD, RxD, RTS, CTS, GND)
COM 2	RS-485 (Self-turner inside)
COM 2 Connector	2-pin screwed terminal block (DATA+, DATA-)
Transmission Distance (m)	Depend on baud rate (for example, max. 1200 m at 9.6 kbps)
Baud Rate (bps)	110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
LED	
Round LED	L1 LED, L2 LED, L3 LED
5-digit 7 Segment	Yes
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	3 W
Mechanism	
Installation	DIN-Rail
Dimensions	72mm x 122mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

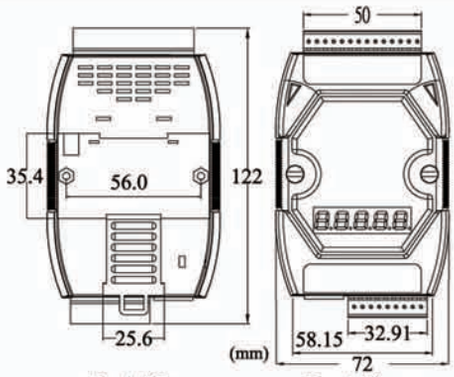
Ordering Information

I-7188XBD-CAN	Programmable automation controller with two series communication port (RS-232/RS-485), one CAN port, seven segment Display, developing tool kit 512 KB flash ,512 KB SRAM, Minios7, 1 DI and 1 DO channels
I-7188XBD-CAN CR	Programmable automation controller with two series communication port (RS-232/RS-485), one CAN port, seven segment Display, developing tool kit 512 KB flash ,512 KB SRAM, Minios7, 1 DI and 1 DO channels (RoHS)

CAN bus uPAC

CAN bus series Programmable Automation Controller

µPAC-7186EXD-CAN



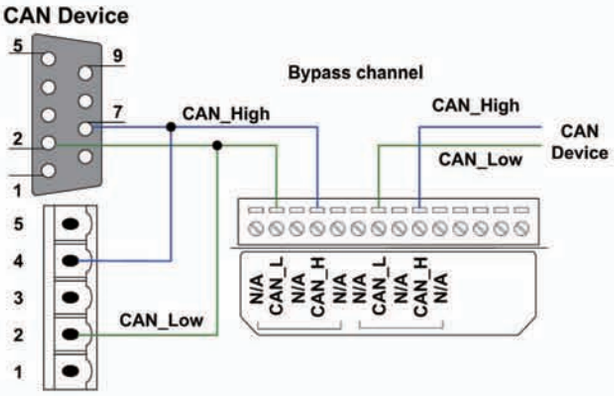
Dimensions

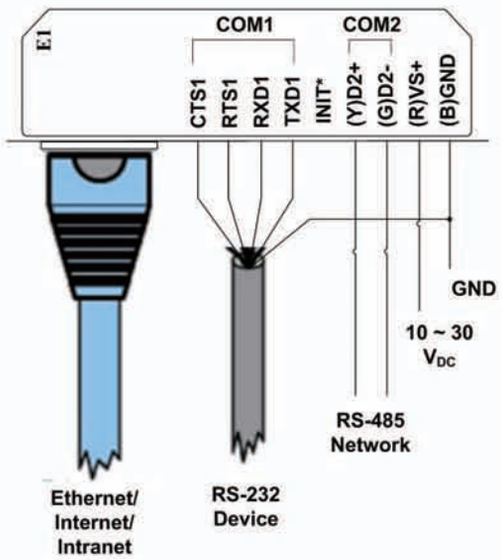
The µPAC-7186EXD-CAN PACs (programmable Automation controller) are powered by 80186-80 processor with 512 KB of static RAM, and 512 KB of Flash memory. All of them provide several communication interfaces to adapt to various applications, such as CAN port, RS-232 port, RS-485 port and Ethernet interface. Uses can program their application program flexibly with C/C++ language because of the built-in MiniOS7 operation system. It is useful for transfer the command from differential communication interface. Therefore, the µPAC-7186EXD-CAN series PACs are economic and convenient solution for diversification CAN application.

Features

- High reliability in harsh environment
- Embedded MiniOS7, anti-virus
- Supports a variety of TCP/IP features, including TCP, UDP, IP, ICMP, ARP
- 10/100BASE-T Ethernet controller
- Remote Configuration
- Support for Virtual COM configuration
- 1000 V_{DC} voltage protection on CAN side
- Compatible with CAN specification 2.0 parts A and B
- Programmable transfer rate up to 1 Mbps
- Jumper for 120 Ω terminator resistor for CAN channel
- 64-bit hardware unique serial number inside
- COM driver support interrupt & 1 KB QUEUE Input & Output buffer
- COM port: COM1, COM2
- Built-in RTC, NVRAM, EEPROM
- Built-in self-tuner ASIC controller on RS-485 port
- 7-segment LED display
- Program download port: COM1 or Ethernet Port (Available soon)
- Free easy-to-use software development toolkits
- Support the CAN bus instead of the X-bus, so it can not be add-on any X-board

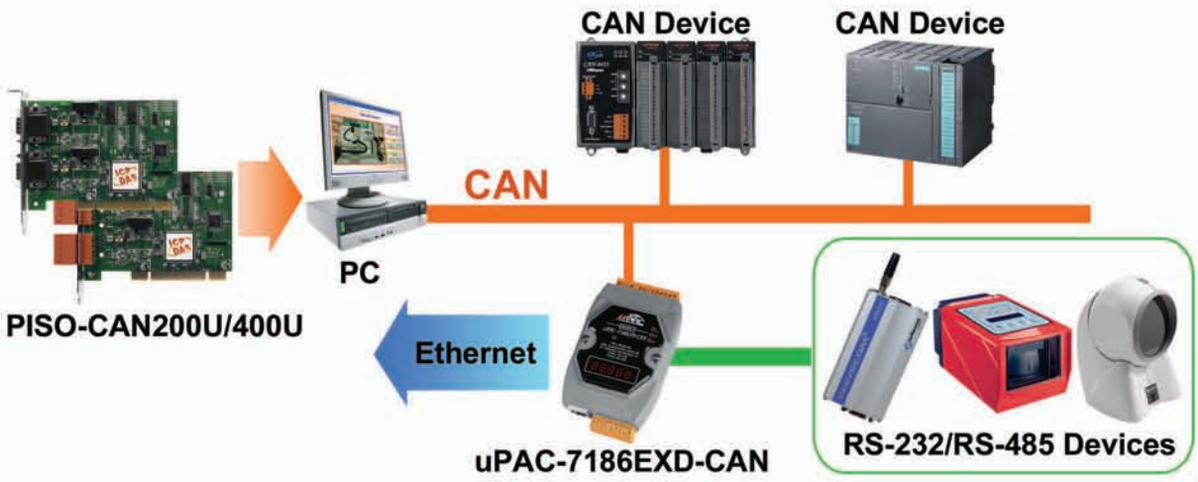
Wiring and Pin Assignments





Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
NVRAM	31 bytes (battery backup, data valid for up to 10 years)
RTC (Real Time Clock)	Yes
ESD Protection	4 kV class A
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Channel number	1
Connector	5-pin screwed terminal block (CAN_L, CAN_H, N/A for others)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
UART Interface	
COM 1	RS-232
COM 1 Connector	5-pin screwed terminal block (TxD, RxD, RTS, CTS, GND)
COM 2	RS-485 (Self-turner inside)
COM 2 Connector	2-pin screwed terminal block (DATA+, DATA-)
Baud Rate (bps)	110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Ethernet Interface	
Controller	10/100Base-TX Ethernet Controller (Auto-negotiating, Auto_MDIX)
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	3 W
Mechanism	
Dimensions	72mm x 122mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing



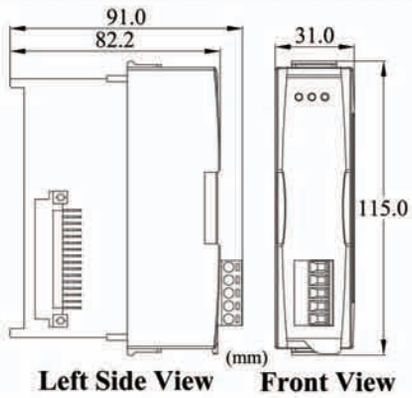
Ordering Information

µPAC-7186EXD-CAN	Programmable automation controller with two series communication port (RS-232/RS-485), one CAN port, one Ethernet port, 7-segment Display, 4 programmable LEDs, 512KB flash ,512KB SRAM, developing tool kit, Minios7.
µPAC-7186EXD-CAN CR	Programmable automation controller with two series communication port (RS-232/RS-485), one CAN port, one Ethernet port, 7-segment Display, 4 programmable LEDs, 512KB flash ,512KB SRAM, developing tool kit, Minios7. (RoHS)

CAN Module

Programmable CAN Interface Module

I-87120



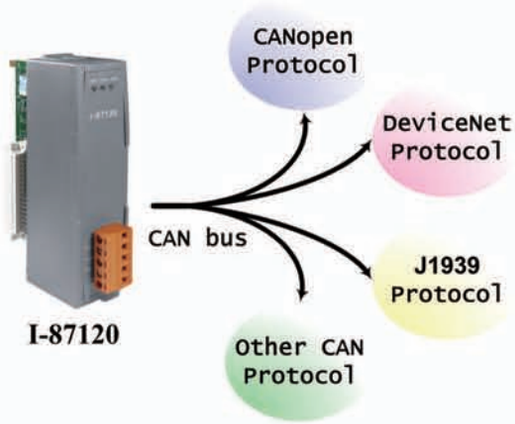
Dimensions

The I-87120 is a kind of CAN communication module, and need to be plugged into a MCU (main control unit), such as I-8000, IP-8000, ViewPAC, WinPAC-8000, LinPAC-8000 and XPAC-8000 series. I-87120 gives a way to connect these ICPDAS host unit with CAN network. We provide the libraries and several demos of these host devices with EVC++ and VB.Net. And we also provide the library and demos of the firmware for designed the user-defined I-87120. Owing to the features of MCUs, these hose units can be arranged to be a CAN converter, CAN slave device and CAN master device in a CAN network.

Features

- Microprocessor inside with 80186, 80 MHz
- 82C250 CAN transceiver
- SJA1000 CAN controller
- Support both CAN 2.0A and CAN 2.0B
- Built-in jumper to select 120 Ω terminal resister
- Max transmission speed up to 1 Mbps for CAN
- Max transmission distance over 1000m

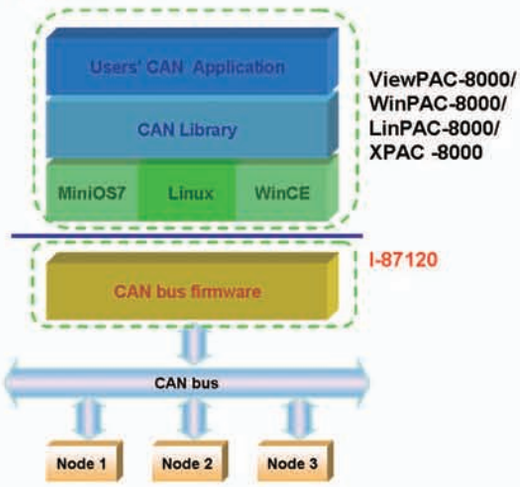
Firmware Features



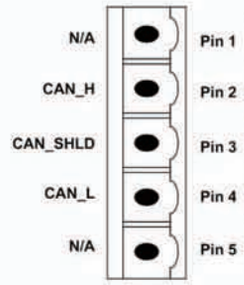
- Initialize function of user-defined
- Interrupt function of user-defined
- Loop function of user-defined
- ASCII command function of user-defined
- Binary code command function of user-defined
- Standard firmware inside

Host Library

- Provide C/C++ function libraries to send and receive CAN message
- Provide C++ demo for I-8000 series MCU
- Provide GCC, EVC++ / C#.Net / VB.Net demo for different series MCUs
- Support I-8000/IP-8000/ViewPAC/WinPAC/ LinPAC/XPAC



Pin Assignments

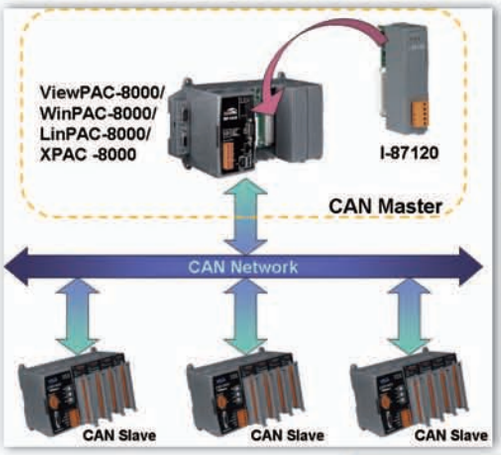


Pin No.	Description
1	No use
2	CAN high bus line
3	CAN Shield
4	CAN low bus line
5	No use

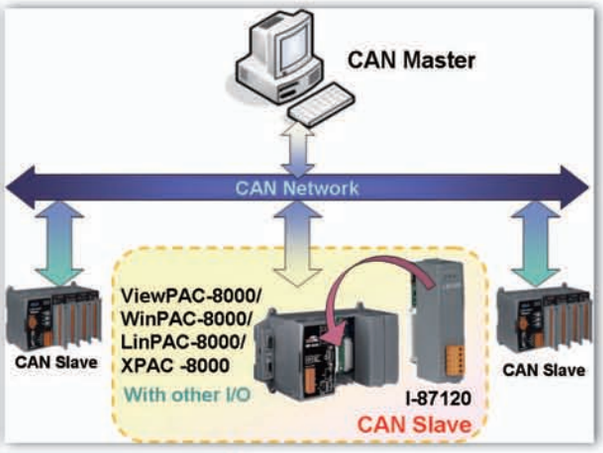
Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 2 KB
RTC (Real Time Clock)	Yes
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Channel number	1
Connector	5-pin screwed terminal block (CAN_L, CAN_SHLD, CAN_H, N/A for others)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
LED	
Round LED	Tx/Rx LED, ERR LED
Software	
Driver	For I-8000/IP-8000/ViewPAC/WinPAC/LinPAC/ XPAC
Library	TC/BC, GCC, VB.Net 2003, C#.Net 2003, VB.Net 2005, C#.Net 2005, eVC++ 4.0
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Power Consumption	2 W
Mechanism	
Dimensions	31mm x 91mm x 115mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

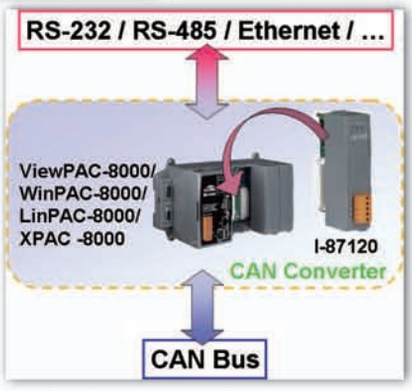
Application



I-87120 is as CAN master



I-87120 is as CAN slave



I-87120 is as CAN converter

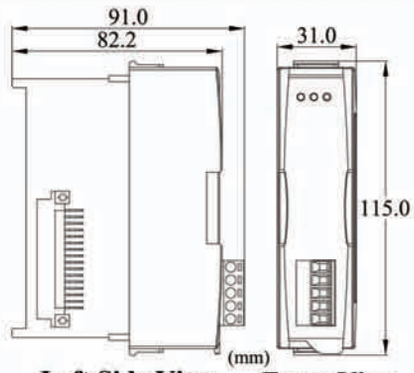
Ordering Information

I-87120	Module with one programmable CAN port, I-8000/IP-8000/ViewPAC/WinPAC/LinPAC/ XPAC library, 80186 80 MHz CPU, 512 KB Flash and SRAM, 120 Ω terminal resister selected by jumper.

CAN Module

1 Port Intelligent CAN bus communication Module

I-8120W



Dimensions

The I-8120W has one CAN communication port with 5-pin screw terminal connector. It uses the NXP SJA1000T and transceiver 82C250, which provide both CAN 2.0A and 2.0B specific, re-transmission function, bus arbitration and error detection. Combining the benefits of PACs of ICP DAS without increasing the CPU loading heavily, it could be a powerful multi CAN port programmable device server by driving the program in the 186 CPU of the I-8120W. It can also communicate with other kinds of communication interface, such as RS-232/RS-485/Ethernet ports to be a programmable multi-interface device server.

Hardware Features

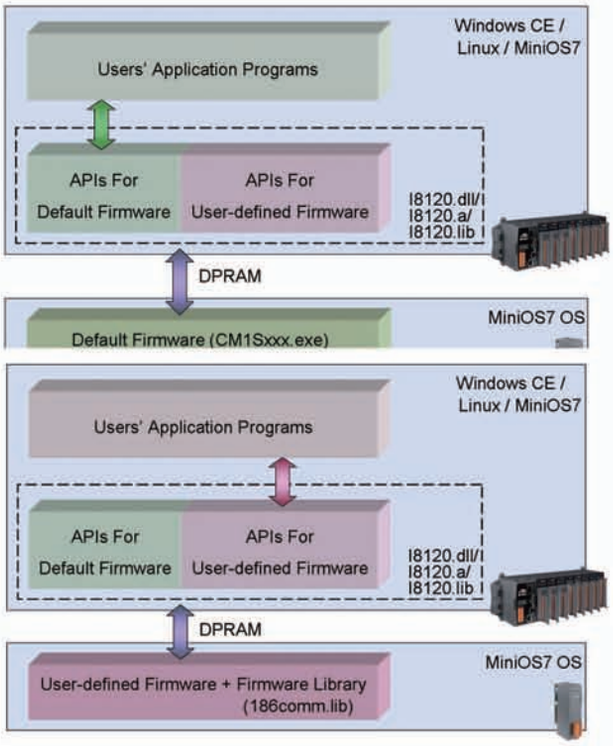
- 80186, 80MHz CPU inside
- SJA1000 CAN controller, 82C250 CAN transceiver
- Support CAN 2.0A and CAN 2.0B specification
- Built-in switch for120 Ω terminal resister
- Max CAN bus transmission speed up to 1M bps
- Max transmission distance over 1000m

Software Features

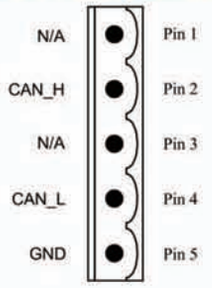
- Support hardware timestamp
- Dual port RAM communication mechanism
- 2048 CAN message reception buffer size
- Allow user-defined firmware
- Support user-defined baud rate
- Utility to update default firmware or download the user-defined firmware
- Utility tool for transmitting / receiving CAN messages
- Easy-to-use data logger for the diagnosis of CAN networks and for recording of the received data

Host Library

- Support WinPAC, ViewPAC and XPAC (LinPAC and iPAC will be available soon)
- Provide eVC++4.0, VC6, VC++ 2005, C#.net 2005, VB.net 2005 demos and library
- Provide C/C++ demos and library for designing the user-defined firmware



Pin Assignments

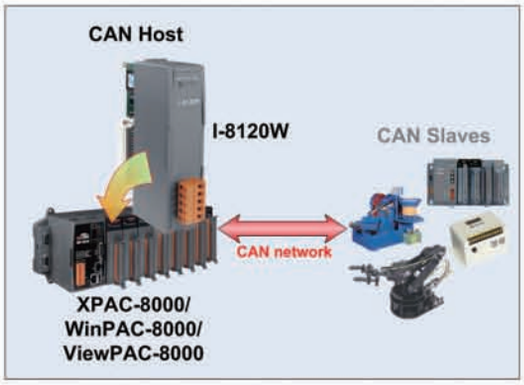


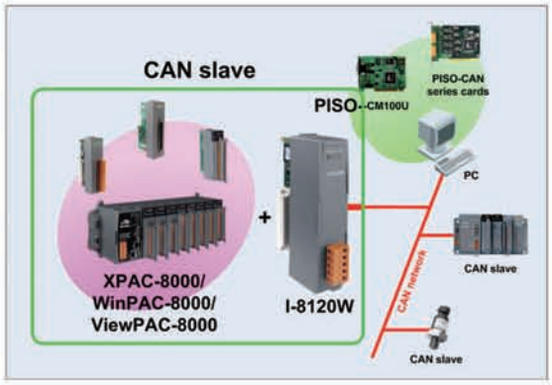
Pin No.	Description
1	No use
2	CAN high bus line
3	No use
4	CAN low bus line
5	CAN Ground

Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
DPRAM	8 KB
Watchdog	Watchdog IC
ESD Protection	2 kV class A and 3 kV class B
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_H, N/A for others)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Switch for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
LED	
Round LED	PWR LED, RUN LED, ERR LED
Software	
Driver	I-8120W (for designing user-defined firmware), WinPAC
Library	TC/BC/TC++/BC++, eVC++ 4.0, VC++ 2005, C#.net 2005, VB.net 2005
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	1.5 W
Mechanism	
Dimensions	31mm x 91mm x 115mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



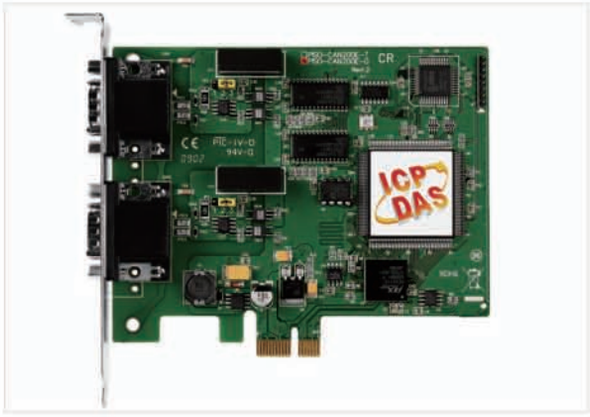


Ordering Information

I-8120W	Module with one programmable CAN port, firmware and application program libraries, 80186 80MHz CPU, 8 KB DPRAM, 512 KB flash, 512 KB SRAM, 120 Ω terminal resister selected by switch.

PCI Interface

PCI Express x1 CAN Communication Card



PEX-CAN200i-D

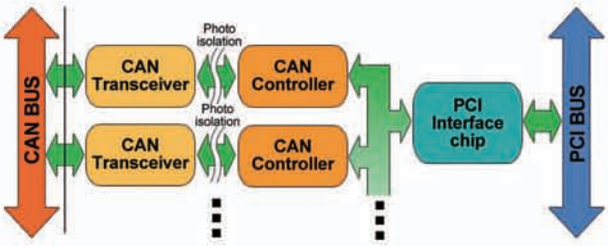
PEX-CAN200i-T

The PEX-CAN200i can represents an economic solution of an active CAN board with express PCI bus. It has 2 independent CAN bus communication ports with 5-pin screw terminal connector or 9-pin male D-sub connector, and has the ability to cover a wide range of CAN applications. Besides, PEX-CAN200i uses the new CAN controller Phillips SJA1000T and transceiver 82C250, which provide bus arbitration, error detection with auto correction and re-transmission function.

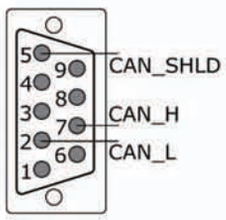
Features

- Compatible with CAN 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN bard from 10 kbps ~ 1 Mbps
- 2500 Vrms photo couple isolation on the CAN bus
- 33 MHz, 32 bit, X1 PCI Express bus
- Built-in jumper to select 120 Ω terminal resister
- 3 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB6.0, VC++6.0, Delphi, BCB6.0 demos
- LabView/DASYLab driver
- Driver support Windows 98/ME/NT/2K/XP

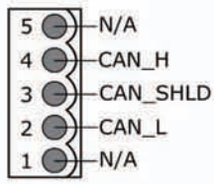
Hardware architecture



Pin Assignments

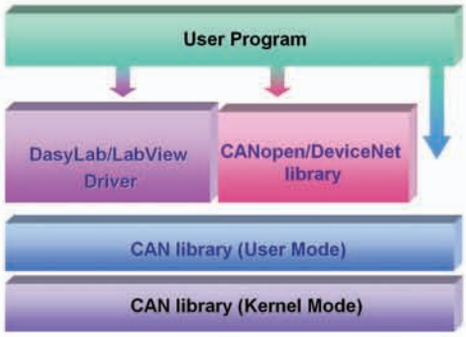


9-pin D-sub male connector

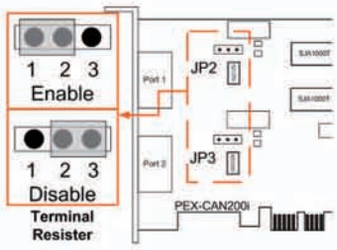


5-pin screw terminal connector

Software Layer



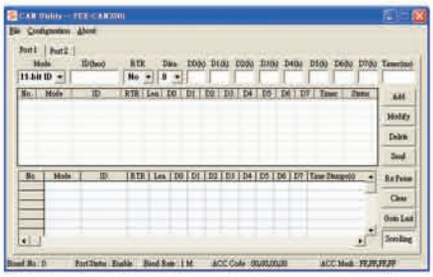
Terminal Resistor



Hardware Specifications

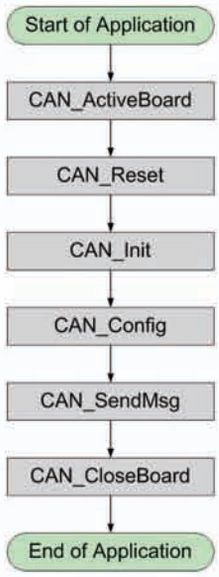
Model Name	PEX-CAN200i-D	PEX-CAN200i-T
Bus Interface		
Type	33 MHz, 32 bit, X1 PCI Express bus	
CAN Interface		
Controller	NXP SJA1000T with 16 MHz clock	
Transceiver	NXP 82C250	
Channel number	2	
Connector	9-pin male D-Sub	5-pin screwed terminal block
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)	
Terminator Resistor	Jumper for 120 Ω terminator resistor	
Power		
Power Consumption	100 mA @ 12 V, 100 mA @ 3.3 V	
Mechanism		
Dimensions	120mm x 22mm x 85mm (W x L x H)	
Environment		
Operating Temp.	0 ~ 60 °C	
Storage Temp.	-20 ~ 70 °C	
Humidity	5 ~ 85% RH, non-condensing	

Utility

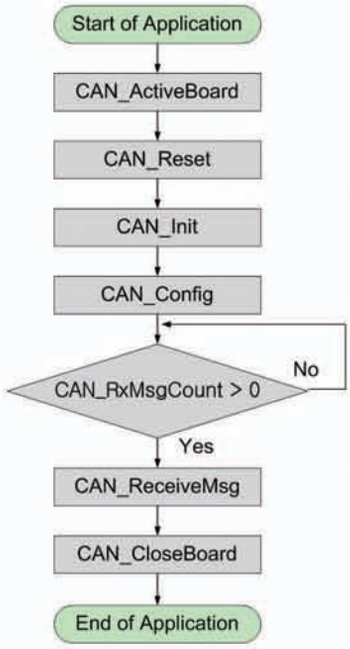


- Can be a CAN system monitor tool with CAN cards
- Can test CAN cards
- Send/Receive/Record CAN messages
- Provide cyclic transmission function
- Record the CAN messages with filter ID with time stamp

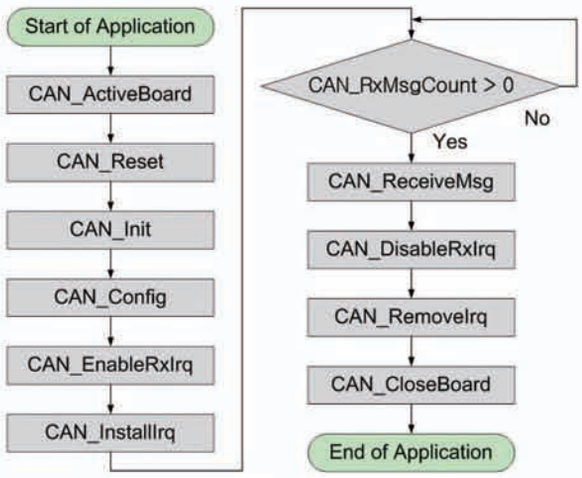
Flow Diagram for Applications



Flow Chart of
"Send CAN Messages"



Flow Chart of
"Receive CAN Messages"



Flow Chart of
"Receive CAN Message with IRQ"

Ordering Information

PEX-CAN200i-D CR	2-Port Isolated Protection CAN Communication Board with 9-pin D-sub connector (RoHS)
PEX-CAN200i-T CR	2-Port Isolated Protection CAN Communication Board with 5-pin Screw Terminal Connector (RoHS)

PCI Interface

Universal PCI CAN Communication Card

PISO-CAN200U-D

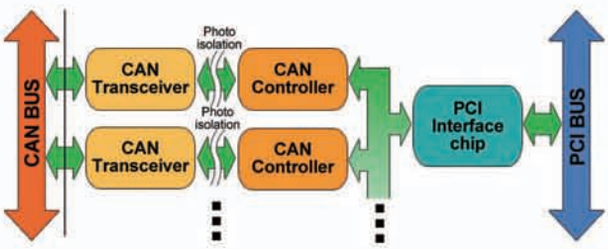
PISO-CAN200U-T

The PISO-CAN200U can represent an economic solution of an active CAN board with universal PCI bus. It has 2 independent CAN bus communication ports with 5-pin screw terminal connector or 9-pin male D-sub connector, and has the ability to cover a wide range of CAN applications. Besides, PISO-CAN200U uses the new CAN controller Phillips SJA1000T and transceiver 82C250, which provide bus arbitration, error detection with auto correction and re-transmission function. It can be installed in both 3.3 V and 5 V PCI slot and supported truly "Plug & play".

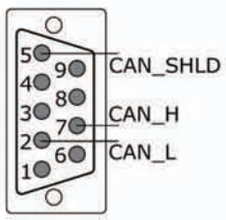
Features

- Compatible with CAN 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN bard from 10 kbps ~ 1 Mbps
- 2500 Vrms photo couple isolation on the CAN bus
- Universal PCI supports both 5 V and 3.3 V PCI bus
- Built-in jumper to select 120 Ω terminal resister
- 3 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB6.0, VC++6.0, Delphi, BCB6.0 demos
- LabView/DASYLab driver
- Driver support Windows 98/ME/NT/2K/XP

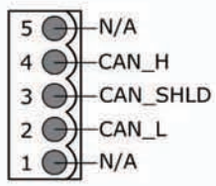
Hardware architecture



Pin Assignments

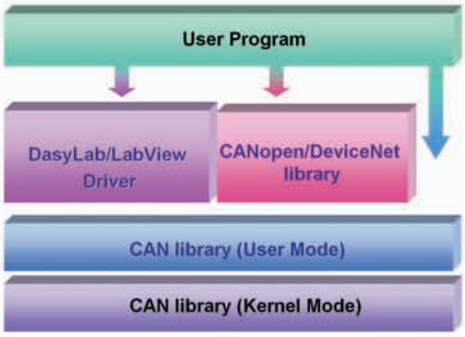


9-pin D-sub male connector

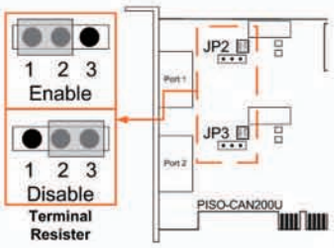


5-pin screw terminal connector

Software Layer



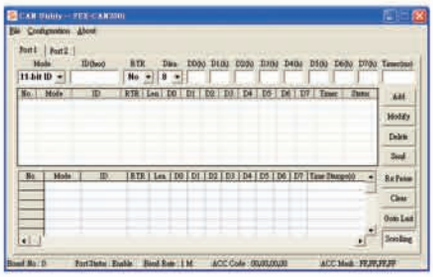
Terminal Resistor



Hardware Specifications

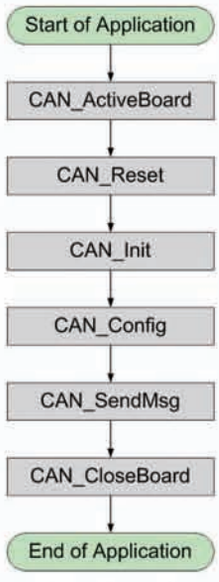
Model Name	PISO-CAN200U-D	PISO-CAN200U-T
Bus Interface		
Type	Universal PCI, 3.3 V and 5 V, 33 MHz, 32-bit, plug and play	
CAN Interface		
Controller	NXP SJA1000T with 16 MHz clock	
Transceiver	NXP 82C250	
Channel number	2	
Connector	9-pin male D-Sub	5-pin screwed terminal block
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)	
Terminator Resistor	Jumper for 120 Ω terminator resistor	
Power		
Power Consumption	250 mA @ 5 V	
Mechanism		
Dimensions	126mm x 22mm x 85mm (W x L x H)	
Environment		
Operating Temp.	0 ~ 60 °C	
Storage Temp.	-20 ~ 70 °C	
Humidity	5 ~ 85% RH, non-condensing	

Utility

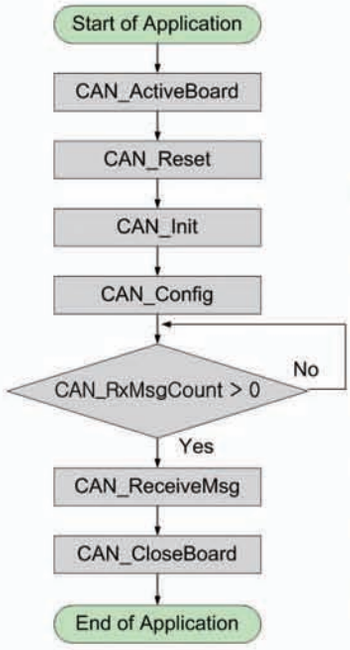


- Can be a CAN system monitor tool with CAN cards
- Can test CAN cards
- Send/Receive/Record CAN messages
- Provide cyclic transmission function
- Record the CAN messages with filter ID with time stamp

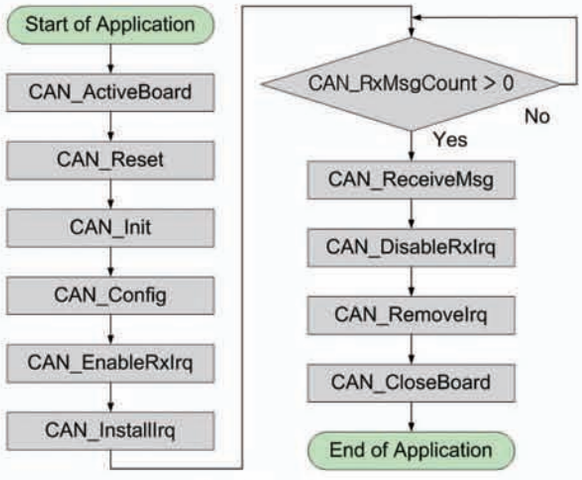
Flow Diagram for Applications



Flow Chart of
"Send CAN Messages"



Flow Chart of
"Receive CAN Messages"



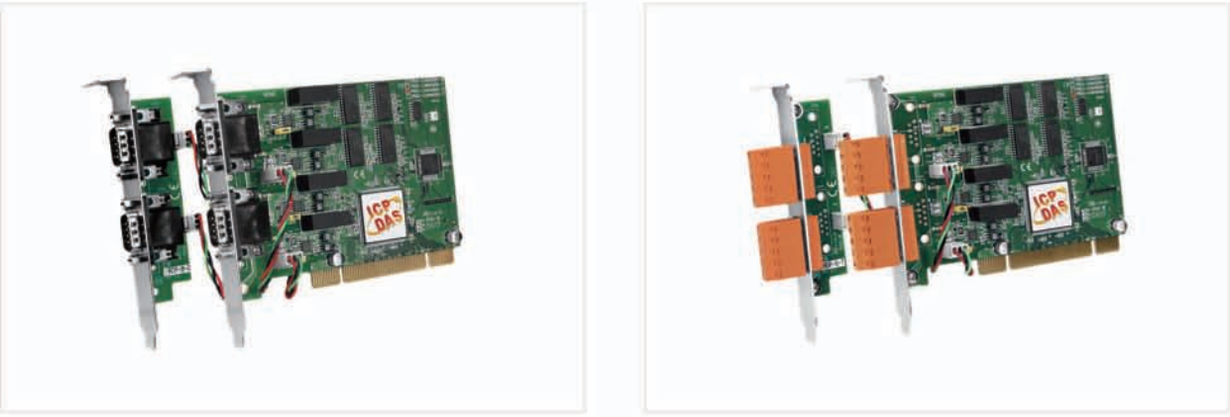
Flow Chart of
"Receive CAN Message with IRQ"

Ordering Information

PISO-CAN200U-D CR	2-Port Isolated Protection CAN Communication Board with 9-pin D-sub connector (RoHS)
PISO-CAN200U-T CR	2-Port Isolated Protection CAN Communication Board with 5-pin Screw Terminal Connector (RoHS)

PCI Interface

PCI CAN Communication Card



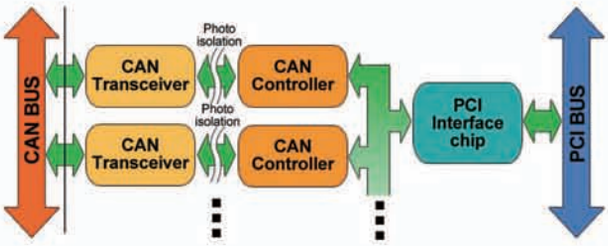
PISO-CAN400U-D *PISO-CAN400U-T*

The PISO-CAN400U can represents an economic solution of an active CAN board. It has four independent CAN bus communication ports with 5-pin screw terminal connector or 9-pin D-sub connector, and has the ability to cover a wide range of CAN applications. Besides, PISO-CAN400U uses the new CAN controller Phillips SJA1000T and transceiver 82C250, which provide bus arbitration, error detection with auto correction and re-transmission function. It can be installed in both 3.3 V and 5 V PCI slot and supported truly "Plug & play".

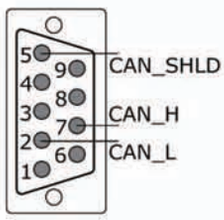
Features

- Compatible with CAN 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN bard from 10 kbps ~ 1 Mbps
- 2500 Vrms photo couple isolation on the CAN bus
- Universal PCI supports both 5 V and 3.3 V PCI bus
- Built-in jumper to select 120 Ω terminal resister
- 3 kV galvanic isolation
- 4 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB6.0, VC++6.0, Delphi, BCB6.0 demos
- LabView/DASYLab driver
- Driver support Windows 98/ME/NT/2K/XP

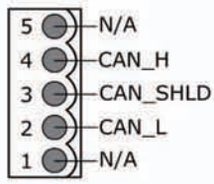
Hardware architecture



Pin Assignments

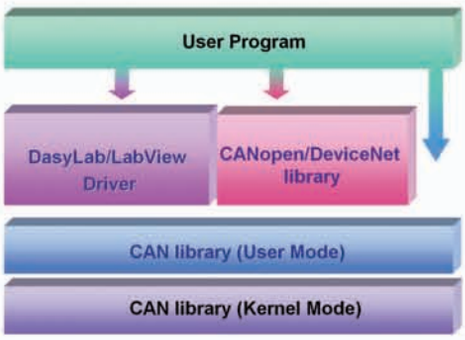


9-pin D-sub male connector

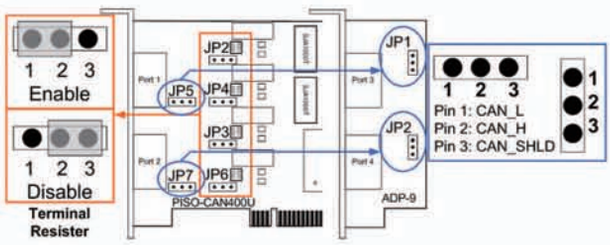


5-pin screw terminal connector

Software Layer



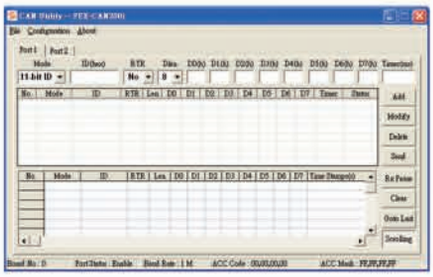
Terminal Resistor



Hardware Specifications

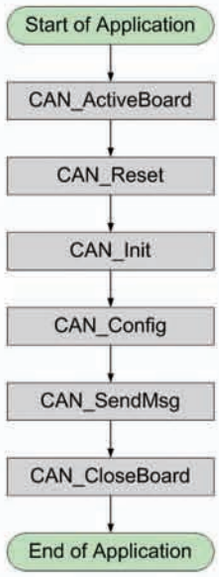
Model Name	PISO-CAN400U-D	PISO-CAN400U-T
Bus Interface		
Type	Universal PCI, 3.3 V and 5 V, 33 MHz, 32-bit, plug and play	
CAN Interface		
Controller	NXP SJA1000T with 16 MHz clock	
Transceiver	NXP 82C250	
Channel number	4	
Connector	9-pin male D-Sub	5-pin screwed terminal block
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)	
Terminator Resistor	Jumper for 120 Ω terminator resistor	
Power		
Power Consumption	300 mA @ 5 V	
Mechanism		
Dimensions	126mm x 22mm x 85mm (W x L x H)	
Environment		
Operating Temp.	0 ~ 60 °C	
Storage Temp.	-20 ~ 70 °C	
Humidity	5 ~ 85% RH, non-condensing	

Utility

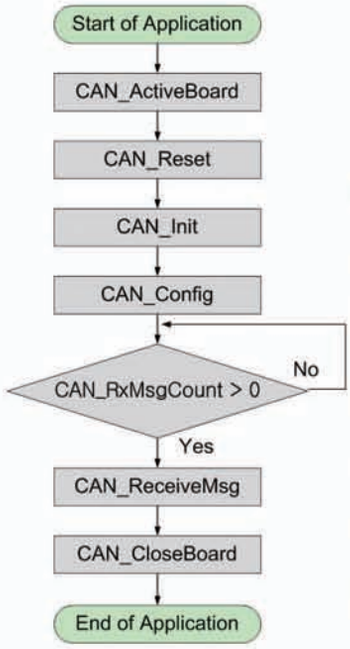


- Can be a CAN system monitor tool with CAN cards
- Can test CAN cards
- Send/Receive/Record CAN messages
- Provide cyclic transmission function
- Record the CAN messages with filter ID with time stamp

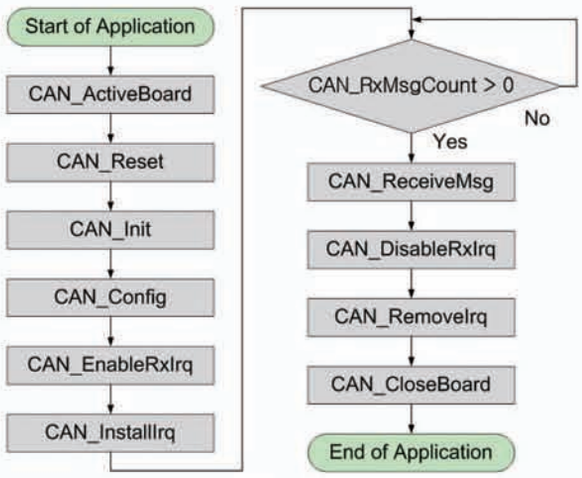
Flow Diagram for Applications



Flow Chart of
"Send CAN Messages"



Flow Chart of
"Receive CAN Messages"



Flow Chart of
"Receive CAN Message with IRQ"

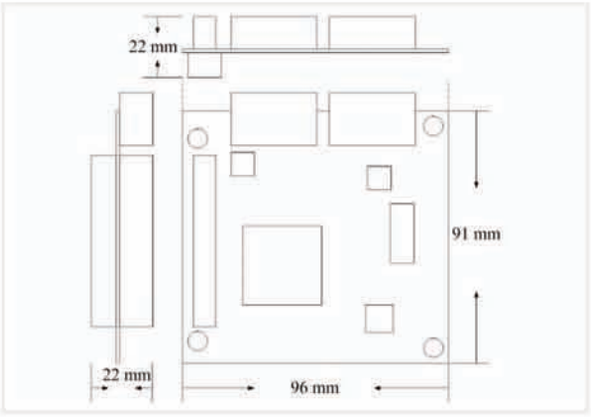
Ordering Information

PISO-CAN400U-D	4-Port Isolated Protection CAN Communication Board with 9-pin D-sub connector (RoHS)
PISO-CAN400U-T	4-Port Isolated Protection CAN Communication Board with 5-pin Screw Terminal Connector (RoHS)

CAN Module

PCI104 CAN Communication Module

PCM-CAN100



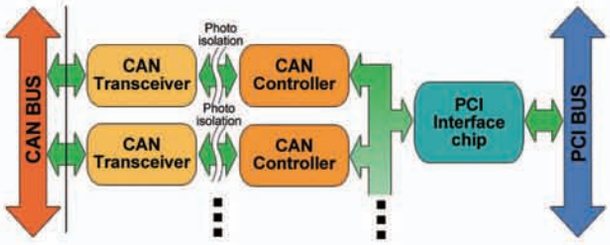
Dimensions

The PCM-CAN100 can represent a CAN solution on a high quality PCI104 hardware in industrial environment compliant with CAN 2.0A and CAN 2.0B specification. It has 1 independent CAN bus communication ports with 9-pin D-sub male connector and 1 bypass CAN port with 9-pin D-sub female connector, and has the ability to cover a wide range of CAN applications. Besides, PCM-CAN100 uses the CAN controller Phillips SJA1000T and transceiver 82C250, which provide bus arbitration, error detection with auto correction and re-transmission function. It can be installed in both 3.3 V and 5 V PCI slot and supported truly "Plug & play".

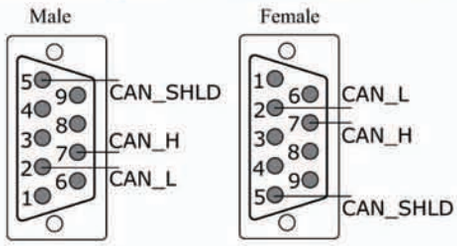
Features

- PCI104 compliant
- 9-pin male D-sub male and female connector
- Compatible with CAN 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN bard from 10 kbps ~ 1 Mbps
- 2500 Vrms photo couple isolation on the CAN bus
- Built-in jumper to select 120 Ω terminal resister
- 3 kV galvanic isolation
- 1 independent and 1 bypass CAN channels
- Direct memory mapping to the CAN controller
- Provide VB6.0, VC++6.0, Delphi, BCB6.0 demos
- Driver support Windows 98/ME/NT/2K/XP/ WinCE

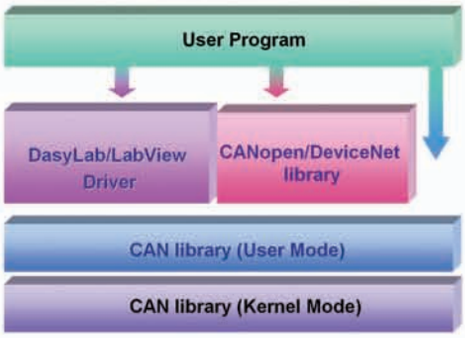
Hardware architecture



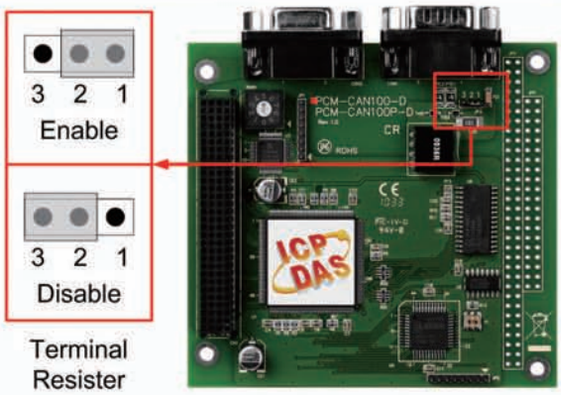
Pin Assignments



Software Layer



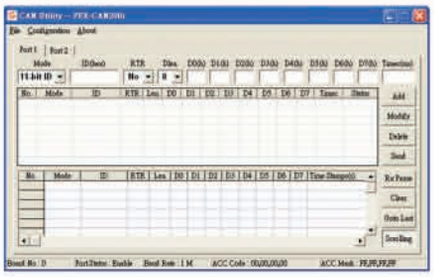
Terminal Resistor



Hardware Specifications

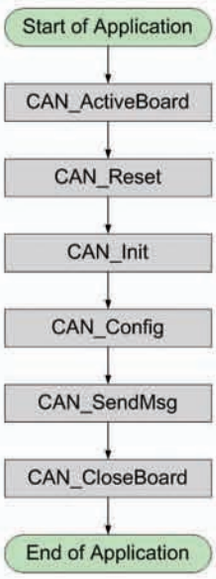
Bus Interface	
Type	PCI-104
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Channel number	1 independent and 1 bypass
Connector	9-pin male and female D-Sub (CAN_L, CAN_SHLD, CAN_H, N/A for others)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)
Terminator Resistor	Jumper for 120 Ω terminator resistor
Power	
Power Consumption	250 mA @ 5 V
Mechanism	
Dimensions	91mm x 96mm x 22mm (W x L x H)
Environment	
Operating Temp.	0 ~ 60 °C
Storage Temp.	-20 ~ 70 °C
Humidity	5 ~ 85% RH, non-condensing

Utility

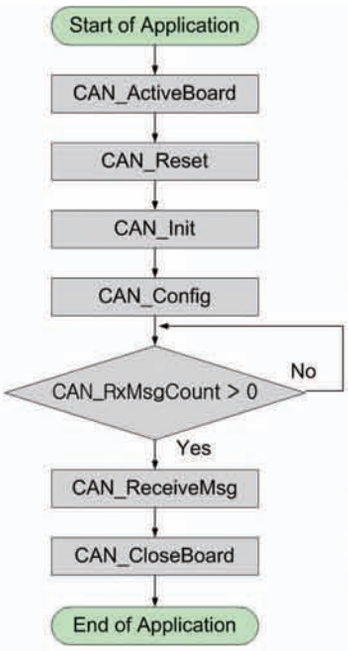


- Can be a CAN system monitor tool with CAN cards
- It is a good tool to test CAN system
- Send/Receive/Record CAN messages
- Provide cyclic transmission function
- Record the CAN messages with filtered ID and time stamp

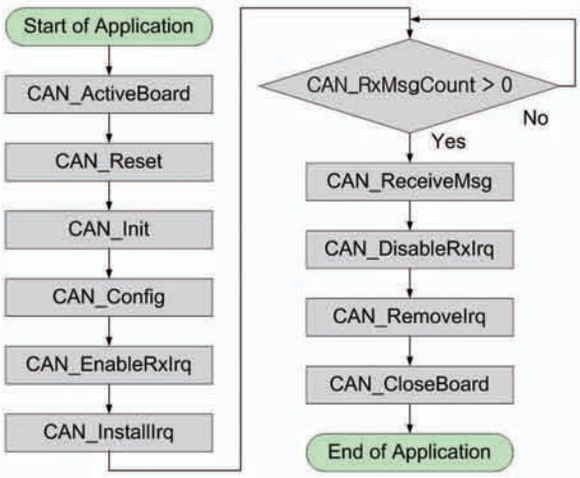
Flow Diagram for Applications



Flow Chart of "Send CAN Messages"



Flow Chart of "Receive CAN Messages"



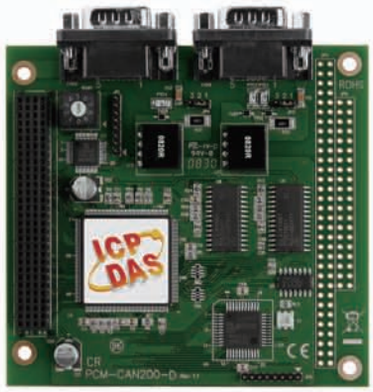
Flow Chart of "Receive CAN Message with IRQ"

Ordering Information

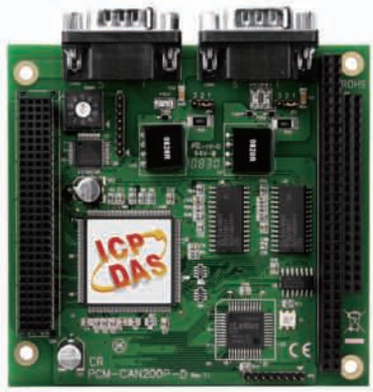
PCM-CAN200-D CR	1-Port Isolated Protection CAN Communication PCI-104 Module with 9-pin Male and Female D-sub connector (RoHS)

PCI Interface

PCI104/PC104+ CAN Communication Module



PCM-CAN200-D



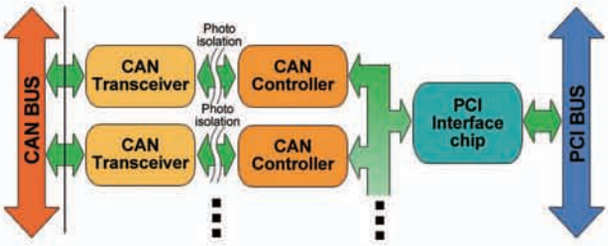
PCM-CAN200P-D

The PCM-CAN200 can represent a CAN solution on a high quality PCI104/PC104+ hardware in industrial environment compliant with CAN 2.0A and CAN 2.0B specification. It has 2 independent CAN bus communication ports with 9-pin D-sub connector, and has the ability to cover a wide range of CAN applications. Besides, PCM-CAN200 uses the CAN controller Phillips SJA1000T and transceiver 82C250, which provide bus arbitration, error detection with auto correction and re-transmission function. It can be installed in both 3.3 V and 5 V PCI slot and supported truly "Plug & play".

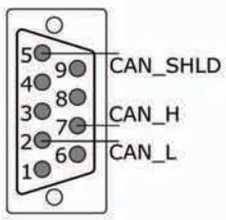
Features

- PCI104/PC104+ compliant
- 9-pin male D-sub connector
- Compatible with CAN 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN bard from 10 kbps ~ 1 Mbps
- 2500 Vrms photo couple isolation on the CAN bus
- Built-in jumper to select 120 Ω terminal resister
- 1 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB6.0, VC++6.0, Delphi, BCB6.0 demos
- Driver support Windows 98/ME/NT/2K/XP/ WinCE

Hardware architecture

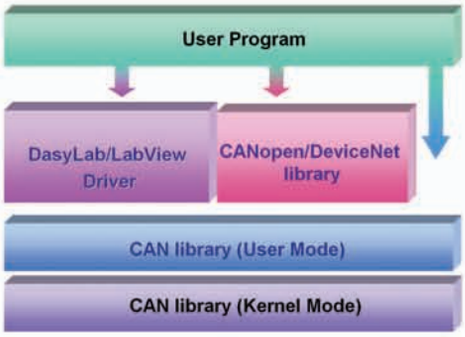


Pin Assignments

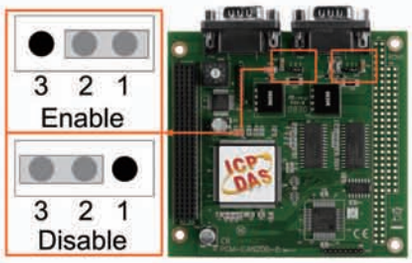


9-pin D-sub male connector

Software Layer



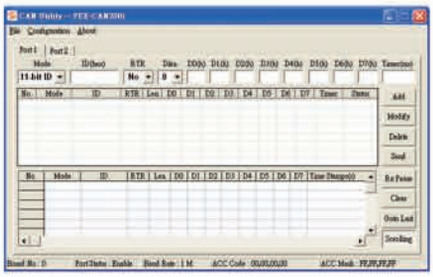
Terminal Resistor



Hardware Specifications

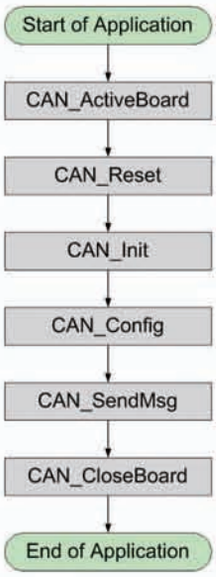
Model Name	PCM-CAN200-D	PCM-CAN200P-D
Bus Interface		
Type	PCI-104	PC-104
CAN Interface		
Controller	NXP SJA1000T with 16 MHz clock	
Transceiver	NXP 82C250	
Channel number	2	
Connector	9-pin male D-Sub (CAN_L, CAN_SHLD, CAN_H, N/A for others)	
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)	
Terminator Resistor	Jumper for 120 Ω terminator resistor	
Power		
Power Consumption	250 mA @ 5 V	
Mechanism		
Dimensions	91mm x 22mm x 96mm (W x L x H)	
Environment		
Operating Temp.	0 ~ 60 °C	
Storage Temp.	-20 ~ 70 °C	
Humidity	5 ~ 85% RH, non-condensing	

Utility

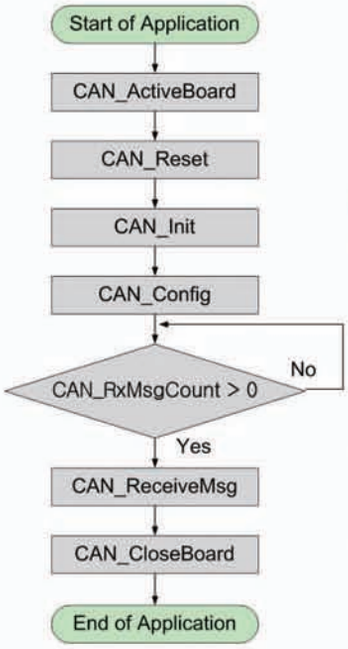


- Can be a CAN system monitor tool with CAN cards
- It is a good tool to test CAN system
- Send/Receive/Record CAN messages
- Provide cyclic transmission function
- Record the CAN messages with filtered ID and time stamp

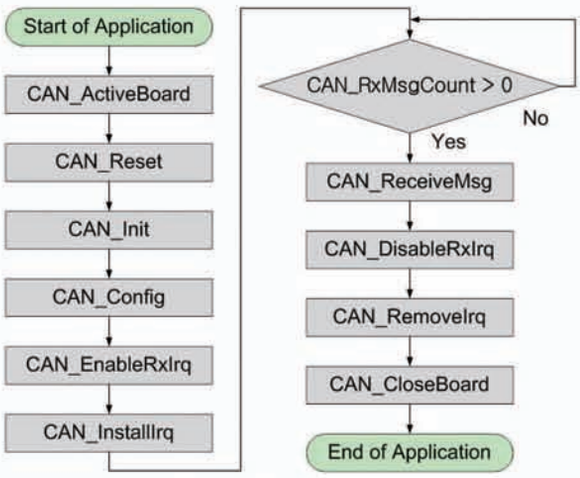
Flow Diagram for Applications



Flow Chart of "Send CAN Messages"



Flow Chart of "Receive CAN Messages"



Flow Chart of "Receive CAN Message with IRQ"

Ordering Information

PCM-CAN200-D CR	2-Port Isolated Protection CAN Communication PCI-104 Module with 9-pin Male D-sub connector (RoHS)
PCM-CAN200-D CR	2-Port Isolated Protection CAN Communication PC-104+ Module with 9-pin Male D-sub connector (RoHS)

PCI Interface

PCI CAN Communication Card

PISO-CM100U-D

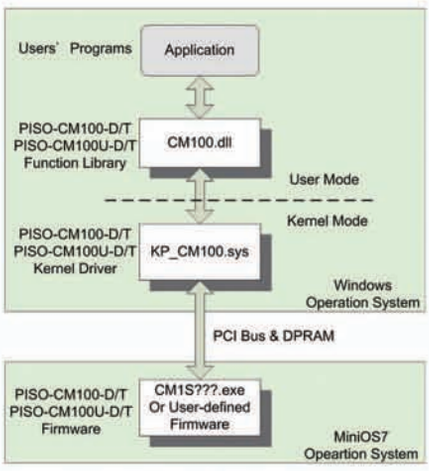
PISO-CM100U-T

The PISO-CM100U represents a very powerful and economic solution of an active CAN board with one CAN channel, covering a wide range of CAN applications. The 16-bit on-board microcontroller allows, among many other features, the filtering, preprocessing, and storage (with timestamp) of CAN messages as well as the real-time transmission of CAN messages. Under the effect of the powerful microcontroller, this card can be made for one CAN controller without losing data, even in systems with a high bus load. In addition, users can develop their own CAN application by using the PISO-CM100U library. When the PISO-CM100U is active, the data exchange between users' application and CAN bus firmware is performed via the memory mapping method of the PISO-CM100U.

Hardware Features

- Microprocessor inside with 80186, 80MHz
- 82C250 CAN transceiver
- SJA1000T CAN controller
- Fully compatible with ISO 11898-2 standard
- Support both CAN 2.0A and CAN 2.0B
- Timestamp with at least ±1ms precision
- DIP switch to select board number
- Dual port RAM communication mechanism
- RTC (real time clock) inside

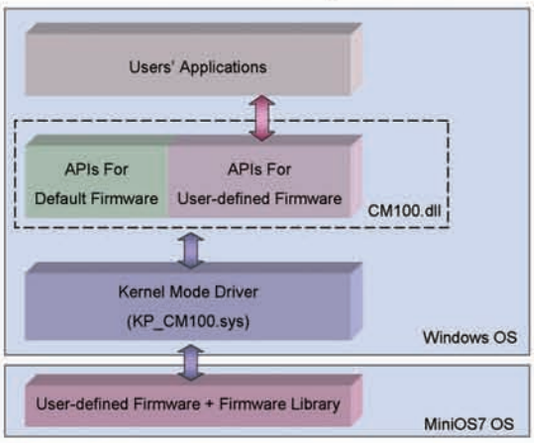
Firmware Features



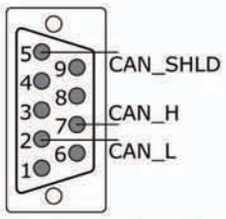
- Support user-defined firmware
- Provide 4 functions of firmware for user-defined
- 2048 CAN message reception buffer
- Cyclic transmission precision is ±1%
- Provide 5 sets of cyclic transmission
- Easy to update firmware
- High performance to process CAN message

Host Library

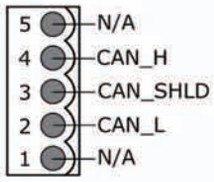
- Driver for Windows 2K/XP
- Provide VC++, VB, BCB demos and libraries
- Support DPRAM read/write functions
- Provide user-defined interrupt function



Wire Assignments



9-pin D-sub male connector

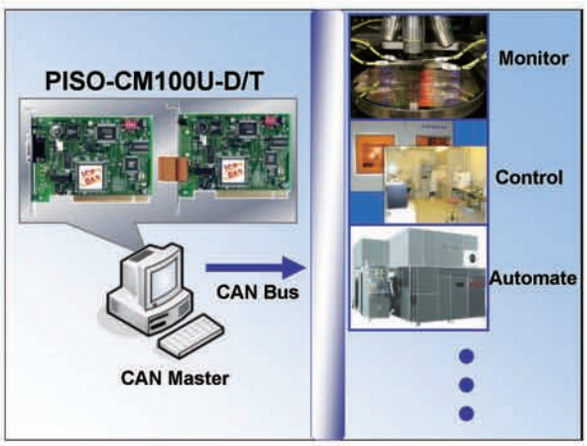


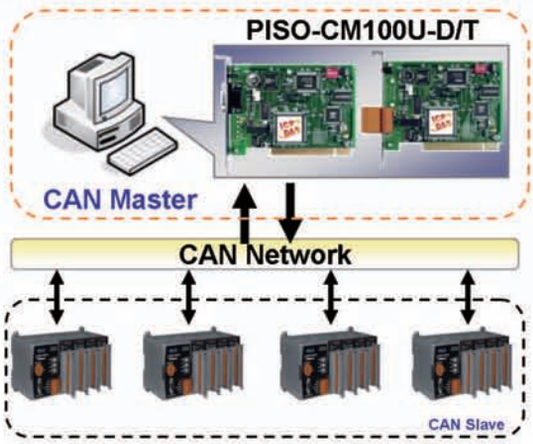
5-pin screw terminal connector

Hardware Specifications

Model Name	PISO-CM100U-D	PISO-CM100U-T
Hardware		
CPU	80186, 80 MHz or compatible	
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB	
DPRAM	8 KB	
NVRAM	31 bytes (battery backup, data valid for up to 10 years)	
RTC (Real Time Clock)	Yes	
Bus Interface		
Type	Universal PCI, 3.3 V and 5 V, 33 MHz, 32-bit, plug and play	
Board No.	By DIP switch	
CAN Interface		
Controller	NXP SJA1000T with 16 MHz clock	
Transceiver	NXP 82C250	
Channel number	1	
Connector	9-pin male D-Sub	5-pin screwed terminal block
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)	
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple	
Terminator Resistor	Jumper for 120 Ω terminator resistor	
LED		
Round LED	Rx/Tx LED, ERR LED	
Software		
Timestamp	Timestamp of CAN message with at least ±1ms precision	
Power		
Power Consumption	300 mA @ 5 V	
Mechanism		
Dimensions	138mm x 22mm x 105mm (W x L x H)	
Environment		
Operating Temp.	0 ~ 60 °C	
Storage Temp.	-20 ~ 70 °C	
Humidity	5 ~ 85% RH, non-condensing	

Applications



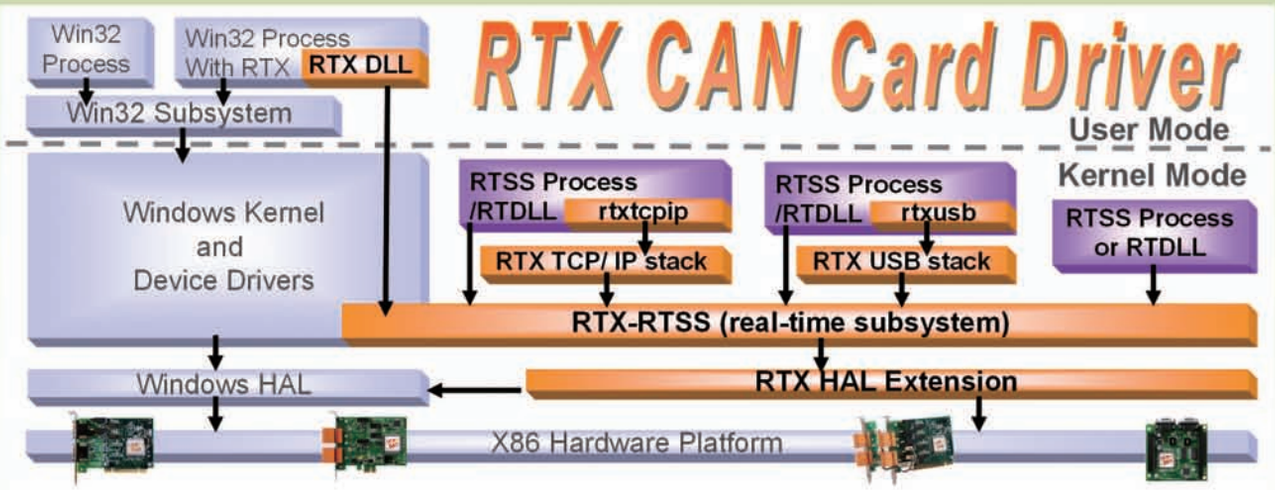


Ordering Information

PISO-CM100U-D	Intelligent CAN interface with one Isolated Protection CAN Communication Port and 9-Pin D-sub connector for universal PCI bus systems
PISO-CM100U-T	Intelligent CAN interface with one Isolated Protection CAN Communication Port and 5-Pin Screw Terminal Connector for universal PCI bus systems

CAN bus Software

RTX CAN Driver



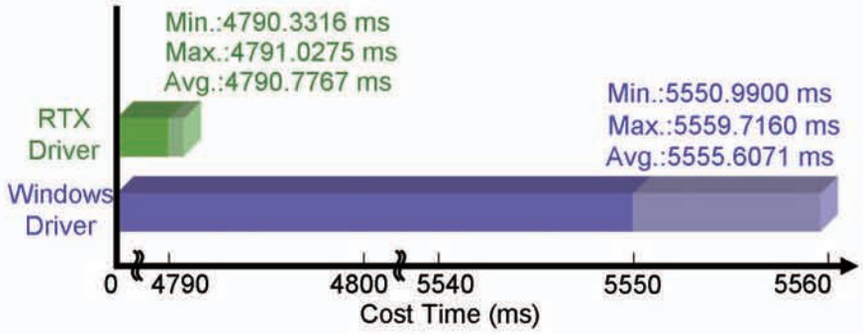
When you develop a time-critical system, the bad real-time defect of the OS usually troubles you. In order to solve this problem, IntervalZero provides the RTX, a real-time application development platform and runtime environment, on Windows OS. By means of the RTX driver of the PISO-CAN series, you can easily and quickly combine the CAN communication in your time-critical system. Besides, the API forms of the RTX driver and the Windows driver are the same. You don't need to pay more efforts on study if you have experience in the Windows driver before. The features of high price performance and real-time of the RTX driver will present more comprehensive application fields of the PISO-CAN series CAN cards.

Features

- Support interrupt function if the PISO-CAN series CAN card can get the independent IRQ
- Direct I/O control and highly real-time feature
- Support Windows2000 SP4, and Windows XP SP2 OS
- Support RTX version 8.0 or late
- Provide VC 6.0 demos

Real-time Test

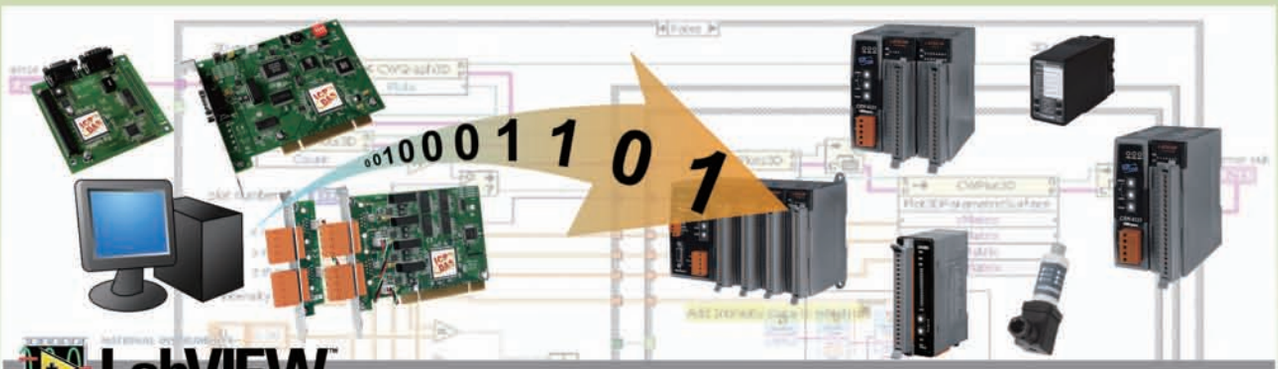
- Platform: Windows XP SP2+PISO-CAN200E
- Device: I-7186EXD-CAN with MiniOS7 (single tasking OS)
- Send and receive 10000 CAN 2.0B 8-byte messages. Repeat this procedure for 10 times



Hardwares Support

PISO-CAN200U-D PISO-CAN200U-T	2-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PISO-CAN400U-D PISO-CAN400U-T	4-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PEX-CAN200i-D PEX-CAN200i-T	2-Port isolated protection PCI-Express CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PCM-CAN100	1-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
PCM-CAN200	2-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
PCM-CAN200P	2-Port isolated protection PC-104+ CAN communication module with 9-pin D-sub connector

LabVIEW CAN Driver



CAN LabVIEW Driver

In order to implement DeviceNet communication by NI LabVIEW software, ICP DAS provides a set of DeviceNet component in the LabVIEW driver. The LabVIEW driver includes a configuration utility to configure the ICP DAS's DeviceNet hardware in your PC. By means of this driver, you don't need to have the complex and abstruse technology of the DeviceNet protocol. Only few simple steps can finish the communication between your PC and the remote DeviceNet devices. Therefore, the ICP DAS LabVIEW driver can help you not only to develop your application rapidly and quickly, but also to reduce the complexity of applications.

Features

- NI LabVIEW Software version 8.0 or later
- OS environment: Windows 2000 / XP
- Support CAN specification 2.0A and 2.0B
- Predefine 8 kinds of CAN baud rate: 10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k and 1M bps
- Allow user-defined CAN baud rate
- Provide 3000-record Rx buffer for each CAN port
- Support functions for directly accessing SJA1000 register
- Allow users to read the card No. and relative information
- Support timestamp information for each received CAN messages

Hardwares Support

PISO-CAN200U-D PISO-CAN200U-T	2-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PISO-CAN400U-D PISO-CAN400U-T	4-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PEX-CAN200i-D PEX-CAN200i-T	2-Port isolated protection PCI-Express CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PCM-CAN100	1-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
PCM-CAN200	2-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
PCM-CAN200P	2-Port isolated protection PC-104+ CAN communication module with 9-pin D-sub connector

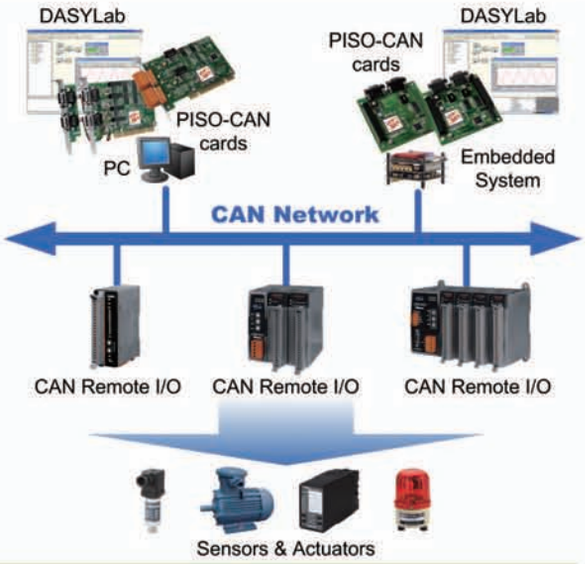
CAN bus Software

DASYLab CAN Driver

DASYLab is a kind of data acquisition software. It lets you interactively develop PC-based applications by simply attaching functional icons. DASYLab offers real-time analysis, control, and the ability to create custom graphical user interfaces. Besides, it can require weeks of training to master. This is useful in some application cases. In order to use DASYLab software with the PISO-CAN series cards, we provide the DASYLab CAN driver for the purpose. It is very useful for developing the CAN-relative application in DASYLab environment. If you want to develop a DASYLab industrial application with CAN network, the DASYLab CAN driver will be your good helper.

Features

- Support DASYLab software version 8.0
- OS environment: Windows 2000 / XP
- Support CAN specification 2.0A and 2.0B
- Predefine 8 kinds of CAN baud rate: 10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k and 1M bps
- Allow user-defined CAN baud rate
- Support maximum 64 CAN ports
- Sample rate from 50 ~ 5000 Hz
- Block size range is 1 ~ 4096
- Provide Intel mode and Motorola mode for remote CAN device
- Support two kinds of languages, German and English
- Selectable data rates (baud): 10K, 20K, 50K, 125K, 250K, 500K, 800K, 1M, and user defined

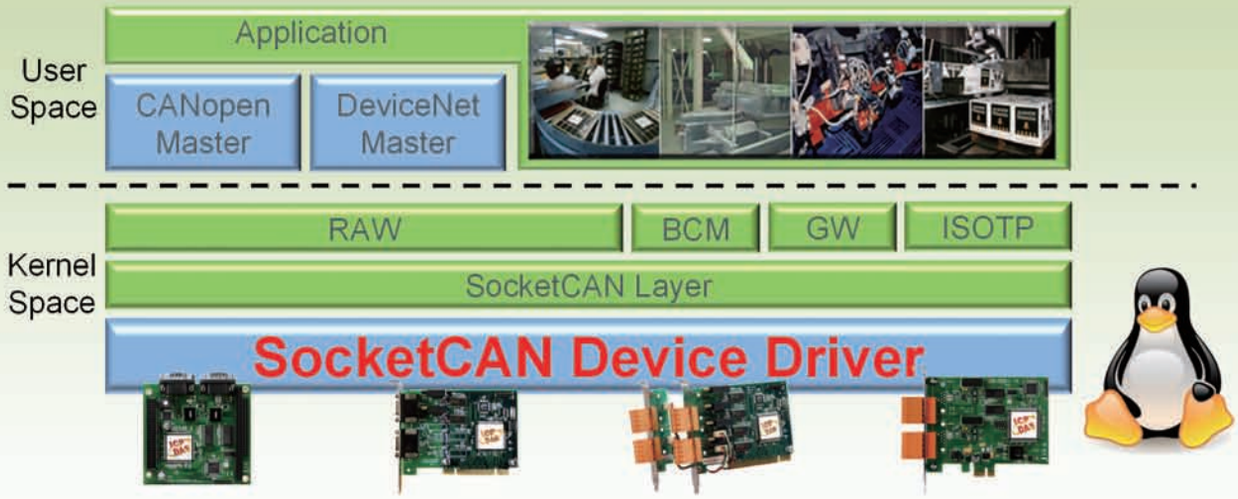


Hardwares Support

PISO-CAN200U-D PISO-CAN200U-T	2-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PISO-CAN400U-D PISO-CAN400U-T	4-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PEX-CAN200i-D PEX-CAN200i-T	2-Port isolated protection PCI-Express CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PCM-CAN100	1-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
PCM-CAN200	2-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
PCM-CAN200P	2-Port isolated protection PC-104+ CAN communication module with 9-pin D-sub connector

CAN bus Software

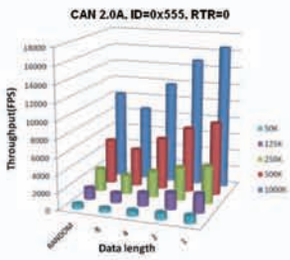
SocketCAN Device Driver



SocketCAN driver is a kind of device driver based on the Linux operating system, and it contains the implementation interface of the network stack and the hardware driver. The hardware manufacturers develop the hardware driver of SocketCAN driver for their hardware interface, and the network stack provides the standard BSD Socket APIs for users. Therefore, through the SocketCAN network stack, they can program their CAN applications as the Ethernet applications without being familiar with the various APIs of the different CAN hardware interface.

Features

- Support Linux kernel version 2.6.31~2.6.34 (x86 hardware platform only)
- Provide CANopen/DeviceNet master static library
- Standard interface for SocketCAN package. Users can use extended BSD socket APIs, you can program the CAN application as building a socket program
- Support Virtual CAN interface. Users can map several virtual CAN port into one physical CAN port. Each virtual CAN port has its own socket. Through these sockets, users can build the multi-thread application more easily
- Provide the RAW socket, CANopen master and DeviceNet master demos
- Good price-performance for economical applications



Hardwares Support

PISO-CAN200U-D PISO-CAN200U-T	2-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PISO-CAN400U-D PISO-CAN400U-T	4-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PEX-CAN200i-D PEX-CAN200i-T	2-Port isolated protection PCI-Express CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PCM-CAN100	1-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
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PCM-CAN200P	2-Port isolated protection PC-104+ CAN communication module with 9-pin D-sub connector

CAN bus Software

PISOCANX ActiveX Object

PISOCANX uses ActiveX technology to simply the procedure while developing the application by using PISO-CAN series CAN card. The ActiveX object (OCX) can be not only used in general program development environment, but used in the SCADA software which supports the ActiveX technology. This may give a way for SCADA software to provide the CAN features and interface. Through the PISOCANX ActiveX object, to construct your CAN applications become faster and easier. You don't need to recite the name and parameters of the APIs. The ActiveX will give you a hint while using the corresponding APIs.

Features

- OS environment: Windows 2000 / XP
- Allow polling mode and interrupt mode
- Provide 3000-record Rx buffer for each CAN port
- Support functions for directly accessing SJA1000 register
- Allow users to read the card No. and relative information
- Support timestamp information for each received CAN messages
- VC6, VB demos are given

Hardwares Support

PISO-CAN200U-D PISO-CAN200U-T	2-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PISO-CAN400U-D PISO-CAN400U-T	4-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PEX-CAN200i-D PEX-CAN200i-T	2-Port isolated protection PCI-Express CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
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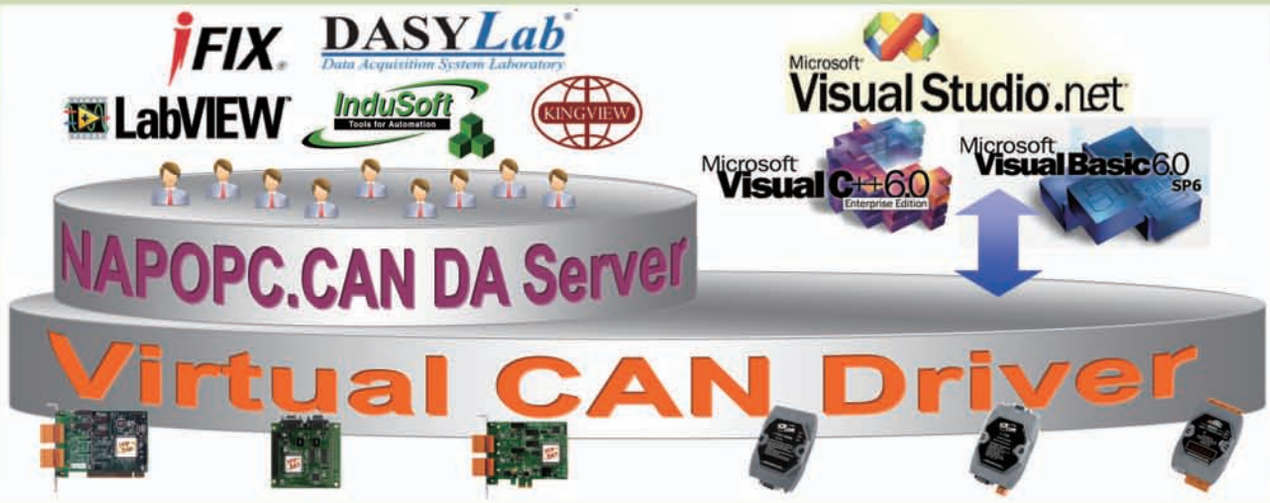
PCM-CAN200	2-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
PCM-CAN200P	2-Port isolated protection PC-104+ CAN communication module with 9-pin D-sub connector

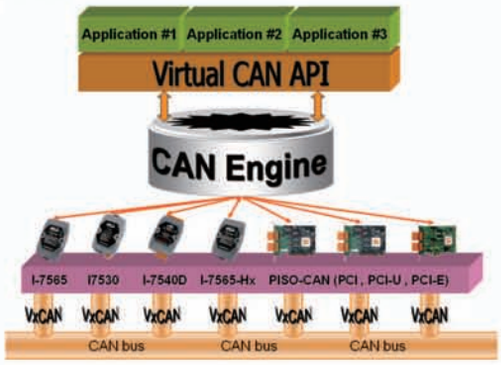
NAPOPC.CAN DA Server



More and more CAN-based devices are introduced in accordance with the keen demands from automotive and industrial fields. There is no common hardware driver for current various operation systems so that it is always a headache for all system developers. NAPOPC.CAN DA Server is a CAN OPC server to be as an expert bridge between ICP DAS CAN products and the OPC client of the third party software. Besides, it also provides the easy-to-use integral APIs to access the different CAN ports without through the OPC server. Therefore, you can easily and flexibly achieve different CAN applications based on a variety of the CAN product lines of ICPDAS.

Features

- OS environment: Windows 2000 / XP
- Follow OPC 2.0 Data Access Standards
- Configure CAN baud rate with OPC utility
- Configure CAN hardware filter by the APIs of the Virtual CAN Driver
- Provide CAN Engine Utility to monitor the CAN messages
- Collect the data from the different CAN devices in one OPC server
- Provide the CAN devices and the virtual CAN port No. mapping table
- Load previous configuration or scan all CAN devices manually while the Virtual CAN Driver boots up
- Provide the APIs of the Virtual CAN Driver
- VC6 / C#.NET / VB.NET Demos for the APIs of the Virtual CAN Driver



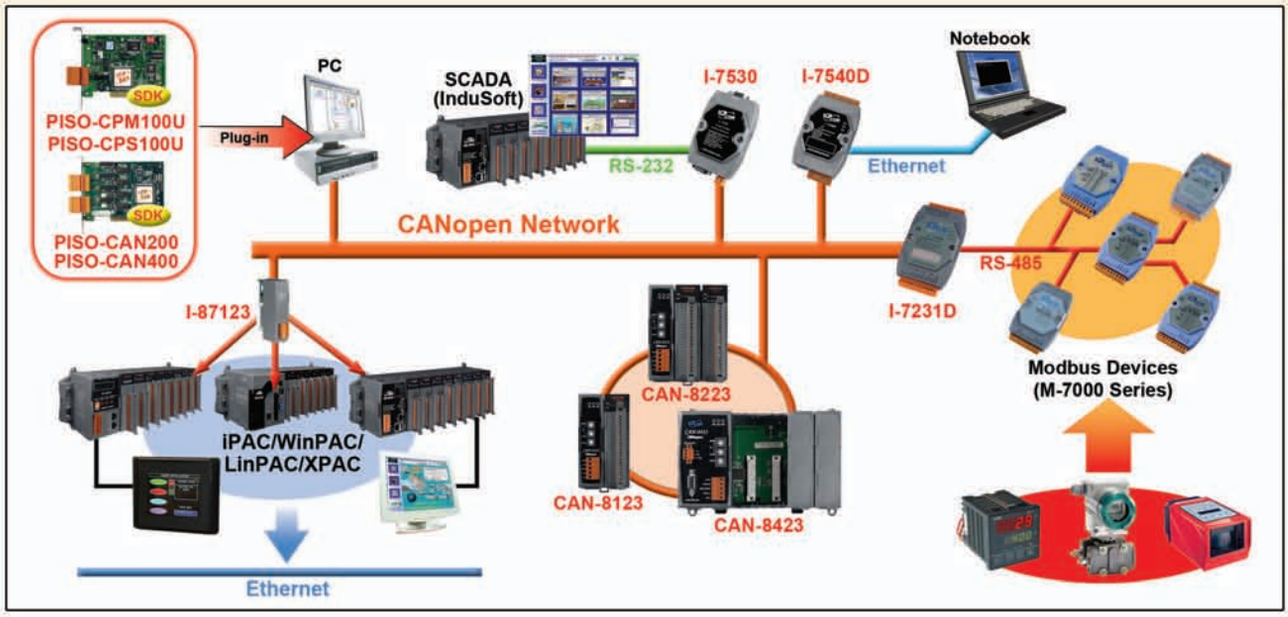
Hardwares Support

PISO-CAN200U-D PISO-CAN200U-T	2-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PISO-CAN400U-D PISO-CAN400U-T	4-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PEX-CAN200i-D PEX-CAN200i-T	2-Port isolated protection PCI-Express CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PCM-CAN100	1-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
PCM-CAN200	2-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
PCM-CAN200P	2-Port isolated protection PC-104+ CAN communication module with 9-pin D-sub connector
I-7530 series	Intelligent RS-232 / RS-422 / RS-485 to CAN converter
I-7540D	Internet converter with one Ethernet, one RS-232, one RS-485 and one CAN port
I-7565 series	Intelligent USB to 1-port / 2-port CAN bus converter

CANopen Series

CANopen is a kind of network protocol based on CAN bus and has been used in various applications, such as vehicles, industrial machines, building automation, medical devices, maritime applications, restaurant appliances, laboratory equipment & research.

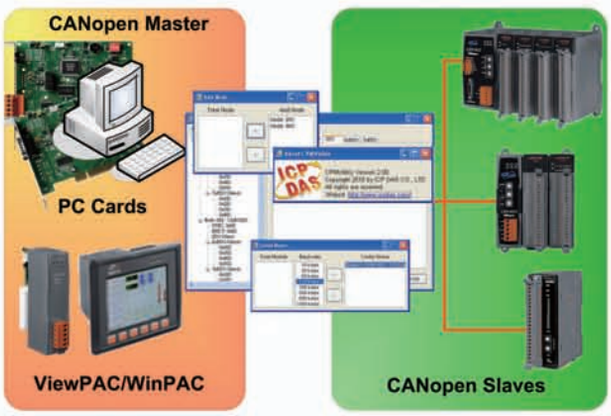
ICP DAS has been developing CAN based-CANopen protocol products for several years. Our products include PCI interface, gateway, CANopen IO and CANopen module for ICP DAS's WinPAC/LinPAC/iPAC. We also help customers to resolve various CANopen network technology problems. In addition, we can provide various CANopen solutions for users.



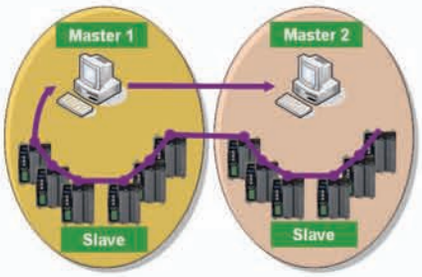
CANopen Series Key Features

- Comply with CANopen DS-301 v4.02
- Slave series comply with CANopen DSP-401 v2.1
- NMT Error Control support Node Guarding and Heartbeat protocol
- Provide Event-triggered, remote-requested, cyclic and acyclic SYNC of PDO mode
- Master series support listen mode
- Master series support Scan-node function
- Support EDS file
- Selectable Node-id (1 ~ 127) and baud rate (10, 20, 50, 125, 250, 500, 800, 1000 kbps)
- Built-in jumper or DIP switch for 120Ω terminator resistor of CAN bus
- Built-in watchdog
- 3000 V_{DC} isolation for DC-to-DC
- 2500 Vrms isolation on CAN bus

CANopen Master Utility



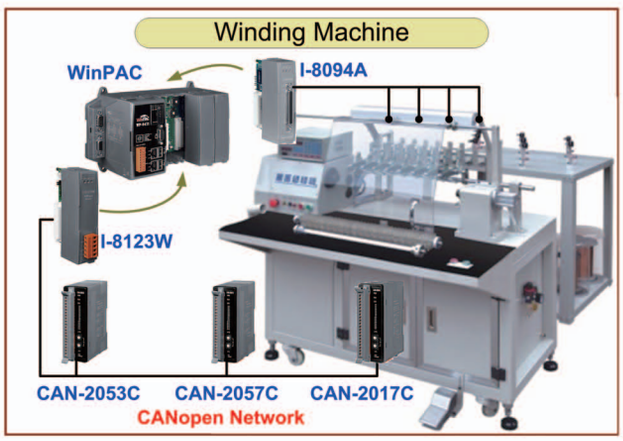
Multi-Master Feature



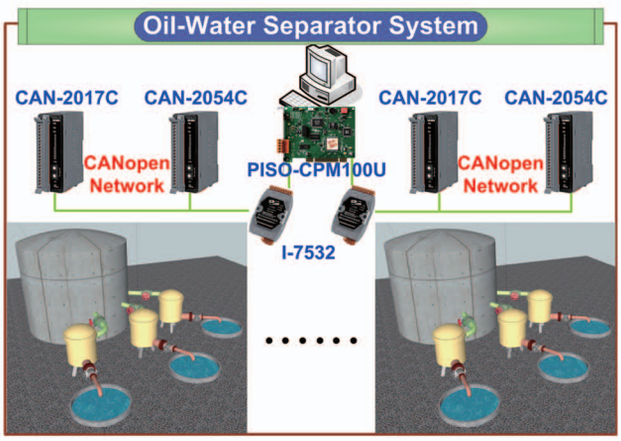
CANopen Series Selection Guide

	Product	Interface	Description	Page
Gateway	I-7231D	CANopen <--> DCON	CANopen Slave/DCON Master Gateway	2-03
	I-7232D	CANopen <--> Modbus RTU	CANopen Slave/Modbus RTU Master Gateway	2-05
	GW-7433D	CANopen <--> Modbus TCP / RTU	CANopen Master/Modbus TCP Server Gateway	2-09
Master	I-7565-CPM	USB <--> CANopen master	USB/CANopen Master Converter	2-07
	I-87123	CANopen master	Built-in CANopen Master Firmware I-87K Module	2-31
	I-8123W	CANopen master	Built-in CANopen Master Firmware I-8K Module	2-33
	PISO-CPM100U	CANopen master	Built-in CANopen Master Firmware Universal PCI board	2-35
	PISO-CAN 200/400	CANopen master	CANopen Master Library for 5 V PCI board	2-37
	PISO-CAN 200U/400U	CANopen master	CANopen Master Library for Universal PCI board	2-37
	PEX-CAN200i	CANopen master	CANopen Master Library for PCI-Express x 1 board	2-37
	PCM-CAN100/200	CANopen master	CANopen Master Library for PCI-104 board	2-37
	PCM-CAN200P	CANopen master	CANopen Master Library for PCI-104+ board	2-37
Slave	CAN-8123	CANopen slave	1 Slot General Purpose CANopen Slave I/O Unit	2-11
	CAN-8223	CANopen slave	2 Slot General Purpose CANopen Slave I/O Unit	2-11
	CAN-8423	CANopen slave	4 Slot General Purpose CANopen Slave I/O Unit	2-13
	CAN-2053C	CANopen slave	16-channel Isolated DI Module of CANopen Slave	2-15
	CAN-2057C	CANopen slave	16-channel Isolated DO Module of CANopen Slave	2-17
	CAN-2054C	CANopen slave	8-channel DI and 8-channel DO Module of CANopen Slave	2-19
	CAN-2015C	CANopen slave	8-channel RTD Input Module of CANopen Slave	2-21
	CAN-2017C	CANopen slave	8-channel Analog Input Module of CANopen Slave	2-23
	CAN-2018C	CANopen slave	8-channel Thermocouple Input Module of CANopen Slave	2-25
	CAN-2024C	CANopen slave	4-channel Analog Output Module of CANopen Slave	2-27
	CAN-2088C	CANopen slave	PWM Module of CANopen Slave	2-29

Application Stories



When the quality of motors is required to upgrade gradually, the precise and the fast motor equipment is more and more important. The high speed motor winding machine uses I-8123W to monitor and control the distributed I/O data through CANopen network. When the I-8123W gets these input data such as tension sensor, pressure sensor, and so on, the WinPAC will output the CANopen DO and the motion signal to control relay, switch, pneumatic valve, and robot to do the winding. As the CANopen features, fast and safe, it can really improving the speed and quality.

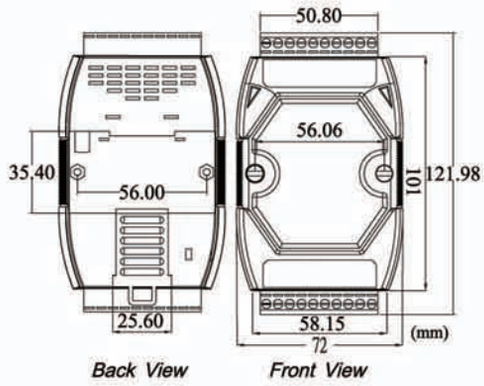


This is an oil-water separator system. The crude oil has several impurities and the majority is water. So we need designed a system to dehydrate crude oil. There are several oil-water separators spread around the control center and hundreds meters distance between each equipment. In the control center, PC receives the data that is sent by every oil-water interface detector through PISO-CPM100U and controls the water outlet valve. If the PISO-CPM100U checks the water, the PC will open the water outlet valve until checks the oil. Now this system has worked in some factories.

CANopen Gateway

CANopen Slave/DCON Master Gateway

I-7231D



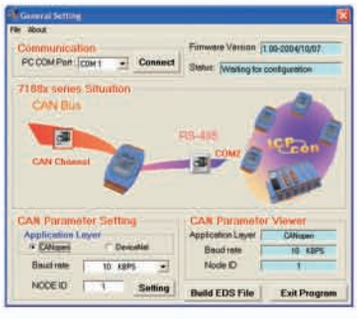
Dimensions

The I-7231D is specially designed for the slave device of CANopen protocol. It follows the CANopen Spec DS-301 V4.02 and DSP-401 V2.1, and supplies many features for users, such as dynamic PDO, EMCY object, error output value, SYNC cyclic and acyclic … etc. The I-7231D supports up to 15 DCON modules for I/O expansion and suits with a lot of ICP DAS DI/AI/DO/AO modules. User can choose DI/DO/AI/AO modules of I-7K/I-87K series to fit the customized practice applications. In addition, we also provide I-7231D Utility to allow users to create the EDS file dynamically.

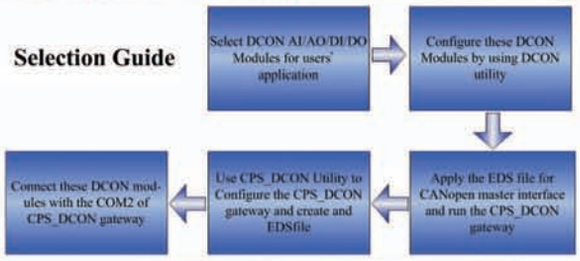
Features

- NMT: Slave
- Error Control: Node Guarding and Heartbeat Producer protocol
- No. of SDOs: 1 Server, 0 Client
- No. of PDOs: default 4 TxPDO and RxPDO
- PDO Modes: Event Triggered, Remotely requested, Cyclic and Acyclic SYNC
- Emergency Message: available
- CANopen Version: DS-301 v4.02
- Device Profile: DSP-401 v2.1
- Produce EDS file Dynamically
- Run, ERR, and Overrun indicator
- Support Max 15 I-7K/I-87K series modules
- CAN Baud Rate setting by utility: 10K, 20K, 50K, 125K, 250K, 500K, 800K, 1M bps
- 7-segmemt LED to show Node ID, CAN baud rate and RS-485 baud rate

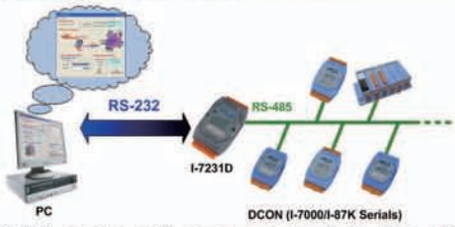
Configuration by Utility



Design Flowchart

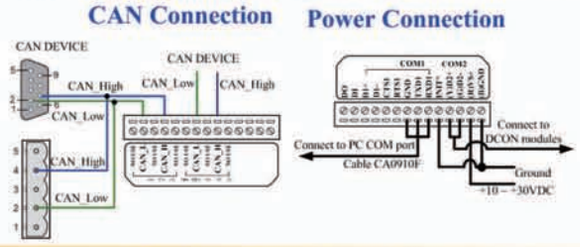


Utility Features



I-7231D main unit can connect to the DCON(I-7K/I-87K) IO modules to create a customized CANopen slave device and application. In order to allow user to easy apply the device on the network, ICP DAS also provides the I-7231D Utility tool to configure the IO connection path, assembly and application objects information and create the EDS file of the device.

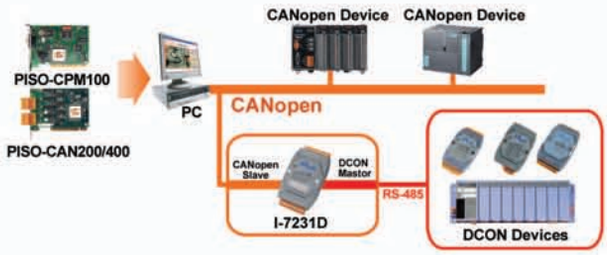
Pin Assignments



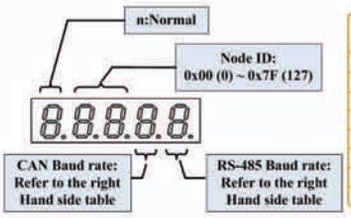
Hardware Specifications

Hardware	
CPU	80188, 40 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
Watchdog	Watchdog IC
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Connector	5-pin screwed terminal block (CAN_L, CAN_H, N/A for others)
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
UART Interface	
COM 1	RS-232 (For configuration)
COM 2	RS-485 (Self-turner inside)
Transmission Distance (m)	Depend on baud rate (for example, max. 1200 m at 9.6 kbps)
Baud Rate (bps)	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Protocol	DCON
LED	
Round LED	MS LED, NS LED, IO LED
5-digit 7 Segment	Yes
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	3W
Mechanism	
Dimensions	72mm x 122mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



5-digit 7-Segment LED Display



7-segment LED Number	CAN Baud rate	RS-485 Baud rate
0	10 K bps	1200 bps
1	20 K bps	2400 bps
2	50 K bps	4800 bps
3	125 K bps	9600 bps
4	250 K bps	19200 bps
5	500 K bps	38400 bps
6	800 K bps	57600 bps
7	1000 K bps	115200 bps

LED indicators

LED	Description
RUN	Indicates the status of the physical layer
ERR	Indicates the condition of the CANopen network state mechanism
OVERRUN	Indicates CAN message loading is heavy and cause buffer overrun

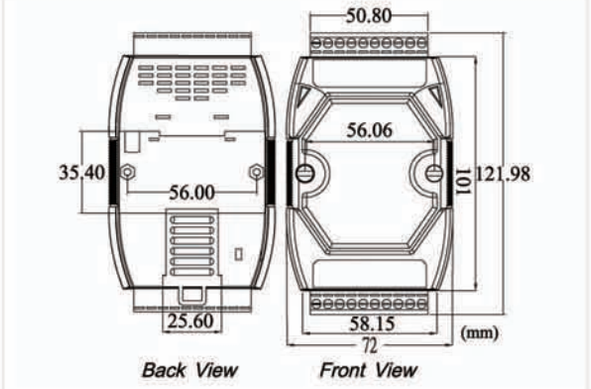
Ordering Information

I-7231D-G	CANopen Slave/DCON Master Gateway
I-7231D-G CR	CANopen Slave/DCON Master Gateway (RoHS)

CANopen Gateway

CANopen Slave/Modbus RTU Gateway

I-7232D



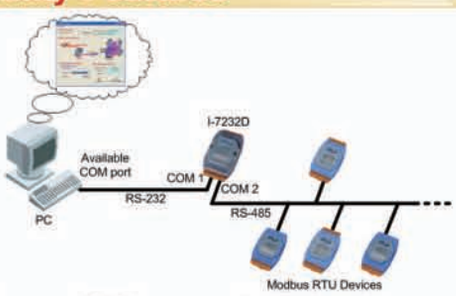
Dimensions

The I-7232D is specially designed for the slave device of CANopen protocol. It follows the CANopen Spec DS-301 V4.02 and DSP-401 V2.1, and supplies many features for users, such as dynamic PDO, EMCY object, error output value, SYNC cyclic and acyclic ... etc. The I-7232D supports up to 10 Modbus/RTU modules for I/O expansion User can choose DI/DO/AI/AO modules of Modubs/RTU series to fit the customized practice applications. In addition, we also provide I-7232D Utility to allow users to create the EDS file dynamically.

Features

- NMT: Slave
- Error Control: Node Guarding Protocol
- No. of SDOs: 1 Server, 0 Client
- PDO Mapping: variable
- PDO Modes: Event Triggered, Remotely requested, Cyclic and Acyclic SYNC
- Emergency Message: available
- CANopen Version: DS-301 v4.02
- Device Profile: DSP-401 v2.1
- Produce EDS file Dynamically
- Run, ERR, and Overrun indicator
- Support Max 10 Modbus RTU series modules

Utility Features



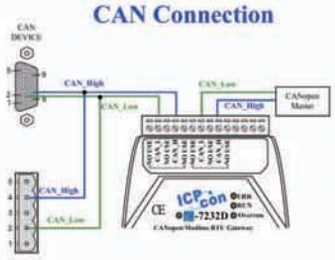
- Support CANopen node ID, baud rate setting
- Provide Modbus RTU parameters setting
- Display Modbus RTU devices configuration
- Show CANopen application objects configuration
- Produce EDS file dynamically

Modbus RTU Command Support

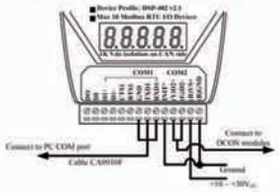
Function code.	Description
01 (0x01)	Read Coil Status
02 (0x02)	Read Input Status
04 (0x04)	Read input Registers
06 (0x06)	Preset Single Register
15 (0x0F)	Preset Multi Registers

Pin Assignments

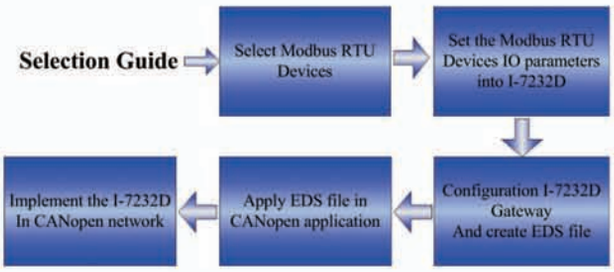
CAN Connection



Power Connection



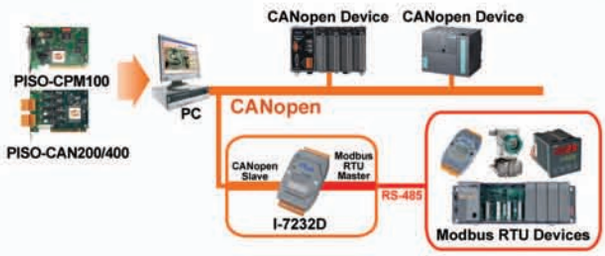
Design Flowchart



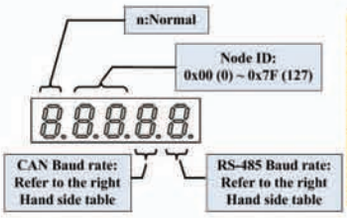
Hardware Specifications

Hardware	
CPU	80188, 40 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
Watchdog	Watchdog IC
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Connector	5-pin screwed terminal block (CAN_L, CAN_H, N/A for others)
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
UART Interface	
COM 1	RS-232 (For configuration)
COM 2	RS-485 (Self-turner inside)
Baud Rate (bps)	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Data bit	7, 8
Stop bit	1, 2
Parity	None, Even, Odd
Protocol	Modbus RTU
LED	
Round LED	MS LED, NS LED, IO LED
5-digit 7 Segment	Yes
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	3 W
Mechanism	
Dimensions	72mm x 122mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



5-digit 7-Segment LED Display



7-segment LED Number	CAN Baud rate	RS-485 Baud rate
0	10 K bps	1200 bps
1	20 K bps	2400 bps
2	50 K bps	4800 bps
3	125 K bps	9600 bps
4	250 K bps	19200 bps
5	500 K bps	38400 bps
6	800 K bps	57600 bps
7	1000 K bps	115200 bps

LED indicators

LED	Description
RUN	Indicates the status of the physical layer
ERR	Indicates the condition of the CANopen network state mechanism
OVERRUN	Indicates CAN message loading is heavy and cause buffer overrun

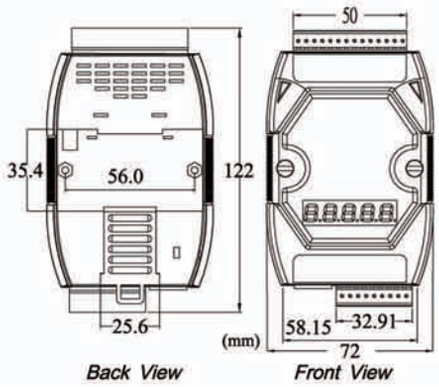
Ordering Information

I-7232D-G	CANopen Slave/Modbus RTU Gateway
I-7232D-G CR	CANopen Slave/Modbus RTU Gateway (RoHS)

CANopen Gateway

Modbus TCP Server/RTU Slave to CANopen Master Gateway

GW-7433D



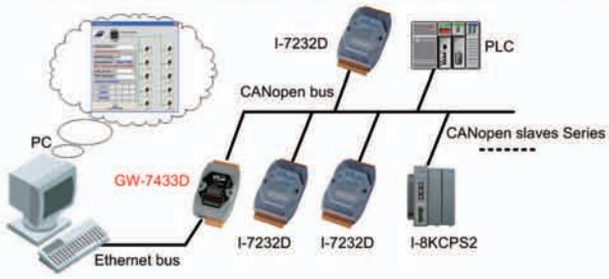
Dimensions

The GW-7433D is a solution that provides a communication transformation between CANopen protocol and Modbus/TCP protocol. It solves a mission-critical problem, and connecting an existed CANopen network with Ethernet-base master device as long as this master device supports Modbus/TCP protocol. It enables CANopen networks to be coupled together with the Internet/Ethernet, whereby remote monitoring and controlling is achieved.

Features

- Communication with CANopen slave automatically when GW-7433D boots up
- CANopen Version: DS-301 v4.02
- Support on-line configure CANopen Slave parameters
- Support 50 TxPDOs, 50 RxPDOs and 15 SDOs
- Support Max 10 CANopen Slave modules
- MI, CI, and Err indicators
- Allow 5 Modbus TCP master to access GW-7433D simultaneously
- Support 5-digits 7-Segment LEDs show information

Utility Features



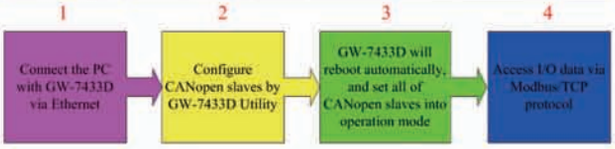
- Add/remove CANopen slaves via Ethernet
- Get/Set Modbus/TCP input/output memory address
- Display CANopen I/O mapping table
- Add/remove CANopen slaves via Ethernet

Modbus RTU Command Support

Function code.	Description
01 (0x01)	Read Coil Status
02 (0x02)	Read Input Status
03 (0x03)	Read Holding Registers
04 (0x04)	Read input Registers
05 (0x05)	Force Single Coils
06 (0x06)	Preset Single Register
15 (0x0F)	Force Multi Coils
16 (0x10)	Preset Multi Registers

Pin Assignments

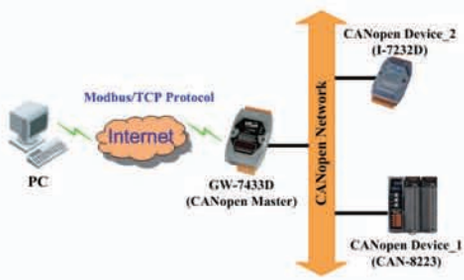
Design Flowchart



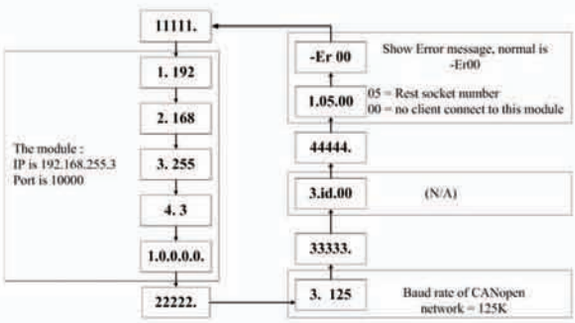
Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
Watchdog	Watchdog IC
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Connector	5-pin screwed terminal block (CAN_L, CAN_SHLD, CAN_H, N/A for others)
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Protocol	CANopen DS-301 ver4.02
UART Interface	
COM 1	RS-232
COM 1 Connector	5-pin screwed terminal block (TxD, RxD, RTS, CTS, GND)
COM 2	RS-485 (Self-turner inside)
COM 2 Connector	2-pin screwed terminal block (DATA+, DATA-)
Protocol	Modbus RTU
Ethernet Interface	
Controller	10/100Base-TX Ethernet Controller (Auto-negotiating, Auto_MDIX)
Connector	RJ-45 with LED indicator
Protocol	Modbus TCP
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	2.5 W
Mechanism	
Dimensions	72mm x 33mm x 122mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



5-digit 7-Segment LED Display



LED indicators

LED	Description
MI	The led provides the Modbus/TCP protocol is act or not
CI	This led indicates the CANopen communication status of the module
ERR	This led indicates the CANopen status of the GW-7433D

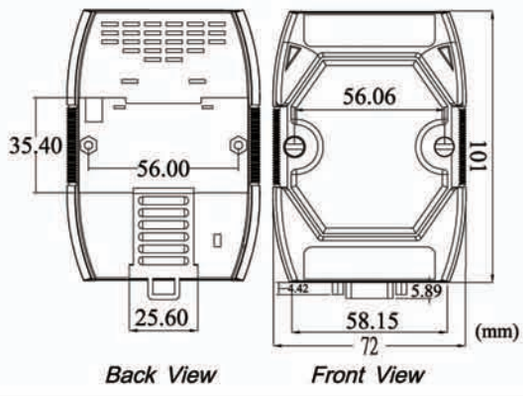
Ordering Information

GW-7433D CRT	Modbus TCP Slave/CANopen Master Gateway (RoHS)

CANopen Master

USB/CANopen Master Converter

I-7565-CPM



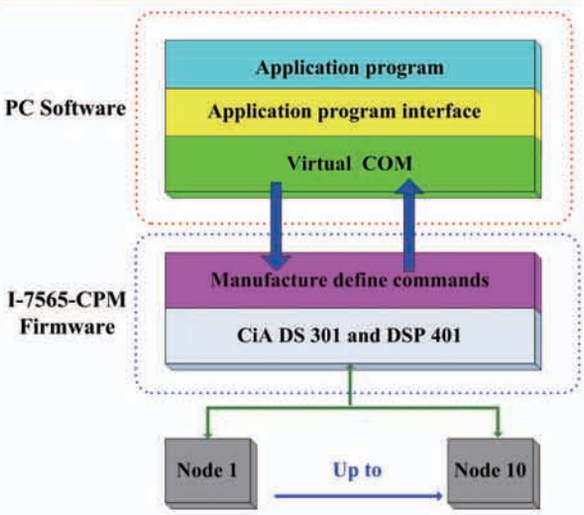
Dimensions

The I-7565-CPM was developed as a standardized CANopen network with highly flexible configuration capabilities. It is a CANopen master solution of USB interface, and has an 80 MHz 186 CPU inside. There is a CANopen protocol interpreter, I-7565-CPM firmware, running in the I-7565-CPM. User can use this converter to process the complex CANopen protocol without increasing the PC loading very much. The rich APIs of the I-7565-CPM library and easy-to-use utility tool can satisfy the requirements of variety and complex CANopen applications.

Features

- NMT: Master
- CANopen Version: DS-301 v4.02
- Error Control: Node Guarding and Heartbeat protocol
- Allow EMCY receptions
- Provide dynamic PDO functions
- Support SYNC protocol
- Several transmission types of PDO are supported
- Support SDO download/upload segment protocol
- Provide CANopen standard baud rate
- PWR, ACT, ERR, and Tx/Rx LED indicator
- Allow max. 10 CANopen slaves

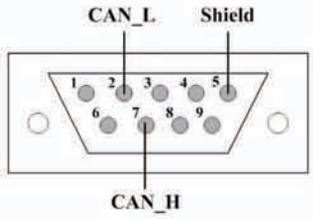
Main Structure



LED Indicators

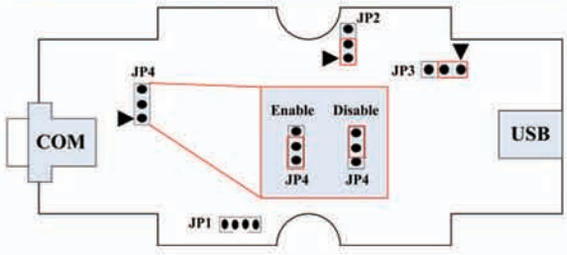
LED.	Description
PWR	Indicate power status
Tx/Rx	Indicate CAN messages transmission
ACT	Indicate firmware running status
ERR	Indicate the error status

Pin Assignments



9-Pin D-Sub male connector

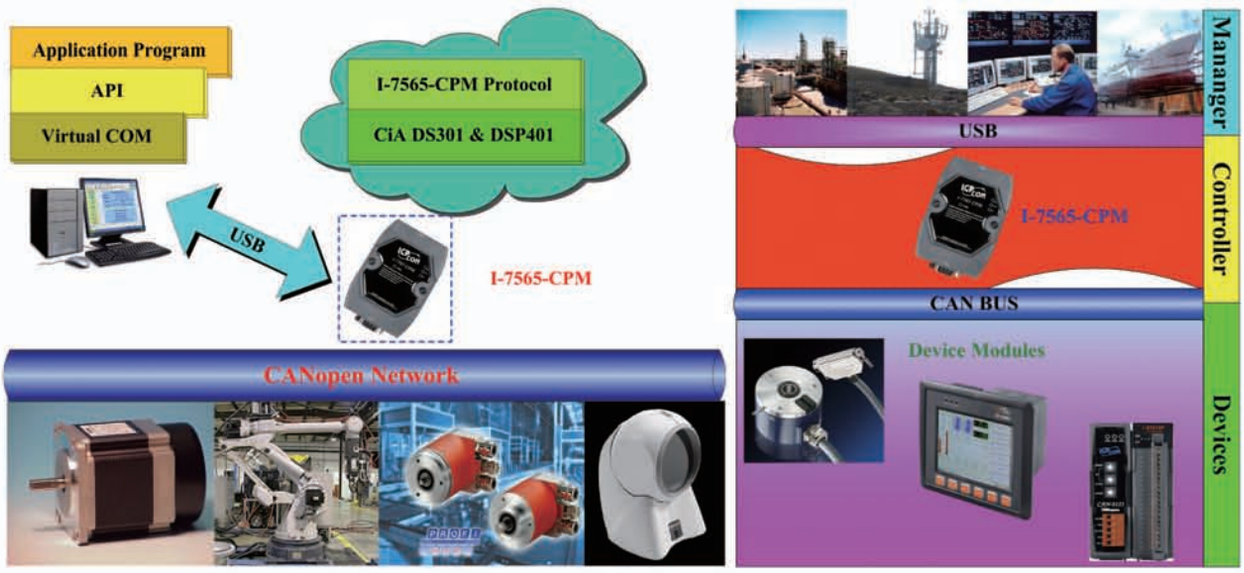
Terminal Resister Switch



Hardware Specifications

Hardware	
CPU	80186, 80MHz.
SRAM/Flash/EEPROM	512KB / 512KB /16KB
ESD Protection	2 kV class A and 3 kV class B
CAN Interface	
Controller	Phillips SJA1000T CAN Controller
Transceiver	Phillips 82C250 CAN Transceiver
Interface	ISO/IS 11898-2, 9-pin male D-Sub(GAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+, N/A for others)
Transfer Rate	Support 10K, 20K, 50K, 125K, 250K, 500K, 800K, 1M bps
Specific	Follow CiA DS-301 V4.02
Slave number	support maximum nodes up to 10
USB Interface	
Connector	USB Type B
Transmission speed	921.6 kbps
LED	
Round LED	PWR LED, ACT LED, ERR LED, Tx/Rx LED.
Software	
Driver	Windows 98/ME/NT/2K/XP.
Library	VC++6.0
Power	
Power supply	By USB interface.
Mechanism	Mechanism
Dimensions	72mm x 101mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ +75 °C
Storage Temp.	-30 ~ +80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



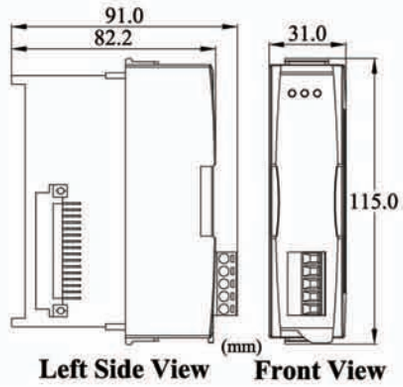
Ordering Information

I-7565-CPM	Module with one CAN port, CANopen master library of VC++, 80186 80MHz CPU, 512K flash, 512K SRAM, 120Ω terminator resister selected by jumper.

CANopen Master

Standalone CANopen Master Module

I-87123



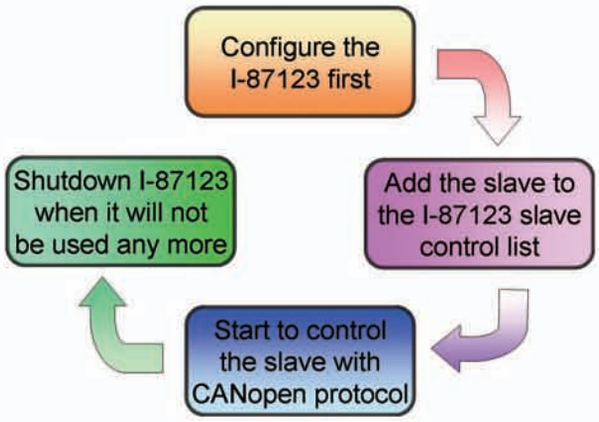
Dimensions

The I-87123 was developed as a standardized embedded network with highly flexible configuration capabilities. It provides standardized communication objects for real-time data (Process Data Objects, PDO), configuration data (Service Data Objects, SDO), network management data (NMT message, and Error Control), and special functions (Time Stamp, Sync message, and Emergency message). Nowadays, CANopen is used in many various application fields, such as medical equipment, off-road vehicles, maritime electronics, public transportation, building automation and etc.

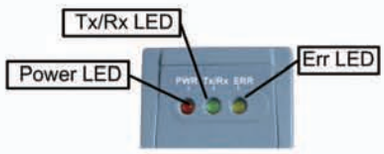
Features

- NMT: Master
- CANopen Version: DS-301 v4.02
- Error Control: Support Guarding and Heartbeat protocol
- Support EMCY receiving
- Provide dynamic PDO functions
- Support SYNC protocol
- Transmission type of PDO is supported
- Support SDO download/upload segment protocol
- 256 records CANopen message reception buffer
- CAN, ERR, and Tx/Rx LED indicator
- Support I-8000/WinPAC/ViewPAC series MCU

Design Flowchart

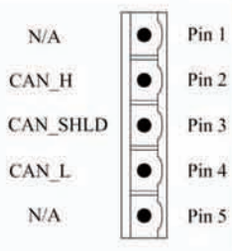


LED Indicators



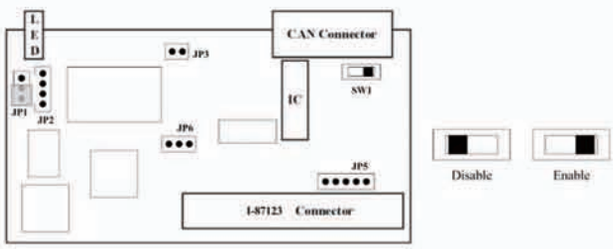
LED.	Description
PWR	Indicate power status
Tx/Rx	Indicate CAN messages transmission
ERR	Indicate the error status

Pin Assignments



Pin No.	Description
1	No use
2	CAN high bus line
3	CAN Shield
4	CAN low bus line
5	No use

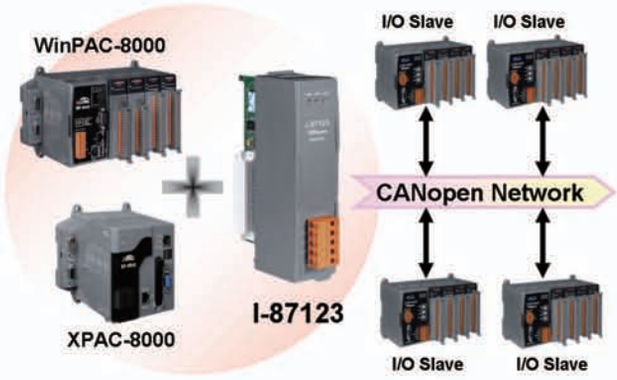
Terminal Resister Switch



Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 2 KB
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Channel number	1
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_SHLD, CAN_H, N/A)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Specification	ISO 11898-2, CAN 2.0A and CAN 2.0B
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
Bus Interface	
Type	Serial I/O module
LED	
Round LED	PWR LED, RUN LED, ERR LED
Software	
Driver	I-8000, WinPAC, ViewPAC
Library	TC/BC
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Mechanism	
Dimensions	31mm x 115mm x 91mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



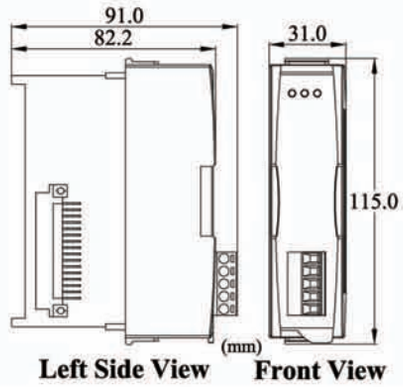
Ordering Information

I-87123	Module with one CANopen CAN port, 80186 80MHz CPU, 512K flash, 512K SRAM, 120Ω terminal resister selected by jumper

CANopen Master

1 Port Intelligent CANopen Master Interface Module

I-8123W



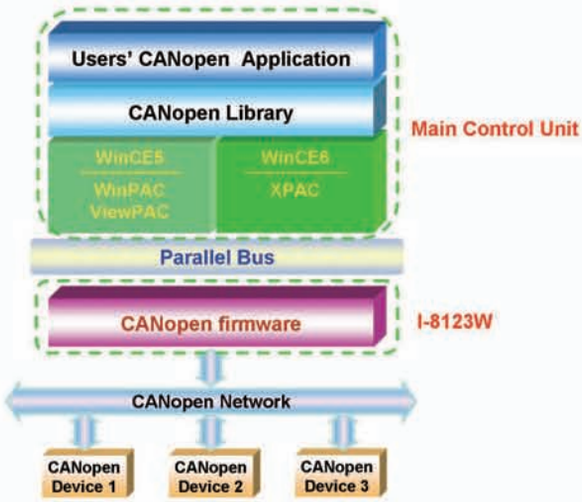
Dimensions

The I-8123W follows CiA CANopen specification DS-301 V4.02. It is a high price/performance CANopen master. With the ViewPAC or WinPAC series MCU (main control unit), it can be generally applied in the industrial automation, building automation, vehicle, and embedded control network. Besides, owing to the feature of building the CANopen protocol firmware inside, users can easily access the slave devices via I-8123W without studying or dealing the complex CANopen protocol. It is helpful to reduce the development cycle time and let users set up their CANopen application more quickly and easily.

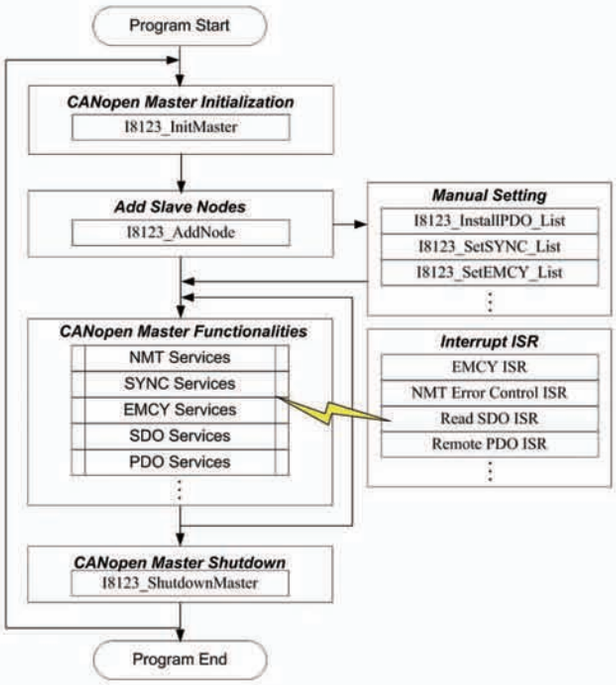
Features

- NMT Master.
- CANopen version: DS-301 V4.02
- Support Node Guarding and Heartbeat Consumer error control. protocol
- Provide EMCY and NMT Error Control interrupt service function
- Provide " master listen mode"
- Provide Dynamic PDO, acyclic and cyclic transmission
- Support ViewPAC and WinPAC series MCU

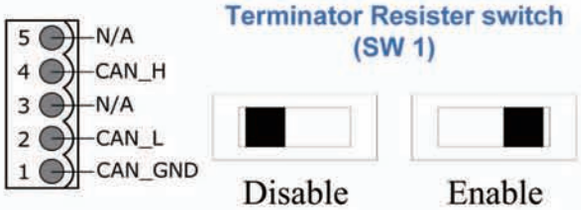
I-8123W Architecture



Design Flowchart



CAN Pin & Baud Rate Rotary

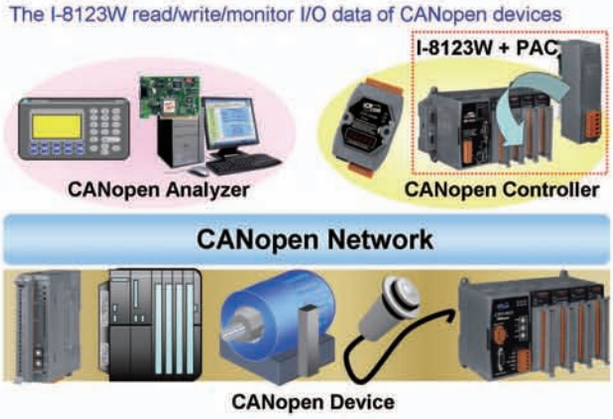


Hardware Specifications

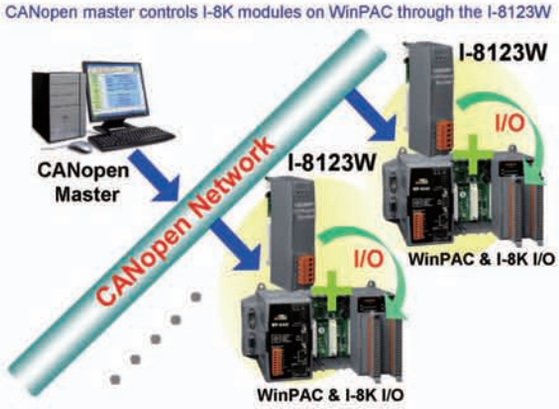
Hardware	
CPU	80186, 80 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
NVRAM	31 bytes (battery backup, data valid for up to 10 years)
RTC (Real Time Clock)	Yes
Watchdog	Yes
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Channel number	1
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_H, N/A for others)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Switch for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
LED	
Round LED	PWR LED, RUN LED, ERR LED
Software	
Driver	Windows CE 5.0
Library	eVC++4.0, VB.Net 2005, C#.Net 2005
Power	
Power Consumption	2 W
Mechanism	
Dimensions	31mm x 91mm x 115mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application

The I-8123W read/write/monitor I/O data of CANopen devices



CANopen master controls I-8K modules on WinPAC through the I-8123W



Ordering Information

I-8123W	One port intelligent CANopen master interface module

CANopen Master

1 Port Intelligent CANopen Master Board

PISO-CPM100U-D

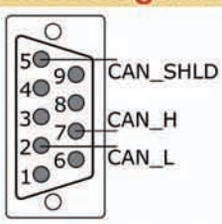
PISO-CPM100U-T

The PISO-CPM100U has followed the CiA CANopen specification DS-301 V4.02. With the built-in 80186 80M Hz CPU, this card can be applied in high transmission applications. The 16-bit on-board microcontroller with real-time O.S., MiniOS7, allows many features, such as real-time message transmission and reception, filtering, preprocessing, and storage of CAN messages. It supports the timestamp of PDO message with at least 1 ms precision. Assorted with the free tool (CPM_Utility), users can easily manage and integrate with CANopen industrial devices.

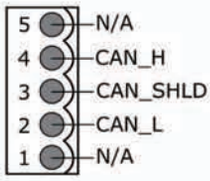
Features

- NMT: Master
- CANopen Version: DS-301 v4.02
- Error Control: Support Guarding and Heart beat protocol
- Support EMCY receiving
- Provide dynamic PDO functions
- Provide 5 sets of SYNC cyclic transmission
- Transmission type of PDO is supported
- Support Multi-Master to Single-Slave architecture
- Auto select with expedition mode or segment mode
- Support load EDS file
- Support Windows 2K/XP

Pin Assignments

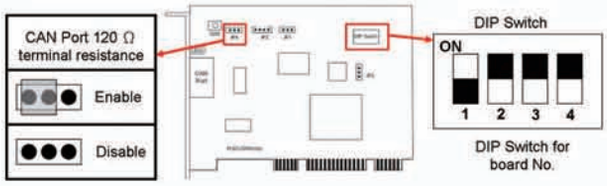


9-pin D-sub male connector

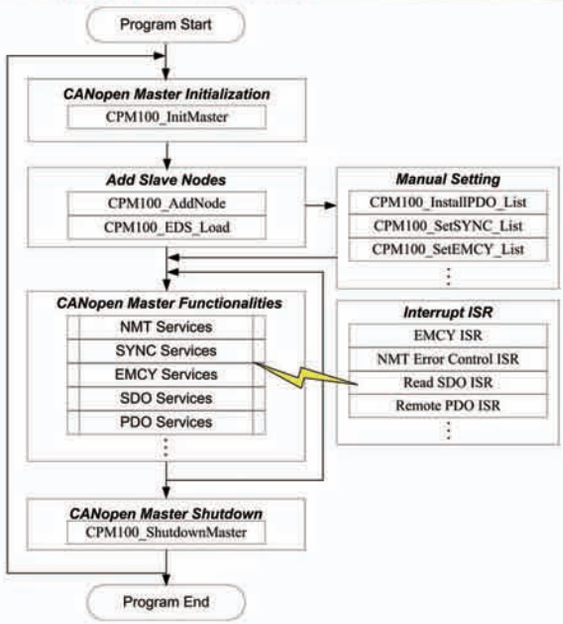


5-pin screw terminal connector

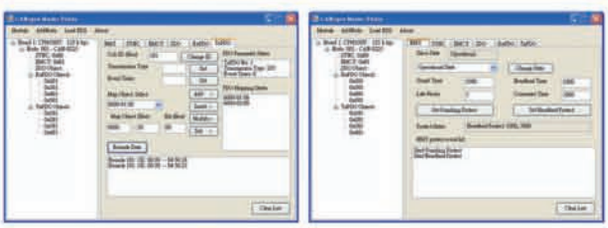
Terminal Resister & DIP Switch



Design Flowchart



Demos Features

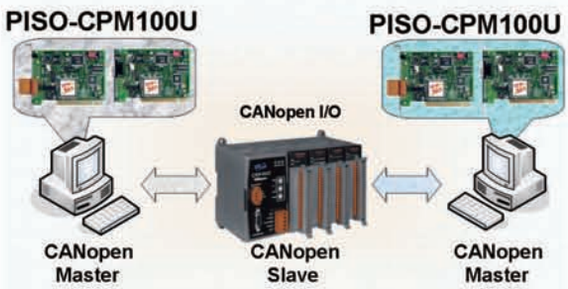


The software utility can easily to access the I/O data of all the slave devices. The users can monitor the input data of the specific slave device and change the output data to the remote slave device with this utility.

Hardware Specifications

Model Name	PISO-CPM100U-D	PISO-CPM100U-T
Hardware		
CPU	80186, 80 MHz or compatible	
SRAM/Flash/EEPROM	512 KB / 512 KB / 2 KB	
Bus Interface		
Type	Universal PCI supports both 5 V and 3.3 V PCI bus	
Board No.	By DIP switch	
CAN Interface		
Controller	NXP SJA1000T with 16 MHz clock Microprocessor inside with 80186 80 MHz	
Transceiver	NXP 82C250	
Channel number	1	
Connector	9-pin male D-Sub (CAN_L, CAN_SHLD, CAN_H, N/A for others)	5-pin screwed terminal block (CAN_L, CAN_SHLD, CAN_H, N/A for others)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M	
Transmission Distance	Depend on baud rate (for example, max. 1000 m at 50 kbps)	
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple	
Terminator Resistor	Jumper for 120 Ω terminator resistor	
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B	
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1	
LED		
Round LED	Green LED, Red LED	
Software		
Driver	Windows 2K/XP	
Library	VB 6.0, VC++ 6.0, BCB 6.0	
Power		
Power Consumption	300 mA @ 5 V	
Mechanism		
Dimensions	138 mm x 22mm x 105 mm (W x L x H)	
Environment		
Operating Temp.	0 ~ 60 °C	
Storage Temp.	-20 ~ 70 °C	
Humidity	5 ~ 85% RH, non-condensing	

Application



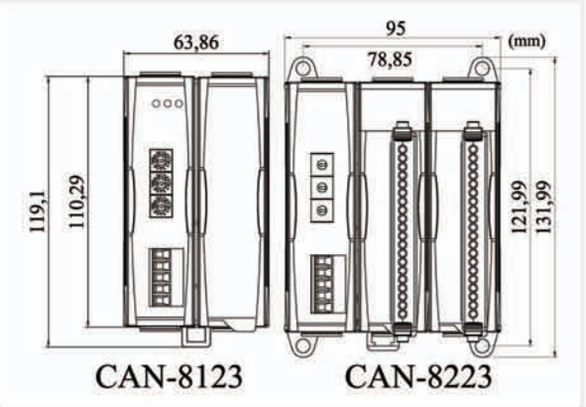
Ordering Information

PISO-CPM100U-D	1 Port Intelligent CANopen Master Universal PCI Board for D-sub 9-pin male connector
PISO-CPM100U-T	1 Port Intelligent CANopen Master Universal PCI Board for 5-pin screw terminal connector

CANopen Slave

CANopen Remote I/O Unit with 1/2 I/O Expansions

CAN-8123 / CAN-8223



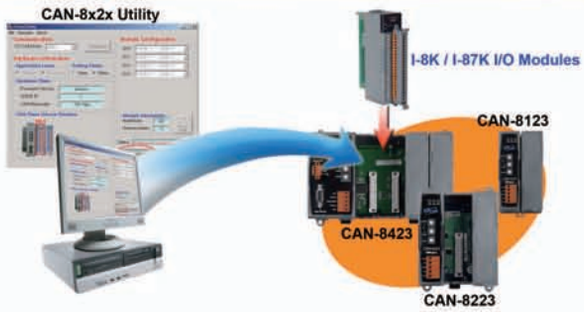
Dimensions

The CAN-8123/CAN-8223 main control unit are specially designed for the slave devices of CANopen protocol. It follows the CANopen Spec DS-301 V4.02 and DSP-401 V2.1, and supplies many features for users, such as dynamic PDO, EMCY object, error output value, SYNC cyclic and acyclic ... etc. The CAN-8123 and CAN-8223 supports 1 and 2 slots for I/O expansion and suits with a lot of ICP DAS DI / AI / DO / AO modules. User can choose DI/DO/AI/AO modules of I-87K series or I-8000 series to fit the customized practice applications. In addition, we also provide CAN-8x23 Utility to allow users to create the EDS file dynamically.

Features

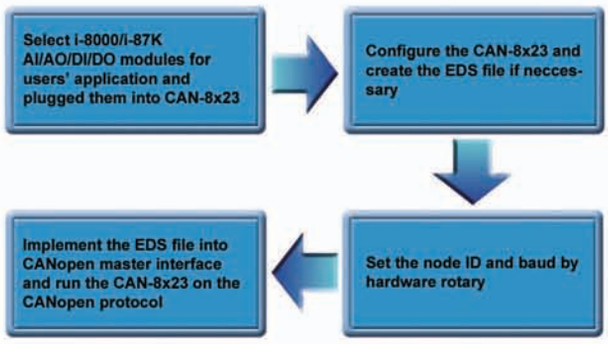
- NMT: Slave
- Error Control: Node Guarding/Heartbeat Producer
- No. of SDOs: 1 Server, 0 Client
- No. of PDOs: 16Rx, 16Tx
- PDO Modes: Event Triggered, Remotely requested, Cyclic and Acyclic SYNC
- Emergency Message available
- CANopen Version: DS-301 v4.02
- Device Profile: DSP-401 v2.1
- Produce EDS file Dynamically
- CAN, ERR, and Tx/Rx LED indicator
- Support Hot Swap and Auto-Configuration for high profile I-87K I/O modules

Utility Features

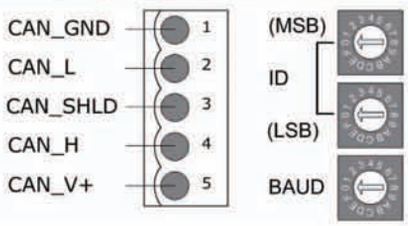


CAN-8x23 main unit can be plugged in the I-8K/I-87K IO modules to create a customized CANopen slave device and application. The CAN-8x23 Utility tool can configure the IO connection path, assembly and application objects information and create the EDS file of the device.

Design Flowchart



Pin Assignments



Rotary Switch Value(DR)	Baud rate (K BPS)
0	10
1	20
2	50
3	125
4	250
5	500
6	800
7	1000

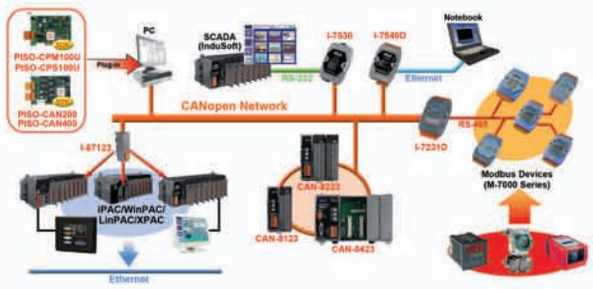
Hardware Specifications

Model Name	CAN-8123	CAN-8223
Hardware		
CPU	80186, 80 MHz or compatible	
SRAM/Flash/EEPROM	512 KB / 512 KB / 2 KB	
NVRAM	31 bytes (battery backup, data valid for up to 10 years)	
RTC (Real Time Clock)	Yes	
Watchdog	CPU built-in	
Expansion Slot	1 slot	2 slots
CAN Interface		
Controller	NXP SJA1000T with 16 MHz clock	
Transceiver	NXP 82C250	
Connector	5-pin screwed terminal block (GND, CAN_L, CAN_SHLD, CAN_H, V+)	
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (By rotary switch)	
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)	
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple	
Terminator Resistor	Jumper for 120 Ω terminator resistor	
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B	
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1	
LED		
Round LED	PWR LED, RUN LED, ERR LED	
Power		
Power supply	Unregulated +10 ~ +30 V_{DC}	
Mechanism		
Dimensions	64mm x 119mm x 91mm (W x L x H)	95mm x 132mm x 91mm (W x L x H)
Environment		
Operating Temp.	-25 ~ 75 °C	
Storage Temp.	-30 ~ 80 °C	
Humidity	10 ~ 90% RH, non-condensing	

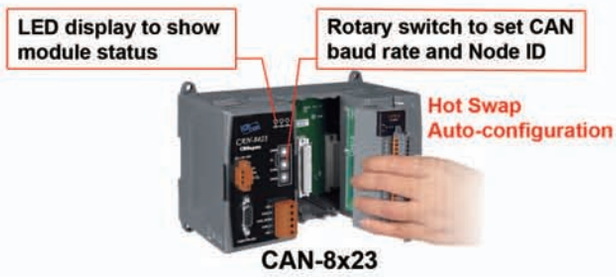
LED indicators

LED	Description
PWR	Indicate the status of power supply
RUN	Indicates the status of the physical layer
ERR	Indicates the condition of the CANopen network state mechanism

Application



Hot Swap & Auto-configuration



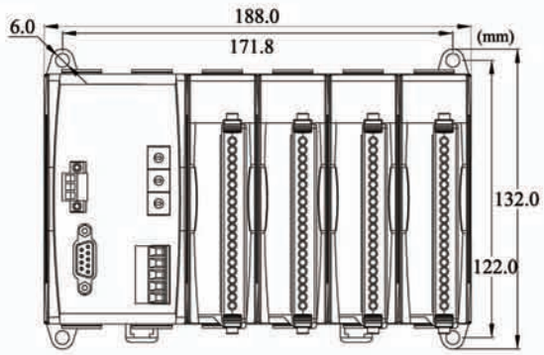
Ordering Information

CAN-8123	CANopen Remote I/O Unit with 1 I/O Expansion
CAN-8223	CANopen Remote I/O Unit with 2 I/O Expansions

CANopen Slave

CANopen Remote I/O Unit with 4 I/O Expansions

CAN-8423



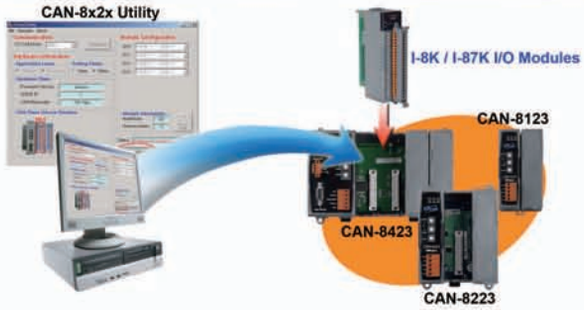
Dimensions

The CAN-8423 main control unit is specially designed for the slave device of CANopen protocol. It follows the CANopen Spec DS-301 V4.02 and DSP-401 V2.1, and supplies many features for users, such as dynamic PDO, EMCY object, error output value, SYNC cyclic and acyclic ... etc. The CAN-8423 supports up to 4 slots for I/O expansion and suits with a lot of ICP DAS DI / AI / DO / AO modules. User can choose DI/DO/AI/AO modules of I-87K series or I-8000 series to fit the customized practice applications. In addition, we also provide CAN-8x23 Utility to allow users to create the EDS file dynamically.

Features

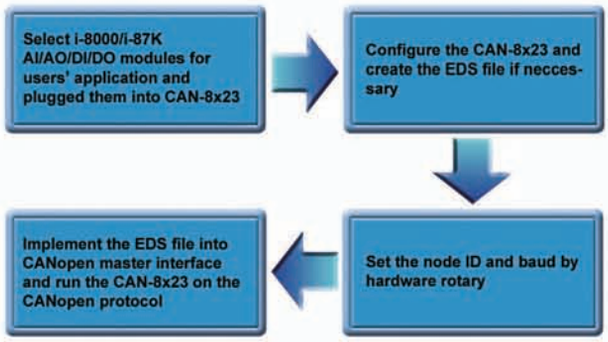
- NMT: Slave
- Error Control: Node Guarding/Heartbeat Producer
- No. of SDOs: 1 Server, 0 Client
- No. of PDOs: 16Rx, 16Tx
- PDO Modes: Event Triggered, Remotely requested, Cyclic and Acyclic SYNC
- Emergency Message available
- CANopen Version: DS-301 v4.02
- Device Profile: DSP-401 v2.1
- Produce EDS file Dynamically
- CAN, ERR, and Tx/Rx LED indicator
- Support Hot Swap and Auto-Configuration for high profile I-87K I/O modules

Utility Features

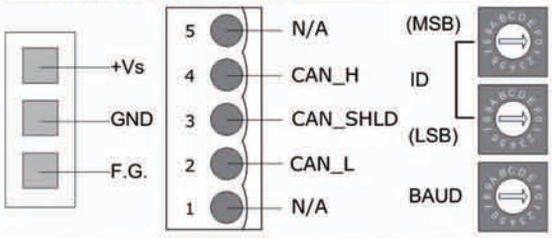


CAN-8x23 main unit can be plugged in the I-8K/I-87K IO modules to create a customized CANopen slave device and application. The CAN-8x23 Utility tool can configure the IO connection path, assembly and application objects information and create the EDS file of the device.

Design Flowchart



Pin Assignments



ID: Node ID Baud: Device Baud Rate

Rotary Switch Value(DR)	Baud rate (K BPS)
0	10
1	20
2	50
3	125
4	250
5	500
6	800
7	1000

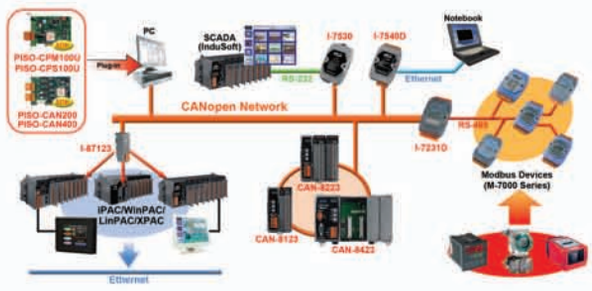
Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 2 KB
NVRAM	31 bytes (battery backup, data valid for up to 10 years)
RTC (Real Time Clock)	Yes
Watchdog	CPU built-in
Expansion Slot	4 slots
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Connector	5-pin screwed terminal block (N/A, CAN_L, CAN_SHLD, CAN_H, N/A)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M (allow user-defined baud rate)
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
UART Interface	
COM 1	RS-232 (For configuration)
LED	
Round LED	PWR LED, RUN LED, ERR LED
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Mechanism	
Dimensions	188mm x 132mm x 91mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

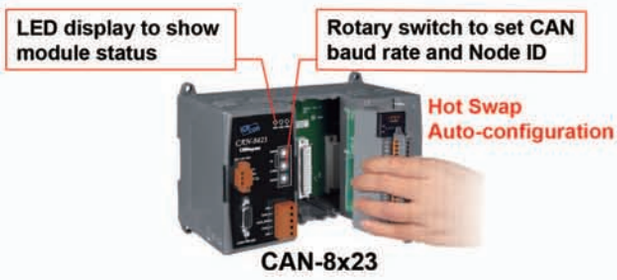
LED indicators

LED	Description
PWR	Indicate the status of power supply
RUN	Indicates the status of the physical layer
ERR	Indicates the condition of the CANopen network state mechanism

Application



Hot Swap & Auto-configuration



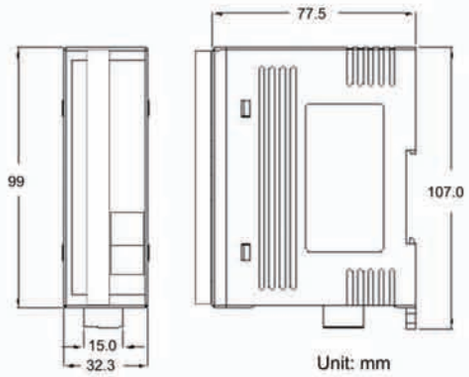
Ordering Information

CAN-8423	CANopen Remote I/O Unit with 4 Expansions

CANopen Slave

16-channel Isolated DI module of CANopen Slave

CAN-2053C



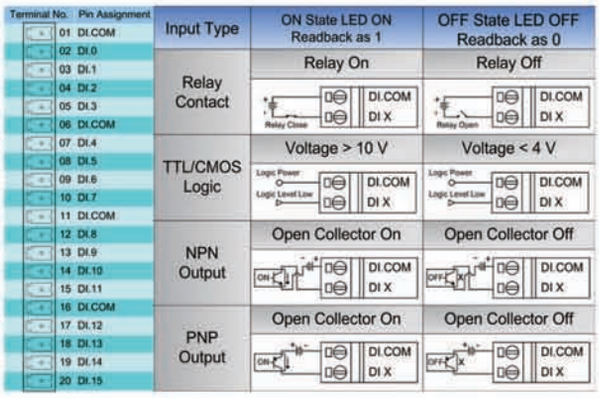
Dimensions

CAN-2053C module follows the DS-301 version 4.02 and DSP-401 version 2.1 and it had passed the validation of the CiA CANopen Conformance Test tool. Therefore, users can use it with standard CANopen master easily by applying the EDS file. CAN-2053C has 16-channel isolated sink/source input and it can be used to various applications, such as PNP, NPN, TTL, relay contact and so forth. By owing to the CANopen masters of ICP DAS or other manufactory, users can quickly build a CANopen network to approach user's requirements.

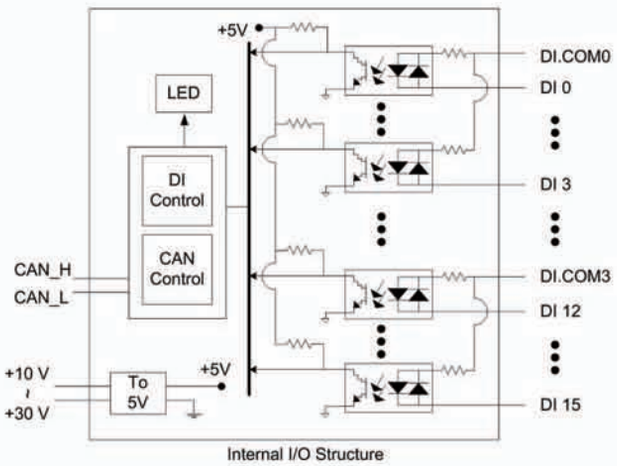
Features

- NMT Slave
- Providing I/O Pair-connection function
- Provide default EDS file
- Passed the validation of CiA CANopen Conformance Test tool
- Support Polarity Input Setting and Save
- Support Dynamic PDO
- Support Application: PNP, NPN, TTL, and Relay Contact
- ESD Protection 4 kV Contact for each channel

I/O Pin & Wire Connection

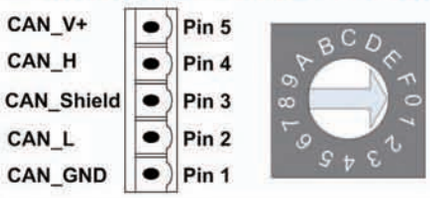


Internal I/O Structure



Internal I/O Structure

CAN Pin & Baud Rate Rotary



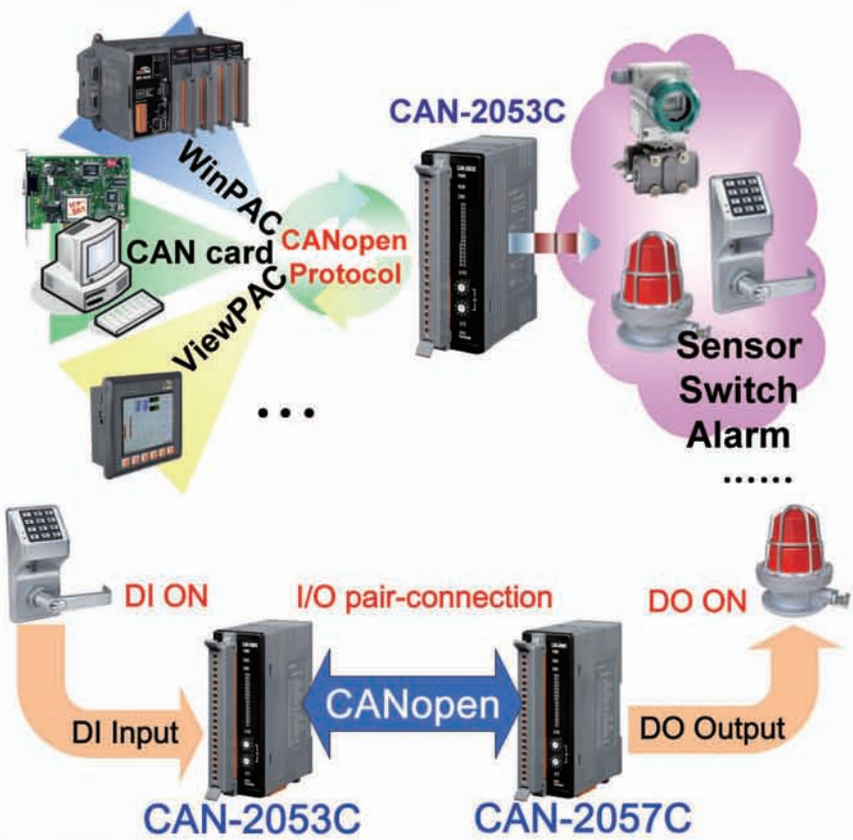
Baud rate rotary switch

Switch Value	Pair-connection	Baud Rate
0	8	10 kbps
1	9	20 kbps
2	A	50 kbps
3	B	125 kbps
4	C	250 kbps
5	D	500 kbps
6	E	800 kbps
7	F	1000 kbps

Hardware Specifications

CAN Interface	
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M
Terminator Resistor	Switch for 120 Ω terminator resistor
Node ID	1~99 selected by rotary switch
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
No. of PDOs	10 Rx, 10 Tx (support dynamic PDO)
PDO Mode	Event Triggered, Remotely requested, Cyclic and acyclic SYNC
Error Control	Node Guarding protocol and Heartbeat Producer protocol
Emergency Message	Yes
DI Interface	
Channels	16 (Sink/Source)
ON Voltage Level	+3.5 ~ +30 V_{DC}
OFF Voltage Level	+1 V_{DC} Max.
Input Impedance	3 kΩ, 0.3 W
Intra-module Isolation	3750 Vrms
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, RUN LED, ERR LED
I/O LED	16 LEDs as Digital Input, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ +75 °C
Storage Temp.	-30 ~ +80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



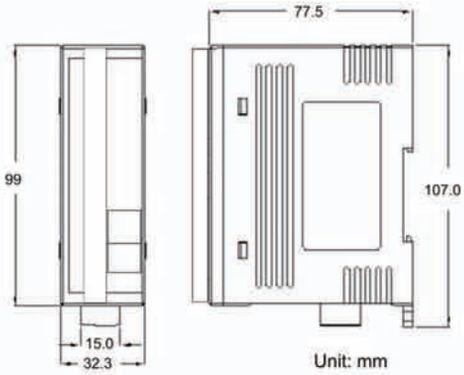
Ordering Information

CAN-2053C	CANopen module of 16-channel Isolated Sink/Source Digital Input

CANopen Slave

16-channel Isolated DO module of CANopen Slave

CAN-2057C



Dimensions

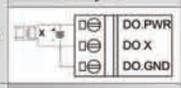
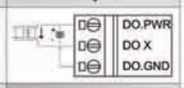
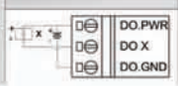
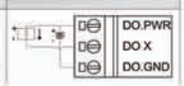
CAN-2057C module follows the DS-301 version 4.02 and DSP-401 version 2.1. CAN-2057C had passed the validation of the CiA CANopen Conformance Test tool. Therefore, users can use it with standard CANopen master easily by applying the EDS file. CAN-2057C has 16-channel isolated open collector output and it can be used to various applications, such as drive relay, resistance load and so forth. By owing to the CANopen masters of ICP DAS or other manufactory, users can quickly build a CANopen network to approach user's requirements.

Features

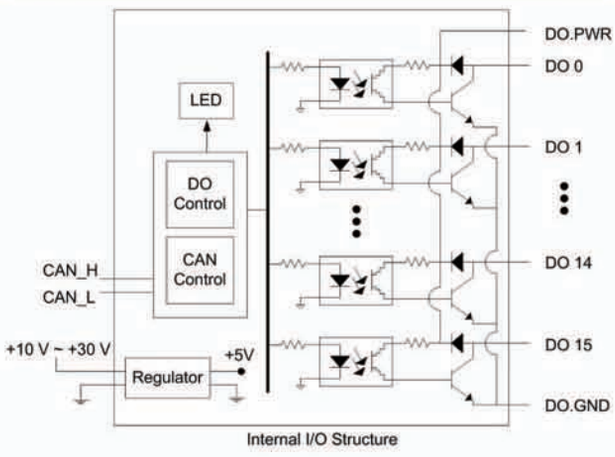
- NMT Slave
- Providing I/O Pair-connection Function
- Provide default EDS file
- Passed the validation of CiA CANopen Conformance Test tool
- Support Polarity Output Setting and Save
- Support Error Value Output Setting and Save
- Support Dynamic PDO
- Support Application: Drive Relay, Resistance Load
- ESD Protection 4 kV Contact for each channel

I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	DO.0
02	DO.1
03	DO.2
04	DO.3
05	DO.4
06	DO.5
07	DO.6
08	DO.7
09	DO.8
10	DO.9
11	DO.10
12	DO.11
13	DO.12
14	DO.13
15	DO.14
16	DO.15
17	DO.GND
18	DO.GND
19	DO.PWR
20	DO.PWR

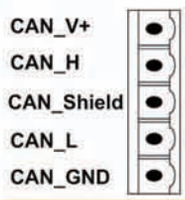
Output Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
	Relay Off	Relay On
Drive Relay		
Resistance Load		

Internal I/O Structure



Internal I/O Structure

CAN Pin & Baud Rate Rotary



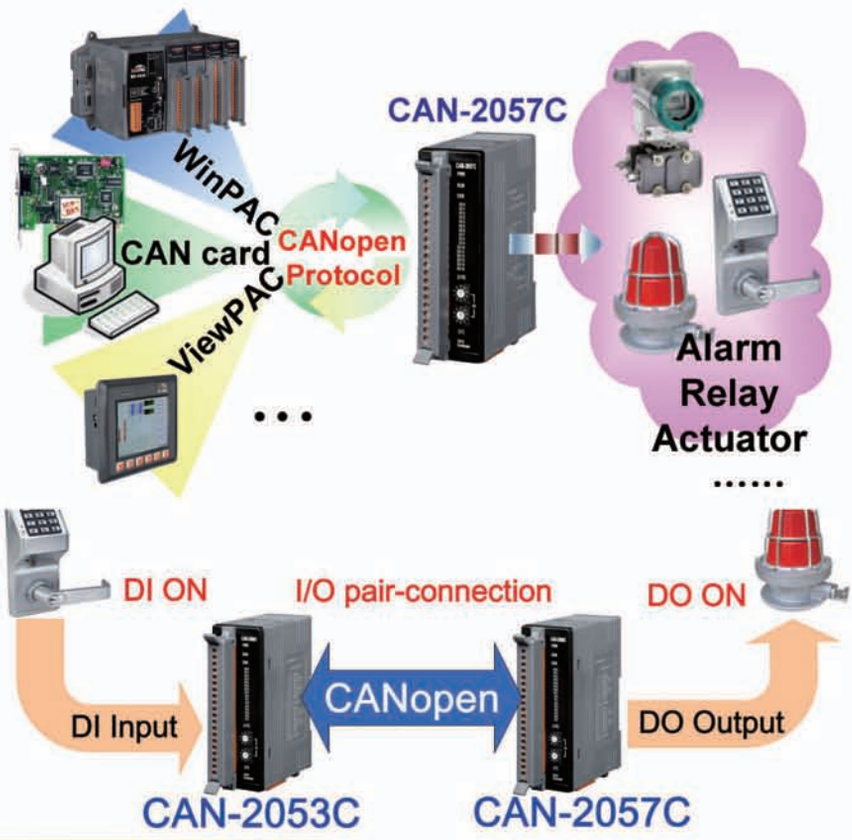
Baud rate rotary switch

Switch Value	Pair-connection	Baud Rate
0	8	10 kbps
1	9	20 kbps
2	A	50 kbps
3	B	125 kbps
4	C	250 kbps
5	D	500 kbps
6	E	800 kbps
7	F	1000 kbps

Hardware Specifications

CAN Interface	
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M
Terminator Resistor	Switch for 120 Ω terminator resistor
Node ID	1~99 selected by rotary switch
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
No. of PDOs	10 Rx, 10 Tx (support dynamic PDO)
PDO Mode	Event Triggered, Remotely requested, Cyclic and acyclic SYNC
Error Control	Node Guarding protocol and Heartbeat Producer protocol
Emergency Message	Yes
Digital Output	
Channels	16 (Sink)
Output Type	Open-collector
Reaction Time	150 us
Max Load Current	100 mA per channel
Load Voltage	+5 ~ +30 V_{DC}
Intra-module Isolation	3750 Vrms
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, RUN LED, ERR LED
I/O LED	16 LEDs as Digital Output, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ +75 °C
Storage Temp.	-30 ~ +80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



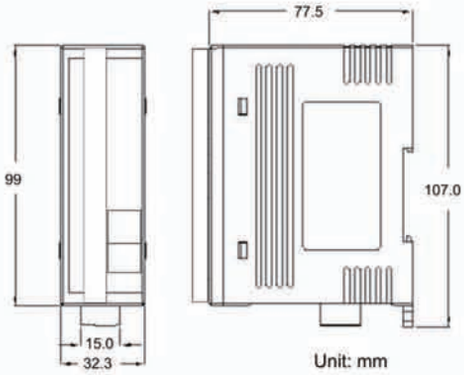
Ordering Information

CAN-2057C	CANopen module of 16-channel Isolated Open-collector Digital Output

CANopen Slave

8-ch DI & 8-ch DO module of CANopen Slave

CAN-2054C



Dimensions

CAN-2054C module follows the CiA DS-301 version 4.02 and DSP-401 version 2.1. You can access the digital I/O status and set the configuration by using standard CANopen protocol. CAN-2054C has passed the validation of the CiA CANopen conformance test tool. Therefore, you can use it with standard CANopen master easily by applying the EDS file. CAN-2054C has 8 isolated sink/source input channels and 8 isolated sink output channels. It can be used to various applications, such as PNP, NPN, TTL, relay contact and so forth. By owing to the CANopen masters of ICP DAS, you can quickly build a CANopen network to approach your requirements.

Features

- NMT Slave
- Providing Pair-Connect function
- Provide default EDS file
- ESD Protection 4 KV Contact for each channel
- Support Power Supply +10 ~ +30 V_{DC}
- Support CiA DS-301 v4.02, DSP-401 v2.1
- Support PDO Mapping

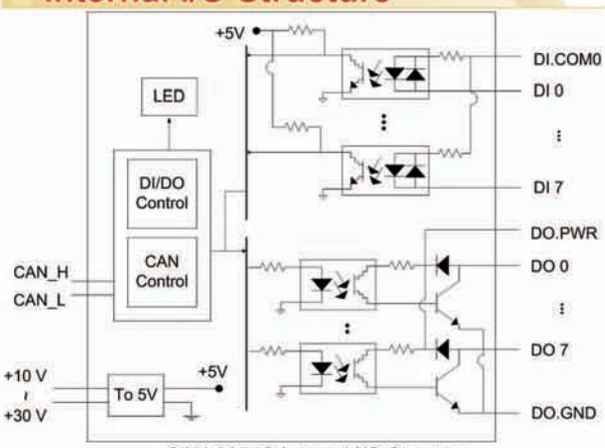
I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	DI.COM
02	DI0
03	DI1
04	DI2
05	DI3
06	DI4
07	DI5
08	DI6
09	DI7
10	DO0
11	DO1
12	DO2
13	DO3
14	DO4
15	DO5
16	DO6
17	DO7
18	DO.GND
19	DO.GND
20	DO.PWR

Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Relay Contact	Relay On	Relay Off
TTL/CMOS Logic	Voltage > 10 V	Voltage < 4 V
NPN Output	Open Collector On	Open Collector Off
PNP Output	Open Collector On	Open Collector Off

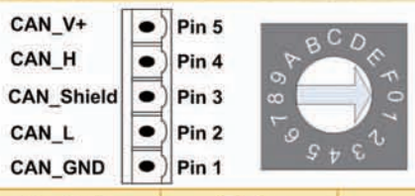
Output Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Drive Relay	Relay Off	Relay On
Resistance Load		

Internal I/O Structure



CAN-2054C Internal I/O Structure

Node ID & Baud rate DIP Switch

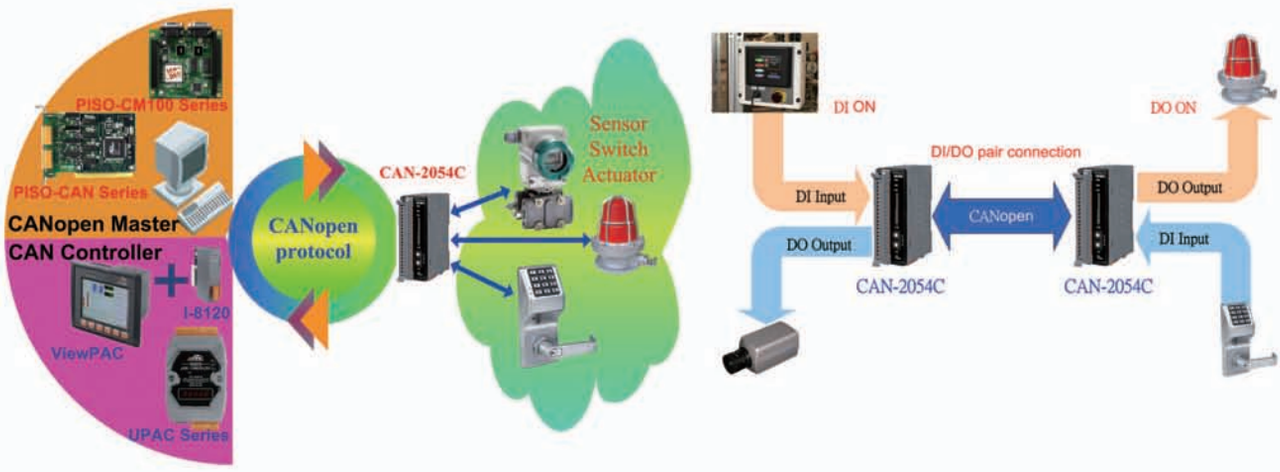


Switch Value	Pair-connection	Baud Rate
0	8	10 kbps
1	9	20 kbps
2	A	50 kbps
3	B	125 kbps
4	C	250 kbps
5	D	500 kbps
6	E	800 kbps
7	F	1000 kbps

Hardware Specifications

CAN Interface	
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M
Terminator Resistor	Switch for 120 Ω terminator resistor
Node ID	1~99 selected by rotary switch
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
No. of PDOs	10 Rx, 10 Tx (support dynamic PDO)
PDO Mode	Event Triggered, Remotely requested, Cyclic and acyclic SYNC
Error Control	Node Guarding protocol and Heartbeat Producer protocol
Emergency Message	Yes
Digital Input	
Channels	8 (Sink / Source)
On Voltage Level	+3.5 ~ +30 V_{DC}
Off Voltage Level	+1 V_{DC} Max.
Response Time	250 us
ESD Protection	4 kV Contact for each channel
Digital Output	
Channels	8 (Sink)
Load Voltage	+5 ~ +30 V_{DC}
Output Type	Open-Collector
Reaction Time	200 us
LED	
Round LED	PWR LED, RUN LED, ERR LED
I/O LED	8 LEDs for DI and DO individually, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ +75 °C
Storage Temp.	-30 ~ +80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



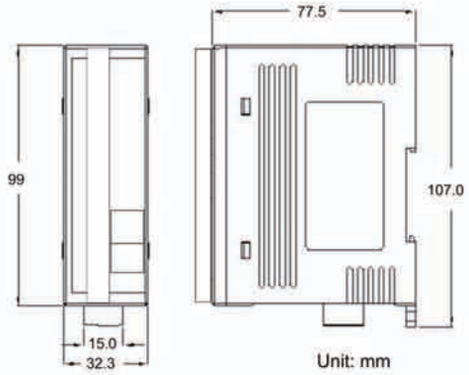
Ordering Information

CAN-2054C	CANopen module of 8-channel Digital Input and 8-channel Digital Output

CANopen Slave

8-channel RTD Input Module of CANopen Slave

CAN-2015C



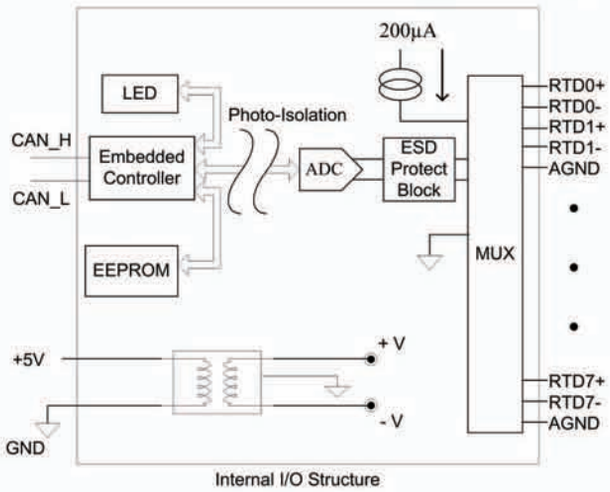
Dimensions

CAN-2015C module follows the CiA DS-301 version 4.02 and DSP-401 version 2.1. You can access the thermocouple input status and set the configuration by using standard CANopen protocol. CAN-2015C has passed the validation of the CiA CANopen conformance test tool. Therefore, you can use it with standard CANopen master easily by applying the EDS file. CAN-2015C has 8 differential RTD input channels. By the CANopen masters of ICP DAS, you can quickly build a CANopen network to approach your requirement.

Features

- NMT Slave
- NMT Error Control support Guarding and Heartbeat
- Provide default EDS file
- Passed the validation of CiA CANopen conformance test tool
- ESD Protection 4 KV Contact for each channel
- Support Power Supply +10 ~ +30 V_{DC}
- Support CiA DS-301 v4.02, DSP-401 v2.1
- Support Dynamic PDO

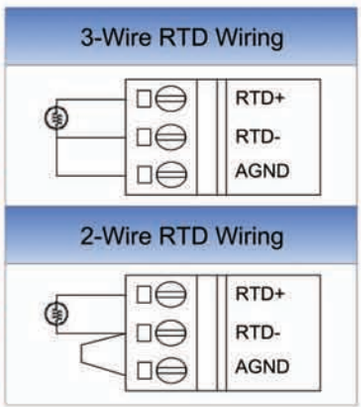
Internal I/O Structure



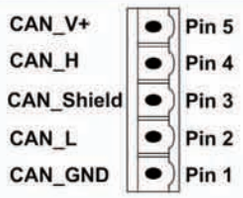
Internal I/O Structure

I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	RTD0+
02	RTD1-
03	RTD1+
04	RTD1-
05	AGND
06	RTD2+
07	RTD2-
08	RTD3+
09	RTD3-
10	AGND
11	RTD4+
12	RTD4-
13	RTD5+
14	RTD5-
15	AGND
16	RTD6+
17	RTD6-
18	RTD7+
19	RTD7-
20	AGND



CAN Pin & Baud Rate Rotary



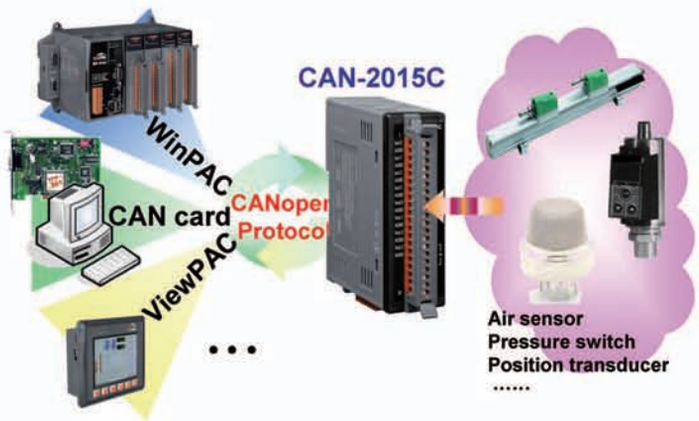
Baud rate rotary switch

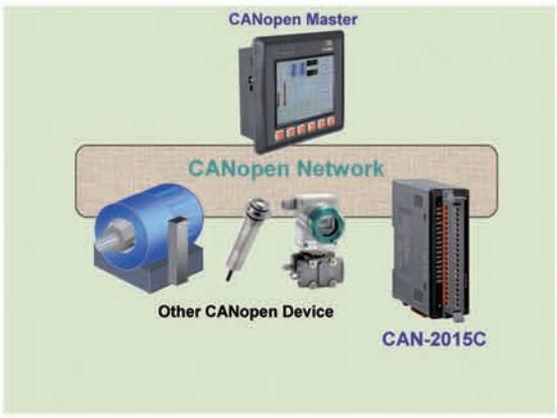
Switch Value	Baud Rate
0	10 kbps
1	20 kbps
2	50 kbps
3	125 kbps
4	250 kbps
5	500 kbps
6	800 kbps
7	1000 kbps

Hardware Specifications

CAN Interface	
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M
Terminator Resistor	Switch for 120 Ω terminator resistor
Node ID	1~99 selected by rotary switch
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
No. of PDOs	10 Rx, 10 Tx (support dynamic PDO)
PDO Mode	Event Triggered, Remotely requested, Cyclic and acyclic SYNC
Error Control	Node Guarding protocol and Heartbeat Producer protocol
Emergency Message	Yes
Analogue Input	
Channels	8 Differential
Voltage Range	Pt100, Pt1000, Ni120, Cu100, Cu1000
Current Range	16-bit
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, RUN LED, ERR LED
I/O LED	8 LEDs as RTD indicator, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application





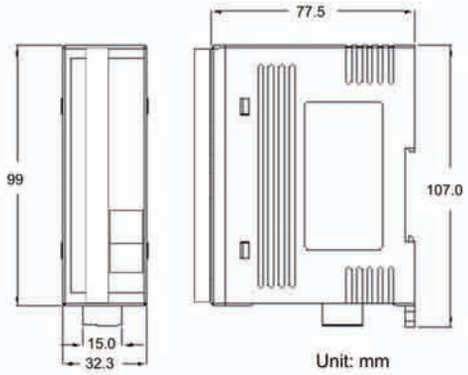
Ordering Information

CAN-2015C	CANopen module of 8-channel Differential RTD Input

CANopen Slave

Analogue Input module of CANopen Slave

CAN-2017C



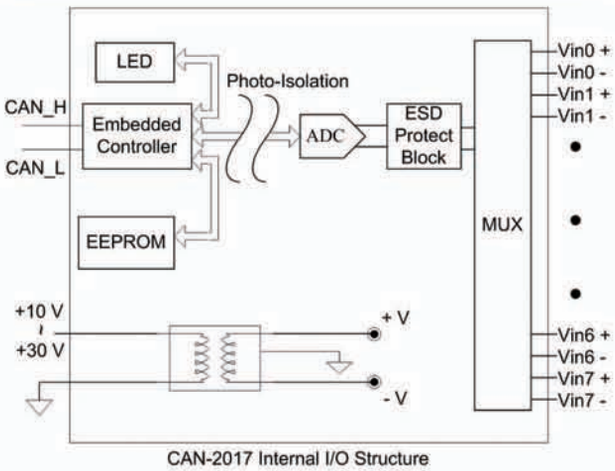
Dimensions

CAN-2017C module follows the CiA DS-301 version 4.02 and DSP-401 version 2.1. You can access the analogue input status and set the configuration by using standard CANopen protocol. CAN-2017C has passed the validation of the CiA CANopen Conformance Test tool. Therefore, you can use it with standard CANopen master easily by applying the EDS file. CAN-2017C has 8-channel differential analogue input. By owing to the CANopen masters of ICP DAS, you can quickly build a CANopen network to approach your requirement.

Features

- NMT Slave
- NMT Error Control support Guarding and Heartbeat
- Provide default EDS file
- Passed the validation of CiA CANopen Conformance Test tool
- Sampling mode support normal and fast mode
- ESD Protection 4 KV Contact for each channel
- Support Power Supply +10 ~ +30 V_{DC}
- Support CiA DS-301 v4.02, DSP-401 v2.1
- Support Dynamic PDO

Internal I/O Structure

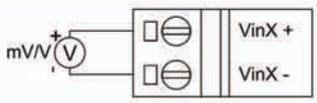


CAN-2017 Internal I/O Structure

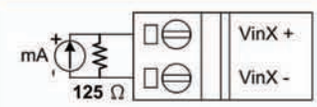
I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	Vin 0 +
02	Vin 0 -
03	Vin 1 +
04	Vin 1 -
05	Vin 2 +
06	Vin 2 -
07	Vin 3 +
08	Vin 3 -
09	Vin 4 +
10	Vin 4 -
11	Vin 5 +
12	Vin 5 -
13	Vin 6 +
14	Vin 6 -
15	Vin 7 +
16	Vin 7 -
17	N/A
18	N/A
19	N/A
20	N/A

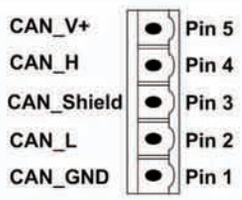
Voltage Input Wiring



Current Input Wiring



CAN Pin & Baud Rate Rotary



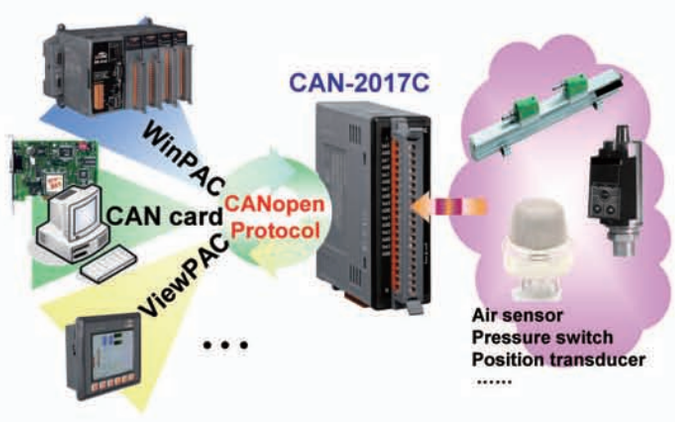
Baud rate rotary switch

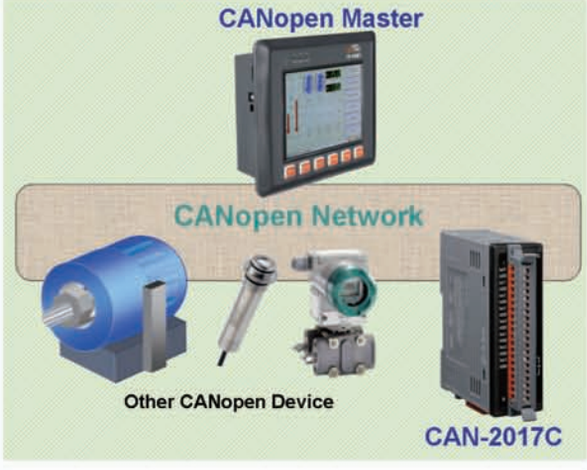
Switch Value	Baud Rate
0	10 kbps
1	20 kbps
2	50 kbps
3	125 kbps
4	250 kbps
5	500 kbps
6	800 kbps
7	1000 kbps

Hardware Specifications

CAN Interface	
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1M
Terminator Resistor	Switch for 120 Ω terminator resistor
Node ID	1~99 selected by rotary switch
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
No. of PDOs	10 Rx, 10 Tx (support dynamic PDO)
PDO Mode	Event Triggered, Remotely requested, Cyclic and acyclic SYNC
Error Control	Node Guarding protocol and Heartbeat Producer protocol
Emergency Message	Yes
Analogue Input	
Channels	8 Differential
Voltage Range	+/-10 V, +/-5 V, +/-1 V, +/-500 mV, +/-150 mV
Current Range	-20 mA ~ +20 mA (Requires Optional External 125Ω Resistor)
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, RUN LED, ERR LED
I/O LED	8 LEDs as Current or Voltage input, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application





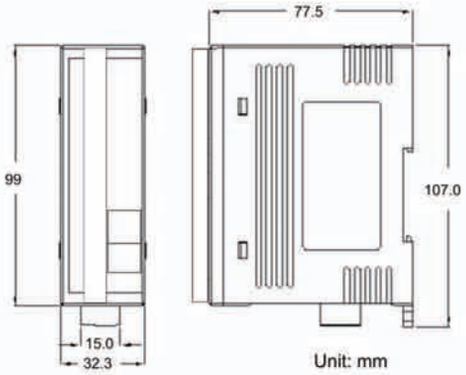
Ordering Information

CAN-2017C	CANopen module of 8-channel Differential Analogue Input

CANopen Slave

8-channel Thermocouple Input Module of CANopen Slave

CAN-2018C



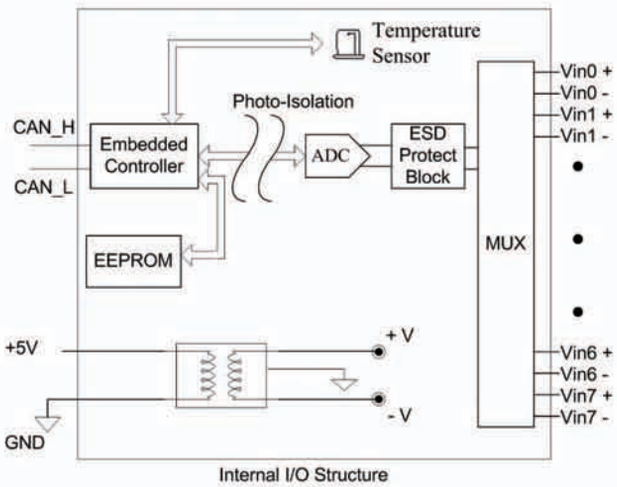
Dimensions

CAN-2018C module follows the CiA DS-301 version 4.02 and DSP-401 version 2.1. You can access the thermocouple input status and set the configuration by using standard CANopen protocol. CAN-2018C has passed the validation of the CiA CANopen conformance test tool. Therefore, you can use it with standard CANopen master easily by applying the EDS file. CAN-2018C has 8 differential thermocouple input channels. By the CANopen masters of ICP DAS, you can quickly build a CANopen network to approach your requirement.

Features

- NMT Slave
- NMT Error Control support Guarding and Heartbeat
- Provide default EDS file
- Passed the validation of CiA CANopen conformance test tool
- ESD Protection 4 KV Contact for each channel
- Support Power Supply +10 ~ +30 V_{DC}
- Support CiA DS-301 v4.02, DSP-401 v2.1
- Support Dynamic PDO

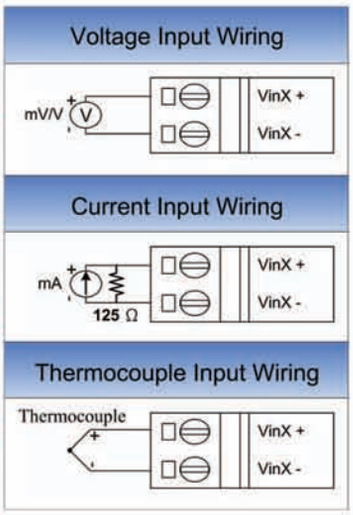
Internal I/O Structure



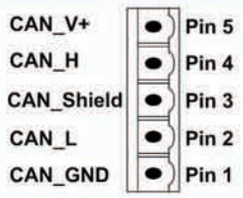
Internal I/O Structure

I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	Vin 0 +
02	Vin 0 -
03	Vin 1 +
04	Vin 1 -
05	Vin 2 +
06	Vin 2 -
07	Vin 3 +
08	Vin 3 -
09	Vin 4 +
10	Vin 4 -
11	Vin 5 +
12	Vin 5 -
13	Vin 6 +
14	Vin 6 -
15	Vin 7 +
16	Vin 7 -
17	N/A
18	N/A
19	N/A
20	N/A



CAN Pin & Baud Rate Rotary



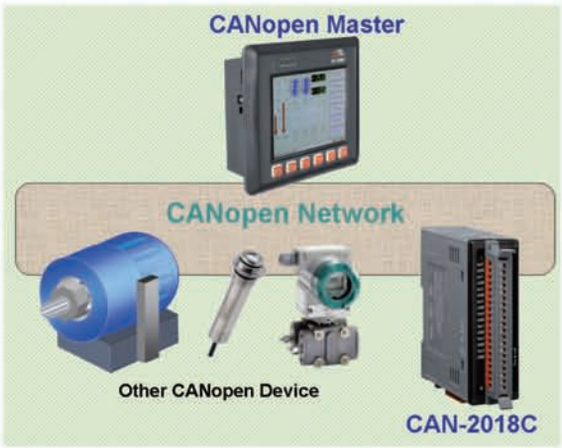
Baud rate rotary switch

Switch Value	Baud Rate
0	10 kbps
1	20 kbps
2	50 kbps
3	125 kbps
4	250 kbps
5	500 kbps
6	800 kbps
7	1000 kbps

Hardware Specifications

CAN Interface	
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1M
Terminator Resistor	Switch for 120 Ω terminator resistor
Node ID	1~99 selected by rotary switch
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
No. of PDOs	10 Rx, 10 Tx (support dynamic PDO)
PDO Mode	Event Triggered, Remotely requested, Cyclic and acyclic SYNC
Error Control	Node Guarding protocol and Heartbeat Producer protocol
Emergency Message	Yes
Analogue Input	
Channels	8 Differential
Voltage Range	+/-15mV, +/-50m V, +/-100m V, +/-500 mV, +/-1V, +/- 2.5V
Current Range	-20 mA ~ +20 mA (Requires Optional External 125Ω Resistor) Thermocouple(J, K, T, E, R, S, B, N, C)
Resolution	16-bit
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, RUN LED, ERR LED
I/O LED	8 LEDs as Current or Voltage input, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



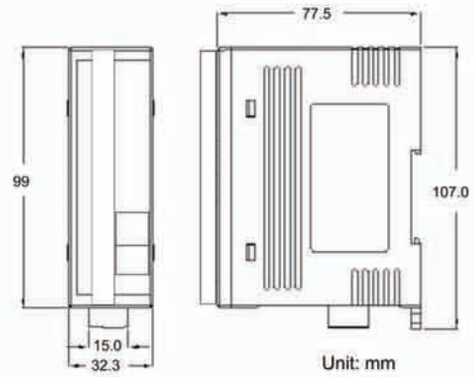
Ordering Information

CAN-2018C	CANopen module of 8-channel Differential Thermocouple Input

CANopen Slave

Analog Output Module of CANopen Slave

CAN-2024C



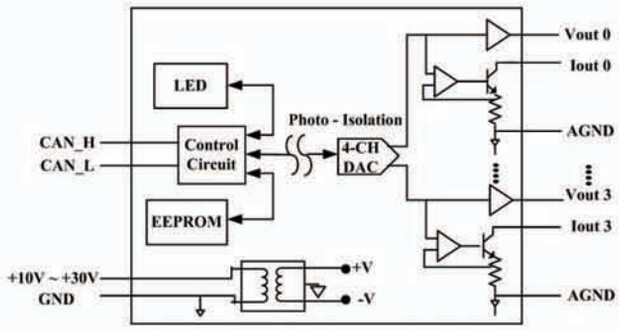
Dimensions

CAN-2024C module follows the CiA DS-301 version 4.02 and DSP-401 version 2.1. You can access the analogue output status and set the configuration by using standard CANopen protocol. CAN-2024C has passed the validation of the CiA CANopen conformance test tool. Therefore, you can use it with standard CANopen master easily by applying the EDS file. CAN-2024C has 4 analogue output channels. By the CANopen masters of ICP DAS, you can quickly build a CANopen network to approach your requirement.

Features

- NMT Slave
- Read-Back Accuracy ±1% of FSR
- Provide default EDS file
- ESD Protection 4 KV Contact for each channel
- Support Power Supply +10 ~ +30 V_{DC}
- Support CiA DS-301 v4.02, DSP-401 v2.1
- Support PDO Mapping

Internal I/O Structure

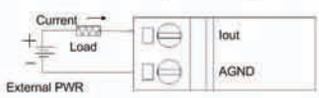


Internal I/O Structure

I/O Pin & Wire Connection

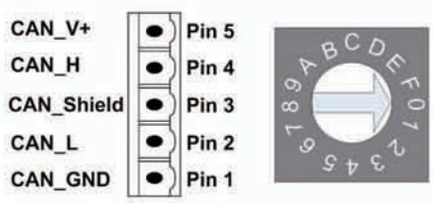
Terminal No.	Pin Assignment
01	Iout 0
02	AGND
03	Iout 1
04	AGND
05	Iout 2
06	AGND
07	Iout 3
08	AGND
09	Vout 0
10	AGND
11	Vout 1
12	AGND
13	Vout 2
14	AGND
15	Vout 3
16	AGND
17	N/A
18	N/A
19	N/A
20	N/A

Current Output Wiring



Voltage Output Wiring

Node ID & Baud rate DIP Switch



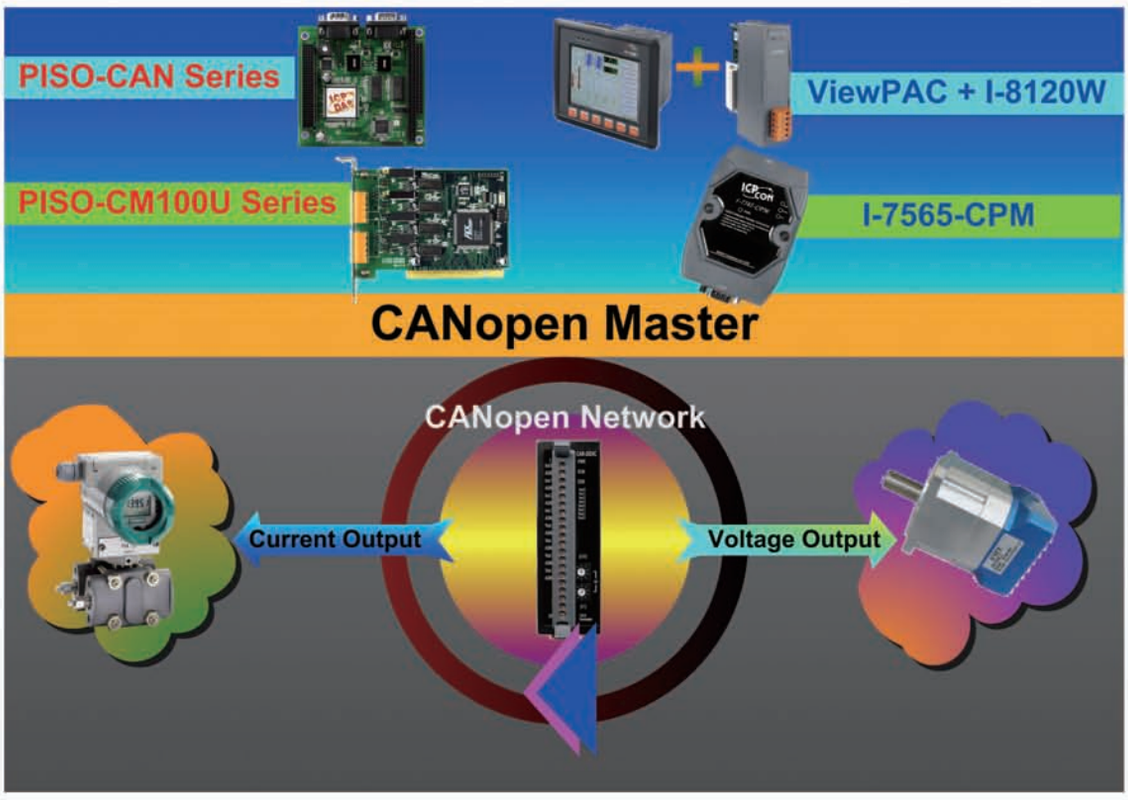
Baud rate rotary switch

Rotary Switch Value	Baud Rate
0	10 kbps
1	20 kbps
2	50 kbps
3	125 kbps
4	250 kbps
5	500 kbps
6	800 kbps
7	1000 kbps

Hardware Specifications

CAN Interface	
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1M
Terminator Resistor	Switch for 120 Ω terminator resistor
Node ID	1~99 selected by rotary switch
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
No. of PDOs	10 Rx, 10 Tx (support dynamic PDO)
PDO Mode	Event Triggered, Remotely requested, Cyclic and acyclic SYNC
Error Control	Node Guarding protocol and Heartbeat Producer protocol
Emergency Message	Yes
Analog Output	
Channels	4
Voltage Range	0 ~ +5 V_{DC}, -5 ~ +5 V_{DC}, 0 ~ +10 V_{DC}. , -10 ~ +10 V_{DC}
Current Range	0 ~ 20 mA, 4 ~ 20 mA
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, RUN LED, ERR LED
I/O LED	4 LEDs as Current and Voltage differently, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ +80 °C
Humidity	5 ~ 95% RH, non-condensing

Application



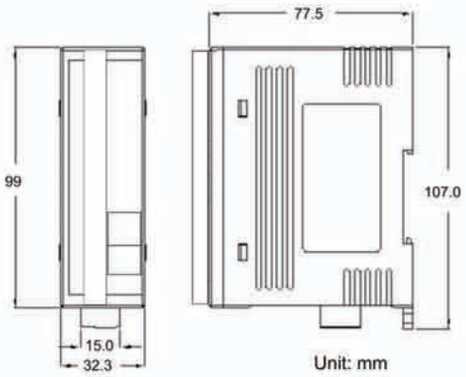
Ordering Information

CAN-2024C	CANopen module of 4-channel Analog Output

CANopen Slave

PWM module of CANopen Slave

CAN-2088C



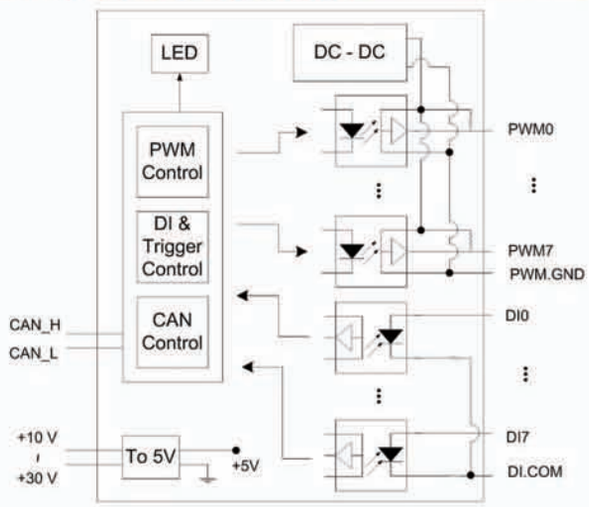
Dimensions

PWM (Pulse width modulation) is a powerful technique for controlling analog circuits. By using digital outputs, it can generate a waveform with variant duty cycle and frequency to control analog circuits. CAN-2088C, a CAN bus remote I/O modules with CANopen protocol, provides 8 PWM output channels and 8 digital inputs channels with high-speed counter function. It can be used to develop practical and economical analog control systems in the CANopen network.

Features

- Hardware-controlled PWM output
- PWM output frequency: 0.2 Hz ~ 500 kHz with 0.1%~99.9% duty cycle
- PWM Output Modes: software trigger / hardware trigger
- Trigger each PWM output individually or all PWM outputs synchronously
- Support Burst output mode and Continue output mode
- Provide 32-bit 500 kHz high-speed counter for each DI channel
- Pass the validation of CANopen conformance test
- Provide EDS file for CANopen master interface

Internal I/O Structure



I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	PO.0
02	PO.1
03	PO.2
04	PO.3
05	PO.4
06	PO.5
07	PO.6
08	PO.7
09	PO.GND
10	PO.GND
11	DI.0
12	DI.1
13	DI.2
14	DI.3
15	DI.4
16	DI.5
17	DI.6
18	DI.7
19	DI.GND
20	DI.GND

Output Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Drive Relay	Relay On	Relay Off
Resistance Load		

Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Relay Contact	Relay On	Relay Off
TTL/CMOS Logic	Voltage > 10 V	Voltage < 4 V
NPN Output	Open Collector On	Open Collector Off
PNP Output	Open Collector On	Open Collector Off

CAN Pin & Baud Rate Rotary

CAN_V+	Pin 5
CAN_H	Pin 4
CAN_Shield	Pin 3
CAN_L	Pin 2
CAN_GND	Pin 1

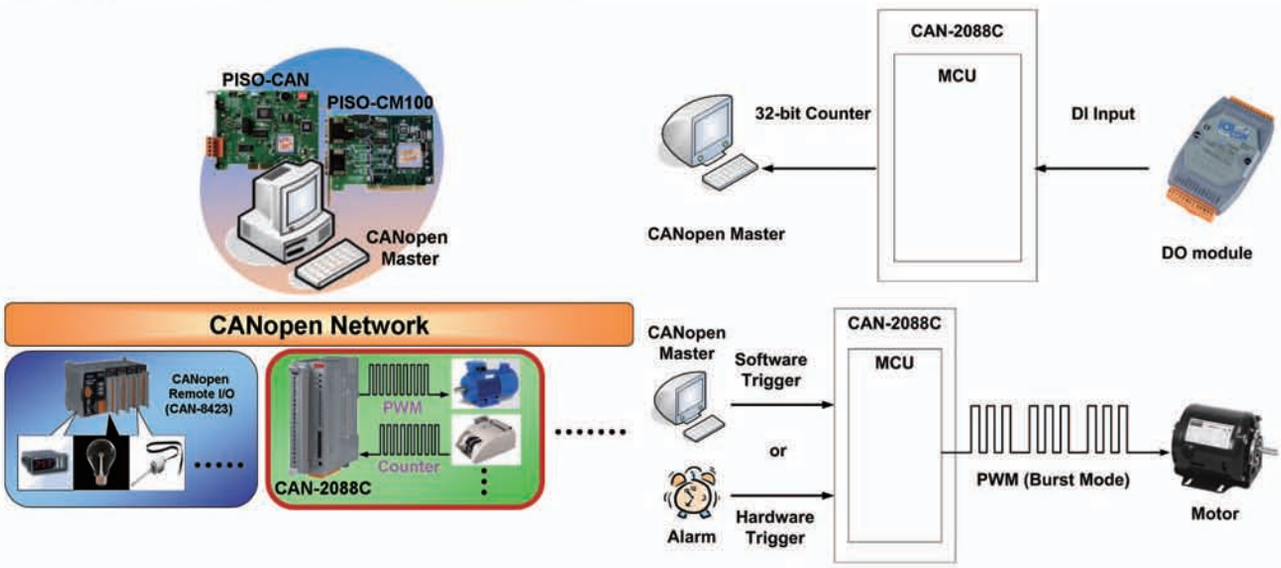
Baud rate rotary switch

Switch Value	Baud Rate
0	10 kbps
1	20 kbps
2	50 kbps
3	125 kbps
4	250 kbps
5	500 kbps
6	800 kbps
7	1000 kbps

Hardware Specifications

CAN Interface	
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+)
Baud Rate (bps)	10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1M
Terminator Resistor	Switch for 120 Ω terminator resistor
Node ID	1~99 selected by rotary switch
Protocol	CANopen DS-301 ver4.02, DS-401 ver2.1
No. of PDOs	10 Rx, 10 Tx (support dynamic PDO)
PDO Mode	Event Triggered, Remotely requested, Cyclic and acyclic SYNC
Error Control	Node Guarding protocol and Heartbeat Producer protocol
Emergency Message	Yes
PWM Interface	
Channels	8 (Source)
Output Max. Load Current	1 mA
Frequency Range	0.2 Hz ~ 500 kHz (non-continuous, the min. unit of the high/low level signal is 1 us)
PWM Mode	Continue mode, Burst mode, Hardware trigger mode, Software trigger mode
ESD Protection	4 kV Contact for each channel
DI Interface	
Channels	8 (Sink)
Counter Frequency	32-bit, 500 kHz Max.
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, RUN LED, ERR LED
I/O LED	8 LEDs as PWM, 8 LEDs as Digital Input, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	3.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ +75 °C
Storage Temp.	-30 ~ +80 °C
Humidity	10 ~ 90% RH, non-condensing

Application

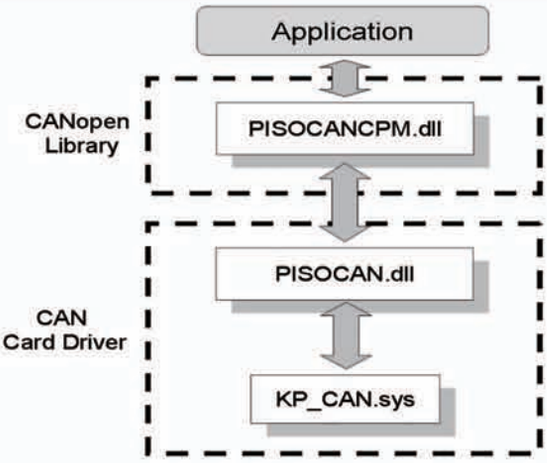


Ordering Information

CAN-2088C	CAN-2088C CANopen Module of 8-channel PWM and 8-channel DI with High-speed Counters

CANopen Software

Compact CANopen Library for PISO-CAN series

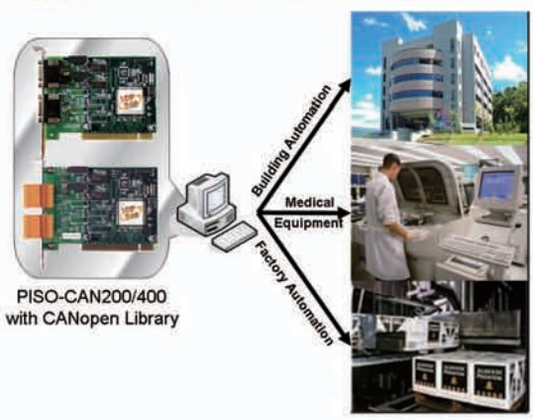


In order to apply the CANopen protocol on the PISO-CAN series boards easily, we provides the CANopen application Tools, which are CANopen library and CANopen diagnosis application tool. If users want to develop an industrial application with CANopen protocol, the CANopen library is very helpful to be applied with the PISO-CAN series boards as the CANopen devices with the features of CANopen protocol. Besides, if the monitor and diagnosis of CANopen message on the CAN network is considered, the CANopen diagnostic application tool can be used to achieve this purpose.

Features

- NMT: Master
- CANopen Version: DS-301 v4.02
- Support up to 127 nodes
- Error Control: Support Guarding protocol
- Support EMCY receiving
- Provide dynamic PDO functions
- Support SYNC protocol
- Support SDO segment and block protocol
- Driver support Win 98/ME/NT/2K/XP, and Linux

Application



Hardwares Support

PISO-CAN200U-D PISO-CAN200U-T	2-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PISO-CAN400U-D PISO-CAN400U-T	4-Port isolated protection Universal PCI CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PEX-CAN200i-D PEX-CAN200i-T	2-Port isolated protection PCI-Express CAN communication board with 9-pin D-sub connector or 5-pin screw terminal connector
PCM-CAN100	1-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
PCM-CAN200	2-Port isolated protection PCI-104 CAN communication module with 9-pin D-sub connector
PCM-CAN200P	2-Port isolated protection PC-104+ CAN communication module with 9-pin D-sub connector

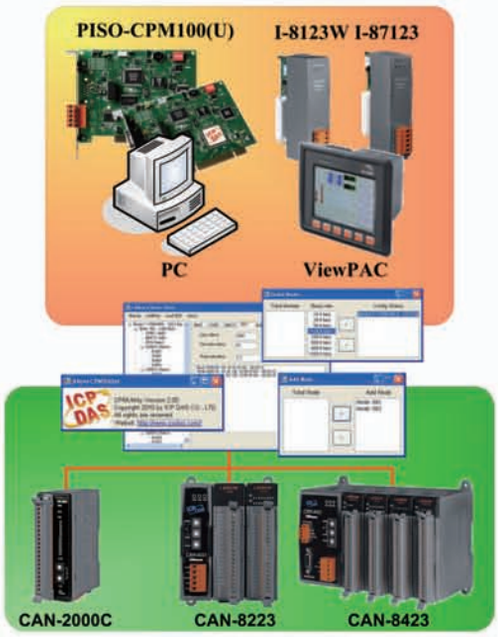
CANopen Master Utility

In order to help users for using the CANopen master communication boards, the PISO-CPM100(U), easily, we provides the CPMUtility application tool. The utility includes several functions, such as NMT protocol, SYNC protocol, EMCY protocol, SDO protocol, PDO protocol, and so forth. So through this tool users can test himself's CANopen network easily and quickly. Or if users need just a simple CANopen master program to do some control and monitor the CANopen network, users can make more use of the CPMUtility.

Features

- Auto-scan all the CANopen master devices that the CPMUtility has supported
- Auto-scan all the CANopen slave devices on the CANopen network
- Support EDS file
- Dynamic PDO object setting easily
- Guarding Event and Heartbeat Event detection
- EMCY message receiving
- Maximum 5 SYNC message producers per CANopen master
- Support PISO-CPM100(U), I-8123W, I-87123 for version 2.00 later
- Support OS: WinCE5.0, and Win2K/XP/Vista/7 with 32-bit system

Application



Hardwares Support

PISO-CPM100-D PISO-CPM100-T	1 Port Intelligent CANopen Master Board with 33MHz 32-bit 5V PCI bus (V2.1) for D-sub 9-pin male connector or 5-pin screw terminal connector
PISO-CPM100U-D PISO-CPM100U-T	1 Port Intelligent CANopen Master Universal PCI Board for D-sub 9-pin male connector or 5-pin screw terminal connector
I-8123W	1 Port high performance CANopen master module with parallel bus
I-87123	1 Port CANopen master module with serial bus

CANopen Software

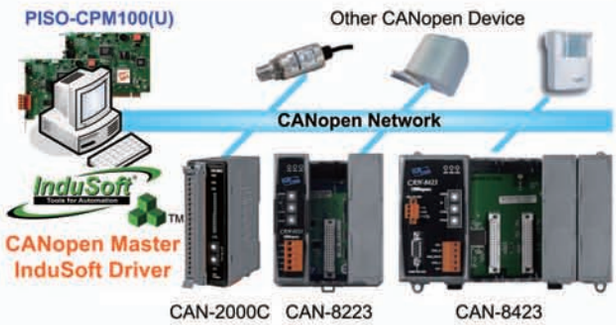
CANopen Master InduSoft Driver

In order to implement CANopen communication by InduSoft software, ICP DAS provides a set of CANopen component in the InduSoft driver. By means of this driver, you don't need to have the complex and abstruse technology of the CANopen protocol. Only few simple steps can finish the communication between your PC and the remote CANopen devices. Therefore, the ICP DAS InduSoft driver can help you not only to develop your application rapidly and quickly, but also to reduce the complexity of applications.

Features

- Integrates with InduSoft Web Studio SCADA
- A Tag supports max. 4 Bytes data length
- Communicates with the Multiple I-7565-CPM (multi-port) and PISO-CPM100 Series modules at the same time
- Auto detecting CANopen slave devices and CANopen I/O monitor
- NMT: Master
- CANopen Version: DS-301 v4.02
- Slave nodes support 1 ~ 127
- Support Guarding and Heartbeat protocol
- Support EMCY and SYNC protocol
- Provide dynamic PDO functions
- Support SDO segment protocol
- Driver support Windows 2K/XP

Application



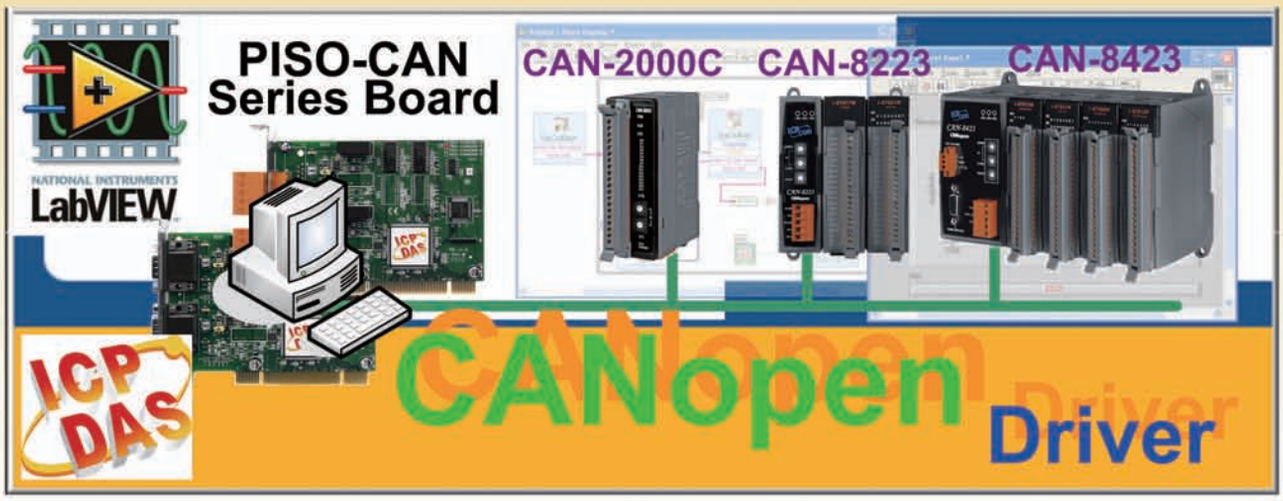
About the CANopen InduSoft driver, we provide some demos for users to refer to. In these demos, most commonly used functions are used and users can refer these functions to design CANopen application himself. There also has detailed description for all functions in the CANopen library user manual.

Hardwares Support

PISO-CPM100(U)	1-Port CANopen Master (Universal) PCI Communication Board
I-7565-CPM	USB / CANopen Master Converter

CANopen Software

CANopen Master LabVIEW Driver



In order to implement CANopen communication by NI LabVIEW software, ICP DAS provides a set of CANopen component in the LabVIEW driver. You only need to have the basic technology of the CANopen protocol. And then through few simple steps can finish the communication between your PC and the remote CANopen devices. Therefore, the ICP DAS LabVIEW driver can help you not only to develop your application rapidly and quickly, but also to reduce the complexity of applications.

Features

- NMT: Master
- CANopen Version: DS-301 v4.02
- Slave nodes support 1 ~ 127
- Error Control: Support Guarding protocol
- Support EMCY and SYNC protocol
- Provide dynamic PDO functions
- Support SDO segment and block protocol
- Driver support Windows 98/ME/NT/2K/XP

Demos Features

About the CANopen LabVIEW driver, we provide some demos for users to refer to. In these demos, most commonly used functions are used and users can refer these functions to design CANopen application himself. There also has detailed description for all functions in the CANopen library user manual.

Hardwares Support

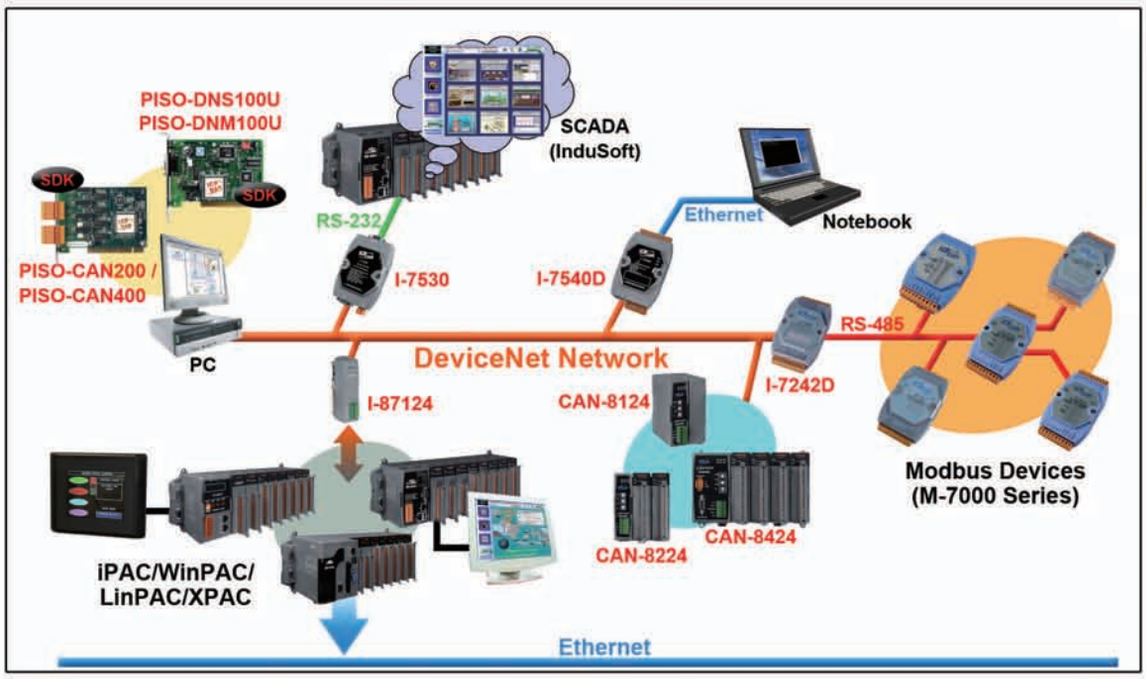
PISO-CAN200-D PISO-CAN200-T	Comply with 33MHz 32-bit 5V PCI bus (V2.1). Support plug-and-play and provide 2 CAN channels with D-Sub 9-pin connector or 5-pin screw terminal connector
PISO-CAN200U-D PISO-CAN200U-T	Comply with Universal PCI bus. Support plug-and-play and provide 2 CAN channels with D-Sub 9-pin connector or 5-pin screw terminal connector
PISO-CAN400-D PISO-CAN400-T	Comply with 33MHz 32-bit 5V PCI bus (V2.1). Support plug-and-play and provide 4 CAN channels with D-Sub 9-pin connector or 5-pin screw terminal connector
PISO-CAN400U-D PISO-CAN400U-T	Comply with Universal PCI bus. Support plug-and-play and provide 4 CAN channels with D-Sub 9-pin connector or 5-pin screw terminal connector
PEX-CAN200i-D PEX-CAN200i-T	Support XI link PCI Express bus and provide 2 CAN channels with D-Sub 9-pin connector or 5-pin screw terminal connector
PCM-CAN100 PCM-CAN200	1/2-Port Isolated Protection CAN Communication PCI-104 Module with 9-pin D-sub connector
PCM-CAN200P	2-Port Isolated Protection CAN Communication PC-104+ Module with 9-pin D-sub connector

ADP-9-D	2-port CAN expansion daughter board with D-sub 9-pin connectors
ADP-9-T	2-port CAN expansion daughter board with screwed terminal connectors

DeviceNet Series

DeviceNet based on the CAN bus is one of the world's leading device-level networks for industrial automation. In fact, more than 40% of end users surveyed by independent industry analysis report choose DeviceNet over other networks.

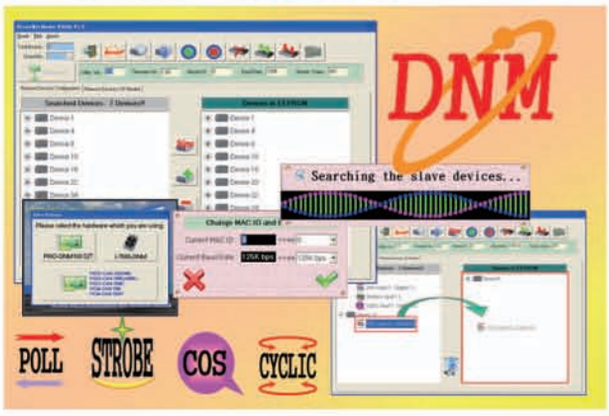
ICP DAS has been developing CAN based DeviceNet protocol products for several years, include PCI interface card, gateway, DeviceNet IO and DeviceNet module for ICP DAS's PACs — XPAC/WinPAC/LinCon/iPAC series main contol unit. We also help customers to resolve various DeviceNet network technology problems. In addition, we can provide DeviceNet solution for users. ICP DAS also holds DeviceNet conference, exhibition and training course all over the world.



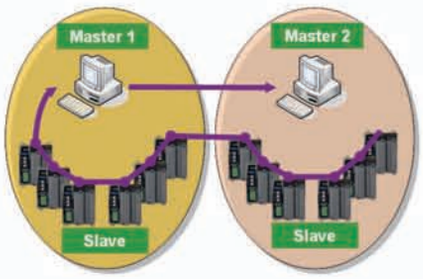
DeviceNet Series Key Features

- Comply with DeviceNet specification Volume I, Release 2.0 & Volume II, Release 2.0
- Support Group 2 Server and UCMM connection
- I/O Operating Modes: Poll, Bit-Strobe, Change of State / Cyclic
- Master series support Auto-Search function
- Master series provide input 512 bytes and output 512 bytes memory size for each slave
- Slave series support DeviceNet heartbeat and shutdown messages
- Slave series provide EDS file
- Selectable MAC ID (0 ~ 63) and baud rate (125, 250, 500 kbps)
- Built-in jumper or DIP switch for 120Ω terminator resistor of CAN bus
- Built-in watchdog
- 3000 V_{DC} isolation for DC-to-DC
- 2500 Vrms isolation on CAN bus

DeviceNet Master Utility



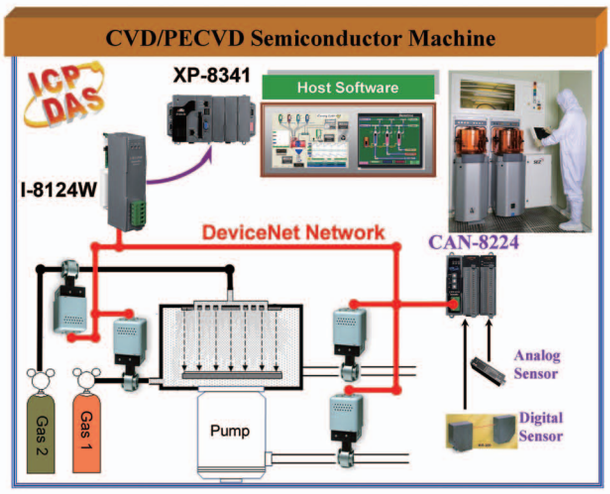
Multi-Master Feature



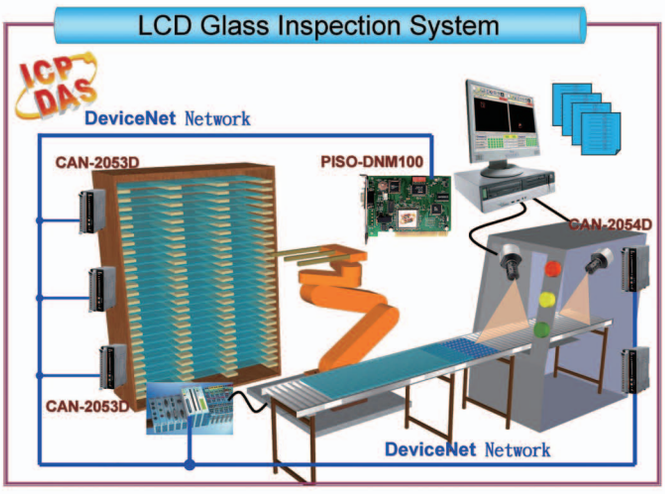
DeviceNet Series Selection Guide

	Product	Interface	Description	Page
Gateway	I-7241D	DeviceNet <--> DCON	DeviceNet Slave/DCON Master Gateway	3-03
	I-7242D	DeviceNet <--> Modbs RTU	DeviceNet Slave/Modbus RTU Master Gateway	3-05
	GW-7243D	DeviceNet <--> Modbus TCP / RTU	DeviceNet Slave/Modbus TCP,RTU Master Gateway	3-07
	GW-7434D	DeviceNet <--> Modbus TCP	DeviceNet Master/Modbus TCP Server Gateway	3-09
Master	I-7565-DNM	USB <--> DeviceNet master	USB/DeviceNet Master Converter	3-11
	I-87124	DeviceNet master	I-87K DeviceNet Master Module for XP/WP/VP series MCU	3-13
	I-8124W	DeviceNet master	I-8K DeviceNet Master Module for XP/WP/VP series MCU	3-15
	PISO-DNM100U	DeviceNet master	Built-in DeviceNet Master Firmware Universal PCI board	3-17
	PISO-CAN 200U/400U	DeviceNet master	DeviceNet Master Library for Universal PCI board	3-41
	PEX-CAN200i	DeviceNet master	DeviceNet Master Library for PCI-Express x 1 board	3-41
	PCM-CAN200	DeviceNet master	DeviceNet Master Library for PCI-104 board	3-41
	PCM-CAN200P	DeviceNet master	DeviceNet Master Library for PCI-104+ board	3-41
Slave	PISO-DNS100U	DeviceNet slave	Built-in DeviceNet Slave Firmware Universal PCI board	3-19
	CAN-8124	DeviceNet slave	1 Slot General Purpose DeviceNet Slave I/O Unit	3-21
	CAN-8224	DeviceNet slave	2 Slot General Purpose DeviceNet Slave I/O Unit	3-21
	CAN-8424	DeviceNet slave	4 Slot General Purpose DeviceNet Slave I/O Unit	3-23
	CAN-2053D	DeviceNet slave	DeviceNet 16-channel Isolated DI Module	3-25
	CAN-2057D	DeviceNet slave	DeviceNet 16-channel Isolated DO Module	3-27
	CAN-2054D	DeviceNet slave	DeviceNet 8-channel DI and 8-channel DO Module	3-29
	CAN-2015D	DeviceNet slave	DeviceNet 8-channel RTD Input Module	3-31
	CAN-2017D	DeviceNet slave	DeviceNet 8-channel Analog Input Module	3-33
	CAN-2018D	DeviceNet slave	DeviceNet 8-channel Thermocouple Input Module	3-35
	CAN-2024D	DeviceNet slave	DeviceNet 4-channel Analog Output Module	3-37
	CAN-2088D	DeviceNet slave	DeviceNet PWM Module	3-39

Application Stories



This system utilizes XP-8341 and I-8124W as the controlling center of the remote I/O devices. I-8124W provides DeviceNet master engine to collect the remote I/O data, including pneumatic valve “MKS 683” and Beckhoff DeviceNet I/O. XP-8341 exists an operating program to control the situation in the chamber. It is important to control the reacting time of the wafer in the chamber which have some kind of gas inside. After tuning timing and pressure parameter, this series equipment has been developed successfully and works in some semiconductor factories.

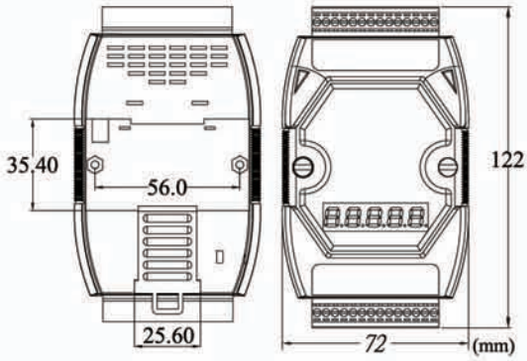


The system is to check that the LCD glass is good or not. Nowadays, the LCD is larger and larger. They need a system to check glass instead of human. There exists a DeviceNet network to control all remote I/O devices. The PC and PISO-DNM100U acts the DeviceNet master and accesses the remote device like sensor, barcode, robot and etc. There exists inspection software in the PC. It would make the robot to load the glass into the equipment. Complete inspecting the glass, the software would record the result of the glass and unload the glass. This system really helps finding defect glass and improving the quality of the product.

DeviceNet Gateway

DeviceNet Slave / DCON Master Gateway

I-7241D



Dimensions

The I-7241D is one of CAN bus products in ICP DAS. The device offers the communication gateway between DeviceNet and DCON protocol. DCON protocol is the communication protocol of I-7K and I-87K series IO modules of ICP DAS. And the I-7241D can be a DeviceNet slave device in CAN bus for DeviceNet network. It is a "Group 2 Only Slave" device, and supports "Predefined Master/Slave Connection Set". In addition, we also provide the utility software for users to configure the device parameters and build EDS file for the DeviceNet slave device. Users can easily apply I-7K and I-87K IO modules in DeviceNet applications with the I-7241D.

Features

- DeviceNet Version: Volume I & II, Release 2.0
- NMT: Slave
- Support Predefined Master/slave Connection Set
- Dynamic Assembly Objects Mapping
- Support Offline Connection Set, Device Heart-beat message and Device Shutdown message
- Provide Assembly object
- Dynamic Product EDS File
- I/O operating modes: Polling, Bit-Strobe, Change of State/Cyclic
- Support max 15 I-7K/I-87K IO modules
- Provide friendly Utility to configure
- Baud Rate: 125, 250, 500 kbps
- On-line change baud rate and MAC ID of CAN
- 7-segmemt LED to show operation mode, MAC ID, baud rate and error code

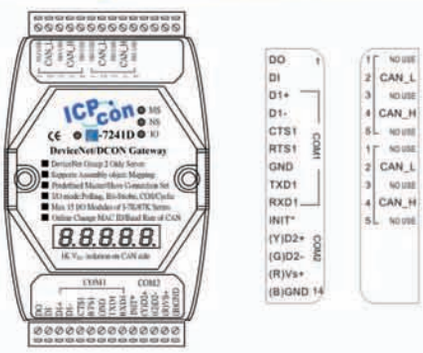
Utility Features

DCON (I-7K/I-87KSeries)

- Support auto-scan I-7K/I-87K modules
- Show Application and Assembly Objects configuration
- Support IO connection path setting
- Support EDS file creating

Design Flowchart

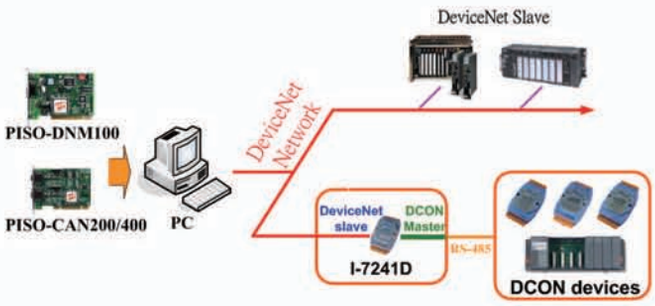
Pin Assignments



Hardware Specifications

Hardware	
CPU	80188, 40 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
Watchdog	Watchdog IC
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Connector	5-pin screwed terminal block (CAN_L, CAN_H, N/A for others)
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Protocol	DeviceNet Volumn I ver2.0, Volumn II ver2.0
UART Interface	
COM 1	RS-232 (For configuration)
COM 2	RS-485 (Self-turner inside)
Transmission Distance (m)	Depend on baud rate (for example, max. 1200 m at 9.6 kbps)
Baud Rate (bps)	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Protocol	DCON
LED	
Round LED	MS LED, NS LED, IO LED
5-digit 7 Segment	Yes
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	3W
Mechanism	
Dimensions	72mm x 122mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



LED Indicators

LED	Description
MS	This LED provides device status. It indicates whether or not the device is operating properly.
NS	This LED indicates the status of the communication link.
I/O	This LED provides information of inputs and/or outputs.

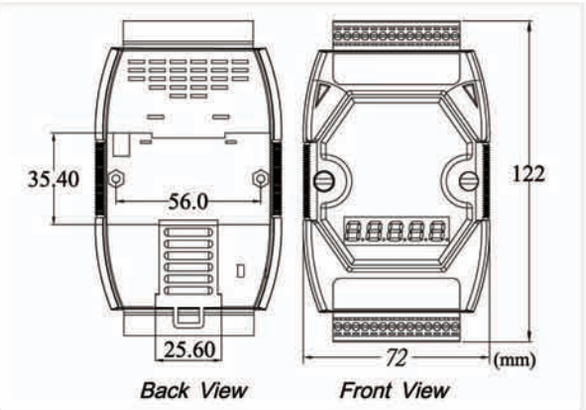
Ordering Information

I-7241D-G	DeviceNet Slave / DCON Master Gateway
I-7241D-G CR	DeviceNet Slave / DCON Master Gateway (RoHS)

DeviceNet Gateway

DeviceNet Slave / Modbus RTU Master Gateway

I-7242D



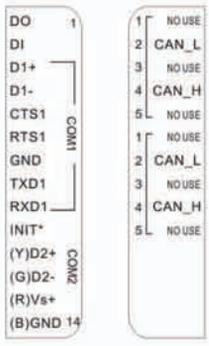
Dimensions

The I-7242D is one of CAN bus products in ICP DAS. The device allows a master located on a DeviceNet network to enter into a dialogue with the slaves on a Modbus RTU network. It is a "Group 2 Only Slave" device, and supports "Predefined Master/Slave Connection Set". It is a general protocol converter operating in a way that is transparent to the user. In addition, we also provide the utility software for users to configure the I-7242D's parameters and build the EDS file. Users can easily apply Modbus RTU devices in DeviceNet applications with the I-7242D.

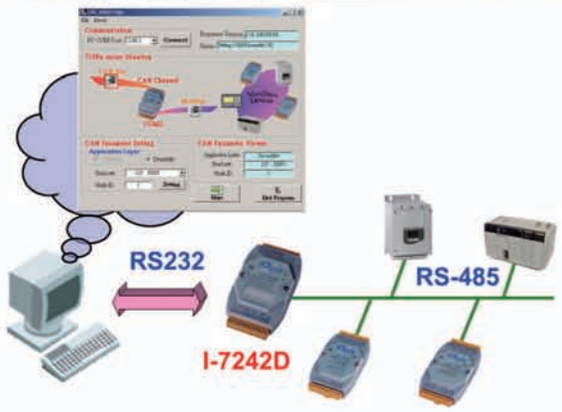
Features

- DeviceNet Version: Volume I & II, Release 2.0
- Group 2 Only Server DeviceNet subscriber
- Dynamic Assembly Objects Mapping
- On-line change baud rate and MAC ID of CAN
- NS, MS and IO LED indicators
- 7-segmemt LED to show operation mode, MAC ID, baud rate and error code
- Configuration facilitated by the use of specific EDS files
- I/O operating modes: Polling, Bit-Strobe, Change of State/Cyclic
- Maximum number of subscribers: 10 Modbus slaves

Pin Assignments



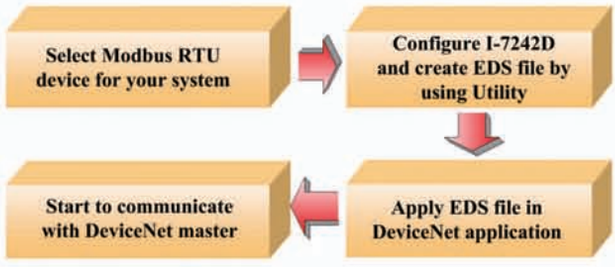
Utility Features



Modbus RTU devices

- Support DeviceNet node ID, baud rate setting
- Show Modbus RTU devices configuration
- Support DeviceNet Polling, Bit-Strobe and COS/Cyclic Produced and Consumed connection path setting
- Dynamically produce EDS file

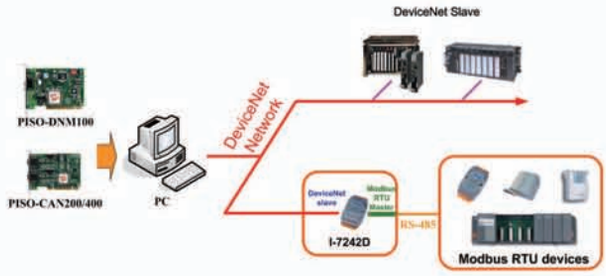
Design Flowchart



Hardware Specifications

Hardware	
CPU	80188, 40 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
Watchdog	Watchdog IC
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Connector	5-pin screwed terminal block (CAN_L, CAN_H, N/A for others)
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Protocol	DeviceNet Volumn I ver2.0, Volumn II ver2.0
UART Interface	
COM 1	RS-232 (For configuration)
COM 2	RS-485 (Self-turner inside)
Baud Rate (bps)	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Data bit	7, 8
Stop bit	1, 2
Parity	None, Even, Odd
Protocol	Modbus RTU
LED	
Round LED	MS LED, NS LED, IO LED
5-digit 7 Segment	Yes
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	3 W
Mechanism	
Dimensions	72mm x 122mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



Modbus RTU Command Support

Function code.	Description
01 (0x01)	Read Coil Status
02 (0x02)	Read Input Status
03 (0x03)	Read Holding Registers
04 (0x04)	Read input Registers
05 (0x05)	Force Single Coils
06 (0x06)	Preset Single Register
15 (0x0F)	Force Multi Coils
16 (0x10)	Preset Multi Registers

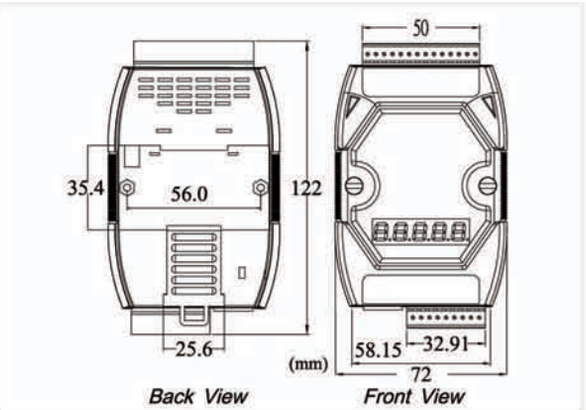
Ordering Information

I-7242D-G	DeviceNet Slave / Modbus RTU Master Gateway
I-7242D-G CR	DeviceNet Slave / Modbus RTU Master Gateway (RoHS)

DeviceNet Gateway

DeviceNet Slave / Modbus Master Gateway

GW-7243D



Dimensions

The GW-7243D is one of DeviceNet products in ICP DAS and it stands as a DeviceNet slave to Modbus TCP/RTU/ASCII master gateway device. It allows a master located on a DeviceNet network to enter a dialogue with slave devices on the Modbus TCP/RTU/ASCII network. In DeviceNet network, it functions as a "Group 2 Only Server" device. In Modbus network, GW-7243D represents a master device and sends request message to access the Modbus TCP/RTU/ASCII slave device by DeviceNet object definition. In order to simplify the protocol converting mechanism, we also provide the GW-7243D Utility tool to configure the device and build EDS file for the DeviceNet slave device.

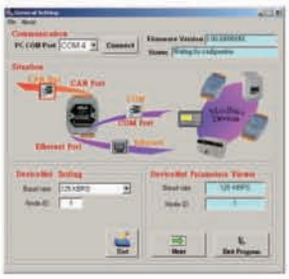
Features

- Group 2 Only Server DeviceNet subscriber
- Support Explicit and Poll Connection
- User can select the Modbus RTU/ASCII protocol for each COM port
- Maximum support 10 Modbus RTU/ASCII commands for each COM port
- Maximum support 4 Modbus TCP devices
- Maximum support 5 Modbus TCP commands for each Modbus TCP device
- Support Modbus function codes: 0x01 , 0x02 , 0x03 , 0x04 , 0x05 , 0x06 , 0x0F and 0x10
- Maximum support 2048 channels DI , 2048 channels DO , 1024 channels AI and 1024 channels AO for each Modbus TCP device

Modbus Command Support

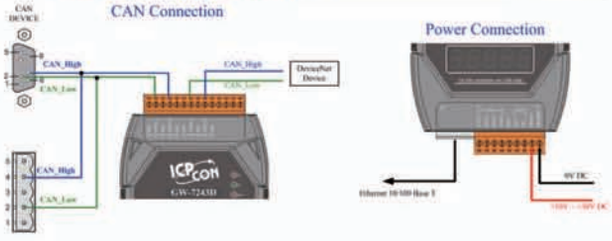
Function code.	Description
01 (0x01)	Read Coil Status
02 (0x02)	Read Input Status
03 (0x03)	Read Holding Registers
04 (0x04)	Read input Registers
05 (0x05)	Force Single Coils
06 (0x06)	Preset Single Register
15 (0x0F)	Force Multi Coils
16 (0x10)	Preset Multi Registers

Utility Features



- Support module IP/Gateway/Mask setting.
- Support Modbus TCP/RTU/ASCII protocol communication parameters setting.
- Support DeviceNet Polling I/O path setting.
- Dynamic produce EDS file after setting.

Pin Assignments

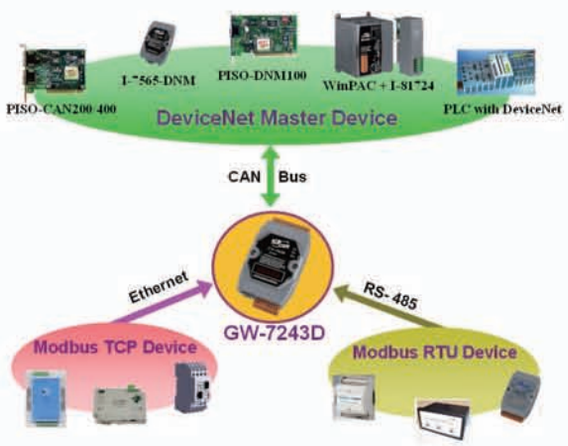


Design Flowchart

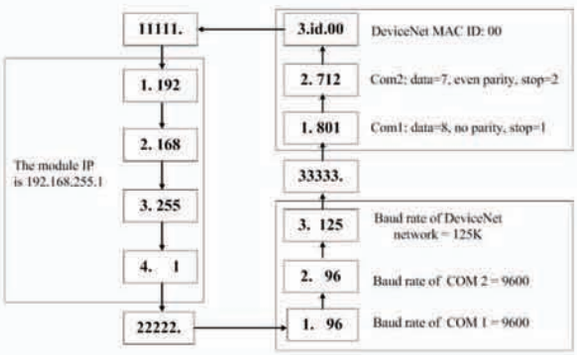
Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
Watchdog	Watchdog IC
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Connector	5-pin screwed terminal block (CAN_L, CAN_H, N/A for others)
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Protocol	DeviceNet Volumn I ver2.0, Volumn II ver2.0
UART Interface	
COM 1	RS-232
COM 1 Connector	5-pin screwed terminal block (TxD, RxD, RTS, CTS, GND)
COM 2	RS-485 (Self-turner inside)
COM 2 Connector	2-pin screwed terminal block (DATA+, DATA-)
Protocol	Modbus ASCII / Modbus RTU
Ethernet Interface	
Controller	10/100Base-TX Ethernet Controller (Auto-negotiating, Auto_MDIX)
Connector	RJ-45 with LED indicator
Protocol	Modbus TCP
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	2.5 W
Mechanism	
Dimensions	72mm x 33mm x 122mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



5-digit 7-segment Display



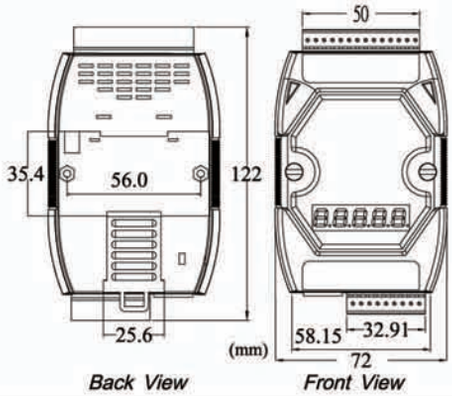
Ordering Information

GW-7243D-G	DeviceNet Slave / Modbus Master Gateway
GW-7243D-G CR	DeviceNet Slave / Modbus Master Gateway (RoHS)

DeviceNet Gateway

Modbus TCP Server to DeviceNet Master Gateway

GW-7434D



Dimensions

The GW-7434D from ICP DAS is a solution that provides a communication protocol transfer the DeviceNet and Modbus TCP protocol and solves a mission-critical problem: connecting an existing DeviceNet network to Ethernet-base PLCs and PC-based configuration and monitor system. It enables DeviceNet networks to be coupled together over the Internet/Ethernet, whereby remote monitoring and control is possible. The GW-7434D can be a DeviceNet master device in the CAN bus on the DeviceNet network. It supports "Predefined Master/Slave Connection Set" and "Group 2 Only Server" functions to communication with slave devices.

Features

- Supports maximum DeviceNet devices up to 63
- Predefined Master/Slave Connection Set
- Supports one Poll, one Bit-Strobe, one COS or one Cyclic IO connection for each DeviceNet device
- Supports on-line adding device into and removing device from network
- Converts single Modbus TCP to multi Modbus RTU devices, setting by Utility
- Supports VxComm technique for every COM ports of controllers, setting by Utility
- Supports Modbus RTU to DeviceNet master, setting by Utility
- Allows multi-client access simultaneously

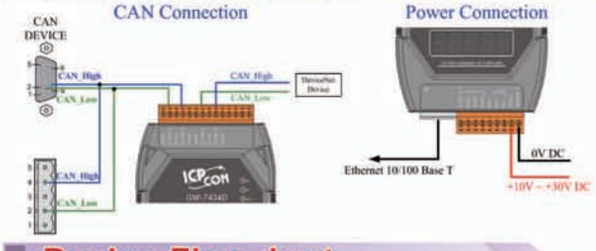
Modbus TCP Command Support

Function code.	Description
01 (0x01)	Read Coil Status
02 (0x02)	Read Input Status
03 (0x03)	Read Holding Registers
04 (0x04)	Read input Registers
05 (0x05)	Force Single Coils
06 (0x06)	Preset Single Register
15 (0x0F)	Force Multi Coils
16 (0x10)	Preset Multi Registers

Utility Features

- Online add/remove DeviceNet devices via Ethernet
- Online monitor and configure devices status via Ethernet
- Get/Set Modbus TCP input/output memory address
- Support communication mode setting
- DeviceNet baud and ID configuration

Pin Assignments

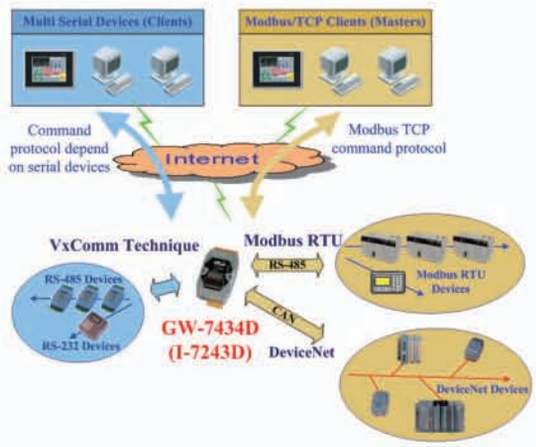


Design Flowchart

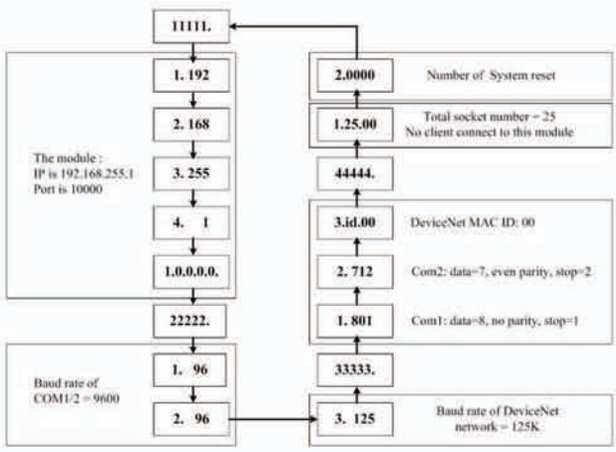
Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
Watchdog	Watchdog IC
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Connector	5-pin screwed terminal block (CAN_L, CAN_H, N/A for others)
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Protocol	DeviceNet Volumn I ver2.0, Volumn II ver2.0
UART Interface	
COM 1	RS-232
COM 1 Connector	5-pin screwed terminal block (TxD, RxD, RTS, CTS, GND)
COM 2	RS-485 (Self-turner inside)
COM 2 Connector	2-pin screwed terminal block (DATA+, DATA-)
Ethernet Interface	
Controller	10/100Base-TX Ethernet Controller (Auto-negotiating, Auto_MDIX)
Connector	RJ-45 with LED indicator
Protocol	Modbus TCP
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	2.5 W
Mechanism	
Dimensions	72mm x 122mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



5-digit 7-segment Display



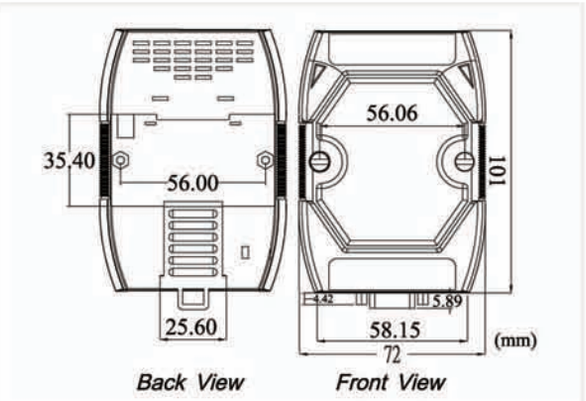
Ordering Information

GW-7434D-G	Modbus TCP server to DeviceNet master Gateway
GW-7434D-G CR	Modbus TCP server to DeviceNet master Gateway (RoHS)

DeviceNet Master

USB/DeviceNet Master Converter

I-7565-DNM



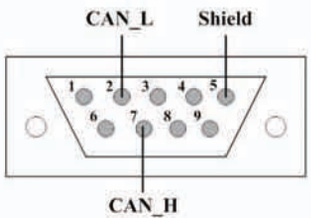
Dimensions

The I-7565-DNM is a DeviceNet master solution for USB interface built-in 80 MHz 186CPU. It acts the DeviceNet master device and communicates with the remote slave devices. There is a complete DeviceNet protocol firmware in the I-7565-DNM. Users can easily access the slave device via I-7565-DNM by using USB port and need not to deal with the complex DeviceNet protocol. By using the powerful Utility tool, user can diagnose the slave devices without any programming. The various development tools are supported for VB, VC, and BCB...

Features

- Fully compliant with USB 1.1/2.0(Full Speed)
- No external power supply is required as I-7565-DNM takes it's power from the USB bus
- DeviceNet Version: Volume I & II, Release 2.0
- Programmable Master MAC ID and Baud Rate
- Baud Rate: 125K, 250K, 500K bps
- Support Group 2 and UCMM connection
- I/O Operating Modes: Poll, Bit-Strobe, Change of State / Cyclic
- I/O Length: 512 Bytes max (Input/Output) per slave
- Slave Node : 63 nodes max
- Support Auto-Search slave device function
- Support on-line adding and removing devices
- Support Auto-detect Group 2 and UCMM device
- Auto-Reconnect when the connection is broken
- Status LED: RUN, MS, NS
- Free Software development tools for Windows
- Windows 98/ME/2000/XP/Linux drivers supported

Pin Assignments

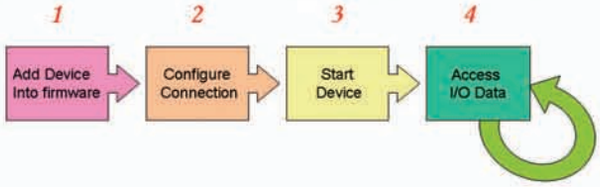


9-Pin D-Sub male connector

Utility Features

This utility supports to search all devices and specific devices in the network and can configure the I/O connection of the devices by searching devices or manual setting. It can easily to access the I/O data of all the slave devices.

Establish Connection Flowchart



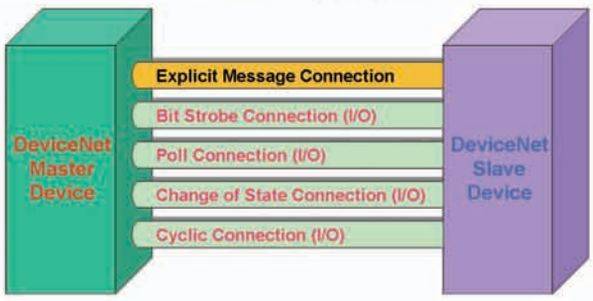
Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
ESD Protection	2 kV class A and 3 kV class B
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Channel number	1
Connector	9-pin male D-Sub (CAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+, N/A for others)
Baud Rate (bps)	125 k, 250 k, 500 k
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Protocol	DeviceNet Volumn I ver2.0, Volumn II ver2.0
USB Interface	
Connector	USB Type B
Transmission speed	921.6 kbps
Specification	USB 1.1 and USB 2.0
LED	
Round LED	PWR LED, RUN LED, NS LED, MS LED
Software	
Driver	Windows 98/ME/NT/2K/XP
Library	VB 6.0, VC++ 6.0, BCB 6.0
Power	
Power supply	By USB interface
Power Consumption	3 W
Mechanism	
Installation	DIN-Rail
Dimensions	72mm x 101mm x 33mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

LED indicators

LED	Description
RUN LED	Indicates the firmware status
MS LED	Indicates any slave devices which is disconnecting with the I-7565-DNM
NS LED	Indicates that there are errors on the bus

DeviceNet Messaging



Application

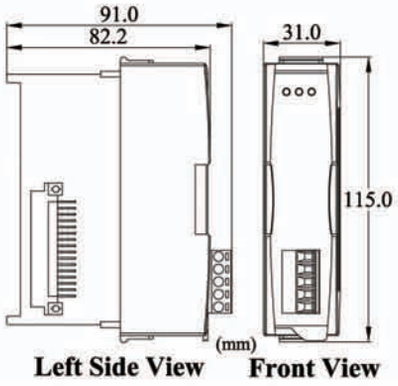
Ordering Information

I-7565-DNM-G CR	USB / DeviceNet Master Converter Module (RoHS)

DeviceNet Master

1 Port Programmable DeviceNet Master Interface

I-87124



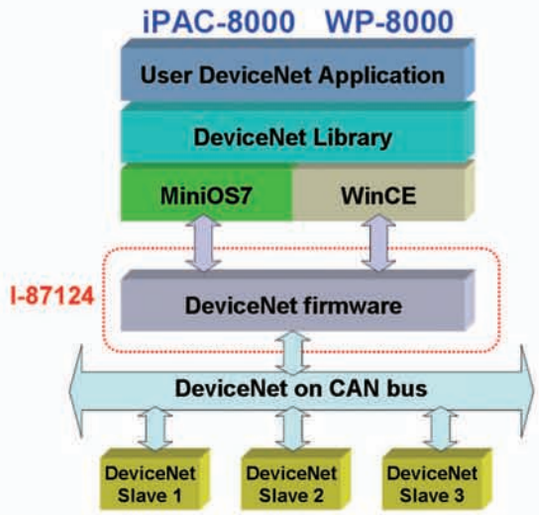
Dimensions

The I-87124 can represent an economic solution of DeviceNet application and be a DeviceNet master device on the DeviceNet network. I-87124 supports Group 2 and UCMM functions to communication with slave devices. It can be installed in ViewPAC or WP-8000 series PAC. It is popularly applied in the industrial automation, building automation, vehicle, and embedded control network. There is a complete DeviceNet protocol firmware in the I-87124. The users can easily access the slave device via I-87124 in the ViewPAC and WP-8000 and need not to deal with the complex DeviceNet protocol. The uses can use as easy as "Read/Write" functions to access slave I/O data.

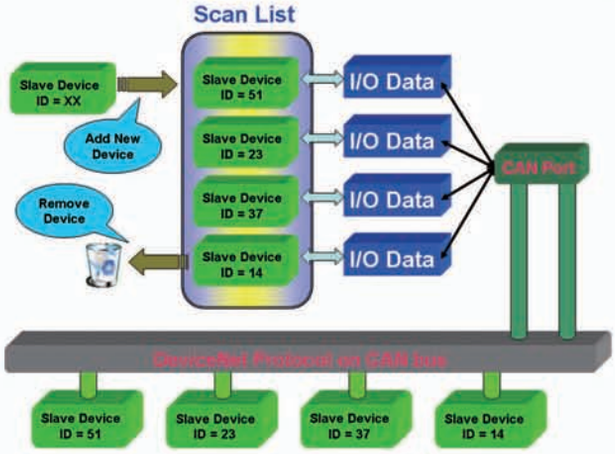
Features

- DeviceNet Version: Volume I & II, Release 2.0
- Programmable master MAC ID and baud rate
- Baud Rate: 125k, 250k, 500k bps
- Support Group 2 and UCMM connection
- I/O operating modes: Poll, Bit-Strobe, Change of State / Cyclic
- I/O Length: max 512 input bytes and 512 output bytes for each slave
- Slave Node : 63 nodes max
- Support auto-search slave device function
- Support on-line adding and removing devices
- Support auto-detect Group 2 and UCMM device
- Auto-reconnect when the connection is broken
- Status LED: RUN, MS, NS

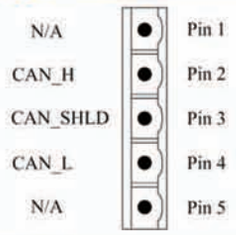
I-8124W Architecture



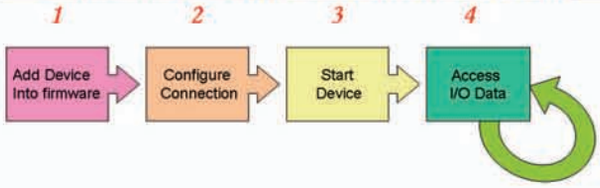
Master's ScanList Concept



Pin Assignments



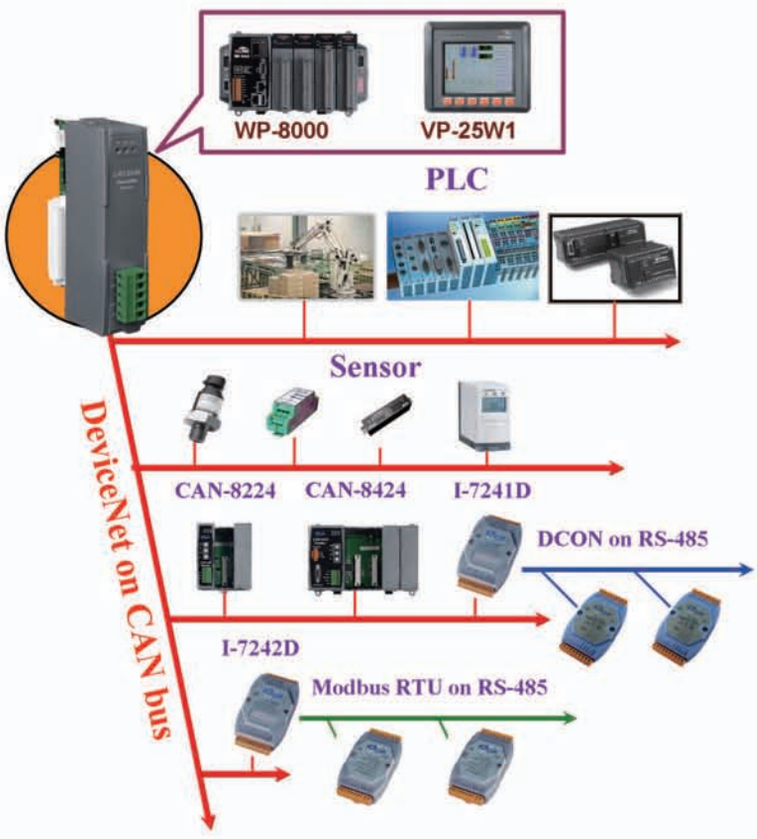
Establish Connection Flowchart



Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
Watchdog	CPU built-in
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock Microprocessor inside with 20MHz
Transceiver	NXP 82C250
Channel number	1
Connector	5-pin screwed terminal block (CAN_L, CAN_SHLD, CAN_H, N/A for others)
Baud Rate (bps)	125 k, 250 k, 500 k
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Switch for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Protocol	DeviceNet Volumn I ver2.0, Volumn II ver2.0
LED	
Round LED	NS LED, RUN LED, MS LED
Software	
Driver	Windows CE
Library	VB.Net 2005, C#.Net 2005, eVC++ 4.0
Power	
Power Consumption	2 W
Mechanism	
Dimensions	31mm x 115mm x 91mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



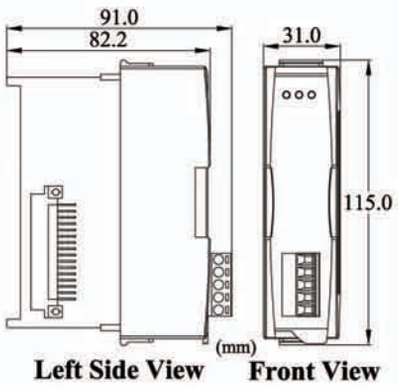
Ordering Information

I-87124	1 Port Programmable DeviceNet Master Interface

DeviceNet Master

1 Port Programmable DeviceNet Master Interface

I-8124W



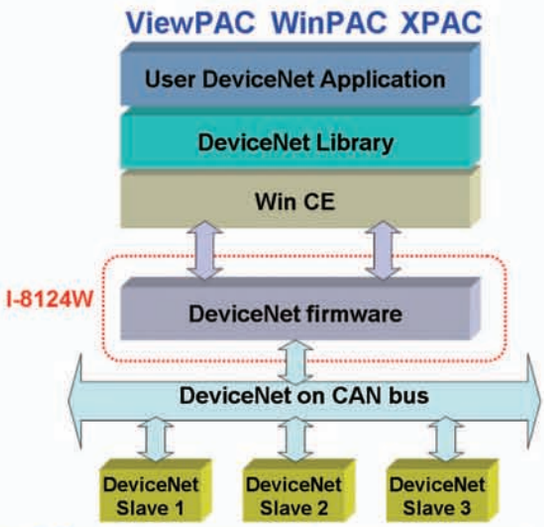
Dimensions

The I-8124W can represent an economic solution of DeviceNet application and be a DeviceNet master device on the DeviceNet network. I-8124W supports Group 2 and UCMM functions simultaneously. It can be installed in ViewPAC or WP-8000 series PAC. It is popularly applied in the industrial automation, building automation, vehicle, and embedded control network. There is a complete DeviceNet protocol firmware in the I-8124W. The users can easily access the slave device via I-8124W in the ViewPAC and WP-8000 and need not to deal with the complex DeviceNet protocol. The uses can use as easy as "Read/Write" functions to access slave I/O data.

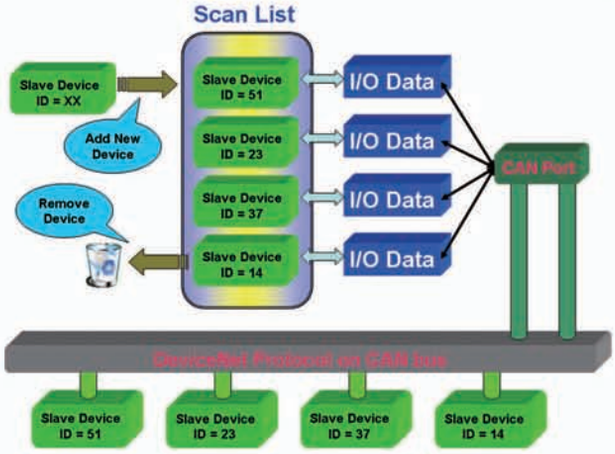
Features

- DeviceNet Version: Volume I & II, Release 2.0
- Programmable master MAC ID and baud rate.
- Baud Rate: 125k, 250k, 500k bps
- Support Group 2 and UCMM connection
- I/O Operating Modes: Poll, Bit-Strobe, Change of State / Cyclic
- I/O Length: max 512 input bytes and 512 output bytes per slave
- Slave Node : 63 nodes max
- Support auto-search slave device function.
- Support on-line adding and removing devices
- Support auto-detect Group 2 and UCMM device
- Auto-reconnect when the connection is broken
- Status LED: RUN, MS, NS

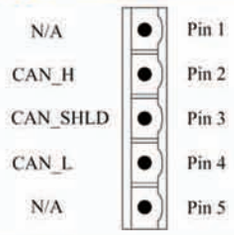
I-8124W Architecture



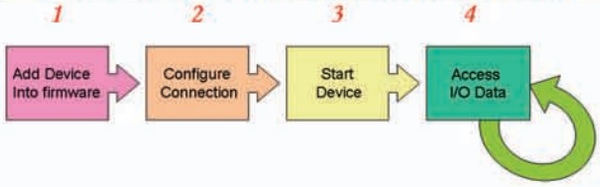
Master's ScanList Concept



Pin Assignments



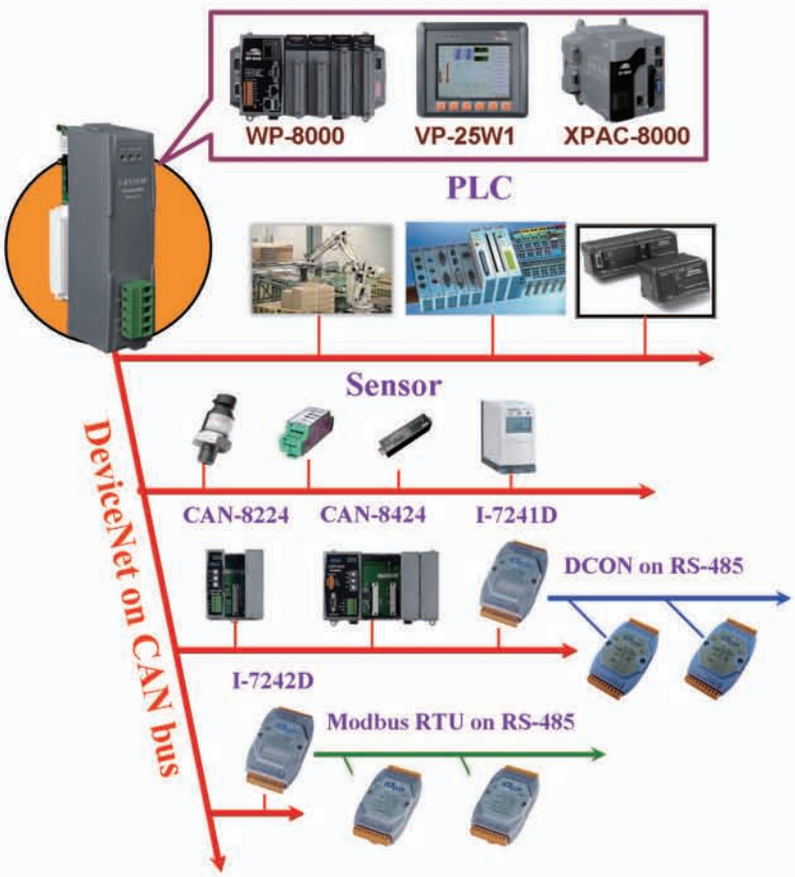
Establish Connection Flowchart



Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
Watchdog	CPU built-in
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock Microprocessor inside with 20MHz
Transceiver	NXP 82C250
Channel number	1
Connector	5-pin screwed terminal block (CAN_L, CAN_SHLD, CAN_H, N/A for others)
Baud Rate (bps)	125 k, 250 k, 500 k
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Switch for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Protocol	DeviceNet Volumn I ver2.0, Volumn II ver2.0
LED	
Round LED	NS LED, RUN LED, MS LED
Software	
Driver	Windows CE
Library	VB.Net 2005, C#.Net 2005, eVC++ 4.0
Power	
Power Consumption	2 W
Mechanism	
Dimensions	31mm x 115mm x 91mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



Ordering Information

I-8124W	1 Port Programmable DeviceNet Master Interface

DeviceNet Master

1 Port Intelligent DeviceNet Master Board

PISO-DNM100U-D

PISO-DNM100U-T

DeviceNet is a simple low cost open industrial networking system. It provides the communication service needed by various types of applications such as sensor, switches, bar-code scanner, AC/DC drives etc. DeviceNet supports the Master/Slave connection model. The PISO-DNM100U module acts the DeviceNet master device and communicates with the remote slave devices. There is a complete DeviceNet protocol firmware in the PISO-DNM100U. The users can easily access the slave device via PISO-DNM100U by using DLL library functions and need not to deal with the complex DeviceNet protocol. The uses can use as easy as "Read/Write" functions to access slave I/O data.

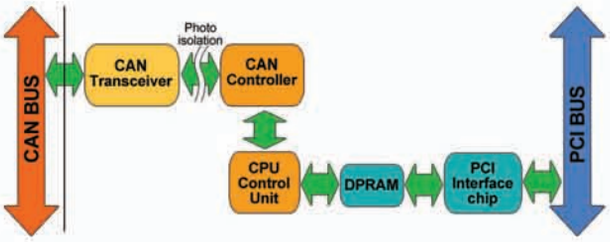
Features

- DeviceNet Version: Volume I & II, Release 2.0
- Programmable master MAC ID and baud rate
- Baud Rate: 125 kbps, 250 kbps, 500 kbps
- Support Group 2 and UCMM connection
- I/O Operating Modes: Poll, Bit-Strobe, Change of State / Cyclic
- I/O Length: max 512 input bytes and 512 output bytes pre slave
- Slave Node : 63 nodes max
- Support auto-search slave device function.
- Support on-line adding and removing devices
- Support auto-detect Group 2 and UCMM device
- Auto-reconnect when the connection is broken
- LED: Status , ERR

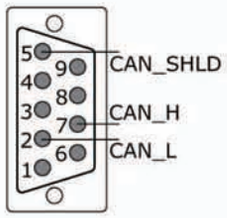
Utility Features

This utility supports to search all devices and specific devices in the network and can configure the I/O connection of the devices by searching devices or manual setting. It can easily to access the I/O data of all the slave devices.

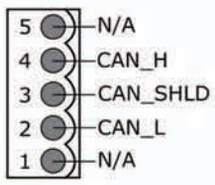
Block Diagram



Pin Assignments

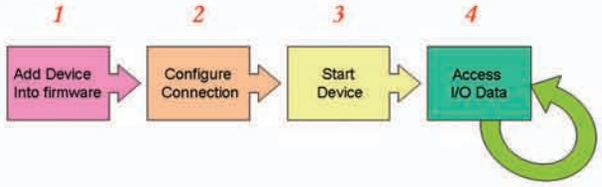


9-pin D-sub male connector



5-pin screw terminal connector

Establish Connection Flowchart



Hardware Specifications

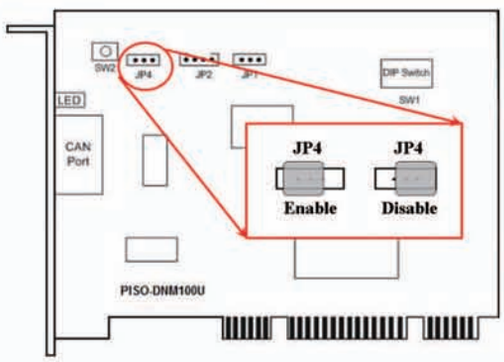
Model Name	PISO-DNM100U-D	PISO-DNM100U-T
Bus Interface		
Type	Universal PCI supports both 5 V and 3.3 V PCI bus	
Board No.	By DIP switch	
CAN Interface		
Controller	NXP SJA1000T with 16 MHz clock Microprocessor inside with 80186 80MHz	
Transceiver	NXP 82C250	
Channel number	1	
Connector	9-pin male D-Sub (CAN_GND, CAN_L, CAN_SHLD, CAN_H, N/A for others)	5-pin screwed terminal block (CAN_L, CAN_SHLD, CAN_H, N/A for others)
Baud Rate (bps)	125 k, 250 k, 500 k	
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)	
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple	
Terminator Resistor	Jumper for 120 Ω terminator resistor	
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B	
Protocol	DeviceNet Volumn I ver2.0, Volumn II ver2.0	
LED		
Round LED	Green LED, Red LED	
Software		
Driver	Windows 98/ME/NT/2K/XP	
Library	VB 6.0, VC++ 6.0, BCB 6.0	
Power		
Power Consumption	300 mA @ 5 V	
Mechanism		
Dimensions	138mm x 22mm x 105mm (W x L x H)	
Environment		
Operating Temp.	0 ~ 60 °C	
Storage Temp.	-20 ~ 70 °C	
Humidity	5 ~ 85% RH, non-condensing	

LED indicators

LED	Status	Description
Green LED	Off	The firmware is not running
	Twinkle	The DeviceNet firmware is waiting for configuration.
	On	This indicates that the DeviceNet firmware is running. The PISO-DNM100U is communicating with the slave devices.
Red LED	Off	there is no error on the bus and about the MAC ID
	twinkle	This indicates that there are errors on the bus which maybe the situations as shown bellow: (a) The CAN connector doesn't connect to the slave devices. (b) The power of the slave devices is off. (c) The MAC ID collision between master and slave devices is occurring.

Application

Terminal Resistor



Ordering Information

PISO-DNM100U-D	1 Port Intelligent DeviceNet Master Board for 9-pin male D-Sub connector
PISO-DNM100U-T	1 Port Intelligent DeviceNet Master Board for 5-pin screwed terminal connector

DeviceNet Slave

1 Port Intelligent DeviceNet Multi-Slave Board

PISO-DNS100U-D

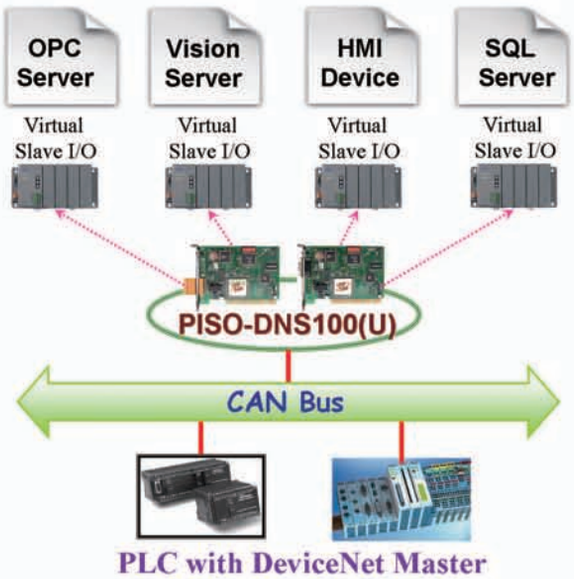
PISO-DNS100U-T

The PISO-DNS100U has completed DeviceNet slave functions according to DeviceNet Group 2 only server. With the built-in 80186, 80M Hz CPU, this card can be applied in high transmission applications. The amazing function is that 10 slave nodes are implemented inside the PISO-DNS100U. It supports up to 512 bytes of input & 512 bytes output data. DeviceNet baud rate is 125 ~ 500 kbps and MACID can be set via utility. The PCI card also has an optically isolated DeviceNet interface.

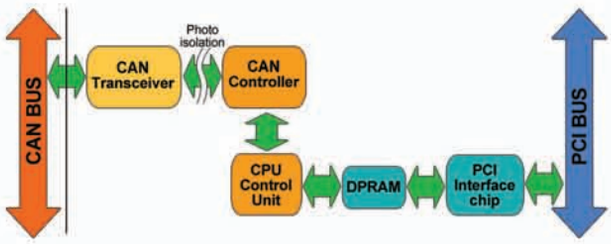
Features

- DeviceNet Version: Volume I & II, Release 2.0
- Programmable slave MAC ID and baud rate
- Baud Rate: 125k, 250k, 500k bps
- Support Group 2 only Server
- I/O Operating Modes: Poll, Bit-Strobe, Change of State / Cyclic
- I/O Length: max 512 input bytes and 512output bytes per slave
- Slave Node : 10(max) nodes inside the board
- Not Support UCMM
- LED : Status , ERR

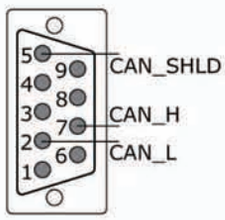
Virtual Slave Concept



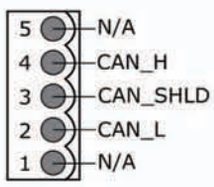
Block Diagram



Pin Assignments

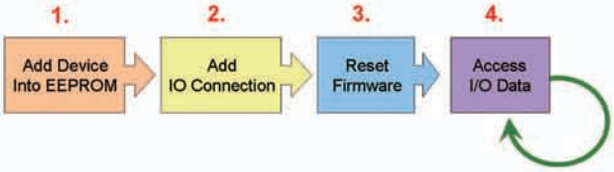


9-pin D-sub male connector



5-pin screw terminal connector

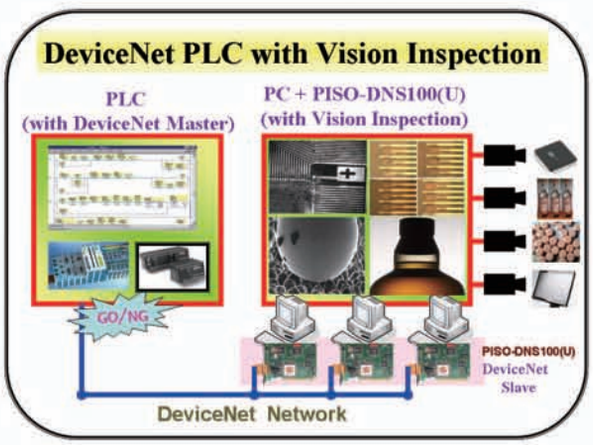
DeviceNet Connection Flowchart



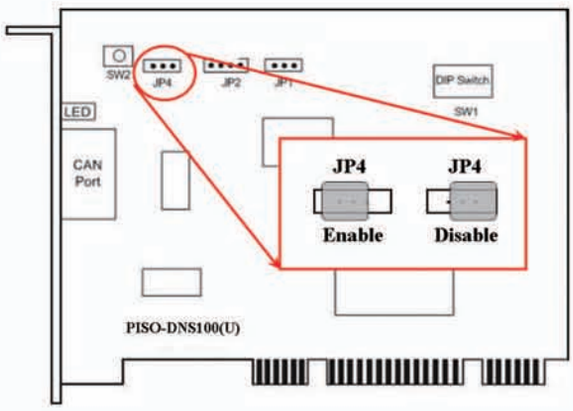
Hardware Specifications

Model Name	PISO-DNS100U-D	PISO-DNS100U-T
Bus Interface		
Type	Universal PCI supports both 5 V and 3.3 V PCI bus	
Board No.	By DIP switch	
CAN Interface		
Controller	NXP SJA1000T with 16 MHz clock Microprocessor inside with 80186 80MHz	
Transceiver	NXP 82C250	
Channel number	1	
Connector	9-pin male D-Sub (CAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+, N/A for others)	5-pin screwed terminal block (CAN_L, CAN_SHLD, CAN_H, N/A for others)
Baud Rate (bps)	125 k, 250 k, 500 k	
Transmission Distance (m)	Depend on baud rate (for example, max. 1000 m at 50 kbps)	
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple	
Terminator Resistor	Jumper for 120 Ω terminator resistor	
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B	
Protocol	DeviceNet Volumn I ver2.0, Volumn II ver2.0	
LED		
Round LED	Status LED, ERR LED	
Software		
Driver	Windows 2K/XP	
Library	VB 6.0, VC++ 6.0, BCB 6.0	
Power		
Power Consumption	300 mA @ 5 V	
Mechanism		
Dimensions	138mm x 22mm x 105mm (W x L x H)	
Environment		
Operating Temp.	0 ~ 60 °C	
Storage Temp.	-20 ~ 70 °C	
Humidity	5 ~ 85% RH, non-condensing	

Application



Terminal Resistor



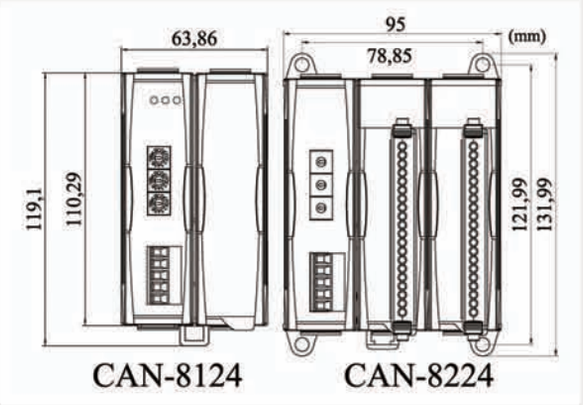
Ordering Information

PISO-DNS100U-D	1 Port Intelligent DeviceNet Multi-Slave Board with 9-pin D-Sub connector
PISO-DNS100U-T	1 Port Intelligent DeviceNet Multi-Slave Board with 5-pin Screw Terminal Connector

DeviceNet Slave

DeviceNet Remote I/O Unit with 1/2 I/O Expansions

CAN-8124 / CAN-8224



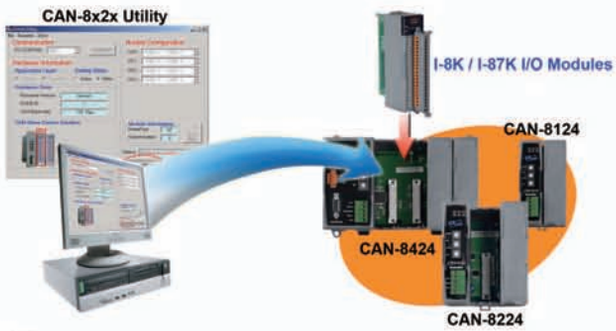
Dimensions

The CAN-8124/CAN-8224 main unit based on the modular design offers many good features to the users and provides more flexibility in data acquisition and control system. CAN-8124 and CAN-8224 are the DeviceNet Group 2 only Server devices. They are applied as the slaves in DevciceNet network. In addition, ICP DAS also presents a Utility tool to allow users to configure and create the EDS file for the specific IO modules plugged in. CAN-8124/CAN-8224 are specifically fit for the distribution system. With the hot-swap function, it is convenient for maintaining system.

Features

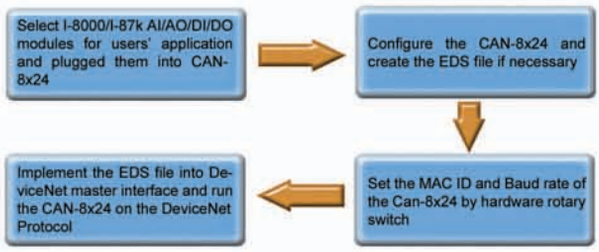
- Number of Nodes: 64 max.
- Baud Rate: 125, 250, 500 kbps
- Support Message Groups: Group 2 only Server
- I/O Operating Modes: Poll, Bit-Strobe, Change of State / Cyclic
- Device Heartbeat & Shutdown Message
- Produce EDS file Dynamically
- No. of Fragment I/O: 128 Bytes max. (Input / Output)
- MAC ID Setting by Rotary Switch
- Baud Rate Setting by Rotary Switch
- Status LED: NET, MOD, PWR
- Support Hot Swap and Auto-Configuration for high profile I-87K I/O Modules

Utility Features

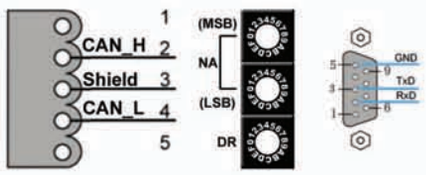


- Support I-8k/I-87K modules
- Show I/O modules configuration
- Show Application and assembly objects configuration
- Support IO connection path setting
- Support EDS file creating

Design Flowchart



Pin Assignments



Rotary Switch Value(DR)	Baud rate (kbps)
0	125
1	250
2	500

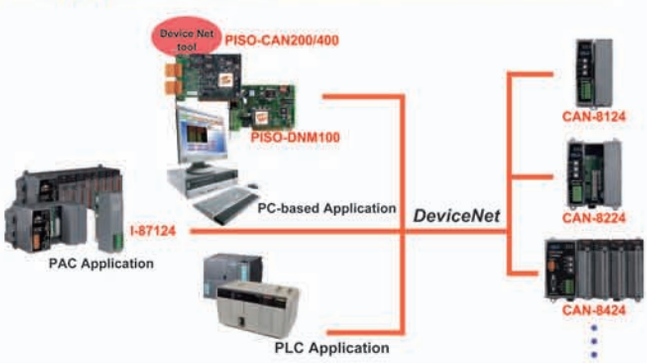
Hardware Specifications

Model Name	CAN-8124	CAN-8224
Hardware		
CPU	80186, 80 MHz or compatible	
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB	
DPRAM	8 KB	
NVRAM	31 bytes (battery backup, data valid for up to 10 years)	
RTC (Real Time Clock)	Yes	
Watchdog	CPU built-in	
Expansion Slot	1 slots	2 slots
CAN Interface		
Controller	NXP SJA1000T with 16 MHz clock	
Transceiver	NXP 82C250	
Channel number	1	
Connector	5-pin screwed terminal block (CAN_GND, CAN_L, CAN_SHLD, CAN_H, CAN_V+)	
Baud Rate (bps)	125 k, 250 k, 500 k	
Transmission Distance (m)	Depend on baud rate (for example, max. 500 m at 125 kbps)	
Isolation	3000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple	
Terminator Resistor	Jumper for 120 Ω terminator resistor	
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B	
Protocol	DeviceNet Volumn I ver2.0, Volumn II ver2.0 Predefined Master/Slave Connection set	
LED		
Round LED	PWR LED, NET LED, MOD LED	
Power		
Power supply	Unregulated +10 ~ +30 V_{DC}	
Protection	Power reverse polarity protection, Over-voltage brown-out protection	
Power Consumption	1.7 W	2 W
Mechanism		
Installation	DIN-Rail DIN-Rail or Wall Mounting	
Dimensions	64mm x 119mm x 91mm (W x L x H)	95mm x 132mm x 91mm (W x L x H)
Environment		
Operating Temp.	-25 ~ 75 °C	
Storage Temp.	-30 ~ 80 °C	
Humidity	10 ~ 90% RH, non-condensing	

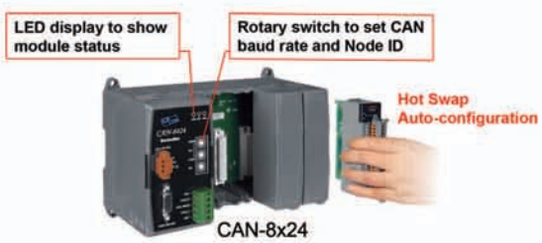
LED Indicators

LED	Description
PWR	Indicate the status of power supply
MOD	Indicate the main or modules status
NET	This LED indicates the DeviceNet network status

Application



Hot Swap & Auto-configuration



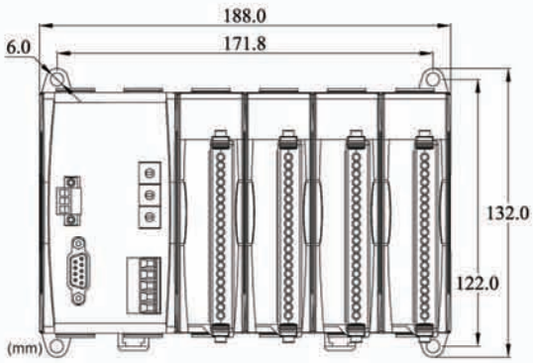
Ordering Information

CAN-8124	DeviceNet remote I/O unit with 1 empty slot
CAN-8224	DeviceNet remote I/O unit with 2 empty slot

DeviceNet Slave

DeviceNet Remote I/O Unit with 4 Expansion Slots

CAN-8424



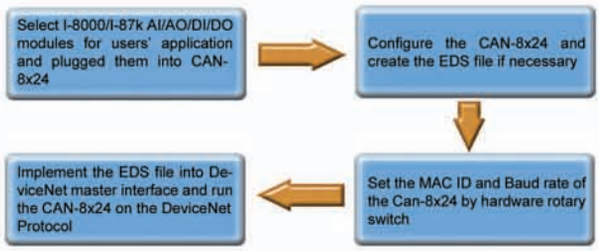
Dimensions

The CAN-8424 main unit based on the modular design offers many good features to the users and provides more flexibility in data acquisition and control system. In addition, ICP DAS also presents a CAN-8424 Utility tool to allow users to configure and create the EDS file for the specific IO modules plugged in. Therefore, users can easily apply the CAN-8424 in various DeviceNet network. In advance, the hot-swap function is provided with the high profile I-87K I/O modules for maintaining the system easily.

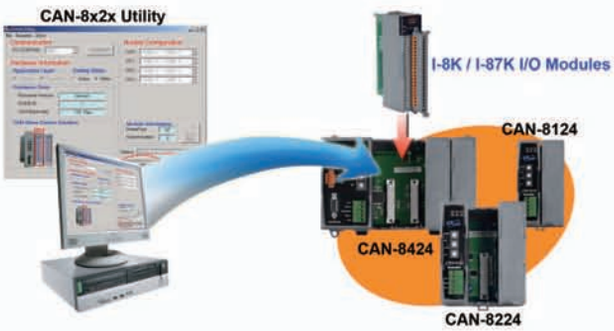
Features

- DeviceNet Version: Volume I & II, Release 2.0
- Number of Nodes: 64 max.
- Baud Rate: 125, 250, 500 kbps
- Support Message Groups: Predefined Master/Slave Connection set (Group 2 only Server)
- I/O Operating Modes: Poll, Bit-Strobe, Change of State / Cyclic
- Device Heartbeat & Shutdown Message
- Produce EDS file Dynamically
- No. of Fragment I/O: 128 Bytes max. (Input / Output)
- MAC ID Setting by Rotary Switch
- Baud Rate Setting by Rotary Switch
- Status LED: NET, MOD, PWR
- Support Hot Swap and Auto-Configuration for high profile I-87K I/O Modules

Design Flowchart

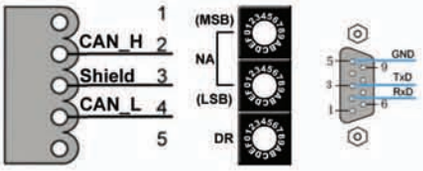


Utility Features



- Support I-8k/I-87K modules
- Show I/O modules configuration
- Show Application and assembly objects configuration
- Support IO connection path setting
- Support EDS file creating

Pin Assignments



Rotary Switch Value(DR)	Baud rate (kbps)
0	125
1	250
2	500

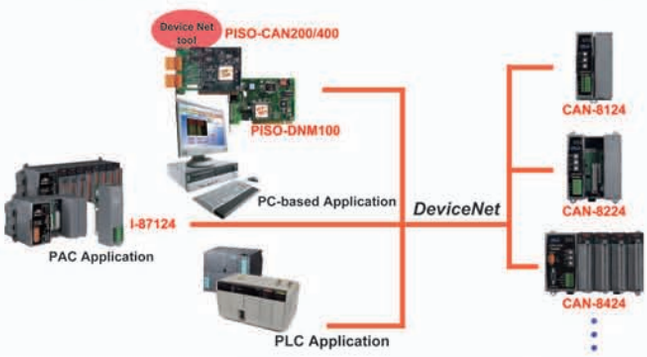
Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
SRAM/Flash/EEPROM	512 KB / 512 KB / 16 KB
NVRAM	31 bytes (battery backup, data valid for up to 10 years)
RTC (Real Time Clock)	Yes
Watchdog	CPU built-in
Expansion Slot	4 slots
CAN Interface	
Controller	NXP SJA1000T with 16 MHz clock
Transceiver	NXP 82C250
Channel number	1
Connector	5-pin screwed terminal block (CAN_L, CAN_SHLD, CAN_H, N/A for others)
Baud Rate (bps)	125 k, 250 k, 500 k
Transmission Distance (m)	Depend on baud rate (for example, max. 500 m at 125 kbps)
Isolation	3000 VDC for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Protocol	DeviceNet Volumn I ver2.0, Volumn II ver2.0 Predefined Master/Slave Connection set
UART Interface	
COM 1	RS-232 (For configuration)
COM 1 Connector	9-pin male D-Sub (DTE: RxD, TxD, RTS, CTS, DTR, DSR, RI, GND)
LED	
Round LED	PWR LED, NET LED, MOD LED
Power	
Power supply	Unregulated +10 ~ +30 VDC
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	2.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	188mm x 132mm x 91mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

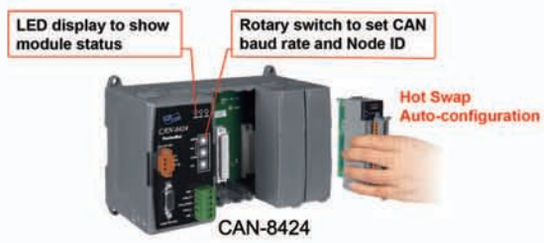
LED Indicators

LED	Description
PWR	Indicate the status of power supply
MOD	Indicate the main or modules status
NET	This LED indicates the DeviceNet network status

Application



Hot Swap & Auto-configuration



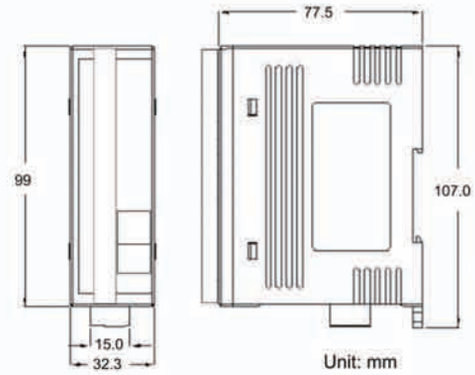
Ordering Information

CAN-8424-G	DeviceNet remote I/O unit with 4 empty slots

DeviceNet Slave

16-channel Isolated DI Module of DeviceNet Slave

CAN-2053D



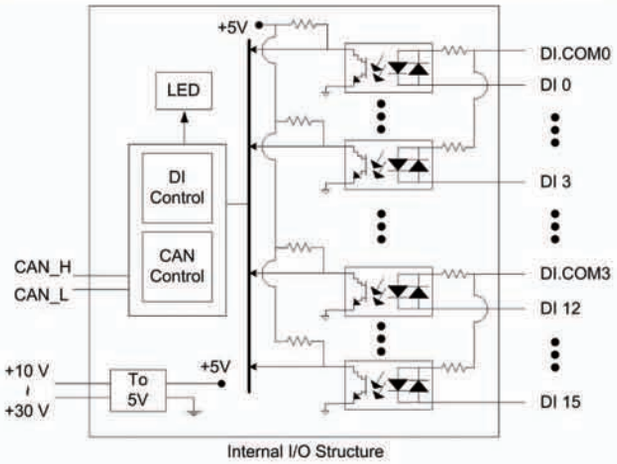
Dimensions

The CAN-2053D follows DeviceNet specification Volume I/II, Release 2.0. User can access the digital output status and set the configuration via DeviceNet EDS file. CAN-2053D has 16-channel isolated sink/source input and it can be used to various applications, such as PNP, NPN, TTL, relay contact and so forth. By the DeviceNet masters of ICP DAS, you can quickly build a DeviceNet network to approach your requirements.

Features

- DeviceNet general I/O slave devices
- Group 2 Only Server (non UCMM-capable)
- Support Predefined Master/Slave Connection Set
- Connection supported:
  - 1 connection for Explicit Messaging
  - 1 connection for Polled I/O
  - 1 connection for Bit-Strobe I/O connection
- Provide EDS file for DeviceNet master interface
- Support Application: PNP, NPN, TTL, and Relay Contact
- ESD Protection 4 kV Contact for each channel

Internal I/O Structure



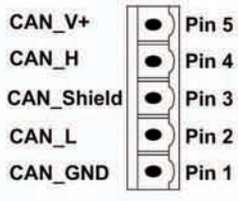
Internal I/O Structure

I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	DI.COM
02	DI.0
03	DI.1
04	DI.2
05	DI.3
06	DI.COM
07	DI.4
08	DI.5
09	DI.6
10	DI.7
11	DI.COM
12	DI.8
13	DI.9
14	DI.10
15	DI.11
16	DI.COM
17	DI.12
18	DI.13
19	DI.14
20	DI.15

Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Relay Contact	Relay On	Relay Off
TTL/CMOS Logic	Voltage > 10 V	Voltage < 4 V
NPN Output	Open Collector On	Open Collector Off
PNP Output	Open Collector On	Open Collector Off

CAN Pin & Baud Rate Rotary



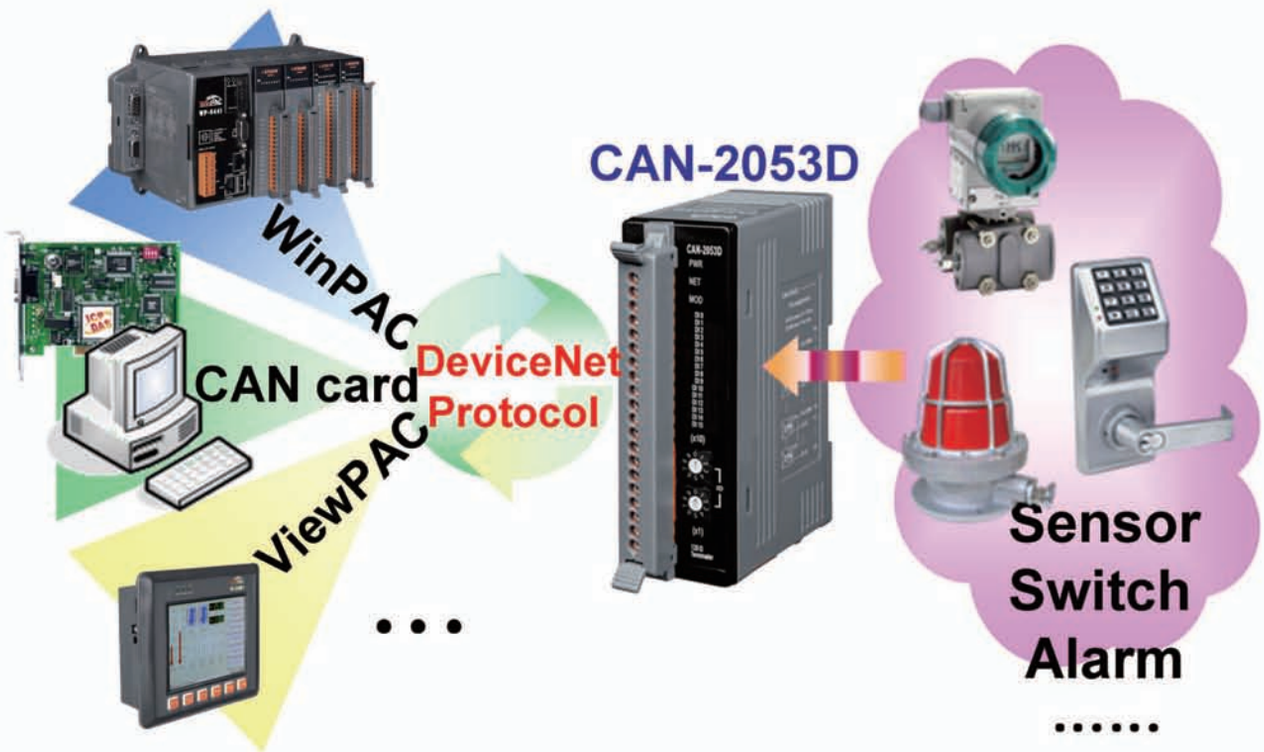
Baud rate rotary switch

Rotary Switch Value(DR)	Baud rate (kbps)
0	125
1	250
2	500

Hardware Specifications

CAN Interface	
DeviceNet Specification	Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
DeviceNet subscribe	Group 2 Only Server
Connection supported	1 connection for Explicit Messaging 1 connection for Polled I/O 1 connection for Bit-Strobe I/O
Node ID	0 ~ 63 selected by rotary switch
Baud Rate (bps)	125 kbps, 250 kbps, 500 kbps
Heartbeat/Shutdown message	Yes
Terminator Resistor	Switch for 120 Ω terminator resistor
DI Interface	
Channels	16 (Sink/Source)
ON Voltage Level	+3.5 ~ +30 V_{DC}
OFF Voltage Level	+1 V_{DC} Max.
Input Impedance	3 kΩ, 0.3 W
Intra-module Isolation	3750 Vrms
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, NET LED, MOD LED
I/O LED	16 LEDs as Digital Input, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



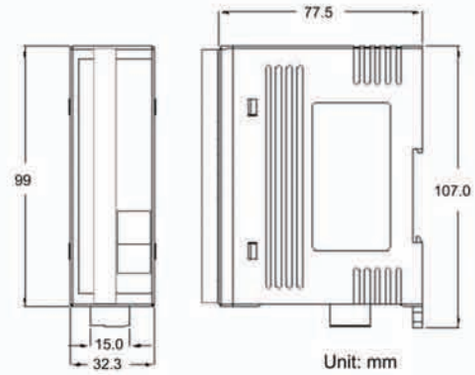
Ordering Information

CAN-2053D	DeviceNet module of 16-channel Isolated Sink/Source Digital Input

DeviceNet Slave

16-channel Isolated DO Module of DeviceNet Slave

CAN-2057D



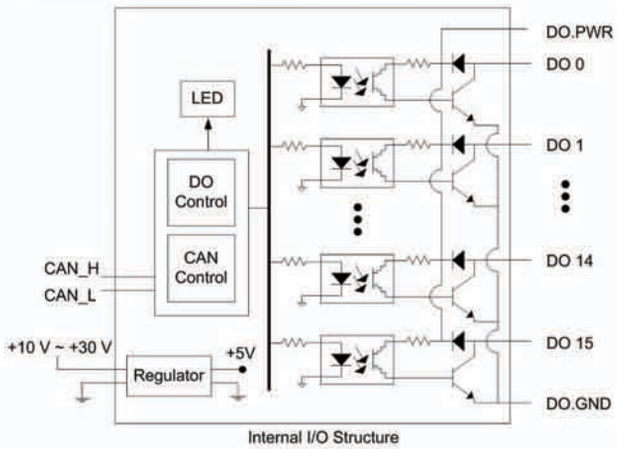
Dimensions

The CAN-2057D follows DeviceNet specification Volume I/II, Release 2.0. User can access the digital output status and set the configuration via DeviceNet EDS file. The CAN-2057D has 16 Digital output channels with Open Collector output type and can be used to develop powerful and cost effective digital control system. By the DeviceNet masters of ICP DAS, you can quickly build a DeviceNet network to approach your requirements.

Features

- DeviceNet general I/O slave devices
- Group 2 Only Server (non UCMM-capable)
- Support Predefined Master/Slave Connection Set
- Connection supported:
  - 1 connection for Explicit Messaging
  - 1 connection for Polled I/O
  - 1 connection for Bit-Strobe I/O connection
- Support DeviceNet heartbeat and shutdown messages
- Provide EDS file for DeviceNet master interface
- Support Application: Drive Relay, Resistance Load
- ESD Protection 4 kV Contact for each channel

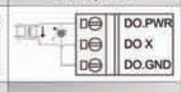
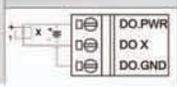
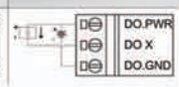
Internal I/O Structure



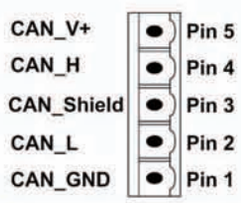
Internal I/O Structure

I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	DO.0
02	DO.1
03	DO.2
04	DO.3
05	DO.4
06	DO.5
07	DO.6
08	DO.7
09	DO.8
10	DO.9
11	DO.10
12	DO.11
13	DO.12
14	DO.13
15	DO.14
16	DO.15
17	DO.GND
18	DO.GND
19	DO.PWR
20	DO.PWR

Output Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
	Relay Off	Relay On
Drive Relay		
Resistance Load		

CAN Pin & Baud Rate Rotary



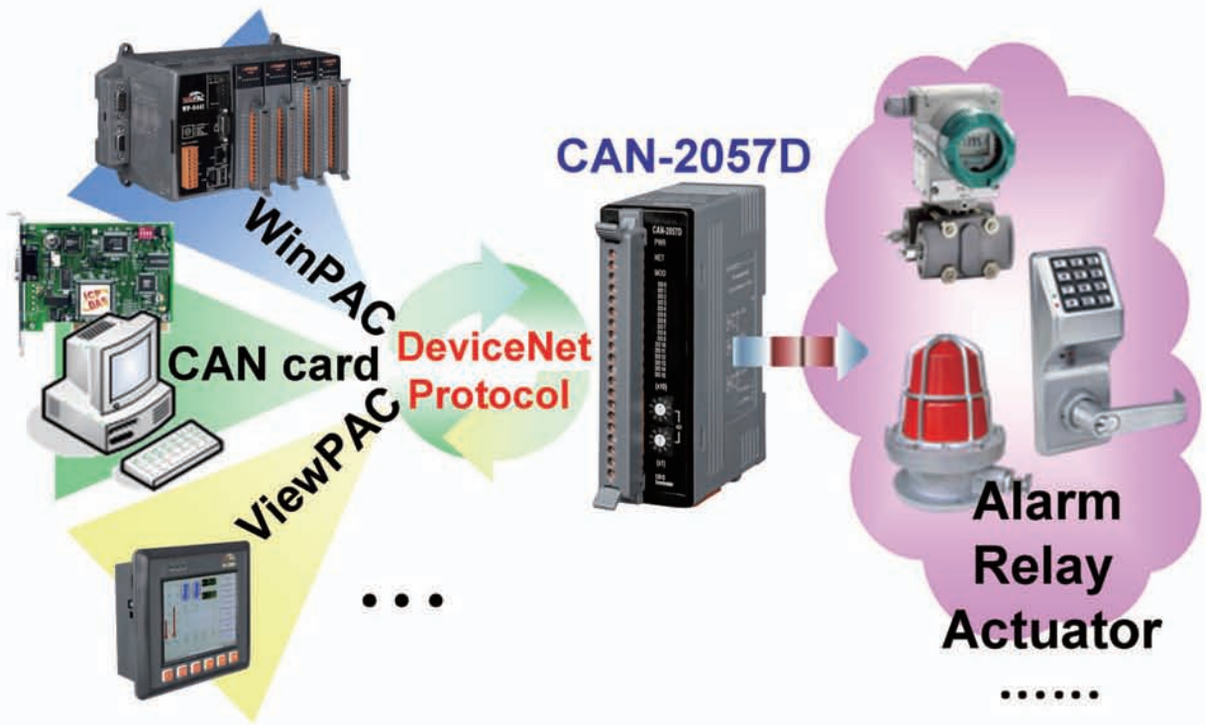
Baud rate rotary switch

Rotary Switch Value(DR)	Baud rate (kbps)
0	125
1	250
2	500

Hardware Specifications

CAN Interface	
DeviceNet Specification	Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
DeviceNet subscribe	Group 2 Only Server
Connection supported	1 connection for Explicit Messaging 1 connection for Polled I/O 1 connection for Bit-Strobe I/O
Node ID	0 ~ 63 selected by rotary switch
Baud Rate (bps)	125 kbps, 250 kbps, 500 kbps
Heartbeat/Shutdown message	Yes
Terminator Resistor	Switch for 120 Ω terminator resistor
DO Interface	
Channels	16 (Sink)
Output Type	Open Collector
Max Load Current	100 mA per channel
Load Voltage	+5 ~ +30 V_{DC}
Intra-module Isolation	3750 Vrms
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, NET LED, MOD LED
I/O LED	16 LEDs as Digital Output, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



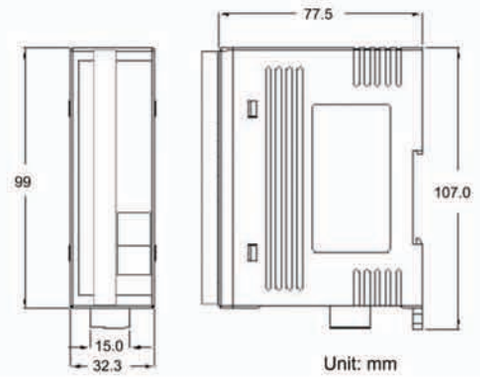
Ordering Information

CAN-2057D	DeviceNet module of 16-channel Isolated Open Collector Digital Output

DeviceNet Slave

Digital Input and Output Module of DeviceNet Slave

CAN-2054D



Dimensions

The CAN-2054D follows DeviceNet specification Volume I/II, Release 2.0. User can access the digital I/O status and set the configuration via DeviceNet EDS file. This module has 8-channel isolated sink/source input and 8-channel isolated sink output. It can be applied to various applications, such as PNP, NPN, TTL, relay contact and so forth. By the DeviceNet masters of ICP DAS, you can quickly build a DeviceNet network to approach your requirements.

Features

- DeviceNet general I/O slave devices
- Comply with DeviceNet specification Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
- Group 2 Only Server (non UCMM-capable)
- Support Predefined Master/Slave Connection Set
- Connection supported:
  - 1 connection for Explicit Messaging
  - 1 connection for Polled I/O
  - 1 connection for Bit-Strobe I/O connection
- Support DeviceNet heartbeat and shutdown messages
- Provide EDS file for DeviceNet master interface

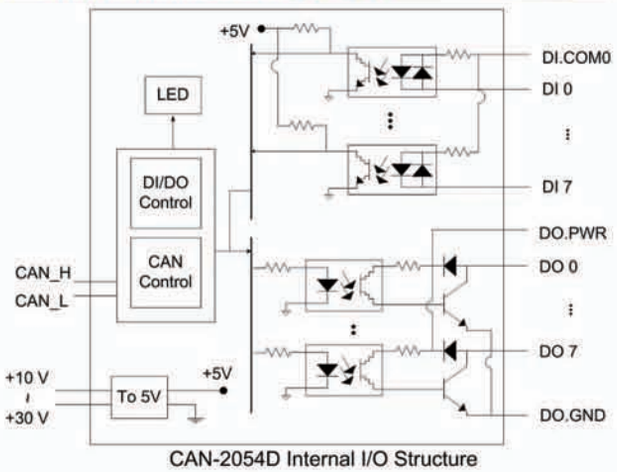
I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	DI.COM
02	DI0
03	DI1
04	DI2
05	DI3
06	DI4
07	DI5
08	DI6
09	DI7
10	DO0
11	DO1
12	DO2
13	DO3
14	DO4
15	DO5
16	DO6
17	DO7
18	DO.GND
19	DO.GND
20	DO.PWR

Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Relay Contact	Relay On	Relay Off
TTL/CMOS Logic	Voltage > 10 V	Voltage < 4 V
NPN Output	Open Collector On	Open Collector Off
PNP Output	Open Collector On	Open Collector Off

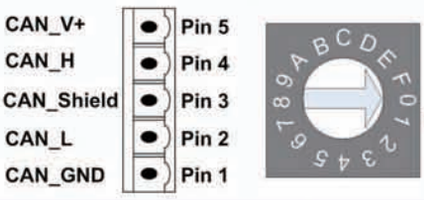
Output Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Drive Relay	Relay Off	Relay On
Resistance Load		

Internal I/O Structure



CAN-2054D Internal I/O Structure

CAN Pin & Baud Rate Rotary

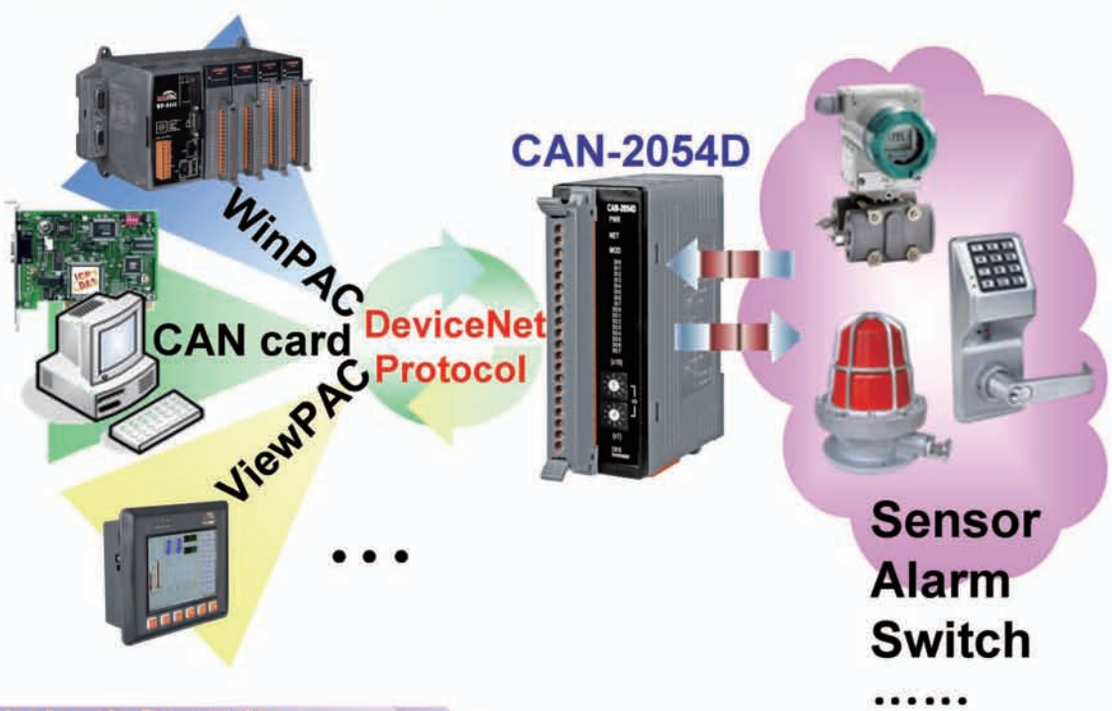


Rotary Switch Value	Baud rate (kbps)
0	125
1	250
2	500

Hardware Specifications

CAN Interface	
DeviceNet Specification	Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
DeviceNet subscribe	Group 2 Only Server
Connection supported	1 connection for Explicit Messaging 1 connection for Polled I/O 1 connection for Bit-Strobe I/O
Node ID	0~63 selected by rotary switch
Baud Rate (bps)	125 kbps, 250 kbps, 500 kbps
Heartbeat/Shutdown message	Yes
Terminator Resistor	Switch for 120 Ω terminator resistor
Digital Input	
Channels	8 (Sink/Source)
On Voltage Level	+3.5 ~ +30 V_{DC}
Off Voltage Level	+1 V_{DC} Max.
Input Impedance	3 kΩ, 0.3 W
Digital Output	
Channels	8 (Sink)
Load Voltage	+5 ~ +30 V_{DC}
Output Max Load Current	700 mA per channel
Output Type	Open Collector
LED	
Round LED	PWR LED, NET LED, MOD LED
I/O LED	8 LEDs as Digital Output, 8 LEDs as Digital Input, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ +80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



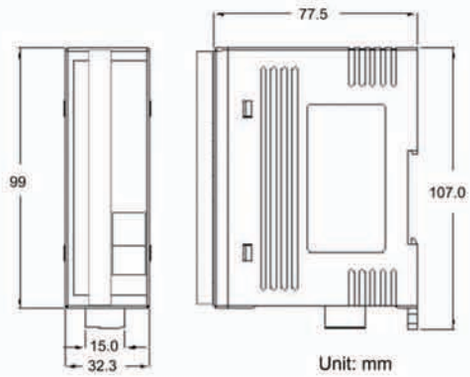
Ordering Information

CAN-2054D	The DeviceNet module of 8-channel Digital Input and 8-channel Digital Output

DeviceNet Slave

8-channel RTD Input Module of DeviceNet Slave

CAN-2015D



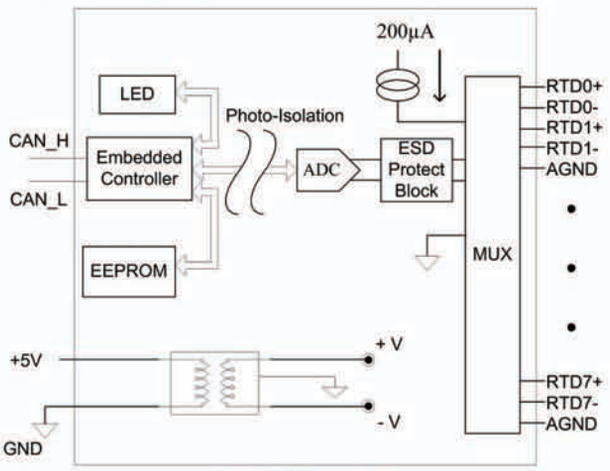
Dimensions

The CAN-2015D follows DeviceNet specification Volume I/II, Release 2.0. User can access the RTD input status and set the configuration via DeviceNet EDS file. This module has 8 differential RTD input channels. By the DeviceNet masters of ICP DAS, you can quickly build a DeviceNet network to approach your requirements.

Features

- DeviceNet general I/O slave devices
- Comply with DeviceNet specification Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
- Group 2 Only Server (non UCMM-capable)
- Support Predefined Master/Slave Connection Set
- Connection supported:
  - 1 connection for Explicit Messaging
  - 1 connection for Polled I/O
  - 1 connection for Bit-Strobe I/O connection
- Support DeviceNet heartbeat and shutdown messages
- Provide EDS file for DeviceNet master interface

Internal I/O Structure

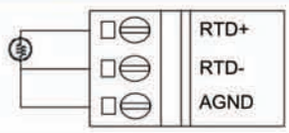


Internal I/O Structure

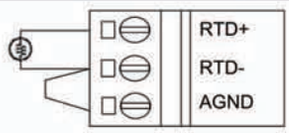
I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	RTD0+
02	RTD1-
03	RTD1+
04	RTD1-
05	AGND
06	RTD2+
07	RTD2-
08	RTD3+
09	RTD3-
10	AGND
11	RTD4+
12	RTD4-
13	RTD5+
14	RTD5-
15	AGND
16	RTD6+
17	RTD6-
18	RTD7+
19	RTD7-
20	AGND

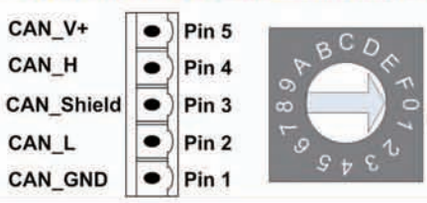
3-Wire RTD Wiring



2-Wire RTD Wiring



CAN Pin & Baud Rate Rotary



Rotary Switch Value	Baud rate (kbps)
0	125
1	250
2	500

Hardware Specifications

CAN Interface	
DeviceNet Specification	Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
DeviceNet subscribe	Group 2 Only Server
Connection supported	1 connection for Explicit Messaging 1 connection for Polled I/O 1 connection for Bit-Strobe I/O
Node ID	0~63 selected by rotary switch
Baud Rate (bps)	125 kbps, 250 kbps, 500 kbps
Heartbeat/Shutdown message	Yes
Terminator Resistor	Switch for 120 Ω terminator resistor
Analog Input	
Channels	8 Differential
Input Type	Pt100, Pt1000, Ni120, Cu100, Cu1000
Resolution	16-bit
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, NET LED, MOD LED
I/O LED	8 LEDs as RTD input, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application

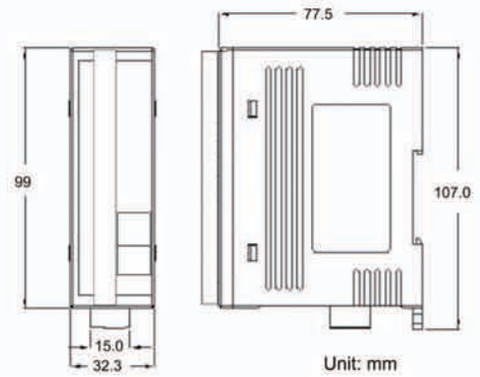
Ordering Information

CAN-2015D	DeviceNet module of 8-channel Differential RTD Input

DeviceNet Slave

8-channel Analog Input Module of DeviceNet Slave

CAN-2017D



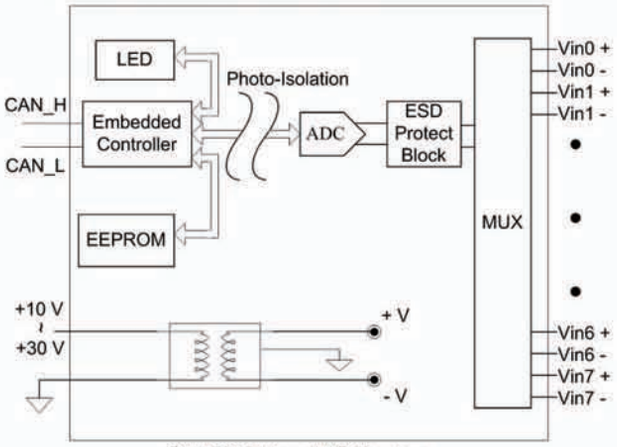
Dimensions

The CAN-2017D follows DeviceNet specification Volume I/II, Release 2.0. User can access the analog input status and set the configuration via DeviceNet EDS file. This module has 8 differential analog input channels. By the DeviceNet masters of ICP DAS, you can quickly build a DeviceNet network to approach your requirements.

Features

- DeviceNet general I/O slave devices
- Comply with DeviceNet specification Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
- Group 2 Only Server (non UCMM-capable)
- Support Predefined Master/Slave Connection Set
- Connection supported:
  - 1 connection for Explicit Messaging
  - 1 connection for Polled I/O
  - 1 connection for Bit-Strobe I/O connection
- Support DeviceNet heartbeat and shutdown messages
- Provide EDS file for DeviceNet master interface

Internal I/O Structure

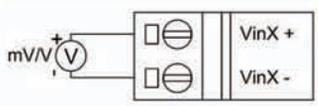


CAN-2017 Internal I/O Structure

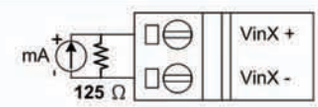
I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	Vin 0 +
02	Vin 0 -
03	Vin 1 +
04	Vin 1 -
05	Vin 2 +
06	Vin 2 -
07	Vin 3 +
08	Vin 3 -
09	Vin 4 +
10	Vin 4 -
11	Vin 5 +
12	Vin 5 -
13	Vin 6 +
14	Vin 6 -
15	Vin 7 +
16	Vin 7 -
17	N/A
18	N/A
19	N/A
20	N/A

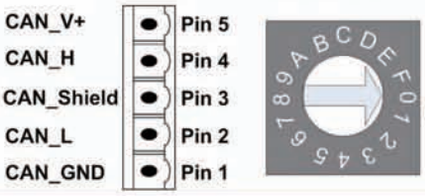
Voltage Input Wiring



Current Input Wiring



CAN Pin & Baud Rate Rotary

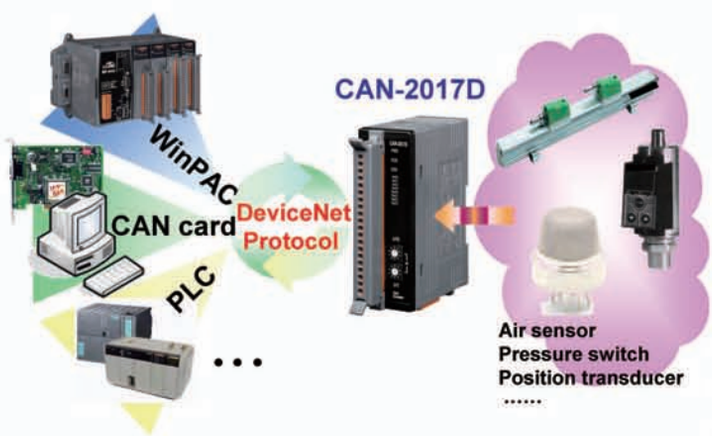


Rotary Switch Value	Baud rate (kbps)
0	125
1	250
2	500

Hardware Specifications

CAN Interface	
DeviceNet Specification	Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
DeviceNet subscribe	Group 2 Only Server
Connection supported	1 connection for Explicit Messaging 1 connection for Polled I/O 1 connection for Bit-Strobe I/O
Node ID	0~63 selected by rotary switch
Baud Rate (bps)	125 kbps, 250 kbps, 500 kbps
Heartbeat/Shutdown message	Yes
Terminator Resistor	Switch for 120 Ω terminator resistor
Analog Input	
Channels	8 Differential
Input Type	+/-10 V, +/-5 V, +/-1 V, +/-500 mV, +/-150 mV
Resolution	-20 mA ~ +20 mA (Requires Optional External 125Ω Resistor)
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, NET LED, MOD LED
I/O LED	8 LEDs as Current or Voltage input, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



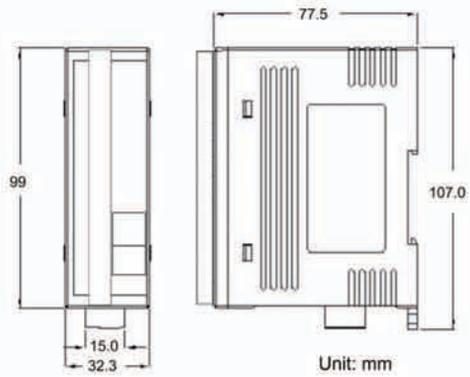
Ordering Information

CAN-2017D	DeviceNet module of 8-channel Differential Analog Input

DeviceNet Slave

8-channel Thermocouple Input Module of DeviceNet Slave

CAN-2018D



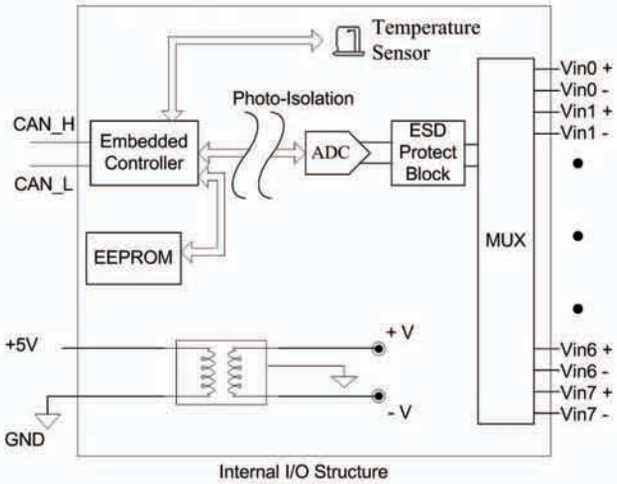
Dimensions

The CAN-2018D follows DeviceNet specification Volume I/II, Release 2.0. User can access the thermocouple input status and set the configuration via DeviceNet EDS file. This module has 8 differential thermocouple input channels. By the DeviceNet masters of ICP DAS, you can quickly build a DeviceNet network to approach your requirements.

Features

- DeviceNet general I/O slave devices
- Comply with DeviceNet specification Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
- Group 2 Only Server (non UCMM-capable)
- Support Predefined Master/Slave Connection Set
- Connection supported:
  - 1 connection for Explicit Messaging
  - 1 connection for Polled I/O
  - 1 connection for Bit-Strobe I/O connection
- Support DeviceNet heartbeat and shutdown messages
- Provide EDS file for DeviceNet master interface

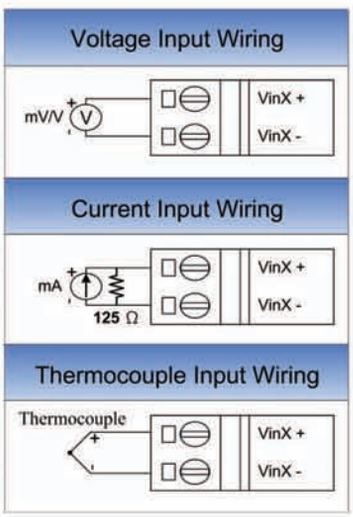
Internal I/O Structure



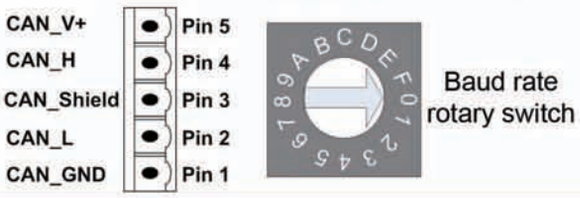
Internal I/O Structure

I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	Vin 0 +
02	Vin 0 -
03	Vin 1 +
04	Vin 1 -
05	Vin 2 +
06	Vin 2 -
07	Vin 3 +
08	Vin 3 -
09	Vin 4 +
10	Vin 4 -
11	Vin 5 +
12	Vin 5 -
13	Vin 6 +
14	Vin 6 -
15	Vin 7 +
16	Vin 7 -
17	N/A
18	N/A
19	N/A
20	N/A



CAN Pin & Baud Rate Rotary



Rotary Switch Value	Baud rate (kbps)
0	125
1	250
2	500

Hardware Specifications

CAN Interface	
DeviceNet Specification	Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
DeviceNet subscribe	Group 2 Only Server
Connection supported	1 connection for Explicit Messaging 1 connection for Polled I/O 1 connection for Bit-Strobe I/O
Node ID	0~63 selected by rotary switch
Baud Rate (bps)	125 kbps, 250 kbps, 500 kbps
Heartbeat/Shutdown message	Yes
Terminator Resistor	Switch for 120 Ω terminator resistor
Analog Input	
Channels	8 Differential
Input Type	+/- 15mV, +/- 50mV, +/- 100mV +/- 500mV, +/- 1V, +/- 2.5V -20mA ~ +20mA(Requires Optional External 125 Ohm Resistor) Thermocouple(J, K, T, E. R. S, B, N, C)
Resolution	16-bit
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, NET LED, MOD LED
I/O LED	1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application

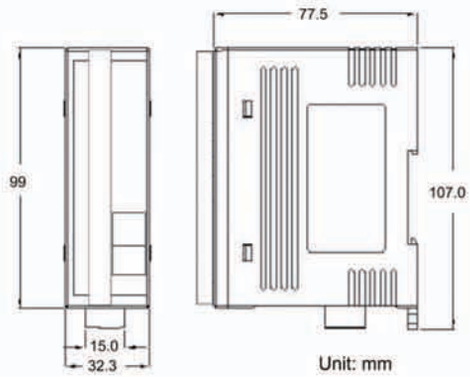
Ordering Information

CAN-2018D	DeviceNet module of 8-channel Differential Thermocouple Input

DeviceNet Slave

4-channel Analog Output Module of DeviceNet Slave

CAN-2024D



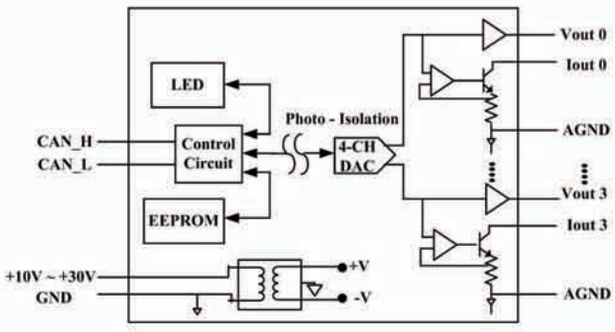
Dimensions

The CAN-2024D follows DeviceNet specification Volume I/II, Release 2.0. User can access the analog output status and set the configuration via DeviceNet EDS file. This module has 4-channel 14-bit analog output. By the DeviceNet masters of ICP DAS, you can quickly build a DeviceNet network to approach your requirements.

Features

- DeviceNet general I/O slave devices
- Comply with DeviceNet specification Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
- Group 2 Only Server (non UCMM-capable)
- Support Predefined Master/Slave Connection Set
- Connection supported:
  - 1 connection for Explicit Messaging
  - 1 connection for Polled I/O
  - 1 connection for Bit-Strobe I/O connection
- Support DeviceNet heartbeat and shutdown messages
- Provide EDS file for DeviceNet master interface

Internal I/O Structure



Internal I/O Structure

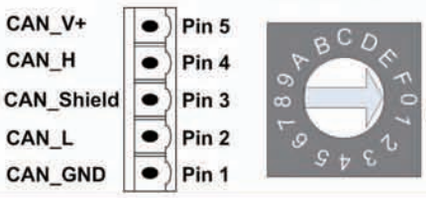
I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	Iout 0
02	AGND
03	Iout 1
04	AGND
05	Iout 2
06	AGND
07	Iout 3
08	AGND
09	Vout 0
10	AGND
11	Vout 1
12	AGND
13	Vout 2
14	AGND
15	Vout 3
16	AGND
17	N/A
18	N/A
19	N/A
20	N/A

Current Output Wiring

Voltage Output Wiring

CAN Pin & Baud Rate Rotary

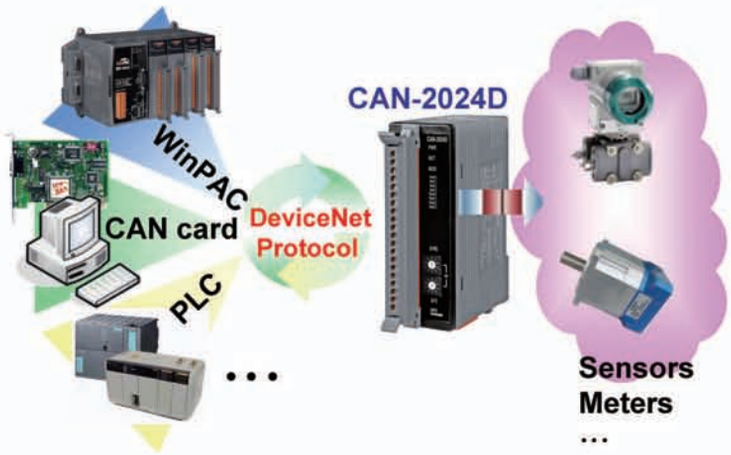


Rotary Switch Value	Baud rate (kbps)
0	125
1	250
2	500

Hardware Specifications

CAN Interface	
DeviceNet Specification	Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
DeviceNet subscribe	Group 2 Only Server
Connection supported	1 connection for Explicit Messaging 1 connection for Polled I/O 1 connection for Bit-Strobe I/O
Node ID	0~63 selected by rotary switch
Baud Rate (bps)	125 kbps, 250 kbps, 500 kbps
Heartbeat/Shutdown message	Yes
Terminator Resistor	Switch for 120 Ω terminator resistor
Analog Input	
Channels	4
Input Type	0 ~ +5 V_{DC}, -5 ~ +5 V_{DC}, 0 ~ +10 V_{DC}, , -10 ~ +10 V_{DC}, 0 ~ 20 mA, 4 ~ 20 mA.
Resolution	14-bit
ESD Protection	4 kV Contact for each channel
LED	
Round LED	PWR LED, NET LED, MOD LED
I/O LED	8 LEDs as Current and Voltage Output status , and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	1.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



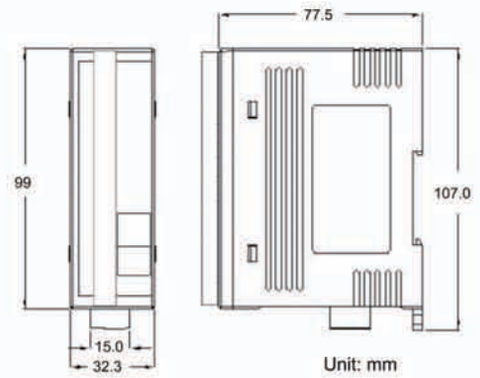
Ordering Information

CAN-2024D	DeviceNet slave module of 4-channel 14-bit Analog Output

DeviceNet Slave

PWM Module of DeviceNet Slave

CAN-2088D



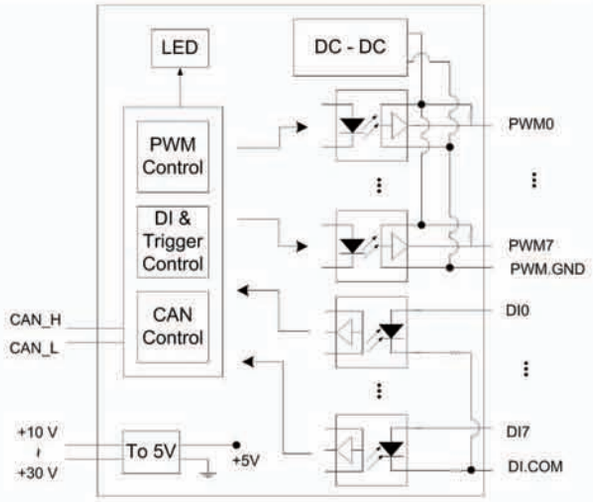
Dimensions

PWM (Pulse width modulation) is a powerful technique for controlling analog circuits. By using digital outputs, it can generate a waveform with variant duty cycle and frequency to control analog circuits. CAN-2088D, a CAN bus remote I/O modules with DeviceNet protocol, provides 8 PWM output channels and 8 digital inputs channels with high-speed counter function. It can be used to develop practical and economical analog control systems in the DeviceNet network.

Features

- Hardware-controlled PWM output
- PWM output frequency: 0.2 Hz ~ 500 kHz with 0.1%~99.9% duty cycle
- PWM Output Modes: software trigger / hardware trigger
- Trigger each PWM output individually or all PWM outputs synchronously
- Support Burst output mode and Continue output mode
- Provide 32-bit 500 kHz high-speed counter for each DI channel
- Pass the validation of DeviceNet conformance test
- Provide EDS file for DeviceNet master interface

Internal I/O Structure



I/O Pin & Wire Connection

Terminal No.	Pin Assignment
01	PO.0
02	PO.1
03	PO.2
04	PO.3
05	PO.4
06	PO.5
07	PO.6
08	PO.7
09	PO.GND
10	PO.GND
11	DI.0
12	DI.1
13	DI.2
14	DI.3
15	DI.4
16	DI.5
17	DI.6
18	DI.7
19	DI.GND
20	DI.GND

Output Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Drive Relay	Relay On	Relay Off
Resistance Load		

Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Relay Contact	Relay On	Relay Off
TTL/CMOS Logic	Voltage > 10 V	Voltage < 4 V
NPN Output	Open Collector On	Open Collector Off
PNP Output	Open Collector On	Open Collector Off

CAN Pin & Baud Rate Rotary

CAN_V+	Pin 5
CAN_H	Pin 4
CAN_Shield	Pin 3
CAN_L	Pin 2
CAN_GND	Pin 1

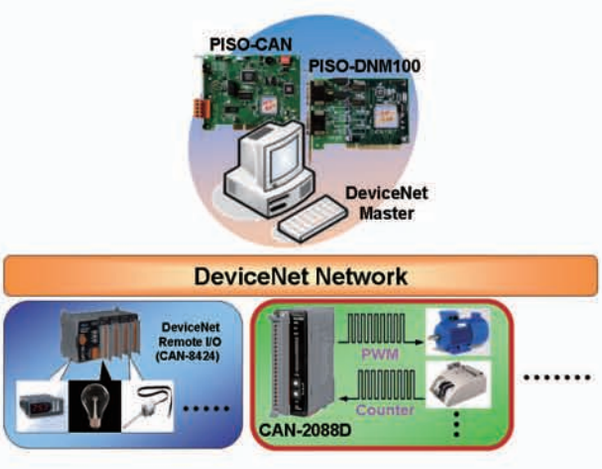
Baud rate rotary switch

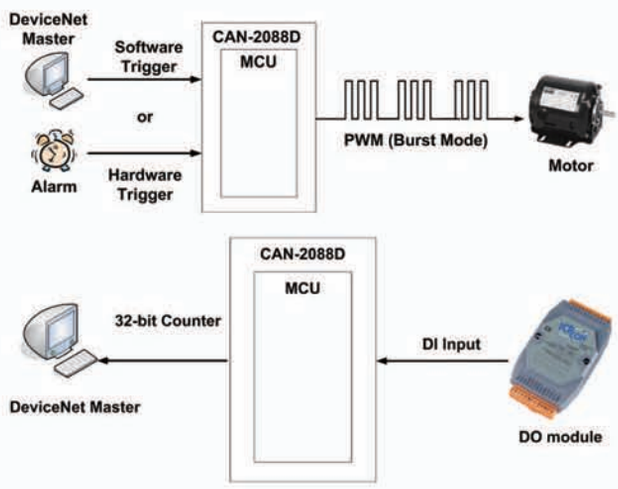
Rotary Switch Value	Baud rate (kbps)
0	125
1	250
2	500

Hardware Specifications

CAN Interface	
DeviceNet Specification	Volume I, Release 2.0 & Volume II, Release 2.0, Errata 5
DeviceNet subscribe	Group 2 Only Server
Connection supported	1 connection for Explicit Messaging 1 connection for Polled I/O 1 connection for Bit-Strobe I/O
Node ID	0~63 selected by rotary switch
Baud Rate (bps)	125 kbps, 250 kbps, 500 kbps
Heartbeat message	Yes
Shutdown message	Yes
Terminator Resistor	Switch for 120 Ω terminator resistor
PWM Interface	
Channels	8 (Source)
Output Max. Load Current	1 mA
Frequency Range	0.2 Hz ~ 500 kHz (non-continuous, the min. units of the high/low level signal is 1 us)
PWM Mode	Continue mode, Burst mode, Hardware trigger mode, Software trigger mode
ESD Protection	4 kV Contact for each channel
DI Interface	
Channels	8 (Sink)
Counter Frequency	32-bit, 500 kHz Max.
LED	
Round LED	PWR LED, NET LED, MOD LED
I/O LED	8 LEDs as PWM, 8 LEDs as Digital Input, and 1 LED as terminal resister indicator
Power	
Input range	Unregulated +10 ~ +30 V_{DC}
Power Consumption	3.5 W
Mechanism	
Installation	DIN-Rail
Dimensions	32.3 mm x 99 mm x 77.5 mm (W x L x H)
Environment	
Operating Temp.	-25 ~ +75 °C
Storage Temp.	-30 ~ +80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



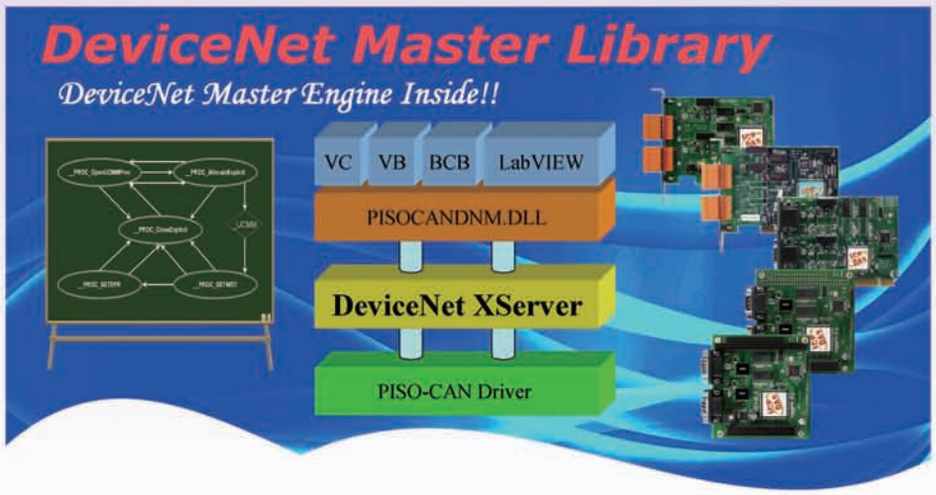


Ordering Information

CAN-2088D	DeviceNet module of 8-channel PWM and 8-channel DI with high-speed counters

DeviceNet Software

Compact DeviceNet Library for PISO-CAN series

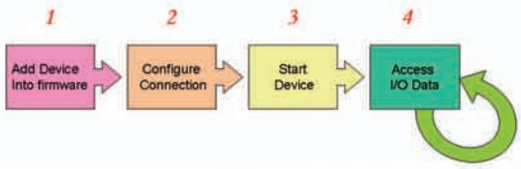


ICP DAS DeviceNet Master Library (DLL functions) for Windows 98/ME/NT/2000/XP provides users to establish DeviceNet network rapidly by Master/Slave connection model. The users can develop various DeviceNet applications via this library. The DeviceNet master library is for PCI CAN interface card, which are PISO-CAN200/400, PISO-CAN200/400U, PCM-CAN200/200P and PISO-CAN200E. Applying the library, users don't need to take care of the detail of the DeviceNet protocol.

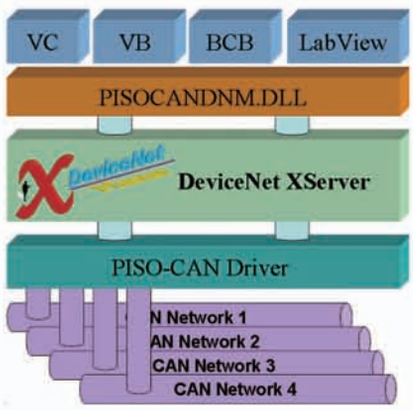
Features

- DeviceNet Version: Volume I & II, Release 2.0
- Programmable Master MAC ID and baud rate
- Baud Rate: 125k, 250k, 500 kbps
- Support Group 2 and UCMM connection
- I/O Operating Modes: Poll, Bit-Strobe, Change of State / Cyclic
- I/O Length: 512 Bytes Max. (Input/Output) per slave
- Slave Node : 63 nodes Max.
- Support Auto-search slave device function
- Support on-line adding and removing devices
- Support Auto-detect Group 2 and UCMM device
- Auto-reconnect when the connection is broken
- Support Linux driver

Establish Connection Flowchart



Establish Connection Flowchart



Ordering Information

PISO-CAN200U-D PISO-CAN200U-T	Comply with Universal PCI bus. Support plug-and-play and provide 2 CAN channels with D-Sub 9-pin connector or 5-pin screw terminal connector
PISO-CAN400U-D PISO-CAN400U-T	Comply with Universal PCI bus. Support plug-and-play and provide 4 CAN channels with D-Sub 9-pin connector or 5-pin screw terminal connector
PEX-CAN200i-D PEX-CAN200i-T	Support XI link PCI Express bus and provide 2 CAN channels with D-Sub 9-pin connector or 5-pin screw terminal connector
PCM-CAN100 PCM-CAN200	2-Port Isolated Protection CAN Communication PCI-104 Module with 9-pin D-sub connector
PCM-CAN200P	2-Port Isolated Protection CAN Communication PC-104+ Module with 9-pin D-sub connector

ADP-9-D	2-port CAN expansion daughter board with D-sub 9-pin connectors
ADP-9-T	2-port CAN expansion daughter board with screwed terminal connectors

DeviceNet Software

DeviceNet Master Utility

Before establishing the DeviceNet network, the users need a useful diagnostic tool. The "DNM Utility" (DeviceNet Master Utility) is the greatest tool. It supports to search all devices in the network. Anymore, it also can diagnose the remote slave devices. After configuring the I/O connection, the information would be saved into the DeviceNet master hardware. The users can export and import the information via the "DNM Utility" .The "DNM Utility" can easily to access the I/O data of all the remote devices. The users can monitor the input data or change the output data of the remote slave devices with "DNM Utility".

Features

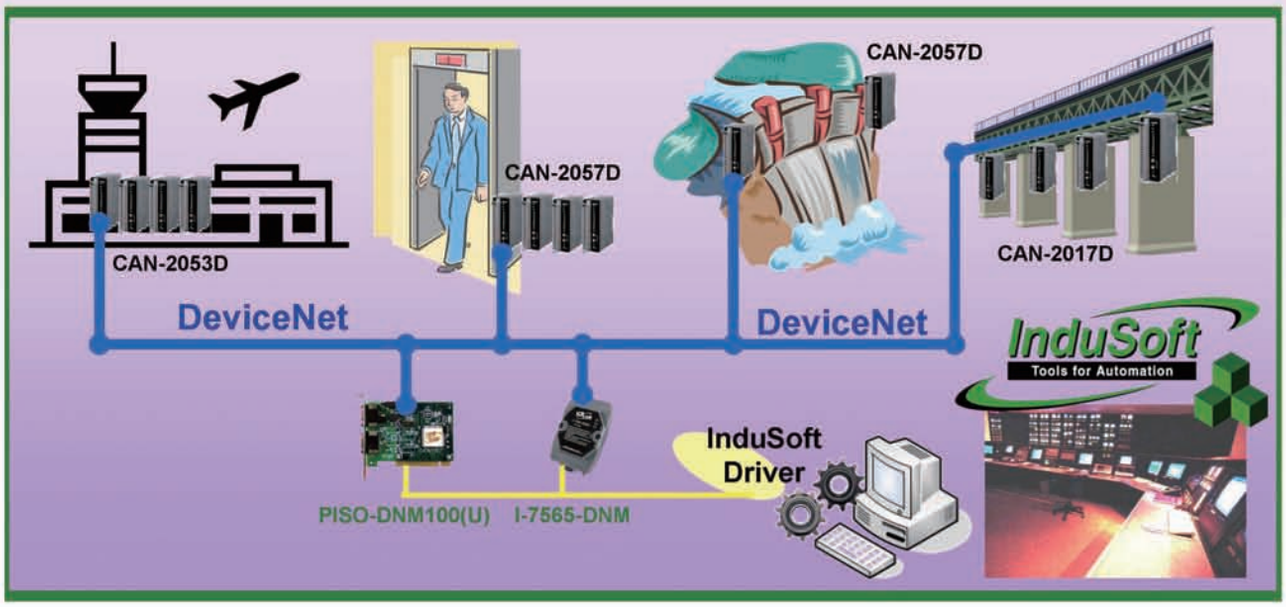
- Selectable baud rate and master MAC ID setting
- Diagnose the remote slave devices
- Searching the DeviceNet slave on demand
- Importing and exporting the slave information
- Support to update firmware of DeviceNet hardware
- Support Group 2 and UCMM remote devices
- Easy to use with the graphic interface
- Reduce the development loading

Ordering Information

PISO-CAN200-D PISO-CAN200-T	Comply with 33MHz 32-bit 5V PCI bus (V2.1). Support plug-and-play and provide 2 CAN channels with D-Sub 9-pin connector or 5-pin screw terminal connector
PISO-CAN400-D PISO-CAN400-T	Comply with 33MHz 32-bit 5V PCI bus (V2.1). Support plug-and-play and provide 4 CAN channels with D-Sub 9-pin connector or 5-pin screw terminal connector
PEX-CAN200i-D PEX-CAN200i-T	Support XI link PCI Express bus and provide 2 CAN channels with D-Sub 9-pin connector or 5-pin screw terminal connector
PCM-CAN100 PCM-CAN200	2-Port Isolated Protection CAN Communication PCI-104 Module with 9-pin D-sub connector
PCM-CAN200P	2-Port Isolated Protection CAN Communication PC-104+ Module with 9-pin D-sub connector
I-7565-DNM	USB / DeviceNet Master Converter Module
PISO-DNM100U	1-Port DeviceNet Master Universal PCI Communication Board

DeviceNet Software

DeviceNet Master InduSoft Driver



In order to implement DeviceNet communication by InduSoft software, ICP DAS provides a set of DeviceNet component in the InduSoft driver. By means of this driver, you don't need to have the complex and abstruse technology of the DeviceNet protocol. Only few simple steps can finish the communication between your PC and the remote DeviceNet devices. Therefore, the ICP DAS InduSoft driver can help you not only to develop your application rapidly and quickly, but also to reduce the complexity of applications.

Features

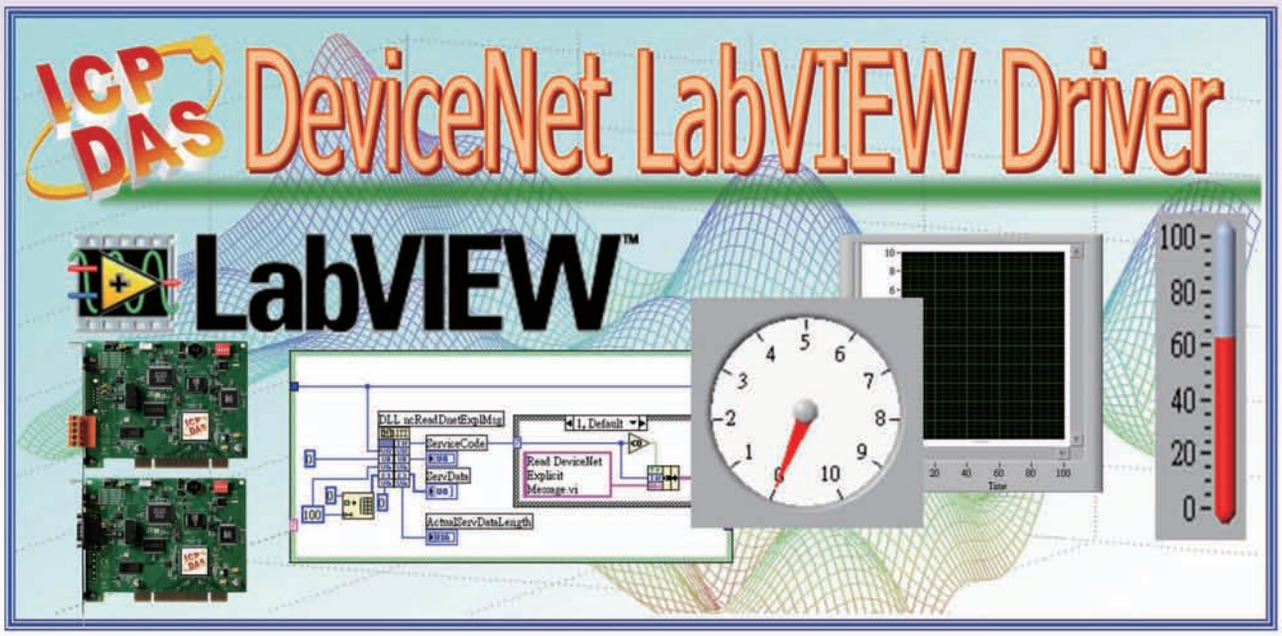
- Integrates with InduSoft Web Studio SCADA
- A Tag supports Max. 4 Bytes data length
- Communicates with the Multiple I-7565-DNM (multi-port) and PISO-DNM100U Series modules at the same time
- Programmable MAC ID Setting
- Auto-detect DeviceNet slave devices and supports DeviceNet I/O monitor
- Support Group 2 and UCMM devices
- Selectable data rates (baud): 125k, 250k, 500 kbps

Ordering Information

PISO-DNM100U	1-Port DeviceNet Master Universal PCI Communication Board
I-7565-DNM	USB / DeviceNet Master Converter

DeviceNet Software

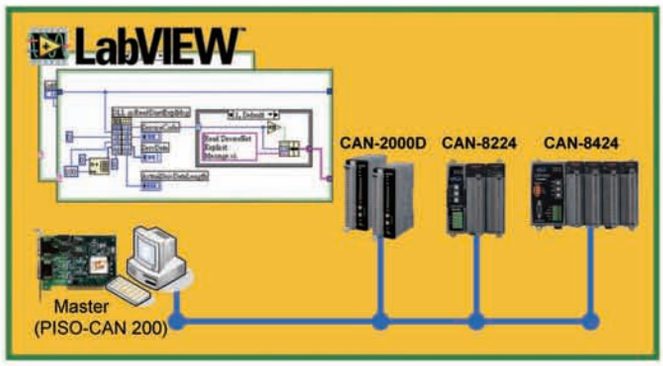
DeviceNet Master LabVIEW Driver



In order to implement DeviceNet communication by NI LabVIEW software, ICP DAS provides a set of DeviceNet component in the LabVIEW driver. The LabVIEW driver includes a configuration utility to configure the ICP DAS's DeviceNet hardware in your PC. By means of this driver, you don't need to have the complex and abstruse technology of the DeviceNet protocol. Only few simple steps can finish the communication between your PC and the remote DeviceNet devices. Therefore, the ICP DAS LabVIEW driver can help you not only to develop your application rapidly and quickly, but also to reduce the complexity of applications.

Features

- NI LabVIEW Software version 7.0 or later
- Auto detecting DeviceNet slave devices and DeviceNet I/O monitor
- Programmable MAC ID Setting
- Provide hardware configuration tool
- Support UCMM capable devices
- Selectable data rates (baud): 125K, 250K, 500K
- Support the Predefined Master/Slave connection set

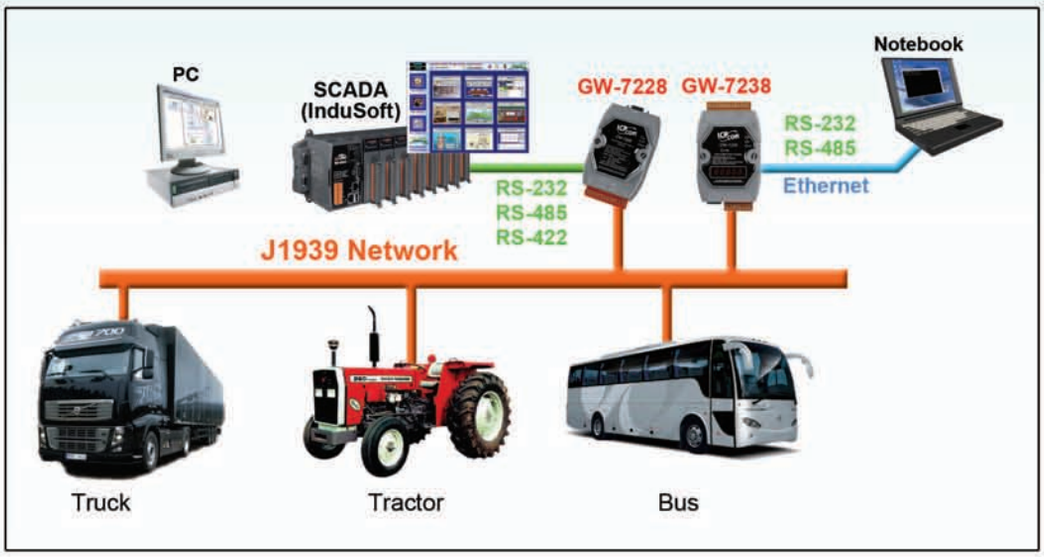


Ordering Information

PISO-CAN 200U / 400U	2/4 Ports Universal PCI CAN Communication Board
PEX-CAN 200i	2-Ports PCI-Express x1 CAN Communication Board
PCM-CAN 100/200	2-Port CAN Communication PCI-104 Module
PCM-CAN 200P	2-Port CAN Communication PC-104+ Module
PISO-DNM100U	1-Port DeviceNet Master Universal PCI Communication Board
I-7565-DNM	USB / DeviceNet Master Converter

J1939 Series

J1939 is the vehicle bus standard used for communication and diagnostics among vehicle components, originally by the car and heavy duty truck industry in the United States. Because of the success of applying in vehicles, J1939 has become the accepted industry standard and the vehicle network technology of choice for off-highway machines in applications such as construction, material handling, and forestry machines. It is a higher-layer protocol based on Controller Area Network (CAN), which provides serial data communications between microprocessor systems (ECU) in any kind of heavy duty vehicles. The messages exchanged between these units can be data such as vehicle road speed, torque control message from the transmission to the engine, oil temperature, and many more.



J1939 Features

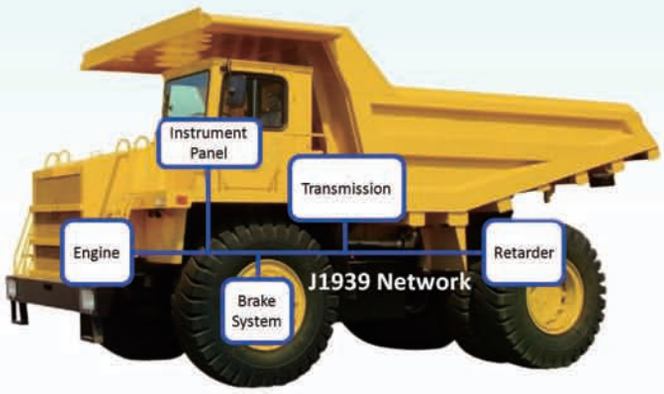
- Higher-layer protocol based on CAN bus
- The speed is nearly always 250 kbit/s
- 29-bit identifier CAN 2.0B
- Used in heavy-duty vehicles
- Peer-to-peer and broadcast communication
- Transport protocols for up to 1785 data bytes
- Network management

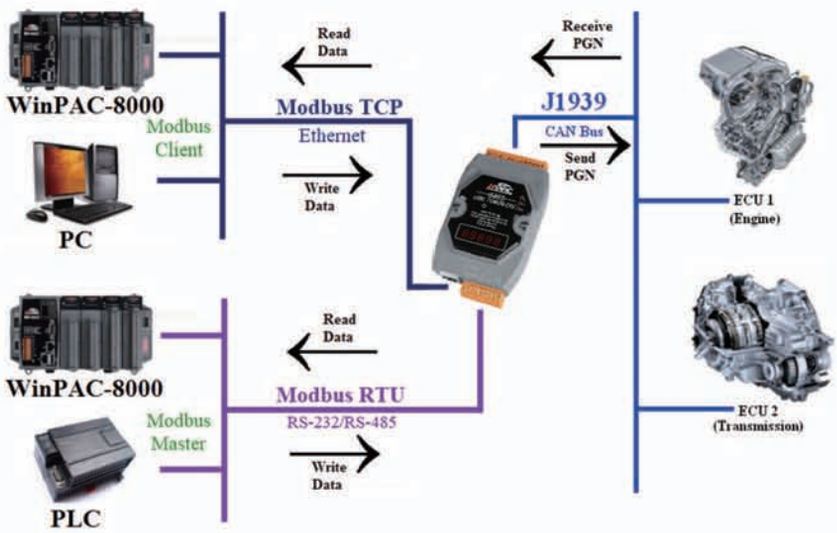
Application Layer	DeviceNet, CANopen J1939...etc
Object Layer	Message Filtering, Message and Status Handing
Transfer Layer	Fault Confinement, Message Framing and Signaling, Message Validation, Arbitration, Error Detection, Transfer Rate and Timing
Physical Layer	Signal Level and Bit Representation, Transmission Medium

CAN bus application layers

All J1939 packets contain eight bytes of data and a standard header which contains an index called PGN (Parameter Group Number), which is embedded in the message's 29-bit identifier. A PGN identifies a message's function and associated data. J1939 attempts to define standard PGNs to encompass a wide range of automotive, agricultural, marine and off-road vehicle purposes. A range of PGNs (00FF0016 through 00FFFF16, inclusive) is reserved for proprietary use. PGNs define the data which is made up of a variable number of SPN elements defined for unique data. For example, there exists a predefined SPN for engine RPM.

J1939 uses three methods to communicate over the CAN bus. Destination specific communications use the PDU1 (Protocol Data Unit 1) format to send and receive data. The PDU1 format allows a message to be directed to specific ECU (CAN Node). The destination address is included in the CAN PDU1 CAN frame. Broadcast Communications use the PDU2 (Process Data Unit 2) format to send a message to multiple nodes. The PDU2 message format identifies a message number versus a node number. In these applications receiving ECU's monitor the CAN bus for specific messages. For example a display unit may ignore all other messages as it monitors the bus waiting for the PDUs containing Fuel Temperature and Fuel Pressure.





Example of J1939 application

J1939 Series in ICP DAS J1939 Gateway series

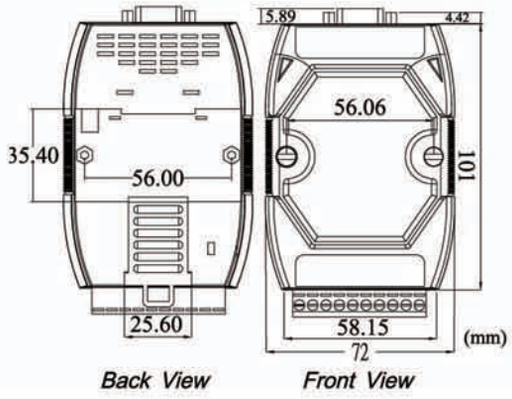
The Modbus TCP/RTU protocol gateways are ready for users in ICP DAS. The series can be used to integrate J1939 devices into the general applications.

	GW-7228	GW-7238
Support Protocol	J1939 Modbus RTU Slave	J1939 Modbus TCP server/RTU Slave
Comm. Interface	RS-232 RS-422 RS-485	RS-232 RS-485 Ethernet

J1939 Gateway

CAN bus series Programmable Automation Controller

GW-7228



Dimensions

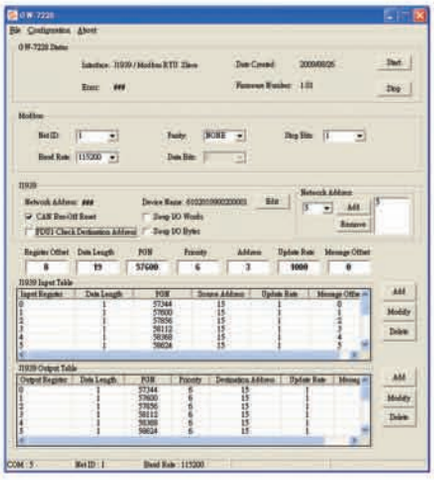
The GW-7228 is a solution that provides a protocol conversion between J1939 and Modbus RTU. For J1939 network, the GW-7228 supports PDU1, PDU2, broadcast and destination specific type of J1939 messages. From the view of Modbus RTU network, the GW-7228 is a Modbus RTU slave to reply the request from Modbus RTU master. We provide Utility software for users to configure the parameters of J1939 / Modbus RTU of the GW-7228. The application fields can be Diesel power-train applications, In-Vehicle networks for trucks and buses, etc.

Features

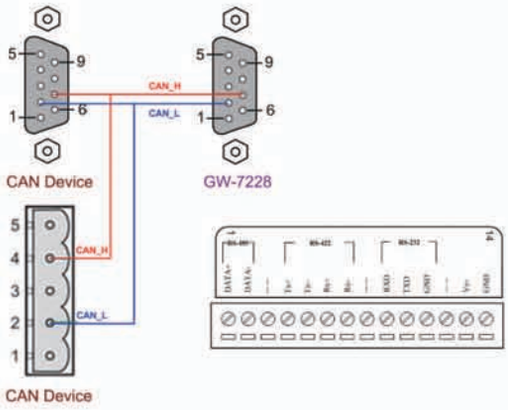
- Provide PWR / J1939 / MODBUS indication LED
- Built-in jumper to select 120 ohm terminal resister
- Watchdog inside
- Transmission and reception of all types of J1939 messages, including PDU1, PDU2, broadcast and destination specific
- J1939 Transport Protocol for transmission and reception of large messages (9 - 1785 bytes)
- Support BAM of Connection Management Message
- Network addresses management
- Support RS-232, RS-485 and RS-422 interfaces
- Support Modbus RTU slave protocol
- Configurable for Modbus Network ID(1~250)
- Configurable baud rates of 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
- Configurable for none, odd, or even parity and 1 or 2 stop bits
- Support Function Code 03 / 04 / 06 / 16 of Modbus functions for reading and writing J1939 Messages

Utility Features

- Provide Modbus network configuration interface
- Provide J1939 network configuration interface – Network Address / Device Name….
- Provide J1939 Input / Output configuration interface



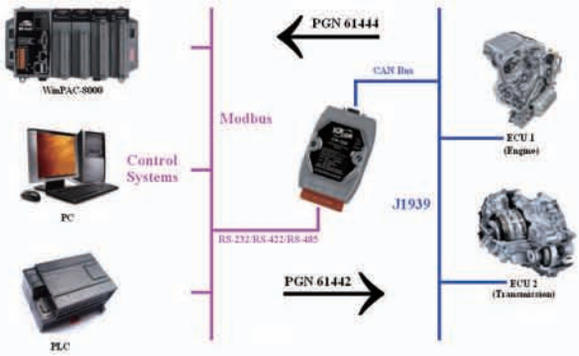
Wire Assignments



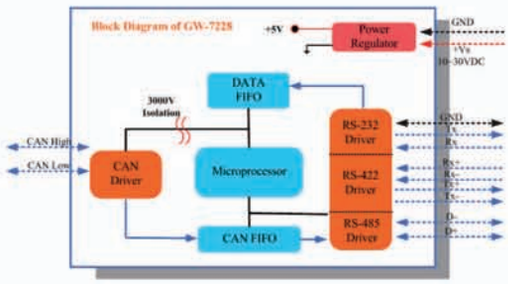
Hardware Specifications

Hardware	
J1939 Port Channels	1
CAN Interface	
Controller	Microprocessor inside with 96 MHz
Transceiver	NXP 82C250
Connector	9-pin D-sub connector
Baud Rate (bps)	250k
Isolation	3000 V_{DC} power protection on CAN side, 2500Vrms photo-couple isolation on CAN bus
Terminator Resistor	Selectable 120Ω terminator resistor by jumper
Specification	ISO-11898-2, CAN 2.0A and CAN 2.0B
Pin Assignment	C.I.A. DS-102 (CAN_H=7, CAN_L=2)
UART Interface	
Connector	14-pin screw terminal connecter
COM1	RS-232(TXD, RXD, GND) / RS-422(Tx+, Tx-, Rx+, Rx-) / RS-485(D+, D-)
Baud Rate (bps)	2400, 4800, 9600, 19200, 38400, 57600, 115200
LED	
Round LED	PWR / J1939 / MODBUS
Power	
Power supply	+10 ~ +30 V_{DC}
Power Consumption	1.5 W
Dip Switch	Init (Firmware Update) / Normal (Firmware Operation)
Mechanism	
Installation	DIN-Rail
Dimensions	108mm x 72mm x 35mm (H x W x D)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



Block Diagram



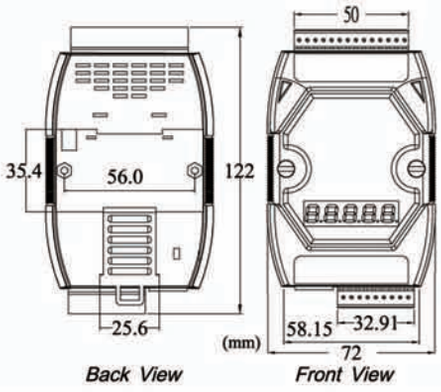
Ordering Information

GW-7228 CR	J1939/Modbus RTU Slave Gateway (RoHS)

J1939 Gateway

CAN bus series Programmable Automation Controller

GW-7238



Dimensions

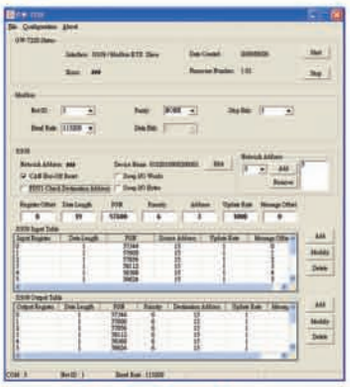
The GW-7238 is a gateway that provides conversion between J1939 and Modbus TCP/RTU protocol. For J1939 network, the GW-7238 supports PDU1, PDU2, broadcast and destination specific type of J1939 messages. For Modbus TCP/RTU network, the GW-7238 is a Modbus TCP server / RTU slave to reply the request from Modbus TCP client / RTU master. Utility software is provided for users to configure J1939 and Modbus TCP/RTU setting in the GW-7238. The application fields can be Diesel power-train applications, In-Vehicle networks for trucks and buses, etc.

Features

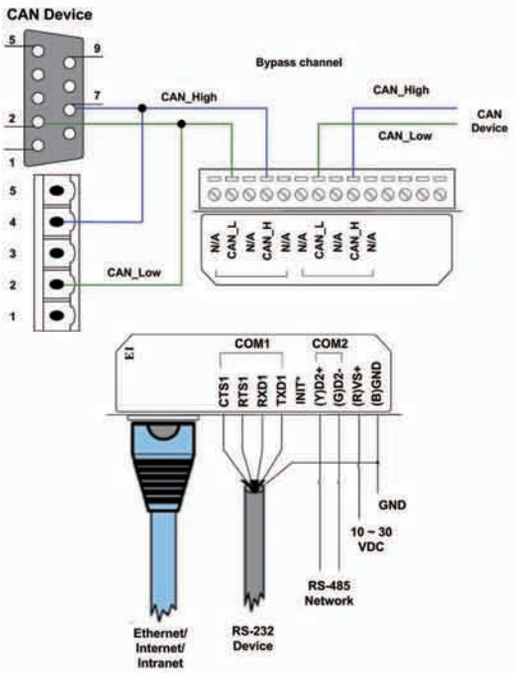
- Provides PWR / J1939 / MODBUS indication LEDs
- Built-in jumper to select 120 ohm terminal resister
- Watchdog inside
- Transmission and reception of all types of J1939 messages, including PDU1, PDU2, broadcast and destination specific
- J1939 Transport Protocol for transmission and reception of large messages (9 - 1785 bytes)
- Supports BAM of Connection Management Message
- Network addresses management
- Supports RS-232, RS-485 and Ethernet interfaces
- Configurable baud rates of 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
- Supports Modbus TCP server / RTU slave protocol
- Configurable for Modbus Network ID (1~250). Allows 5 Modbus/TCP clients' simultaneous accesses
- Supports Function Code 03 / 04 / 06 / 16 of Modbus functions for reading and writing J1939 Messages

Utility Features

- Provides Modbus network configuration interface
- Provides J1939 network configuration interface – Network Address / Device Name….
- Provides J1939 Input / Output configuration interface



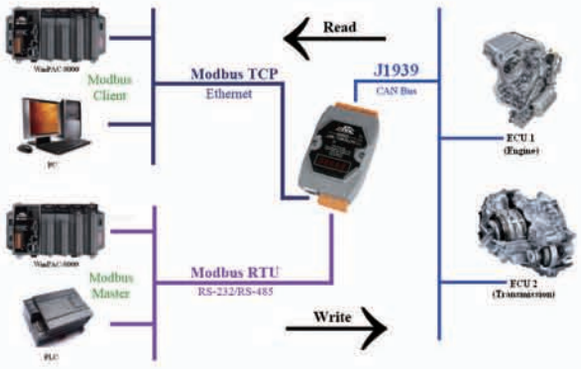
Wiring and Pin Assignments



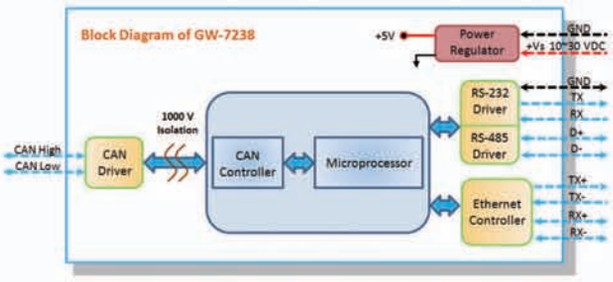
Hardware Specifications

Hardware	
CPU	80186, 80 MHz or compatible
CAN Interface	
Controller / Transceiver	NXP SJA1000T with 16 MHz clock / NXP 82C250
Channel number	1
Connector	5-pin screwed terminal block (CAN_L, CAN_H, N/A for others)
Baud Rate (bps)	250 k
Isolation	1000 V_{DC} for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor	Jumper for 120 Ω terminator resistor
Specification / Protocol	ISO-11898-2, CAN 2.0A and CAN 2.0B / J1939
UART Interface	
COM 1 / Protocol	RS-232 / Modbus RTU
COM 1 Connector	5-pin screwed terminal block (TxD, RxD, RTS, CTS, GND)
COM 2 / Protocol	RS-485 (Self-turner inside) / Modbus RTU
COM 2 Connector	2-pin screwed terminal block (DATA+, DATA-)
Ethernet Interface	
Controller	10/100Base-TX Ethernet Controller (Auto-negotiating, Auto_MDIX)
Connector / Protocol	RJ-45 with LED indicator / Modbus TCP
LED	
Round LED	PWR / J1939 / MODBUS RTU / MODBUS TCP
Power	
Power supply	Unregulated +10 ~ +30 V_{DC}
Protection	Power reverse polarity protection, Over-voltage brown-out protection
Power Consumption	3 W
Mechanism	
Dimensions	108mm x 72mm x 35mm (H x W x D)
Environment	
Operating Temp.	-25 ~ 75 °C
Storage Temp.	-30 ~ 80 °C
Humidity	10 ~ 90% RH, non-condensing

Application



Block Diagram



Ordering Information

GW-7238 CR	J1939 to Modbus TCP server / RTU Slave Gateway (RoHS)

J1939 is the vehicle bus standard used for communication and diagnostics among vehicle components, originally by the car and heavy duty truck industry in the United States. Because of the success of applying in vehicles, J1939 has become the accepted industry standard and the vehicle network technology of choice for off-highway machines in applications such as construction, material han

The **CAN** (Controller Area Network) 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. CAN supplies the multi-master capabilities, and is especially suited for networking as well as sensors and actuators within a system or sub-system.

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