Industrial Wireless Communication Products Catalog

Vol. IWCP 2.0.00 Beta Version

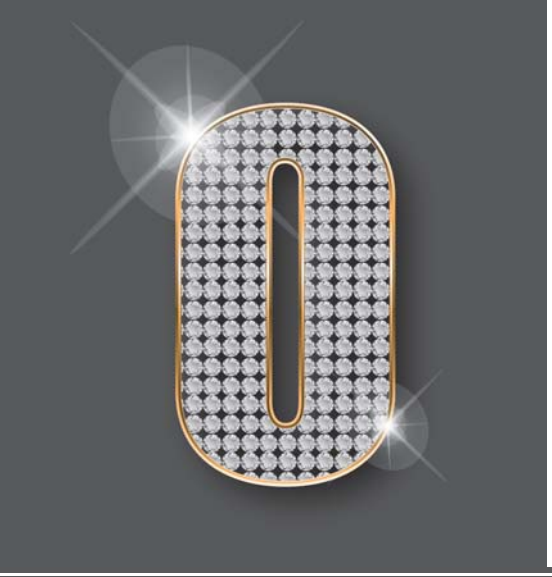


Table of Contents

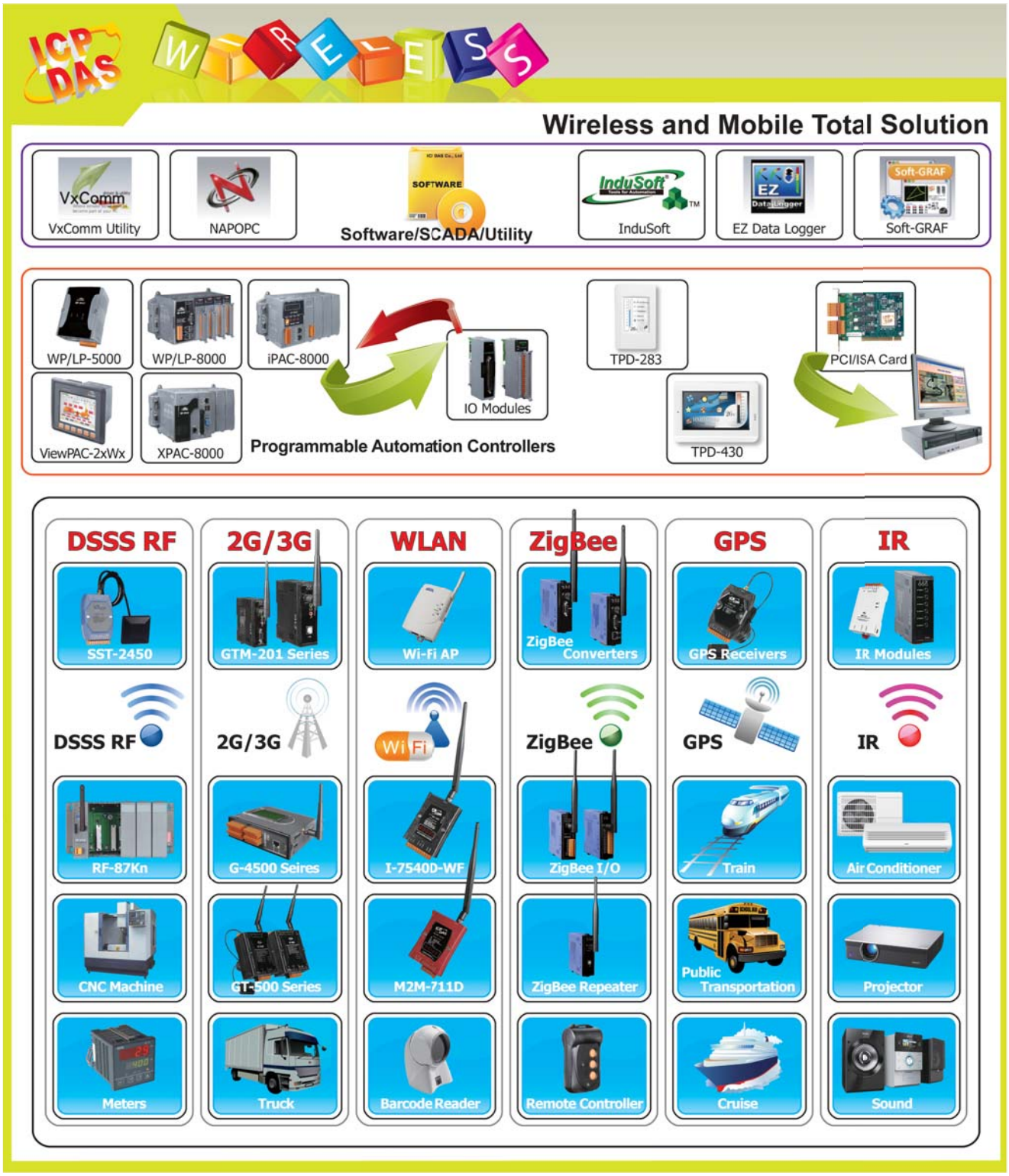
1

Introduction

1.1. Industrial Wireless Communication Products

Industrial Wireless Communication creates new prospects for automation. In the harsh environment, chemicals, vibrations, or moving parts could potentially damage cabling. Industrial Wireless Communication system substantially reduces cost and time for the installation and maintenance of the large number of cable, thus makes plants setup and reconfiguration easy and safe.

ICP DAS provides a great variety of wireless products with modular and universal solution specially designed for industrial harsh environment.



• WLAN Products

Chapter 2

WLAN (Wireless Local Area Network) links devices by wireless distribution method (spread-spectrum or OFDM radio), and generally provides a connection through an access point to the internet. WLAN allows users to move device within a local coverage area, and still be connected to the network. High-bandwidth allocation for wireless will make a relatively low-cost wiring possible.

ICP DAS provides a great variety of WLAN products which are compliant with standard of IEEE 802.11. The WLAN products have two modes: Ad-hoc and Infrastructure.

• DSSS RF Products

Chapter 3

DSSS RF (direct-sequence spread spectrum) is a modulation technique, which is the process of varying one or more properties of a high frequency periodic wave called the carrier signal, with respect to a modulating signal. The benefits of using DSSS include, but not limited to, 1) reduced signal/background-noise level hampers interception and 2) resistance to intended or unintended jamming.

ICP DAS provides SST series which is designed for data acquisition control applications between a host and remote sensors. It is also useful for those applications where the installation of cable wire is inconvenient.

• 2G/3G Products

Chapter 4

ICP DAS 2G/3G wireless solutions are uniquely designed to meet the challenges of implementing and managing a small, medium and large number of unmanned remote devices as well as mobile terminals using the 2G/3G telecom network. The ICP DAS 2G/3G wireless system is comprised of intelligent 2G/3G modems with versatile interfaces, a 2G/3G Data Server (DS), and 2G/3G PACs with embedded dynamic IP resolution technology to help system integrators and application service providers can quickly integrate 2G/3G technology into their own solutions, and save development time with reduced costs and assured performance.

• ZigBee Products

Chapter 5

ZigBee is a specification based on the IEEE 802.15.4 standard for wireless personal area networks (WPANs). ZigBee operates in the ISM radio bands and its focus is to define a general purpose, inexpensive, self-organizing, mesh network that can be used for industrial control, embedded sensing, medical data collection, smoke and intruder warning, building automation, and home automation, etc.

• GPS Products

Chapter 6

GPS (Global Positioning System) is widely used for driving navigation, geographic monitoring, fleet management and cargo tracking, etc. We also can use GPS for industrial application according to its longitude and latitude value and UTC time. ICP DAS provides various modules for different applications. Some are pure GPS data receivers and some add DO channels. Some even can generate a UTC synchronized 1 PPS (Pulse Per Second) output signal. You can refer the following selection guide in chapter 5 to choose the suitable GPS modules for your application.

• Infrared Products

Chapter 7

The consumer electronics industry has been employing the infrared (IR) light for a long time. Invisibility, low power consumption and low cost are the reason why IR is chosen for remote control purpose. The IR signal is often modulated at a frequency between 30 kHz and 60 kHz with various IR protocols. ICP DAS has developed several IR modules to help users to integrate various IR appliances into control systems. With the combination of the PACs, touchPADs, LC series modules and the related products of ICP DAS, users can easily establish their home/building automation systems.

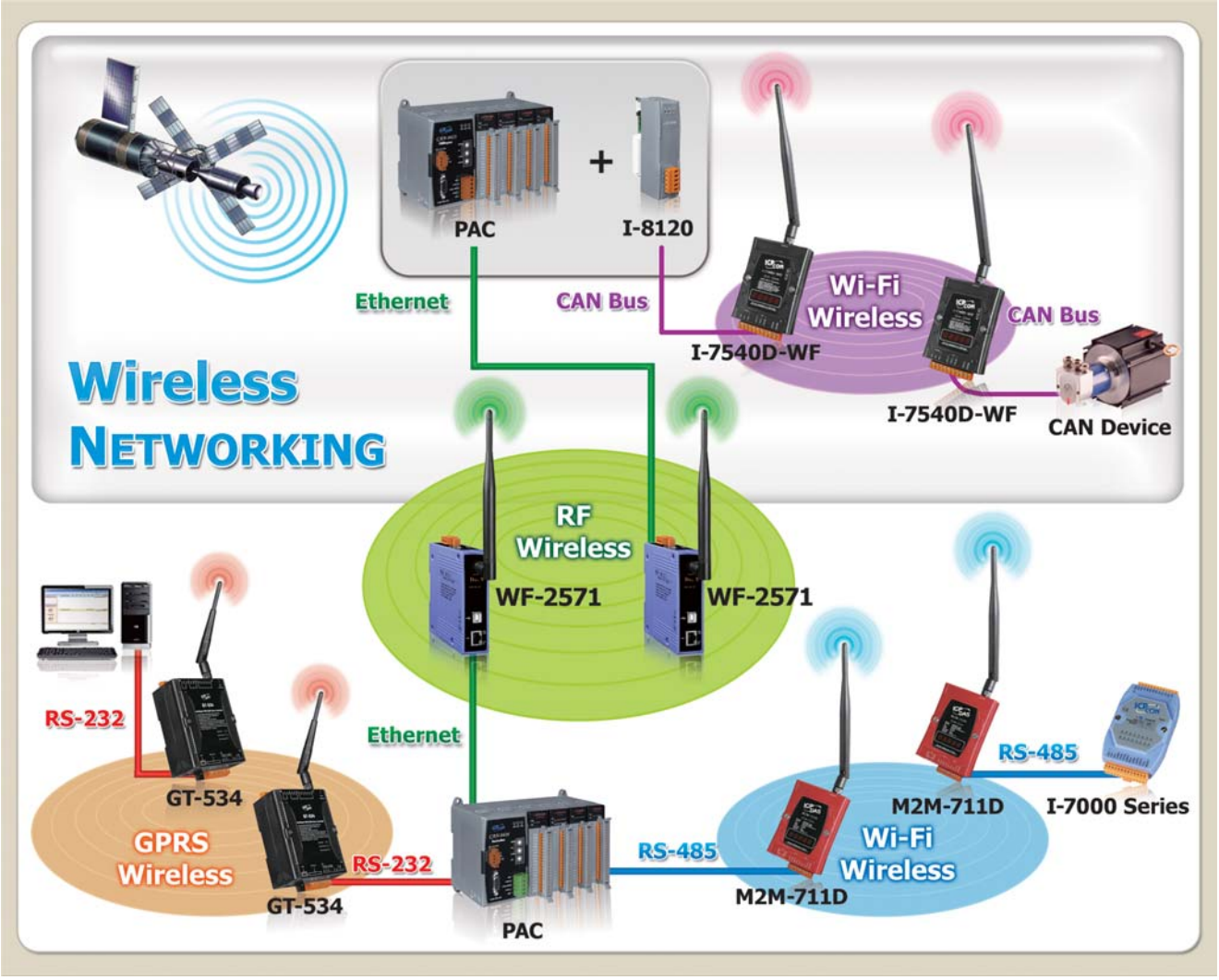
• Accessories

Chapter 8

Antennas are required by any radio receiver or transmitter in order to couple its electrical connection to the electromagnetic field. Amplifier is a device for increasing the power of a signal. ICP DAS provides various accessories including external antennas and amplifiers to extend communication length of a wireless network.

1.2. Wired to Wireless Solutions

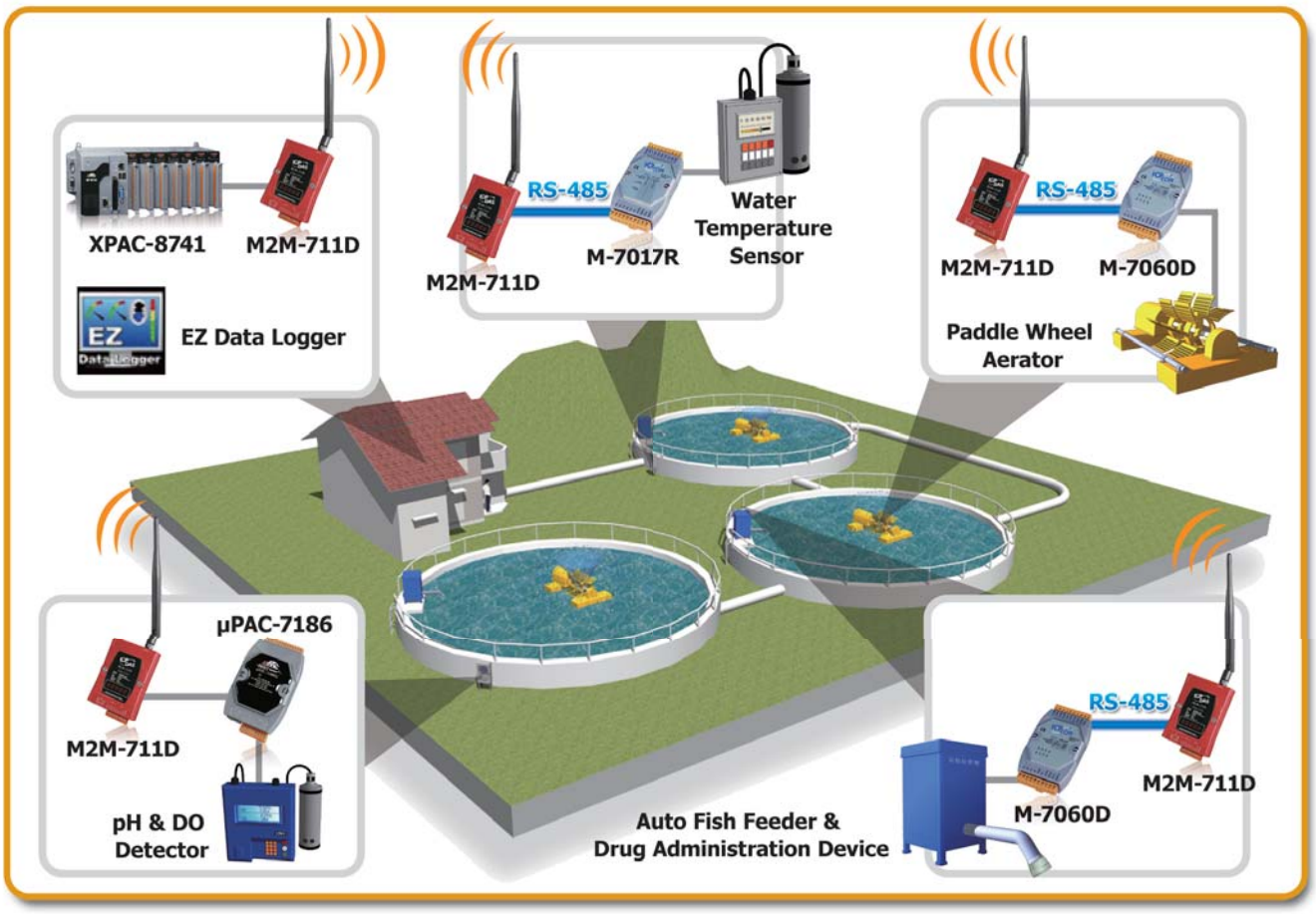
ICP DAS Wired to Wireless Solution is a cost effective solution designed to offer users more flexible and inexpensive ways to send and receive data. The aim of wireless technology is quite simple: to remove the restrictions put on messy wires and cables both inside the site and out. The wireless products by ICP DAS are also designed to be as easy as cables in use. There is no complex wireless connection software or intimate knowledge is required to connect your serial device over wireless. To achieve multiple goals, ICP DAS Wired to Wireless Solutions include , serial to wireless, CAN to wireless, Ethernet to wireless, and wireless I/O products to provide ubiquitous wireless coverage through the entire network.



The key benefits of wireless technology:

- Increase efficiency – improved communications leads to faster transfer of information
- Users are rarely out of touch – stay in communication anywhere and anytime
- Greater flexibility and mobility – access network more freely
- Reduce costs – cheaper to install and maintain a wireless network

• Serial to Wireless Solutions

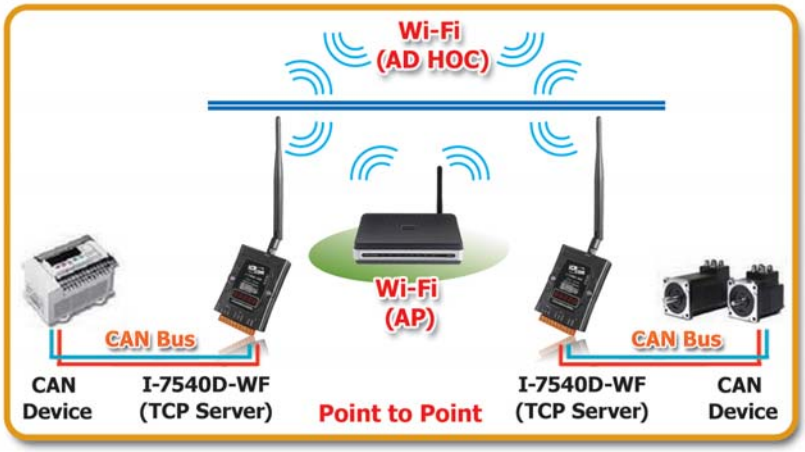


Setting up a fixed-line network on site is relatively complicated, makes the agricultural production technology underdeveloped, and left behind the state of the art in factories of manufactured products. The application shown above is a project aiming to improve the production process in fish farms using new perception, control and automation technologies. Simply converting serial signal to wireless allows fisher to monitor or control fish farm easily.

It is easy to convert serial RS-232/485 to a wireless product by wireless modems or with converters instead of running a wire. All of the following products allow you to convert a serial port to a wireless serial connection.

Model Name	Interface	Wireless
Serial to WLAN		
M2M-711D	RS-232 RS-485	Wi-Fi (802.11b/g)
Serial to DSSS RF		
SST-900B	RS-232 RS-485	DSSS RF (900 MHz)
SST-2450	RS-232 RS-485	DSSS RF (2.4 GHz)
Serial to ZigBee		
ZT-2550	RS-232 RS-485	ZigBee Host (2.4 GHz)
ZT-2551	RS-232 RS-485	ZigBee Slave (2.4 GHz)

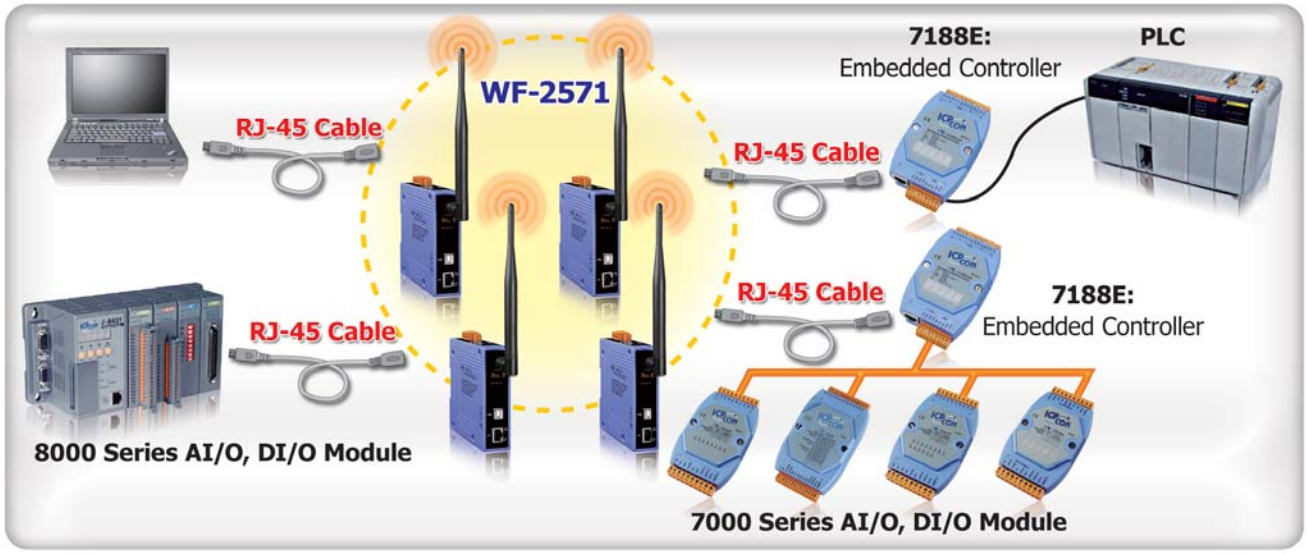
• CAN Bus Wireless Solutions



Controller Area Network (CAN) is a message-based protocol, designed specifically for automotive applications but now also used in other areas such as industrial automation and medical equipment. ICP DAS provides CAN to Wi-Fi product to support the wireless transmission of CAN data between various CAN networks or a CAN network and a WLAN network according to the 802.11b/g standard.

Model Name	Interface	Wireless
CAN to WLAN		
I-7540D-WF	CAN / RS-232	Wi-Fi (802.11b/g)

• Ethernet to Wireless Solutions



The applications of 802.11b/g wireless LAN are getting more popular by mature technology. It is not only faster than the industrial traditional transmission i.e. RS-232, RS-485, RS-422 etc, but also able to reduce the troublesomely wiring works. It also has higher mobility than Ethernet network. The multipoint wireless network of a short distance using Ad-hoc mode is shown in the above figure. There is also infrastructure mode which supports long distance as user's option.

Model Name	Interface	Wireless
Ethernet to WLAN		
WF-2571	Ethernet	Wi-Fi (802.11b/g)
Ethernet to ZigBee		
ZT-2570	Ethernet	ZigBee Host (2.4 GHz)
ZT-2571	Ethernet	ZigBee Slave (2.4 GHz)

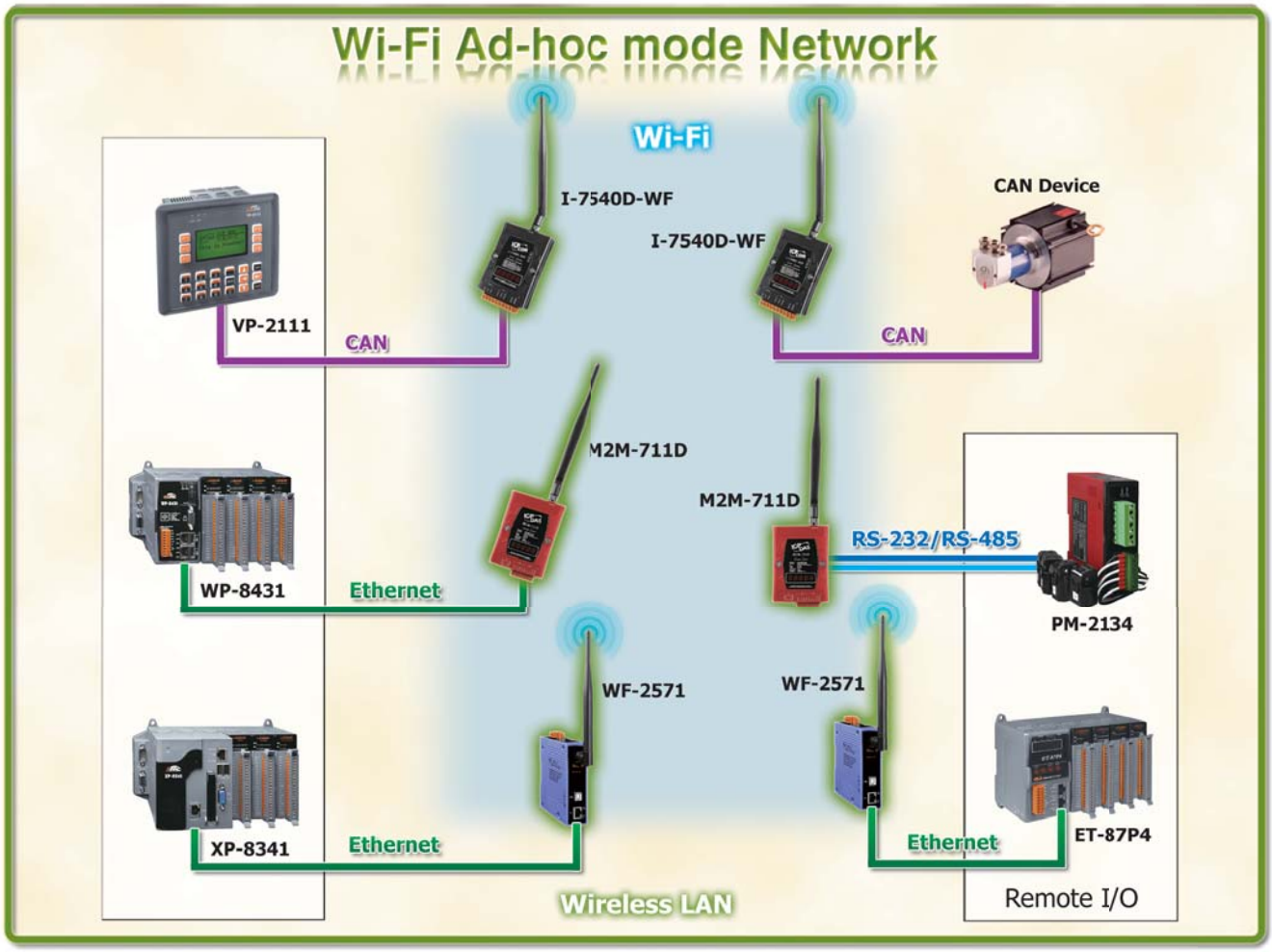
• Real-time GPS Tracking Solutions

The application shown above is a vehicle and parcel tracking system using GPS and GPRS technology. The GT-540P collects information including GPS location, speed, heading and events such as key on/off, door open/close and transmits the data in real-time via cellular or satellite networks to a computer or shipping warehouse for evaluation. Other than vehicle tracking, package loading or delivering will be transmitted as well. When a cellular network is available and GT-540P is connected, it transmits data to a server; when a network is not available the device stores data in the internal memory and will transmit stored data to the server later.

Model Name	Interface	Wireless
GTM-201P-3GWA	GPS RS-232 USB 2.0	2G (GSM/GPRS) 3G (UMTS/HSDPA/HSUPA)
I-8213W	GPS	2G (GSM/GPRS)
GT-540P	GPS RS-232 RS-485	2G (GSM/GPRS)
G-4500P(D)-2G	GPS RS-232 RS-485	2G (GSM/GPRS)
G-4500P(D)-3GWA	GPS RS-232 RS-485	2G (GSM/GPRS) 3G (UMTS/HSDPA/HSUPA)

WLAN Products

2.1. Overview



WLAN (Wireless Local Area Network) links devices by wireless distribution method (spread-spectrum or OFDM radio), and generally provides a connection through an access point to the internet. WLAN allows users to move device within a local coverage area, and still be connected to the network. High-bandwidth allocation for wireless will make a relatively low-cost wiring possible.

Advantages & Benefits

- Build a wireless network via Wi-Fi technology. There is no need to build an expansive fixed line network.
- Enable CAN/Serial/Ethernet device to be connected to the same network via Wi-Fi without any cable.
- Use widely available IEEE 802.11 (Wi-Fi) or Ethernet network infrastructure.
- Support IEEE 802.11 b/g for Wi-Fi and Ad Hoc modes.
- Secure data access with WEP, WPA, WPA2.

The WF-2000 series I/O modules have WLAN connection complies with the IEEE802.11b/g standards. With the popularity of 802.11 network infrastructure, the WF-2000 series I/O modules make an easy way to incorporate wireless connectivity into monitoring and control systems. They also support Modbus/TCP and UDP protocol and the network encryption configuration, which makes perfect integration to SCADA software and offer easy and safe access for users from anytime and anywhere.

• WLAN Product Selection Guide

Nowadays, Wireless LAN applications are very popular. They're not only faster than traditional industrial transmissions, i.e. RS-232, RS-485, RS-422 etc, but are also able to minimize the need for troublesome wiring tasks and have a higher mobility than an Ethernet network. ICP DAS provides a great variety of WLAN products, which are compliant with standard of IEEE 802.11. The WLAN products have two modes: Ad-hoc and Infrastructure.

WLAN Remote Maintenance Device

Model Name	Standard	Data Rate
M2M-711D	IEEE 802.11b DSSS (2.4 GHz ISM radio band)	11 Mbps, 5.5 Mbps, 1 Mbps (Auto scaling)

CAN to WLAN Converter

Model Name	Standard	Data Rate
I-7540D-WF	IEEE 802.11b DSSS (2.4 GHz ISM radio band)	11 Mbps, 5.5 Mbps, 1 Mbps (Auto scaling)

LAN to WLAN Converter

Model Name	Standard	Data Rate
WF-2571	IEEE 802.11b DSSS (2.4 GHz ISM radio band)	11 Mbps, 5.5 Mbps, 1 Mbps (Auto scaling)

WLAN I/O Devices

Model Name	Protocol	Input Channel	Output Channel	Transmit Power	Receive Sensitivity	Transmission Distance (LOS)
WF-2015	Modbus TCP/UDP	6 x AI (RTD)	-	8 dBm @11Mbps	-83 dBm @11Mbps	100 M
WF-2017	Modbus TCP/UDP	8 x AI	-			
WF-2019	Modbus TCP/UDP	10 x AI (Thermocouple)	-			
WF-2042	Modbus TCP/UDP	-	16 x DO			
WF-2051	Modbus TCP/UDP	16 x DI	-			
WF-2055	Modbus TCP/UDP	8 x DI	8 x DO			
WF-2060	Modbus TCP/UDP	6 x DI	6 x Relay			

2.2. WLAN Remote Maintenance Device

M2M-711D

Remote Maintenance Wi-Fi Device Terminal Unit

Features

- Supports static IP/DHCP (Ad Hoc mode don't support DHCP)
- Ethernet Protocol: TCP, UDP, IP, ICMP, ARP,RARP
- Provide dynamic DNS function
- Support IEEE 802.11 b/g for Wi-Fi mode and Ad Hoc mode
- Support WEP-64,WEP-128, WPA-TKIP and WPA2-AES encryption for Wi-Fi mode
- Support WEP-64,WEP-128 encryption for Ad Hoc mode
- Provides 1~13 RF channels
- Auto control channel in AP mode
- Ad Hoc mode transmission range up to 100 m (Line of sight)
- Accommodate with M-4132, M2M-720A, M2M-710D
- Web-based administration

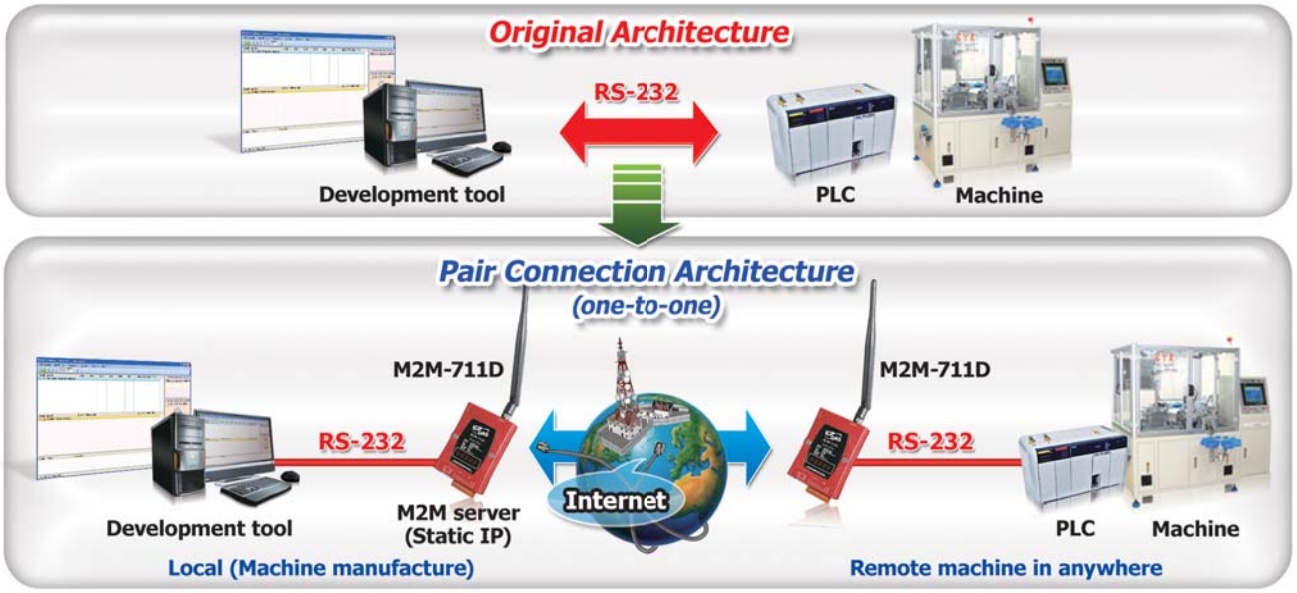
Introduction

The M2M-711D module is specially designed for the remote maintenance and upgrading the serial to network application solution. Users can choose Ethernet mode or Wi-Fi mode to do the pair connection, which provides TCP data tunneling between two serial devices.
In addition to M2M-710D original features, M2M-711D has the Ad Hoc mode of operation. This operation mode can be used to extend the distance of RS232/485 network without Wi-Fi AP and Ethernet Hub.

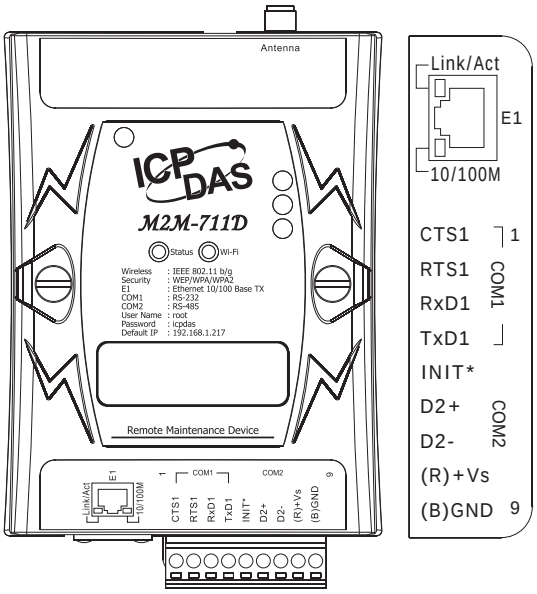
Specifications

Models	M2M-711D
System	
CPU	80186, 80 MHz
SRAM	512 KB
Flash	Flash ROM: 512 DB; Erase unit is one sector (64 KB); 100,000 erase/write cycles
EEPROM	16KB; Data retention: 40 years; 1,000,000 erase/write cycles
Built-in Watchdog Timer	Yes
Communication Interface	
COM1	RS-232 (RxD, TxD,RTS,CTS,DTR,DSR,GND); Non-isolation
COM2	RS-485 (DATA+, DATA-); Non-isolation
Ethernet Port	10/100 Base-TX
LED Display	
5-Digit 7 Segment LED	Yes
System LED Indicator	Yes
Wi-Fi Module	
RF channels	0~13; 0: Auto control channel in AP mode
Receiving sensitivity	-87 dBm(IEEE 802.11b) / -72 dBm (IEEE 802.11g)
Data encryption	WPA-TKIP / WPA2-AES / WEP-64 /WEP-128
Transmit Power	12 dBm(IEEE 802.11b) / 14 dBm(IEEE 802.11g)
Antenna	2.4 GHz - 2 dBi Omni-Directional antenna
Transmission range (LOS)	100M
Power	
Protection	Power reverse polarity protection
Required Supply Voltage	+10 VDC ~ +30 VDC
Mechanical	
Casing	Plastic
Flammability	Fire Retardant Materials (UL 94V-0 Level)
Dimensions (W x L x H)	76 mm x 117 mm x 37 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-40 ~ +80°C
Humidity	5 ~ 90% RH, Non-condensing

Applications

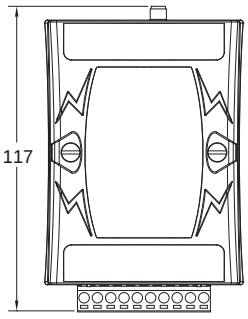


Appearance

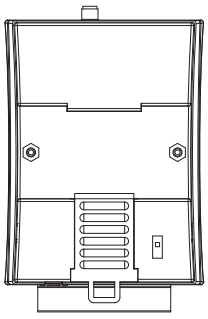


Pin	Name	Description
1	CTS1	CTS of RS-232
2	RTS1	RTS of RS-232
3	RxD1	Rx of RS-232
4	TxD1	Tx of RS-232
5	INIT*	Init Pin
6	D2+	DATA+ of RS-485
7	D2-	DATA- of RS-485
8	(R)+Vs	V+ of Power Supply (+10 ~ +30 VDC)
9	(B)GND	GND of Power Supply

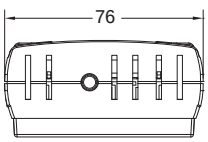
Dimensions (Units: mm)



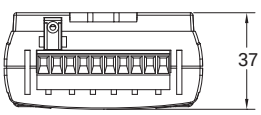
Front View



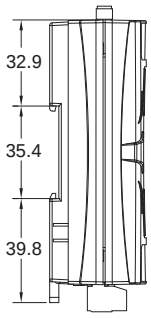
Rear View



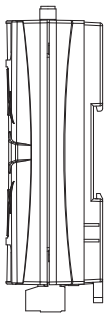
Top View



Bottom View



Left Side View



Right Side View

Ordering Information

M2M-711D CR	Remote maintenance Wi-Fi Device Terminal Unit

2.3. CAN to Wifi Converter

I-7540D-WF

CAN to WiFi Converter

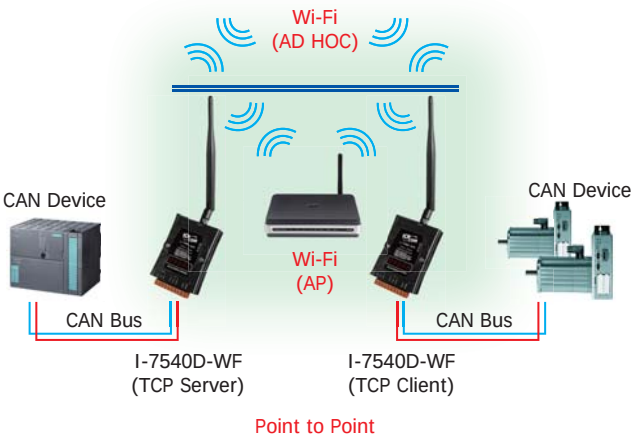
Features

- 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
- Support WEP, WPA and WPA2 encryption for wireless LAN
- CAN 2.0A/2.0B compliant
- Connect CAN networks via a WLAN bridge
- 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)

Introduction

I-7540D-WF supports the wireless transmission of CAN data between various CAN networks or a CAN network and a WLAN network according to the 802.11b/g standard. I-7540D-WF is highly suitable for connecting mobile (e.g., vehicles or machines) or stationary CAN networks and often used for short ranges up to 100 or 300 m.(TCP data protocols are available.) Using an appropriately configured router, CAN data can be transmitted over the Internet. There are two operating modes in the I-7540D-WF: access point mode and ad-hoc mode. 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. In this way, the I-7540D-WF can be used as a CAN diagnosis interface. The wireless connection that is established between two I-7540D-WF units can be used instead of a cable, and enables the connection of CAN networks.

Applications

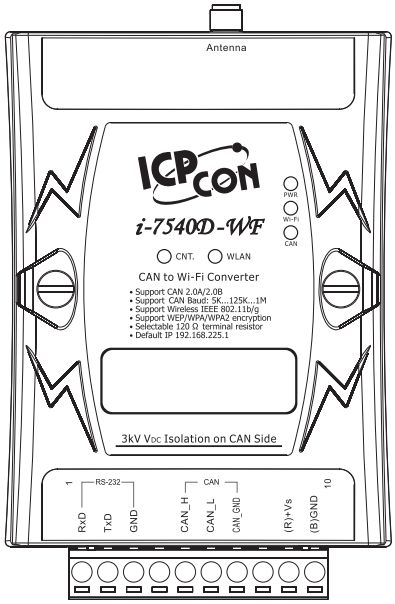


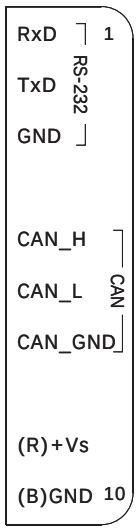
Specifications

Models	I-7540D-WF
Hardware	
CAN Port Channels	1
CAN Interface	
Controller	CAN Controller inside
Transceiver	NXP 82C250
Connector	10-pin screw terminal connecter
Bause Rate (bps)	5K ~ 1 Mbps
Isolation	3000 VDC power protection on CAN side, 2500 Vrms photo-couple isolation on CAN bus
Terminator Resistor	Selectable 120 Ω 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
COM	RS-232 (TxD, RxD, GND)
Baud Rate (bps)	115200

Models	I-7540D-WF
Wi-Fi Module	
RF channels	0~13; 0: Auto control channel in AP mode
Receiving sensitivity	-87 dBm (IEEE 802.11b) / -72 dBm (IEEE 802.11g)
Data encryption	WPA-TKIP / WPA2-AES / WEP-64 /WEP-128
Transmit Power	12 dBm (IEEE 802.11b) / 14 dBm (IEEE 802.11g)
Antenna	2.4 GHz - 2 dBi Omni-Directional antenna
Transmission range (LOS)	100M
LED Indicators	
Round LED	PWR / Wi-Fi / CAN / CNT / WLAN
Power	
Required Supply Voltage	+10 VDC ~ +30 VDC
Power Consumption	1.5 W
Dip Switch	Init (Firmware Update) / Normal (Firmware Operation)
Mechanical	
Casing	Plastic
Flammability	Fire Retardant Materials (UL 94V-0 Level)
Dimensions (W x L x H)	76 mm x 117 mm x 37 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-40 ~ +80°C
Humidity	5 ~ 90% RH, Non-condensing

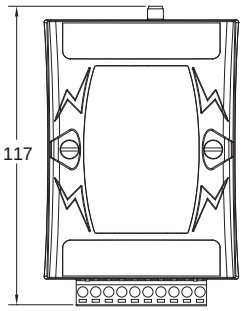
Appearance



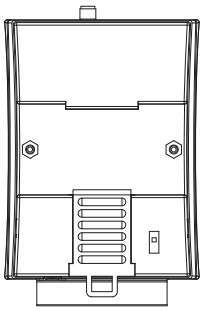


COM Port & Power Input		
Pin	**Name**	**Description**
1	RxD	RS-232
2	TxD	
3	GND	
4	--	--
5	CAN_H	CAN
6	CAN_L	
7	CAN_GND	
8	--	--
9	(R)+Vs	Power Input +10 VDC ~ +30 VDC
10	(B)GND	

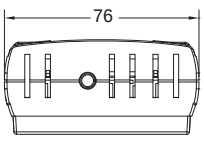
Dimensions (Units: mm)



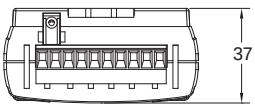
Front View



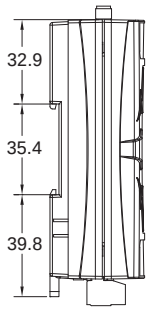
Rear View



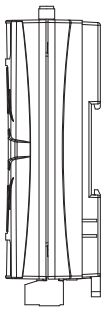
Top View



Bottom View



Left Side View



Right Side View

Ordering Information

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

2.4. Ethernet to Wifi Bridge

WF-2571

Ethernet to Wi-Fi Bridge

Features

- Compatible with IEEE 802.11b/g standards
- Supports Infrastructure and Ad-hoc mode
- Enterprise Class wireless security (WEP, WPA and WPA2)
- Plug-and-Play Ethernet to Wi-Fi connectivity
- USB-based configuration
- No driver installation required

Introduction

The WF-2571 is an Industrial Ethernet to Wi-Fi Bridge that creates a connection between an 802.11b/g wireless LAN and a device with a standard Ethernet port. The Bridge transparently conveys data between devices with a 10/100 Ethernet interface and a wireless LAN without drivers or complicated addressing schemes. This significantly reduces the complexity of network connectivity and wireless system deployment and also provides wireless LAN and Internet connectivity to industrial, scientific and automotive applications.

Operating Modes

Ad-hoc Mode

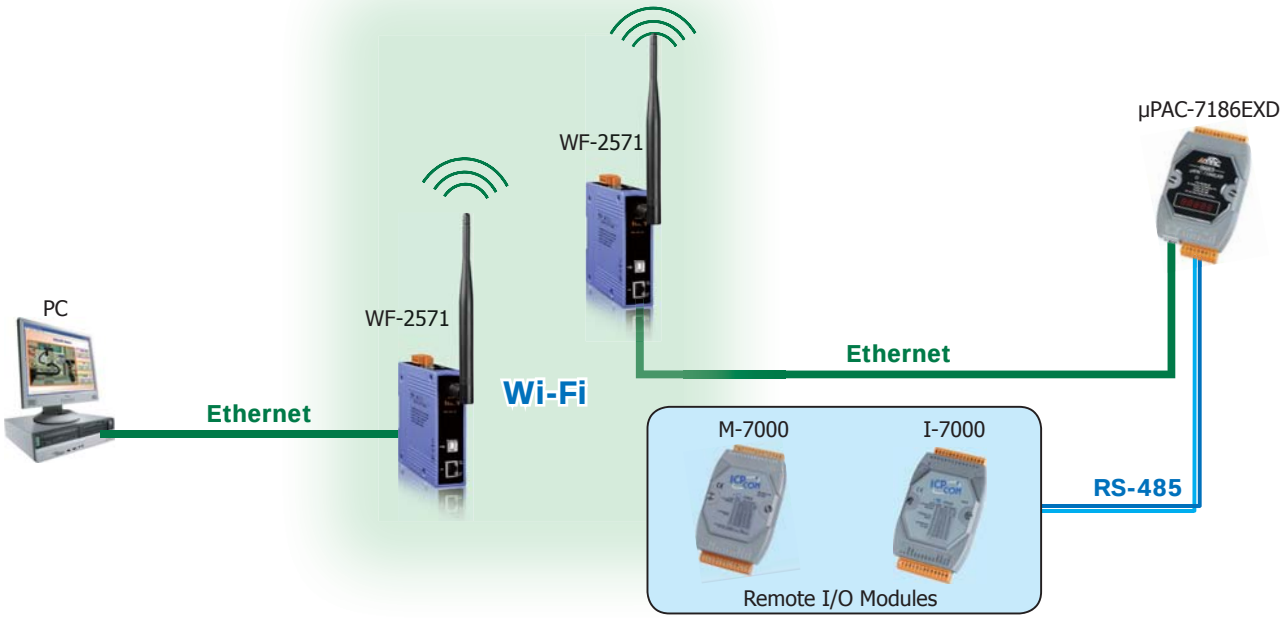
An Ad -hoc network is formed using a number of wireless stations (without an Access Point) and communicates via Wi-Fi. For the user, the shared resources on the wireless network appear exactly as they would on a regular wired network. The wireless operation of the network is totally transparent.

Infrastructure Mode

An Infrastructure network is formed using a number of stations together with one or more Access Points (APs), with the stations positioned within a set distance from the AP. This mode supports long distance transmissions.

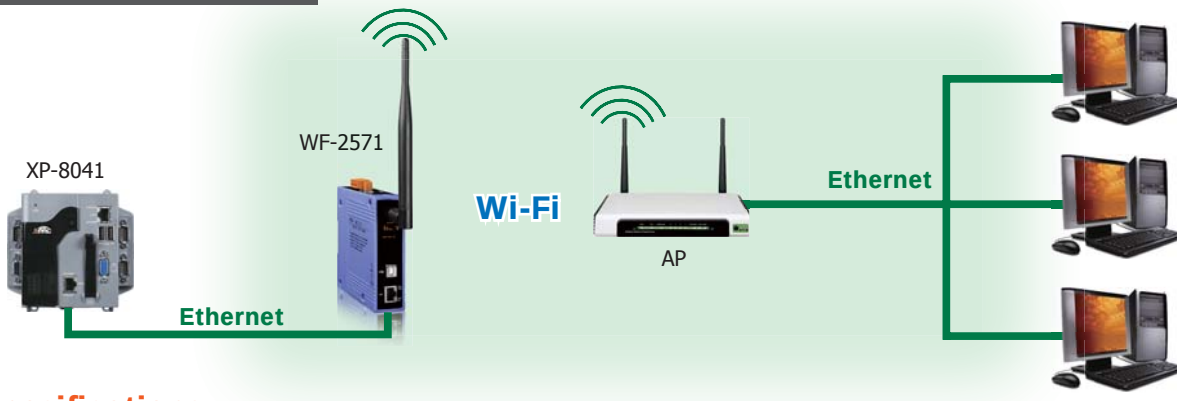
Applications

Ad-Hoc connection



Applications

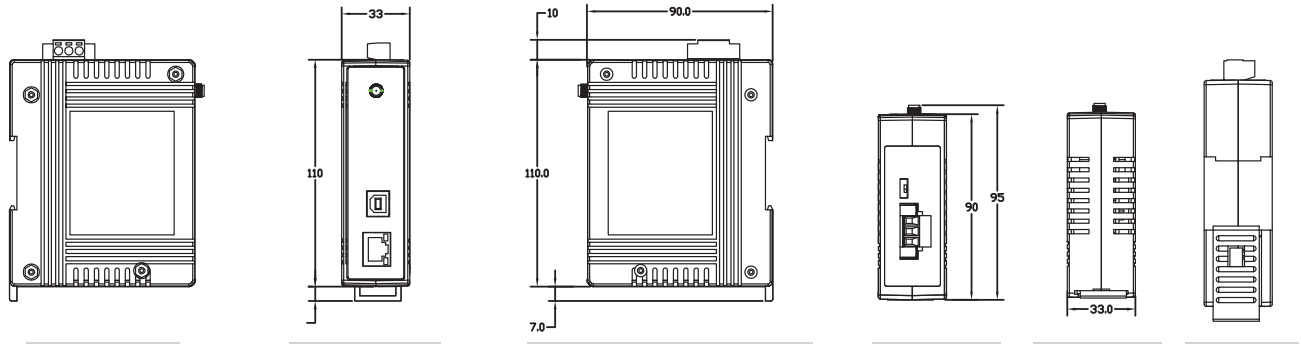
AP connection



Specifications

Models	WF-2571
Wi-Fi Interface	
Antenna	5 dBi (Omni-Directional)
Standard Supported	IEEE 802.11b/g
Network Access Modes	Infrastructure & Ad-hoc
Encryption	WEP, WPA and WPA2
Transmission Range	100 meters (LOS)
Ethernet Interface	
Controller	10/100Base-TX Ethernet Controller (Auto-negotiating, Auto_MDIX)
Connector	RJ-45 with LED indicator
USB Interface	
Type	USB 2.0 Full-Speed
Connector	USB type B
LED Indicators	
System status	3 Indicator LEDs (PWR, LINK, COMM)
Signal strength	3 Indicator LEDs (High, Mid, Low)
Power	
Input Voltage Range	10V ~ 30V
Power Consumption	1.6W
Mechanical	
Installation	DIN-Rail
Dimensions	110mm x 90mm x 33mm (H x W x D)
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +80°C
Humidity	10% ~ 90%

Dimensions (Units: mm)



Right Side View | Front View | Left Side View | Top View | Bottom View | Back View

Ordering Information

WF-2571 CR	Ethernet to Wi-Fi Bridge (RoHS)

2.5. Wifi 6-Ch RTD Input Module

WF-2015

Wi-Fi I/O Module with 6-channel RTD and 3-wire RTD Lead Resistance Elimination

Features

- Support 3-wire RTD Input with Lead Resistance Elimination
- Individual Channel Configuration
- Compatible with IEEE 802.11b/g standards
- Support Infrastructure and Ad Hoc modes for wireless networks
- Support WEP, WPA and WPA2 wireless encryption
- Support Modbus/TCP and UDP protocols
- Open Wire Detection
- Overvoltage Protection

Introduction

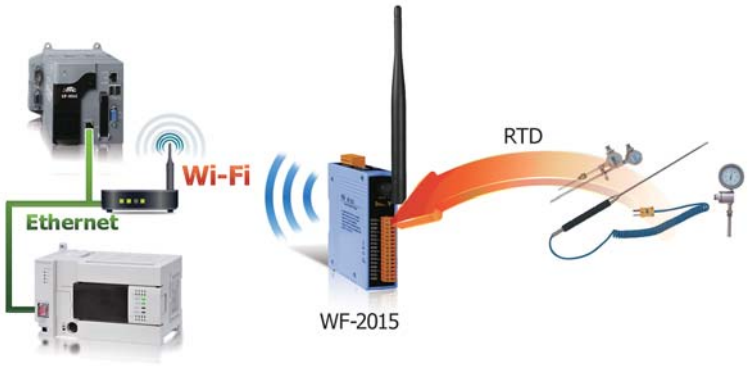
The WF-2015 offers 6 wireless input channels, each of which can be connected to different kinds of RTD sensors.
It features automatic compensation for 3-wire RTD, with long-distance measurement capabilities so that it can measure accurately regardless of the length of the wires. In addition, the WF-2015 has WLAN connection complies with the IEEE802.11b/g standards. With the popularity of 802.11 network infrastructure, the WF-2015 makes an easy way to incorporate wireless connectivity into monitoring and control systems. The WF-2015 also supports Modbus/TCP and UDP protocols and the network encryption configuration, which makes perfect integration to SCADA software and offer easy and safe access for users from anytime and anywhere.

Specifications

Models	WF-2015
Analog Input	
Channels	6
Input Type	2/3-wire RTD
RTD Types	Pt100, Pt1000, Ni120, Cu100, Cu1000
Resolution	16-bit
Sampling Rate	12 Samples/Sec. (Total)
Accuracy	+/-0.05%
Zero Drift	+/-0.5 μV/°C
Span Drift	+/-20 μV/°C
Common Mode Rejection	150 dB
Normal Mode Rejection	100 dB
Open Wire Detection	Yes
Overvoltage Protection	120 VDC /110 VAC
Individual Channel Configuration	Yes
3-wire RTD Lead Resistance Elimination	Yes
ESD Protection	+/-4 kV contact for each channel
Intra-module Isolation, Field to Logic	3000 VDC
Wi-Fi Interface	
Antenna	5 dBi (Omni-Directional)
Output Power	8 dBm @ 11Mbps
Receive Sensitivity	-83 dBm @ 11Mbps
Standard Supported	IEEE 802.11b/g
Wireless Mode	Infrastructure & Ad-hoc
Encryption	WEP, WPA and WPA2
Transmission Range	100 meters (LOS)
Power	
Input Voltage Range	10V ~ 30V
Power Consumption	2.0W
Mechanism	
Installation	DIN-Rail
Dimensions	110mm x 90mm x 33mm (H x W x D)

Models	WF-2015
Environment	
Operating Temperature	-25°C ~ +75°C
Storage Temperature	-30°C ~ +80°C
Humidity	10% ~ 90%

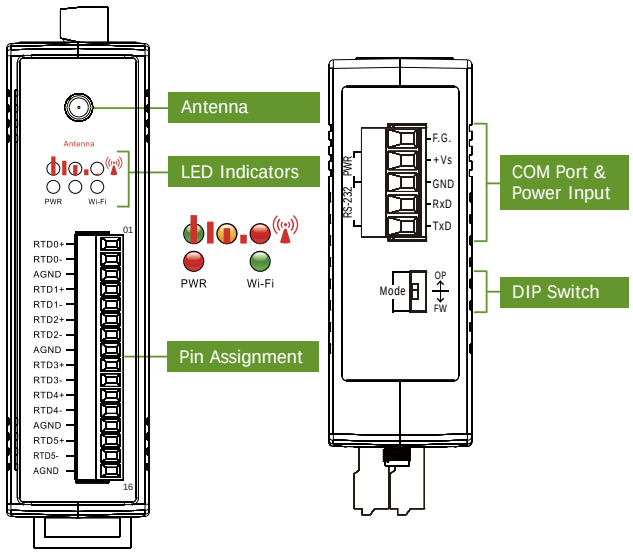
Applications



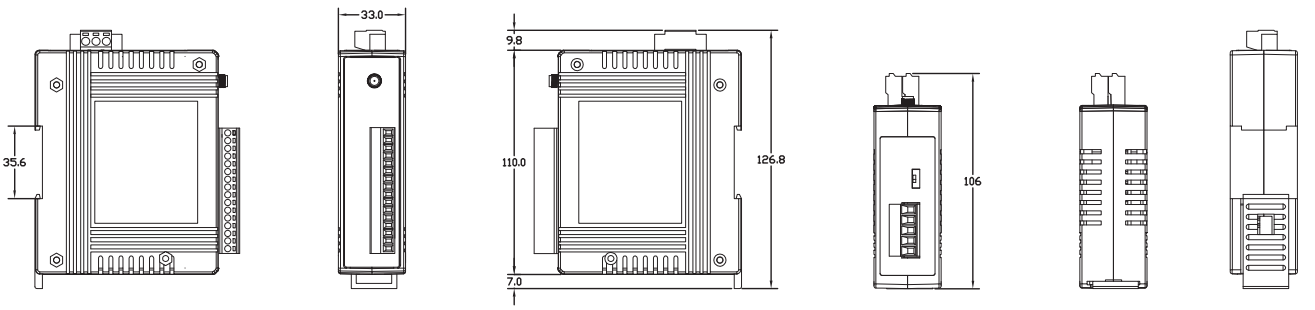
Wiring

2-wire of RTD	CH0, 1, 2, 5 and 6 RTDx+ RTDx- AGND
3-wire of RTD	CH0, 1, 2, 5 and 6 RTDx+ RTDx- AGND

Appearance



Dimensions (Units: mm)



Right Side View | Front View | Left Side View | Top View | Bottom View | Back View

Ordering Information

WF-2015 CR	Wi-Fi I/O Module with 6-channel RTD Input Module and 3-wire RTD Lead Resistance Elimination (RoHS)

2.6. Wifi 8-Ch AI Input Module

WF-2017

Wi-Fi I/O Module with 8-channel Analog Input Module

Features

- 8 Differential Analog Input Channels
- Individual Channel Configuration
- Compatible with IEEE 802.11b/g standards
- Support Infrastructure and Ad Hoc modes for wireless networks
- Support WEP, WPA and WPA2 wireless encryption
- Support Modbus/TCP and UDP protocols
- Overvoltage Protection up to 240 Vrms

Introduction

The WF-2017 is a 16-bit, 8-channel differential analog input Wi-Fi module that provides a programmable input range on all analog channels (+/-150 mV, +/-500 mV, +/-1 V, +/-5 V or +/-10 V). Each analog channel can be configured for an individual input range and has a high 240 Vrms overvoltage protection. In addition, the WF-2017 has WLAN connection complies with the IEEE802.11b/g standards. With the popularity of 802.11 network infrastructure, the WF-2017 makes an easy way to incorporate wireless connectivity into monitoring and control systems. The WF-2017 also supports Modbus/TCP and UDP protocols and the network encryption configuration, which makes perfect integration to SCADA software and offer easy and safe access for users from anytime and anywhere.

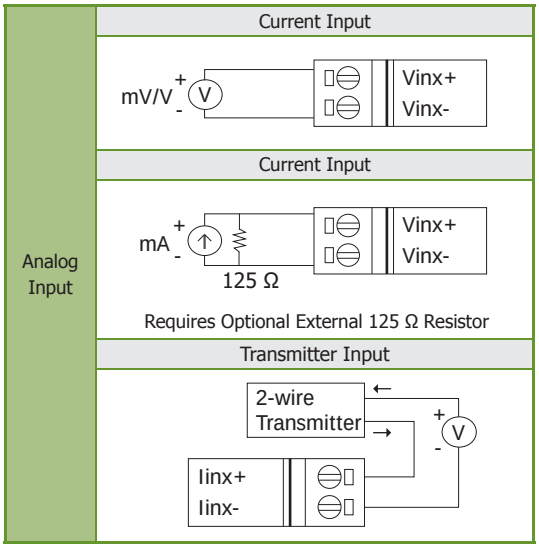
Specifications

Models		WF-2017
Analog Input		
Channels		8
Input Type		+/-10 V, +/-5 V, +/-1V, +/-500 mV, +/-150 mV or -20 mA ~ +20 mA (Requires Optional External 125 Ω Resistor)
Resolution	Normal Mode	16-bit
	Fast Mode	12-bit
Sampling Rate	Normal Mode	16-bit, 10 Samples/Sec. (Total)
	Fast Mode	12 bit, 60 Samples/Sec. (Total)
Accuracy	Normal Mode	+/-0.1% of FSR
	Fast Mode	+/-0.5% of FSR
Zero Drift		+/-20 μV/°C
Span Drift		+/-25 μV/°C
Common Mode Rejection		86 dB
Normal Mode Rejection		100 dB
Input Impedance		>2 MΩ
Overvoltage Protection		240 Vrms
Individual Channel Configuration		Yes
ESD Protection		+/-4 kV contact for each channel
Intra-module Isolation, Field to Logic		3000 VDC
Wi-Fi Interface		
Antenna		5 dBi (Omni-Directional)
Output Power		8 dBm @ 11Mbps
Receive Sensitivity		-83 dBm @ 11Mbps
Standard Supported		IEEE 802.11b/g
Wireless Mode		Infrastructure & Ad-hoc
Encryption		WEP, WPA and WPA2
Transmission Range		100 meters (LOS)
Power		
Input Voltage Range		10V ~ 30V
Power Consumption		2.0W

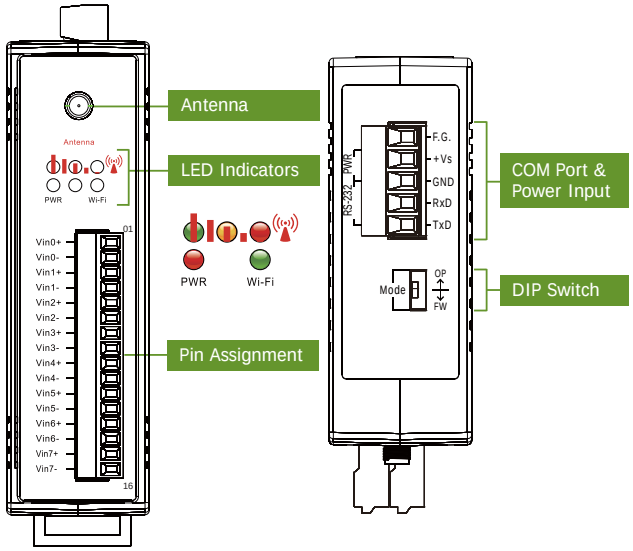
Models	WF-2017
Mechanism	
Installation	DIN-Rail
Dimensions	110mm x 90mm x 33mm (H x W x D)
Environment	
Operating Temperature	-25°C ~ +75°C
Storage Temperature	-30°C ~ +80°C
Humidity	10% ~ 90%

Applications

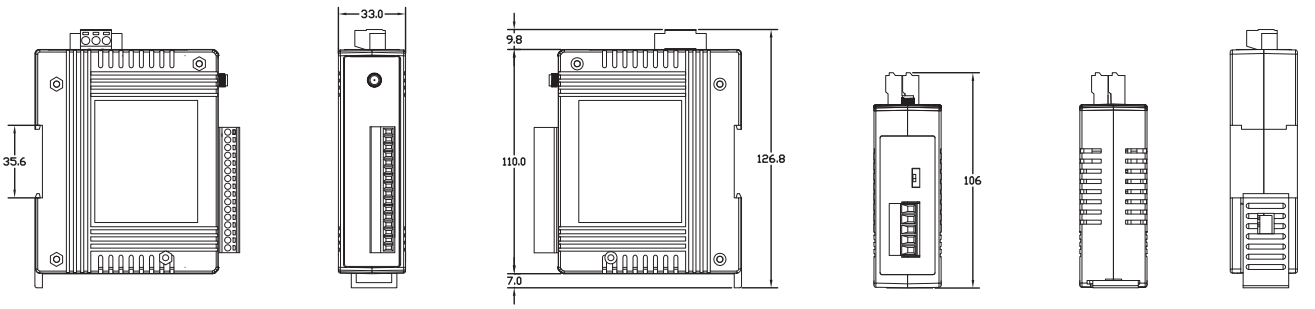
Wiring



Appearance



Dimensions (Units: mm)



Right Side View | Front View | Left Side View | Top View | Bottom View | Back View

Ordering Information

WF-2017 CR	Wi-Fi I/O Module with 8-channle Analog Input Module (RoHS)

2.7. Wifi 10-Ch Universal Analog Input Module

WF-2019

Wi-Fi I/O Module with 10-channel Universal Analog Input

Features

- 10 Differential Universal Analog Input Channels
- Open Thermocouple Detection
- Compatible with IEEE 802.11b/g standards
- Support Infrastructure and Ad hoc modes for wireless networks
- Support WEP, WPA and WPA2 wireless encryption
- Support Modbus/TCP and UDP protocols
- Support Pair connection mode

Introduction

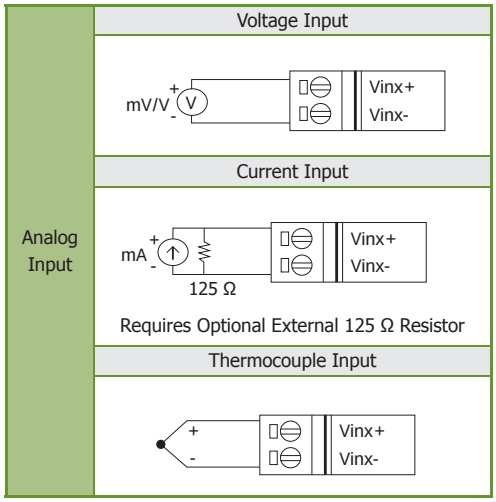
The WF-2019 is a 10-channel universal analog input module with an Wi-Fi interface that is a specially designed for extremely accurate thermocouple measurement and features automatic cold-junction compensation for each channel to ensure temperature output consistency and stable temperature output in the field. Besides the thermocouple inputs, the WF-2019 also supports voltage and current inputs. The voltage input range can be form +/-15 mV to +/-10 V, and the current input range can be either 4 ~ 20 mA, 0 ~ 20 mA, or +/- 20 mA. Up to 10 analog inputs of different types can be connected to a single module. Overvoltage protection of up to 240 Vrms is provided.

Specifications

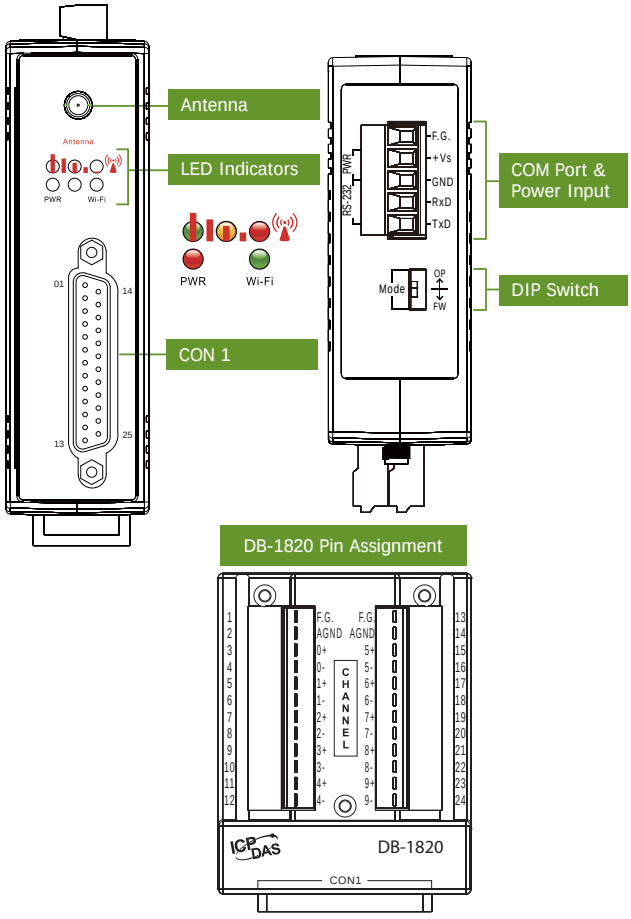
Models	WF-2019
Analog Input	
Channels	10 differential
Input Type	Voltage : ±15 mV, ±50 mV, ±100 mV, ±150 mV, ±500 mV, ±1 V, ±2.5 V, ±5 V, ±10 V Current : ±20 mA, 0 ~ +20 mA, +4 ~ +20 mA (External resistor is required) Thermocouple : J, K, T, E, R, S, B, N, C, L, M and LDIN43710
Resolution	16 bit
Accuracy	±0.1% FSR
Sampling Rate	10 Hz (Total)
Zero Drift	±20 μV/°C
Span Drift	±25 ppm/°C
Common Mode Rejection	86 dB Min.
Normal Mode Rejection	100 dB
Input Impedance	Voltage input : > 400 kΩ, Current input : 125 Ω (An external resistor is required)
Intra-Module Isolation, Field-to-Logic	3000 VDC
Overvoltage protection	240 Vrms
Individual Channel Configuration	Yes
Open Thermocouple Detection	Yes, (Software Selectable)
Wi-Fi Interface	
Antenna	5 dBi (Omni-Directional)
Output Power	8 dBm @ 11Mbps
Receive Sensitivity	-83 dBm @ 11Mbps
Standard Supported	IEEE 802.11b/g
Wireless Mode	Infrastructure & Ad-hoc
Encryption	WEP, WPA and WPA2
Transmission Range	100 meters (LOS)
Power	
Input Voltage Range	10V ~ 30V
Power Consumption	2.0W
Mechanism	
Installation	DIN-Rail
Dimensions	110mm x 90mm x 33mm (H x W x D)
Environment	
Operating Temperature	-25°C ~ +75°C
Storage Temperature	-30°C ~ +80°C
Humidity	10% ~ 90%

Applications

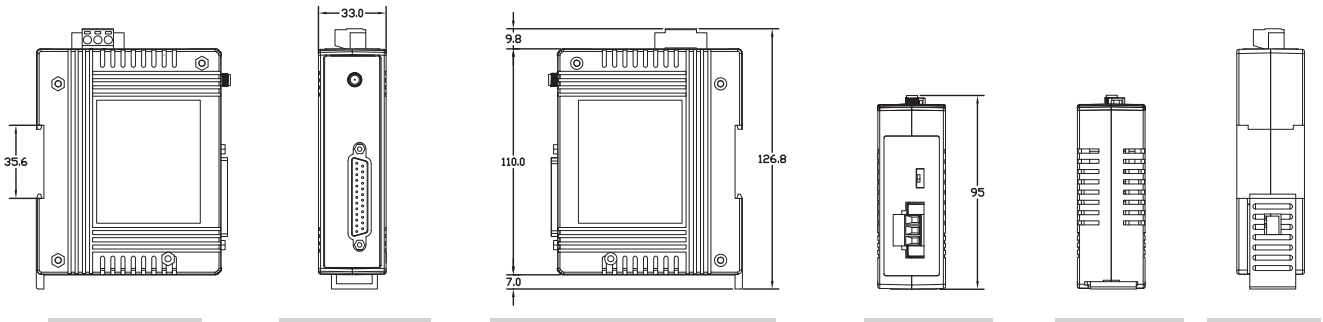
Wiring



Appearance



Dimensions (Units: mm)



Right Side View | Front View | Left Side View | Top View | Bottom View | Back View

Ordering Information

WF-2019/S CR	10-channel Universal Analog Input Wi-Fi I/O Module include DB-1820 (RoHS)

2.8. Wifi 16-Ch DO Module

WF-2042

Wi-Fi I/O Module with 16 DO

Features

- Support sink type digital outputs
- Compatible with IEEE 802.11b/g standards
- Support infrastructure and ad hoc modes for wireless networks
- Support WEP, WPA and WPA2 wireless encryption
- Support Modbus/TCP and UDP protocols
- Support pair connection mode
- Support DO power on value & safe value Mechanism

Introduction

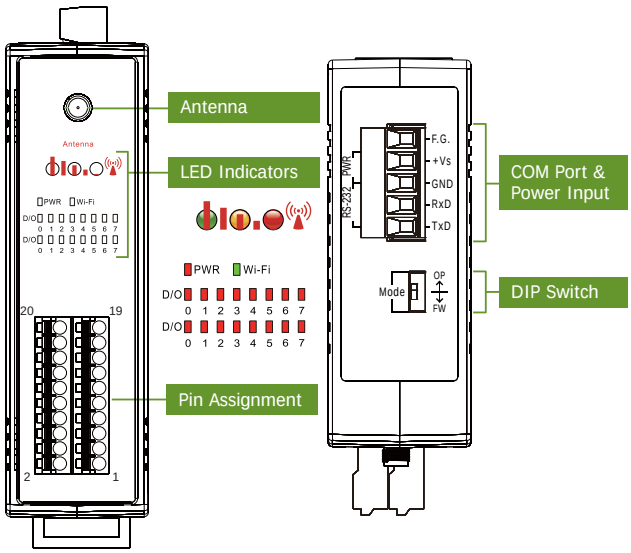
The WF-2042 is a 16-channel sink type isolated digital output module and it is one of the members of the WF-2000 wireless product family. In addition, the WF-2042 has WLAN connection complies with the IEEE802.11b/g standards. With the popularity of 802.11 network infrastructure, the WF-2042 makes an easy way to incorporate wireless connectivity into monitoring and control systems. The WF-2042 also supports Modbus/TCP and UDP protocols and the network encryption configuration, which makes perfect integration to SCADA software and offer easy and safe access for users from anytime and anywhere.

Specifications

Models	WF-2042
Digital Output	
Channels	16, Sink(NPN)
Output Voltage	+3.5 ~ +50 V
Output Current	700mA per channel
Intra-module Isolation, Field to Logic	3750 VDC
Overvoltage Protection	60 VDC
Wi-Fi Interface	
Antenna	5 dBi (Omni-Directional)
Output Power	8 dBm @ 11Mbps
Receive Sensitivity	-83 dBm @ 11Mbps
Standard Supported	IEEE 802.11b/g
Wireless Mode	Infrastructure & Ad-hoc
Encryption	WEP, WPA and WPA2
Transmission Range	100 meters (LOS)
Power	
Input Voltage Range	10V ~ 30V
Power Consumption	2.0W
Mechanism	
Installation	DIN-Rail
Dimensions	110mm x 90mm x 33mm (H x W x D)
Environment	
Operating Temperature	-25°C ~ +75°C
Storage Temperature	-30°C ~ +80°C
Humidity	10% ~ 90%

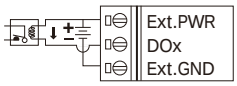
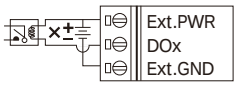
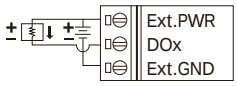
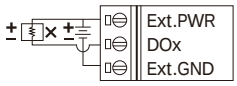
Applications

Appearance

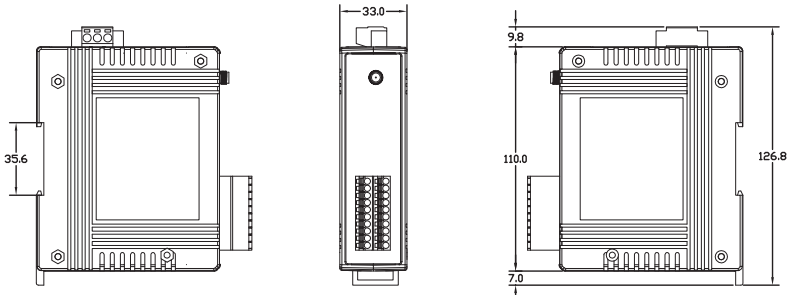


Pin Assignment			
Terminal No.	**Description**	**Terminal No.**	**Description**
1	EXT.PWR	2	EXT.PWR
3	DO7	4	DO15
5	DO6	6	DO14
7	DO5	8	DO13
9	DO4	10	DO12
11	DO3	12	DO11
13	DO2	14	DO10
15	DO1	16	DO9
17	DO0	18	DO8
19	EXT.GND	20	EXT.GND

Wiring

Output	ON	OFF
Drive Relay		
Resistance Load		

Dimensions (Units: mm)



Right Side View | Front View | Left Side View | Top View | Bottom View | Back View

Ordering Information

WF-2042 CR	Wi-Fi I/O Module with 16-channel Sink Type Isolated Digital Output (RoHS)

2.9. Wifi 16-Ch DI Module

WF-2051

Wi-Fi I/O Module with 16 DI

Features

- Support sink / source type digital inputs
- Compatible with IEEE 802.11b/g standards
- Support infrastructure and ad hoc modes for wireless networks
- Support WEP, WPA and WPA2 wireless encryption
- Support Modbus/TCP and UDP protocols
- Support pair connection mode

Introduction

The WF-2051 is a 16-channel isolated digital input with 32-bit counters module and it is one of the members of the WF-2000 wireless product family. In addition, the WF-2051 has WLAN connection complies with the IEEE802.11b/g standards. With the popularity of 802.11 network infrastructure, the WF-2051 makes an easy way to incorporate wireless connectivity into monitoring and control systems. The WF-2051 also supports Modbus/TCP and UDP protocols and the network encryption configuration, which makes perfect integration to SCADA software and offer easy and safe access for users from anytime and anywhere.

Specifications

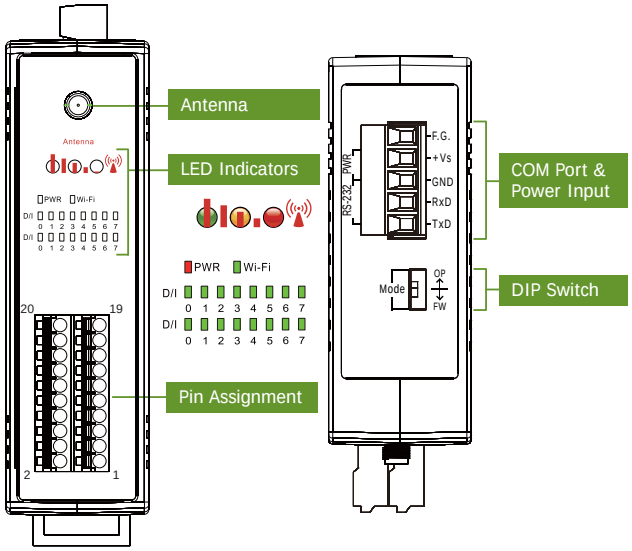
Models		WF-2051	
Digital Input			
Channels		16	
Input Type		Dry Contact: Source, Wet Contact: Sink / Source	
Dry Contact Level		Off Voltage Level: Open	On Voltage Level: Close to GND
Wet Contact Level		Off Voltage Level: +4V max.	On Voltage Level: +10 V ~ +50 V
Counters	Channels	6	
	Max. Counts	32-bit (4294967295)	
	Max. Input Frequency	10K Hz	
Photo-Isolation		3750 VDC	
Wi-Fi Interface			
Antenna		5 dBi (Omni-Directional)	
Output Power		8 dBm @ 11Mbps	
Receive Sensitivity		-83 dBm @ 11Mbps	
Standard Supported		IEEE 802.11b/g	
Wireless Mode		Infrastructure & Ad-hoc	
Encryption		WEP, WPA and WPA2	
Transmission Range		100 meters (LOS)	
Power			
Input Voltage Range		10V ~ 30V	
Power Consumption		1.6W	
Mechanism			
Installation		DIN-Rail	
Dimensions		110mm x 90mm x 33mm (H x W x D)	
Environment			
Operating Temperature		-25°C ~ +75°C	
Storage Temperature		-30°C ~ +80°C	
Humidity		10% ~ 90%	

Applications

Wiring

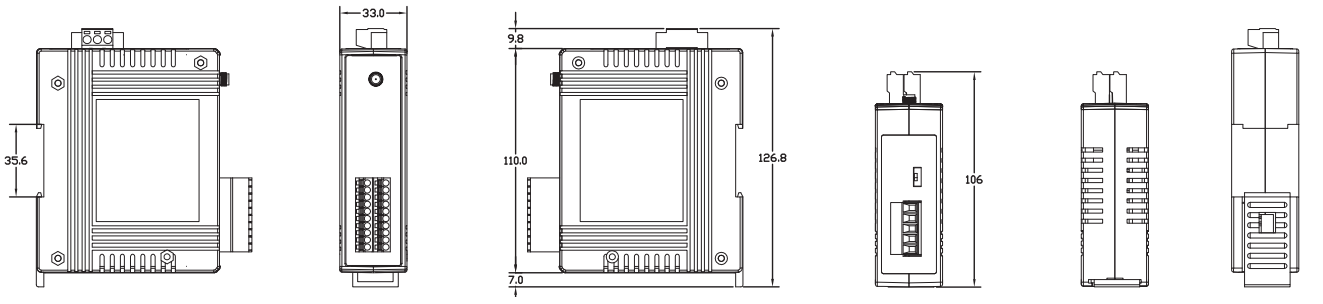
Input	ON	OFF
Relay Contact (Dry)	Relay Close, DIx, GND	Relay Open, DIx, GND
Open Collector (Dry)	ON, DIx, GND	OFF, DIx, GND
Relay Contact (Wet)	Relay Close, DI.COM, DIx	Relay Open, DI.COM, DIx
NPN Output (Wet)	ON, DI.COM, DIx	OFF, DI.COM, DIx

Appearance



Pin Assignment			
Terminal No.	**Description**	**Terminal No.**	**Description**
1	DI.COM	2	DI.COM
3	DI7	4	DI15
5	DI6	6	DI14
7	DI5	8	DI13
9	DI4	10	DI12
11	DI3	12	DI11
13	DI2	14	DI10
15	DI1	16	DI9
17	DI0	18	DI8
19	DI.GND	20	DI.GND

Dimensions (Units: mm)



Right Side View | Front View | Left Side View | Top View | Bottom View | Back View

Ordering Information

WF-2051 CR	Wi-Fi I/O Module with 16-channel Isolated Digital Input (RoHS)

2.10. Wifi 8-Ch DI and 8-Ch DO Module

WF-2055

Wi-Fi I/O Module with 8 DI and 8 DO

Features

- Support sink type digital outputs
- Support sink / source type digital inputs
- Compatible with IEEE 802.11b/g standards
- Support infrastructure and ad hoc modes for wireless networks
- Support WEP, WPA and WPA2 wireless encryption
- Support Modbus/TCP and UDP protocols
- Support pair connection mode
- Support DO power on value & safe value Mechanism

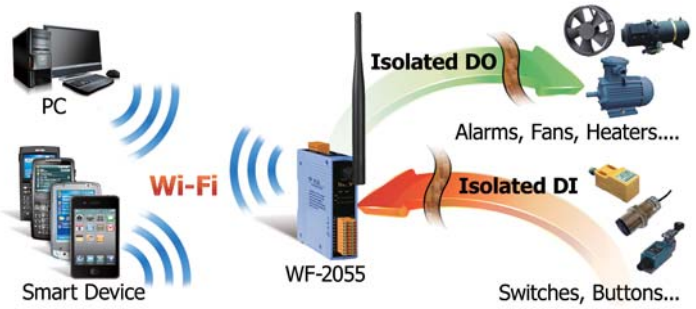
Introduction

The WF-2055 is an 8-channel isolated digital input with 32-bit counters and 8-channel sink type isolated digital output module and it is one of the members of the WF-2000 wireless product family. In addition, the WF-2055 has WLAN connection complies with the IEEE802.11b/g standards. With the popularity of 802.11 network infrastructure, the WF-2055 makes an easy way to incorporate wireless connectivity into monitoring and control systems. The WF-2055 also supports Modbus/TCP and UDP protocols and the network encryption configuration, which makes perfect integration to SCADA software and offer easy and safe access for users from anytime and anywhere.

Specifications

Models		WF-2055	
Digital Input			
Channels		8	
Input Type		Dry Contact: Source, Wet Contact: Sink / Source	
Dry Contact Level		Off Voltage Level: Open	On Voltage Level: Close to GND
Wet Contact Level		Off Voltage Level: +4V max.	On Voltage Level: +10 V ~ +50 V
Counters	Channels	8	
	Max. Counts	32-bit (4294967295)	
	Max. Input Frequency	10K Hz	
Photo-Isolation		3750 VDC	
Digital Output			
Channels		8, Sink(NPN)	
Output Voltage		+3.5 ~ +50 V	
Output Current		700mA per channel	
Intra-module Isolation, Field to Logic		3750 VDC	
Overvoltage Protection		60 VDC	
Wi-Fi Interface			
Antenna		5 dBi (Omni-Directional)	
Output Power		8 dBm @ 11Mbps	
Receive Sensitivity		-83 dBm @ 11Mbps	
Standard Supported		IEEE 802.11b/g	
Wireless Mode		Infrastructure & Ad-hoc	
Encryption		WEP, WPA and WPA2	
Transmission Range		100 meters (LOS)	
Power			
Input Voltage Range		10V ~ 30V	
Power Consumption		1.9W	
Mechanism			
Installation		DIN-Rail	
Dimensions		110mm x 90mm x 33mm (H x W x D)	
Environment			
Operating Temperature		-25°C ~ +75°C	
Storage Temperature		-30°C ~ +80°C	
Humidity		10% ~ 90%	

Applications

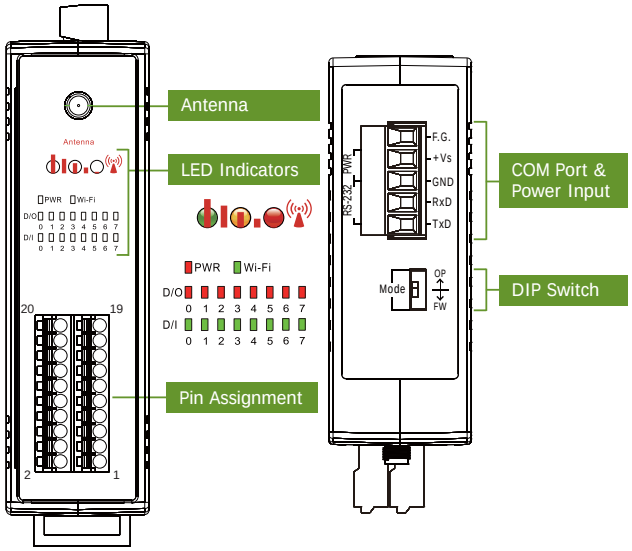


Wiring

Input	ON	OFF
Relay Contact (Dry)	Relay Close DIx GND	Relay Open DIx GND
Open Collector (Dry)	ON DIx GND	OFF DIx GND
Relay Contact (Wet)	Relay Close DI.COM DIx	Relay Open DI.COM DIx
NPN Output (Wet)	ON DI.COM DIx	OFF DI.COM DIx

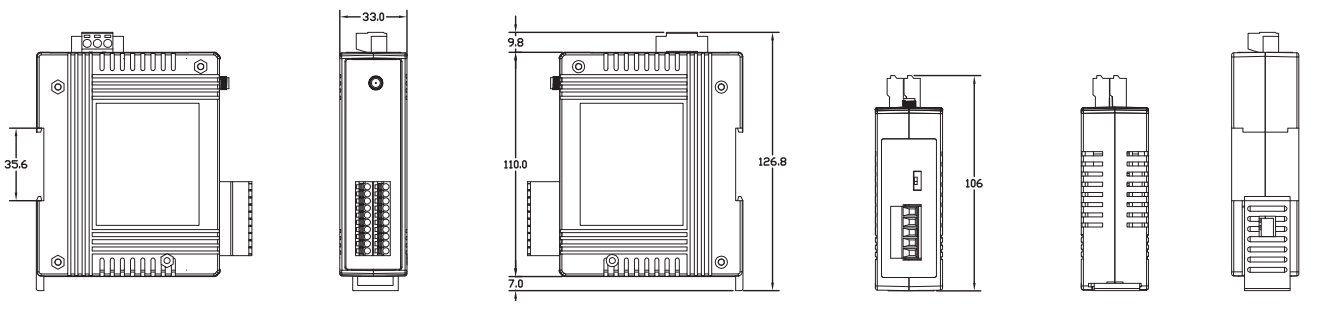
Output	ON	OFF
Drive Relay	Ext.PWR DOx Ext.GND	Ext.PWR DOx Ext.GND
Resistance Load	Ext.PWR DOx Ext.GND	Ext.PWR DOx Ext.GND

Appearance



Pin Assignment			
Terminal No.	**Description**	**Terminal No.**	**Description**
1	DI.COM	2	EXT.PWR
3	DI7	4	DO7
5	DI6	6	DO6
7	DI5	8	DO5
9	DI4	10	DO4
11	DI3	12	DO3
13	DI2	14	DO2
15	DI1	16	DO1
17	DI0	18	DO0
19	DI.GND	20	EXT.GND

Dimensions (Units: mm)



Right Side View | Front View | Left Side View | Top View | Bottom View | Back View

Ordering Information

WF-2055 CR	Wi-Fi I/O Module with 8-channel Isolated Digital Input and 8-channel Sink Type Isolated Digital Output (RoHS)

WF-2060

Wi-Fi I/O Module with 6 DI and 6 Relay Output

Features

- Support Relay type digital outputs
- Support sink / source type digital inputs
- Compatible with IEEE 802.11b/g standards
- Support infrastructure and ad hoc modes for wireless networks
- Support WEP, WPA and WPA2 wireless encryption
- Support Modbus/TCP and UDP protocols
- Support pair connection mode
- Support DO power on value & safe value Mechanism

Introduction

The WF-2060 is a 6-channel isolated digital input with 32-bit counters and 6-channel relay output module and it is one of the members of the WF-2000 wireless product family. In addition, the WF-2060 has WLAN connection complies with the IEEE802.11b/g standards. With the popularity of 802.11 network infrastructure, the WF-2060 makes an easy way to incorporate wireless connectivity into monitoring and control systems. The WF-2060 also supports Modbus/TCP and UDP protocols and the network encryption configuration, which makes perfect integration to SCADA software and offer easy and safe access for users from anytime and anywhere.

Specifications

Models		WF-2060	
Digital Input			
Channels		6	
Input Type		Dry Contact: Source, Wet Contact: Sink / Source	
Dry Contact Level		Off Voltage Level: Open	On Voltage Level: Close to GND
Wet Contact Level		Off Voltage Level: +4V max.	On Voltage Level: +10 V ~ +50 V
Counters	Channels	6	
	Max. Counts	32-bit (4294967295)	
	Max. Input Frequency	10K Hz	
Photo-Isolation		3750 VDC	
Digital Output			
Channels		6	
Output Type		Form A (SPST-NO)	
Contact Rating (Resistive Load)		5A 250VAC (47~63Hz)	5A 30VDC
Operate Time	Release Time	10ms max.	5ms max.
Insulation Resistance		1,000MΩs at 500VDC	
Dielectric Strength		Between Open Contact	1000VAC (1 min.)
		Between Coil and Contacts	3000VAC (1 min.)
Endurance		Mechanical	20,000,000 times min.
		Electrical	100,000 times min.
Wi-Fi Interface			
Antenna		5 dBi (Omni-Directional)	
Output Power		8 dBm @ 11Mbps	
Receive Sensitivity		-83 dBm @ 11Mbps	
Standard Supported		IEEE 802.11b/g	
Wireless Mode		Infrastructure & Ad-hoc	
Encryption		WEP, WPA and WPA2	
Transmission Range		100 meters (LOS)	
Power			
Input Voltage Range		10V ~ 30V	
Power Consumption		1.6W	
Mechanism			
Installation		DIN-Rail	
Dimensions		110mm x 90mm x 33mm (H x W x D)	
Environment			
Operating Temperature		-25°C ~ +75°C	
Storage Temperature		-30°C ~ +80°C	
Humidity		10% ~ 90%	

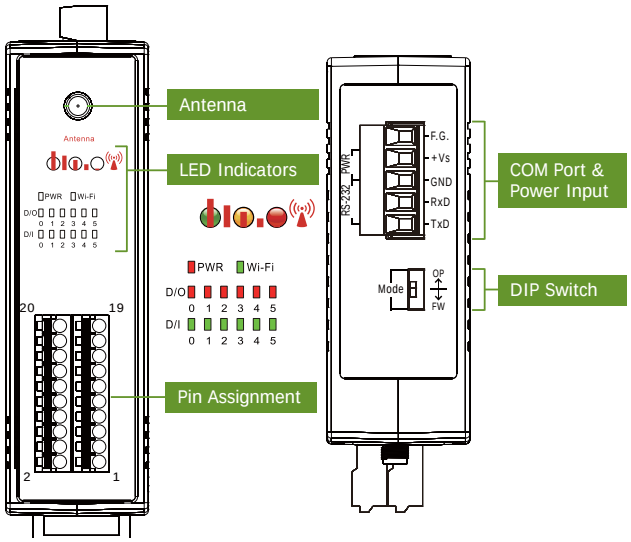
Applications

Wiring

Input	ON	OFF
Relay Contact (Dry)	Relay Close — DIx, GND	Relay Open — DIx, GND
Open Collector (Dry)	ON — DIx, GND	OFF — DIx, GND
Relay Contact (Wet)	Relay Close — DI.COM, DIx	Relay Open — DI.COM, DIx
NPN Output (Wet)	ON — DI.COM, DIx	OFF — DI.COM, DIx

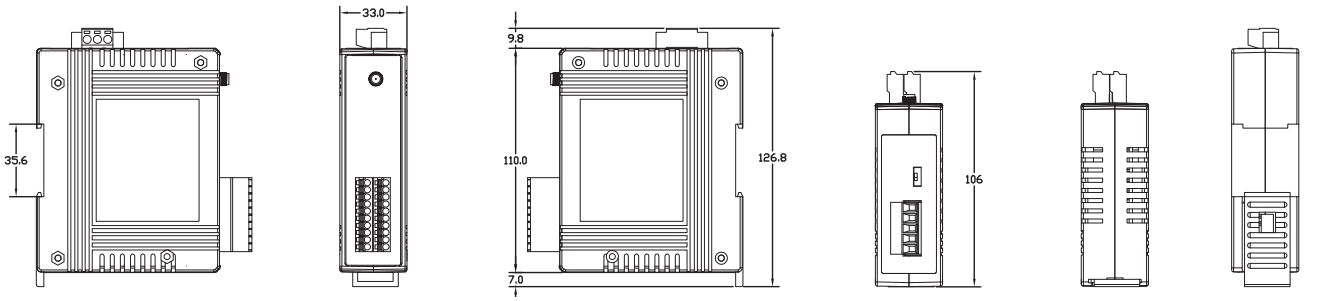
Output	ON	OFF
Relay	Load, AC/DC — RLx NO, RLx COM	Load, AC/DC — RLx NO, RLx COM

Appearance



Pin Assignment			
Terminal No.	**Description**	**Terminal No.**	**Description**
1	RL5 COM	2	RL4 COM
3	RL5 NO	4	RL4 NO
5	DI.COM	6	RL3 COM
7	DI5	8	RL3 NO
9	DI4	10	RL2 COM
11	DI3	12	RL2 NO
13	DI2	14	RL1 COM
15	DI1	16	RL1 NO
17	DI0	18	RL0 COM
19	DI.GND	20	RL0 NO

Dimensions (Units: mm)



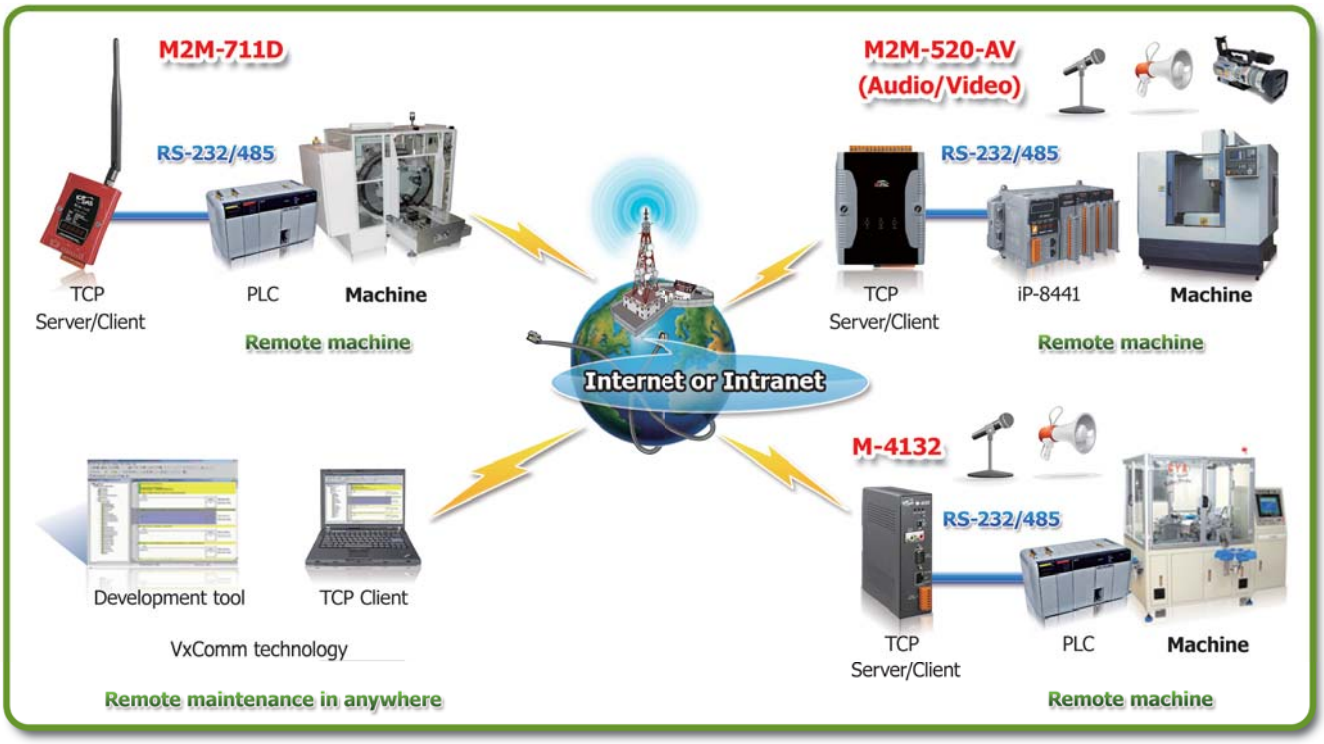
Right Side View | Front View | Left Side View | Top View | Bottom View | Back View

Ordering Information

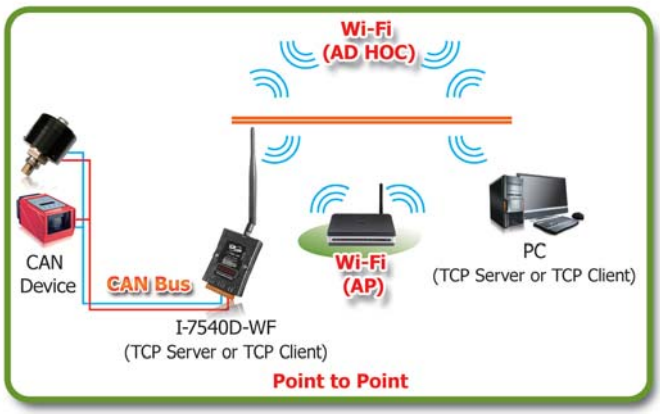
WF-2060 CR	Wi-Fi I/O Module with 6-channel Isolated Digital Input and 6-channel Relay Output (RoHS)

2.11. Applications

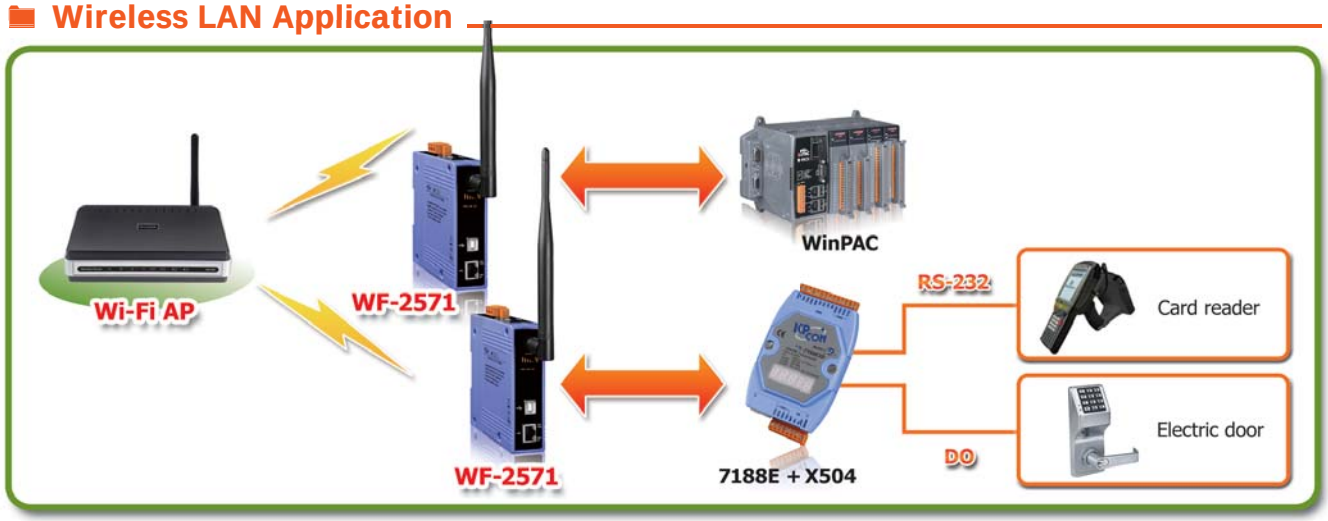
Remote Maintenance Application



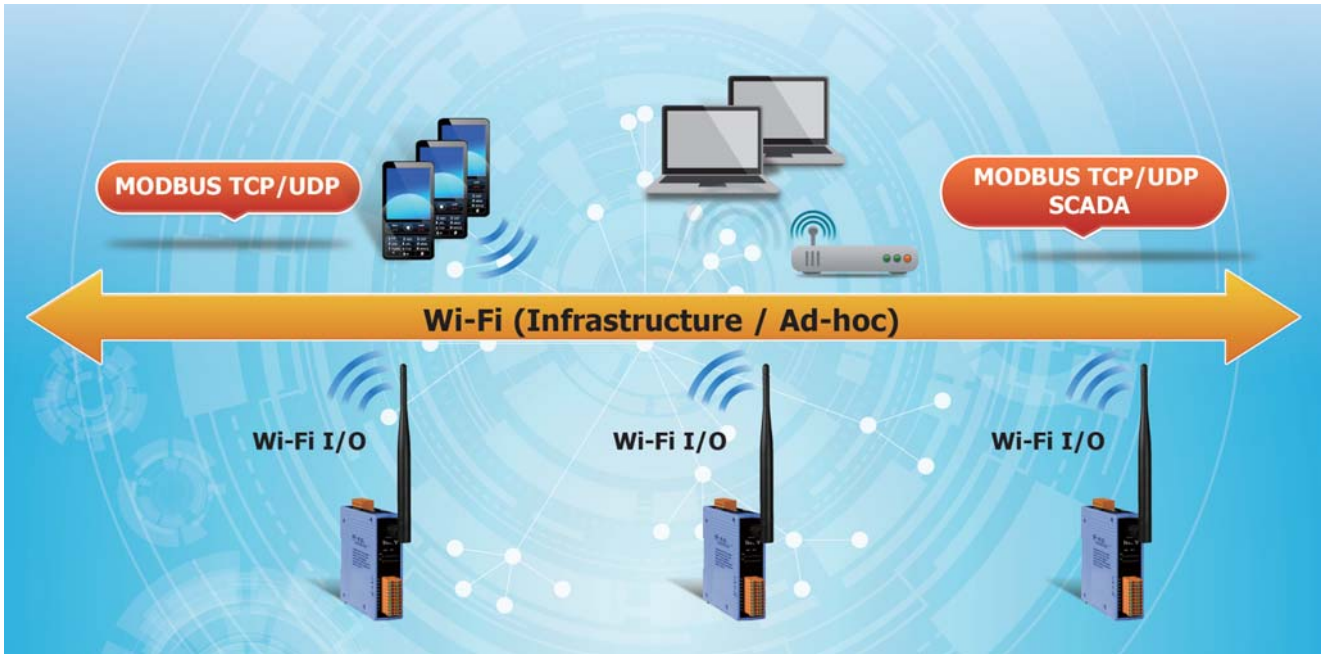
CAN to Wi-Fi Application



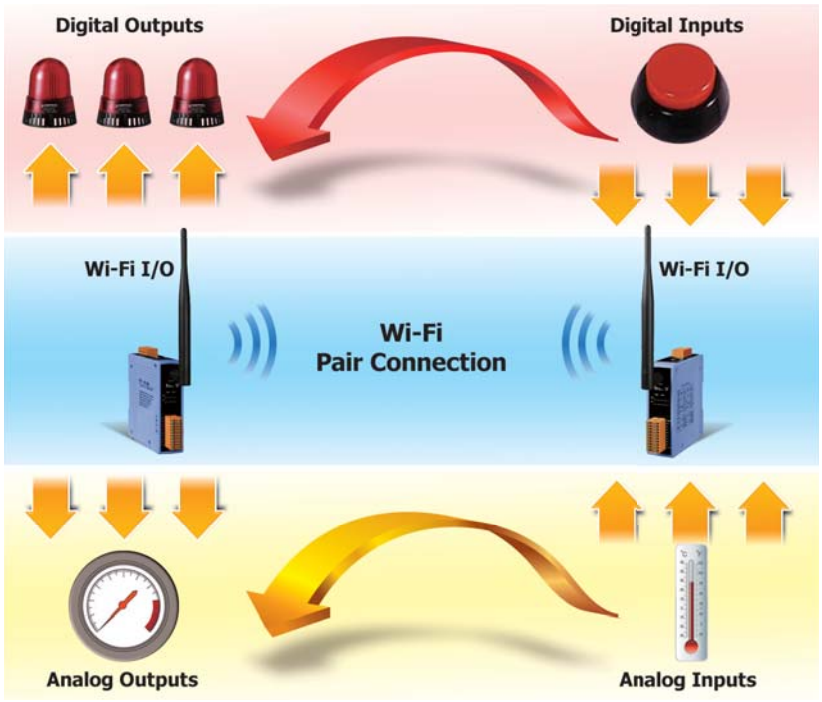
Wireless LAN Application



Application architecture for the WF-2000 series

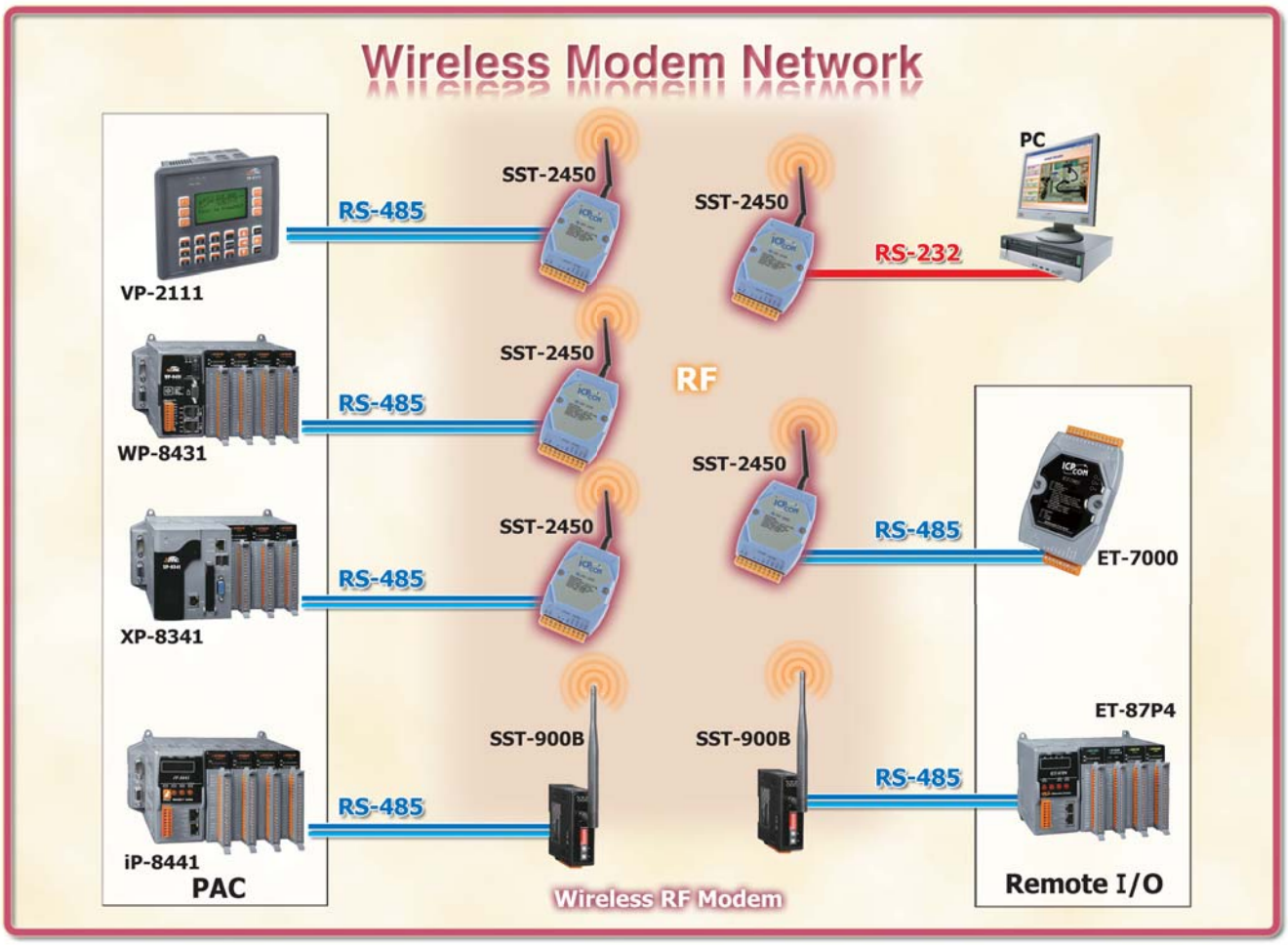


I/O Pair Connection of the WF-2000 series



DSSS RF Products

3.1. Overview



DSSS RF (direct-sequence spread spectrum) is a modulation technique, which is the process of varying one or more properties of a high frequency periodic wave called the carrier signal, with respect to a modulating signal. The benefits of using DSSS include, but not limited to, 1) reduced signal/background-noise level hampers interception and 2) resistance to intended or unintended jamming.

ICP DAS provides SST series which is designed for data acquisition control applications between a host and remote sensors. It is also useful for those applications where the installation of cable wire is inconvenient.

Advantages & Benefits

- Full-duplex and Half-duplex up to 57600bps
- Auto band-rate settings
- Direct sequence spread spectrum using RF technology
- Reduce wiring cost and inconvenience

• Wireless Modem Selection Guide

ICP DAS provides SST series which is designed for data acquisition and control applications between a host and remote sensors. It is also useful for those applications where the installation of cable wire is inconvenient.

The SST Series is a spread spectrum radio modem with an RS-232/ RS-485 interface port. The module can be used not only in peer-to-peer mode, but also in a multi-point structure.

Model Name	Frequency	Interface	Transmission Range
SST-900B	900 MHz (902-928 MHz)	RS-232/RS-485	Typical 700 m, Max. 1 Km
SST-2450	2.4 GHz (2410.496 MHz ~ 2471.936 MHz	RS-232/RS-485	300 m (Typical)

2.4 GHz Omni-directional Antennas

Model Name	Ordering Information	Connector	Radiation	Band	Gain (dBi)	Note
ANT-8	1 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Omni-Directional	2.4 ~ 2.5 GHz	8	Dipole
ANT-15	5 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Omni-Directional	2.4 ~ 2.5 GHz	15	Dipole

2.4 GHz Directional Antennas

Model Name	Ordering Information	Connector	Radiation	Band	Gain (dBi)	Note
ANT-15YG	5 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Directional	2.4 ~ 2.5 GHz	15	Yagi
ANT-18	9 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Directional	2.4 ~ 2.5 GHz	18	Panel

3.2. 900 MHz Radio Modem

SST-900B

900 MHz Wireless Modem

Features

- Half-duplex up to 115200 bps
- Internal Self-Tuner
- ISM Band 900 MHz
- Typical wireless transmission range is 700 meters (LOS)
- UI Configuration via external switch

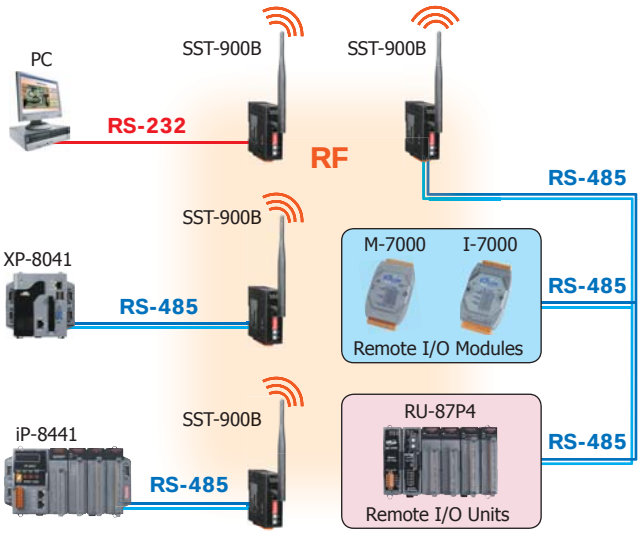
Introduction

The SST-900B is a radio frequency modem with an RS-232/RS-485 interface port and is designed for data acquisition and control applications between a host and remote sensors. It is also useful for those applications where the installation of cable wire is inconvenient. The SST-900B module is a wireless module that works in a frequency range of 902-928 MHz, and includes adjustable 16 RF channels and each channel can be allocated one of sixteen group IDs. The SST-900B can be used not only in peer-to-peer mode but also in a multi-point structure.

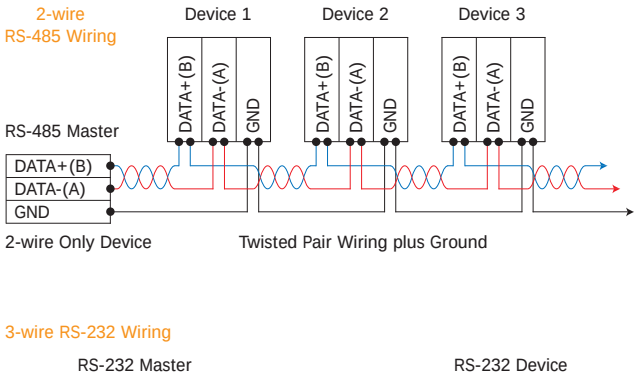
Specifications

Models		SST-900B
Wireless		
Operating Frequency Range		915 MHz (902 MHz ~ 928 MHz)
Channel Spacing		1.5 MHz
Transmit Power		Up to 20 dBm
Number of Channel		16
Transmission Range		700 m
Receive Sensitivity		-100 dBm @ 150k bps
Antenna		
Type		3 dBi Omni-directional, bendable
Connector		Reverse Polarity SMA (RP-SMA) Plug (Male)
Com 0 Settings		
Interface	RS-232	TxD, RxD, GND
	RS-485	DATA+, DATA-; internal self-tuner ASIC; Non-isolated
Baud Rate		1200 ~ 115200 bps
Data Bit		8
Parity Check		None, Even , Odd
Stop Bit		1
Power		
Operating Voltage		+10 VDC ~ +30 VDC
Mechanical		
Dimensions (W x L x H)		84 mm x 108 mm x 33 mm
Environment		
Operating Temperature		-25 ~ +70°C
Storage Temperature		-40 ~ +80°C
Humidity		0 ~ 90% RH, Non-condensing

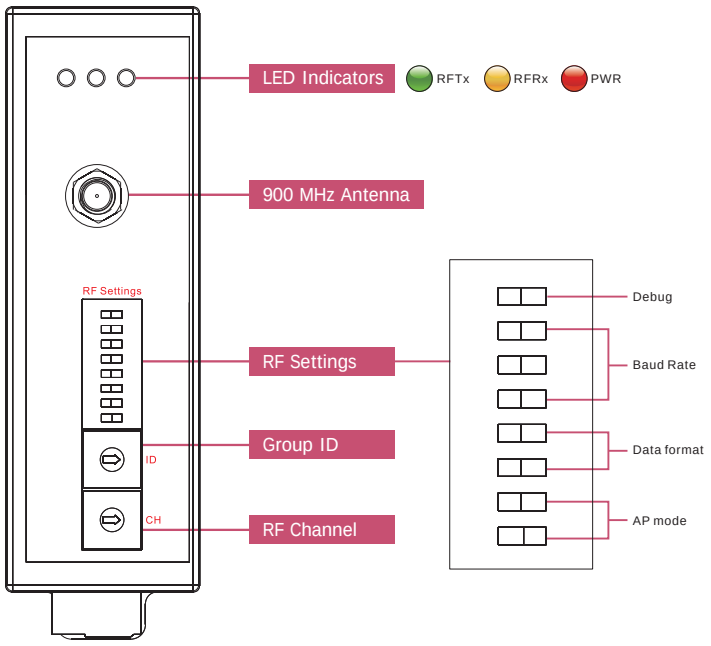
Applications

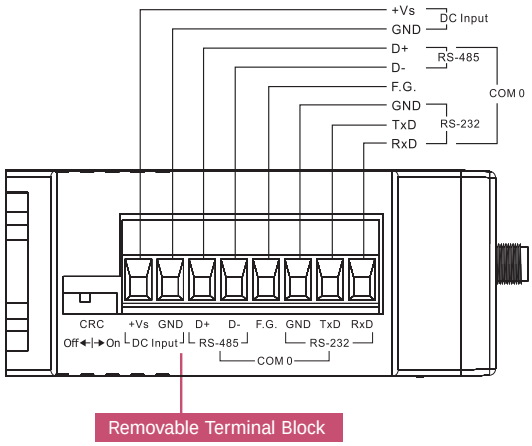


Wiring

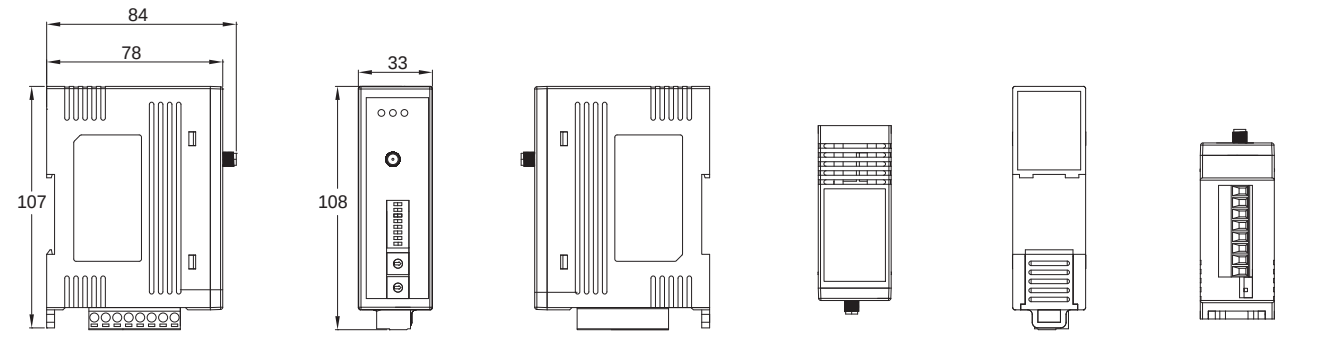


Pin Assignments





Dimensions (Units: mm)



Left View | Front View | Right View | Top View | Rear View | Bottom View

Ordering Information

SST-900B	900 MHz Wireless Modem

3.3. 2.4 GHz Radio Modem

SST-2450

2450 MHz Wireless Modem

Features

- Half-duplex up to 57600 bps
- Internal Self-Tuner
- ISM Band 2.4 GHz
- Support Full-duplex and Half-duplex communication
- Spread Spectrum Technology

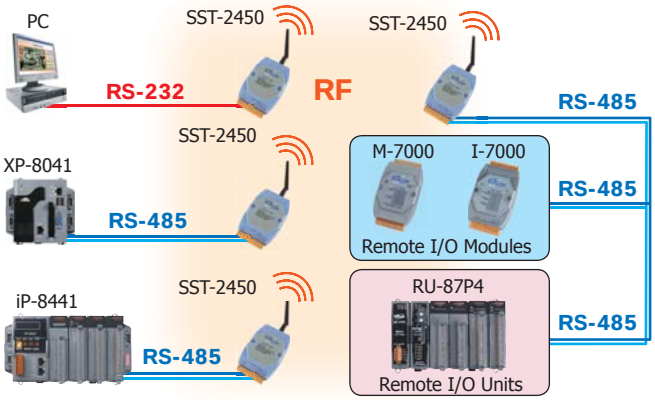
Introduction

The SST-2450 is a spread spectrum radio modem with an RS-232/RS-485 interface port and is designed for data acquisition and control applications between host and remote sensors. It is also useful for those applications, the cable wire is inconvenient to be installed. The SST-2450 can be used in not only peer to peer mode but also multi-point structure.

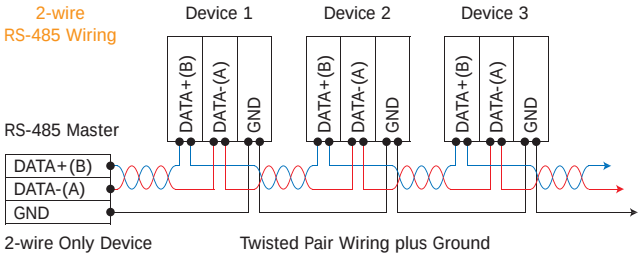
Specifications

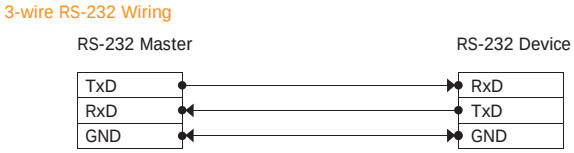
Models		SST-2450
Wireless		
Operating Frequency Range		2.4 GHz (2410.496 MHz ~ 2471.936 MHz)
Channel Spacing		4.096 MHz
Output Power		0.05 W
Transmit Power		17 dBm +/-2 dBm
Modulation		MSKG
Radio Technique		Direct Sequence Spread Spectrum
Duplex Mode		TDD (for Full-duplex)
Number of Channel		16
Number of PN Code		16
PN Code Rate		1.365 Mchips/Sec.
Transmission Range		Typical 300 m
Data Bit Error Rate		< 1/1000 @ -102 dBm
Antenna		
Type		3 dBi Omni-directional, bendable
Connector		Reverse-Polarity SMA-Jack
Serial Link		
Interface	RS-232	TxD, RxD, GND
	RS-485	D+, D-; internal self-tuner ASIC; Non-isolated
Max. Data Transfer Rate in Asynchronous Mode	Full-duplex Mode	9600 bps
	Half-duplex Mode	28800 bps
Max. Data Transfer Rate in Synchronous Mode	Full-duplex Mode	19200 bps
	Half-duplex Mode	57600 bps
Data Format 28800 bps		N, 8, 1 or E, 8, 1
Power		
Operating Voltage		+10 VDC ~ +30 VDC
Current Consumption	Typical	Less than 250 mA
	Transmission	2 W
	Receive	1 W
Mechanical		
Dimensions (W x H x D)		72 mm x 117 mm x 35 mm
Environment		
Operating Temperature		-10 ~ +50°C
Storage Temperature		-20 ~ +70°C
Humidity		0 ~ 90% RH, Non-condensing

Applications

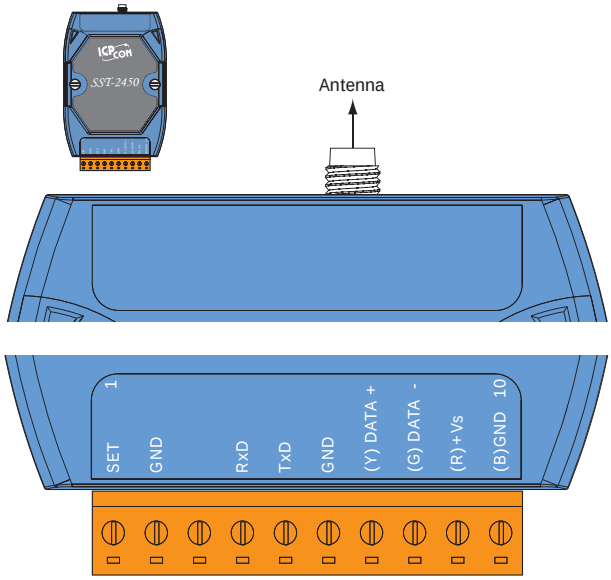


Wiring

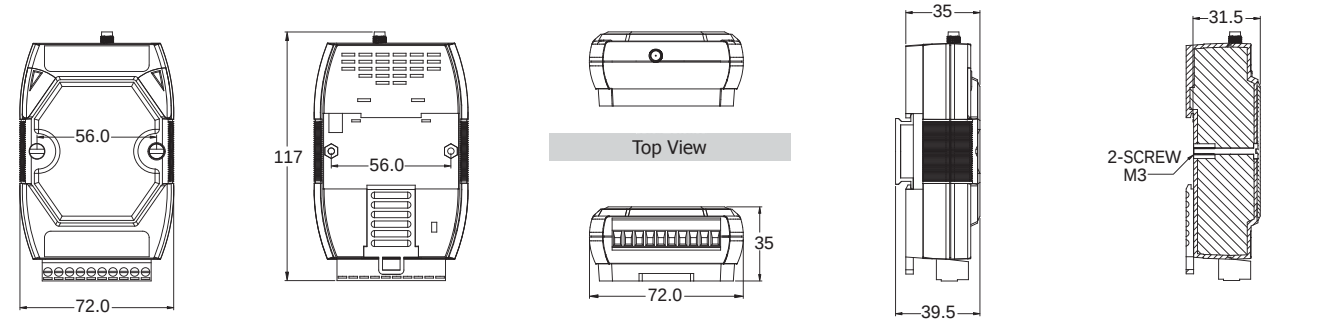




Pin Assignments



Dimensions (Units: mm)



Front View | Rear View | Bottom View | Din-Rail Mounting Bracket | Side View

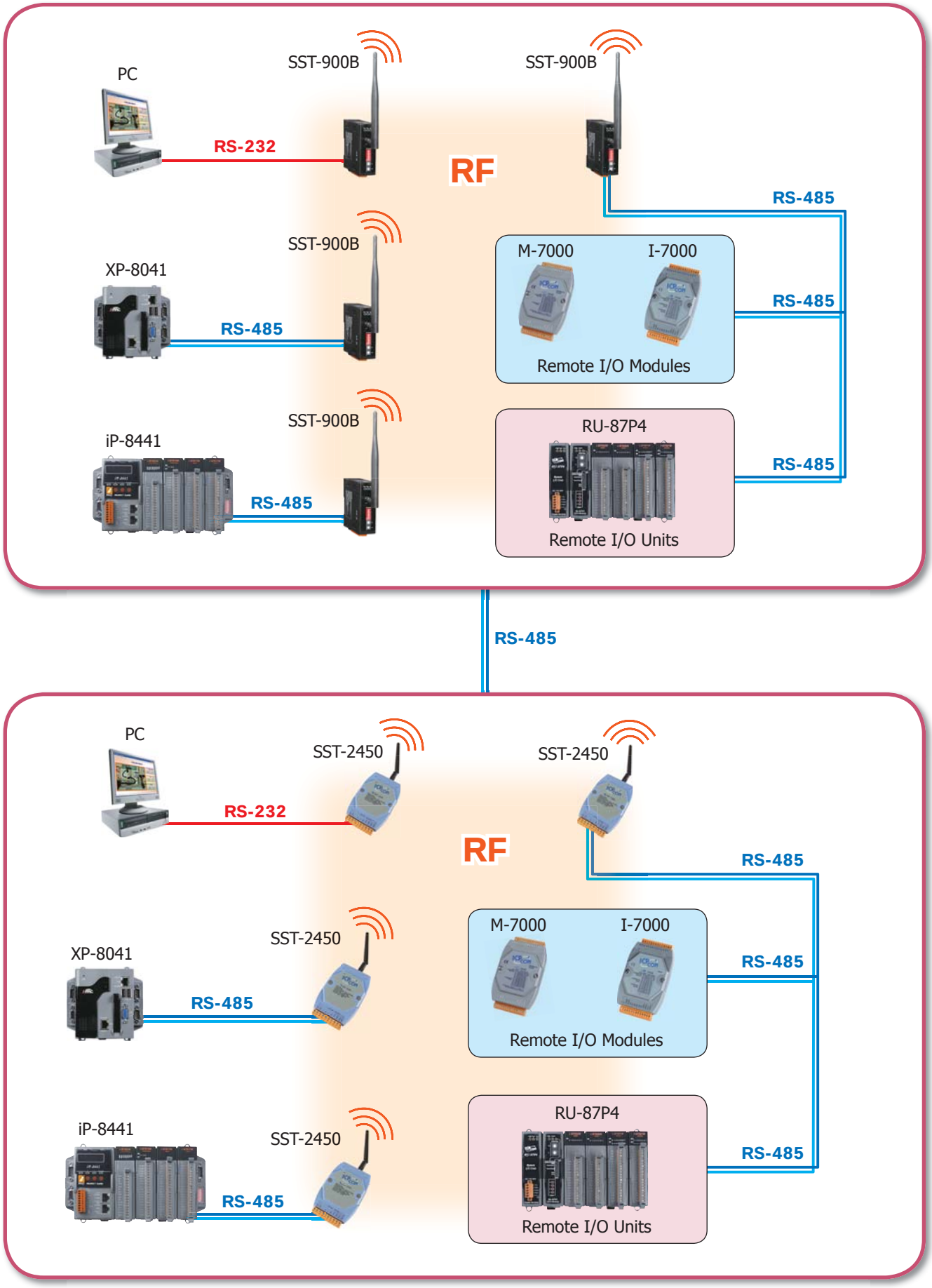
Ordering Information

SST-2450	2450 MHz Wireless Modem

Accessories

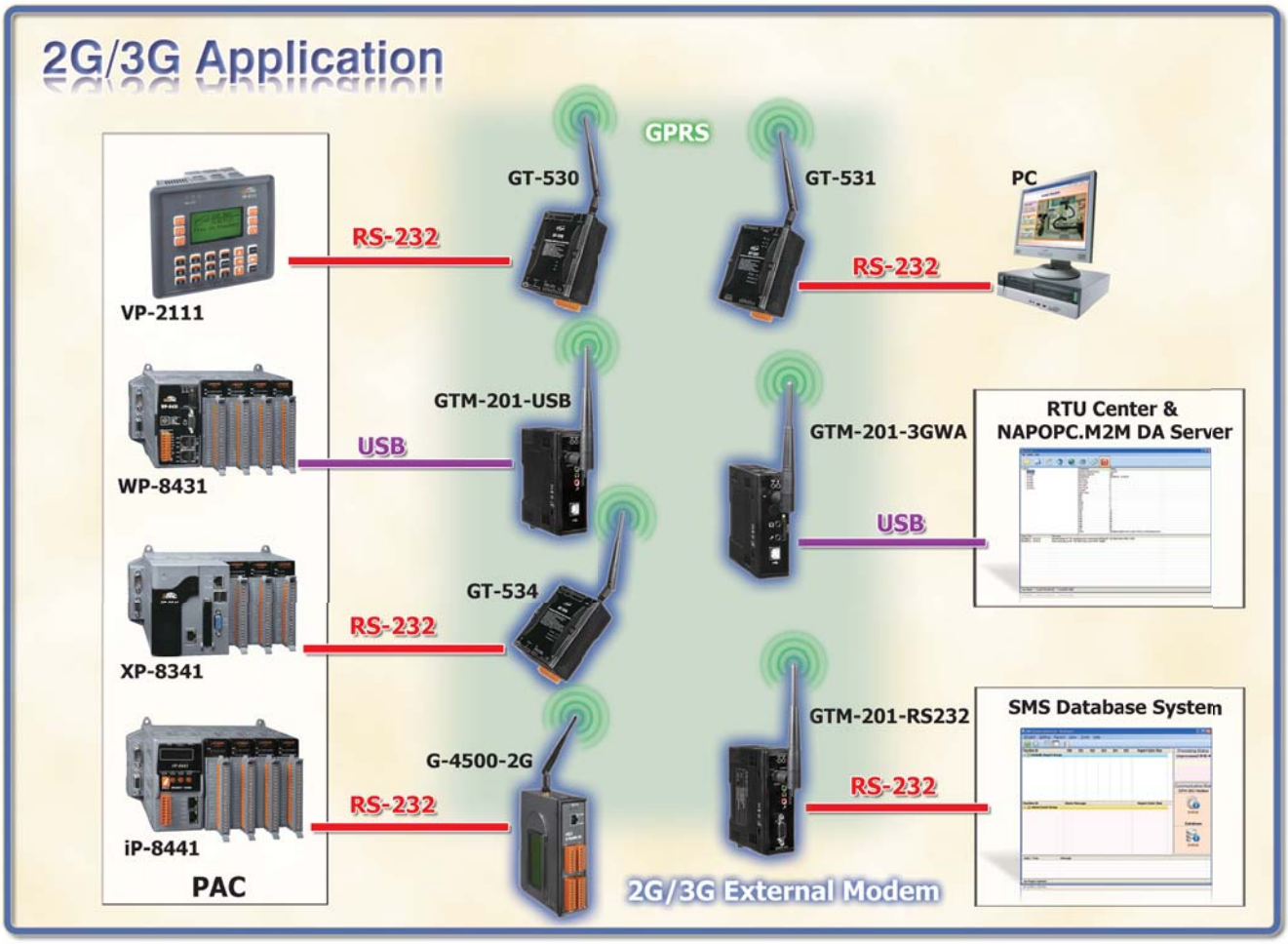
ANT-8	1 km, 2.4 GHz External Antenna (Omni-directional). Gain: 8 dBi
ANT-15	5 km, 2.4 GHz External Antenna (Omni-directional). Gain: 15 dBi
ANT-18	9 km, 2.4 GHz External Antenna (Directional). Gain: 18 dBi
ANT-15YG	5 km, 2.4 GHz External Antenna (Directional). Gain: 15 dBi

3.4. Applications



2G/3G Products

4.1. Overview



ICP DAS 2G/3G wireless solutions are uniquely designed to meet the challenges of implementing and managing a small, medium and large number of unmanned remote devices as well as mobile terminals using the 2G/3G network. The ICP DAS 2G/3G wireless system is comprised of intelligent 2G/3G modems with versatile interfaces, a 2G/3G Data Server (DS), and 2G/3G PACs with embedded dynamic IP resolution technology to help system integrators and application service providers can quickly integrate 2G/3G technology into their own solutions, and save development time with reduced costs and assured performance.

The 2G/3G products support Quad-band GSM (850, 900, 1800, 1900MHz) and Tri-band 3G WCDMA (850, 1900, 2100 MHz), two of the major frequency bands. By supporting these two bands, 2G/3G products are compatible with most mobile networks worldwide.

Advantages & Benefits

- There is no need to build an expensive fixed line network.
- Enable any devices to be connected to the Internet via serial port over a 2G/3G network.
- The most efficient method of handling data over a 2G/3G wireless network and the Internet.
- A full turnkey solution that is designed for both fixed and mobile machine to machine applications.
- Reliable GSM/GPRS/EDGE/UMTS/HSPA network connectivity, providing fast and cost-effective long-range wireless applications

• 2G/3G Modem Selection Guide

ICP DAS provides various industrial Quad-band 2G or Tri-band 3G modem. The modems utilize the 2G/3G network for convenient and inexpensive data transfer from remote instruments, meters, computers or control systems in either live data or packet data. The modems have the integrated TCP/IP stack so that even simple controllers with serial communications ports can be connected to the modem without the need for special driver implementation.

Stand Alone Modem

Model Name	Frequency (MHz)	Reset Input	MIC Input /Audio Output	GPS	TCP/IP Stack	Baud Rate (bps)	Interface	Driver
GTM-201-RS232	2G (GSM/GPRS): 850/900/1800/1900	Yes	Yes	-	Yes	9.6K~115.2K	RS-232	Windows XP / 7 Windows CE Linux
GTM-201-USB	2G (GSM/GPRS): 850/900/1800/1900	Yes	Yes	-	Yes	9.6K~115.2K	USB2.0	Windows XP / 7 Windows CE Linux
GTM-201-3GWA	2G (GSM/GPRS): 850/900/1800/1900 3G (UMTS/HSDPA/HSUPA): 2100/1900/850	Yes	Yes	-	Yes	9.6K~115.2K	USB2.0 RS-232	Windows XP / 7 Linux
GTM-201P-3GWA	2G (GSM/GPRS): 850/900/1800/1900 3G (UMTS/HSDPA/HSUPA): 2100/1900/850	Yes	Yes	Yes	Yes	9.6K~115.2K	USB2.0 RS-232 GPS	Windows XP / 7 Linux

GSM/GPRS Module

Model Name	Frequency (MHz)	GPS Interface	Max. Dowload Speed	AT Command	TCP/IP Protocol
I-8212W	2G (GSM/GPRS): 850/900/1800/1900	-	85.6 Kbps	Yes	Yes
I-8213W	2G (GSM/GPRS): 850/900/1800/1900	Yes	85.6 Kbps	Yes	Yes
I-8212W-3GWA	2G (GSM/GPRS): 850/900/1800/1900 3G (UMTS/HSDPA/HSUPA): 2100/1900/850	-	115.2 Kbps	Yes	Yes
I-8213W-3GWA	2G (GSM/GPRS): 850/900/1800/1900 3G (UMTS/HSDPA/HSUPA): 2100/1900/850	Yes	115.2 Kbps	Yes	Yes

• Intelligent 2G/3G Modules Selection Guide

ICP DAS provides various intelligent 2G/3G modules and gateway, GT-5xx Series. The Module is GSM remote control and alarm system allows users to use their mobile phone to monitor and control the business from any location. Its alarm facilities provide a flexible way to distribute critical alarm information to any number of mobile phone users. The Gateway allows user to access mobile phone by using standard protocol, such as Modbus.

Model Name	Interface	Frequency (MHz)	I/O	Alarm	Micro SD	Battery Backup	Transparent Communication	VxComm	3G Router
GT-530	2 × RS-232	GSM: 850/900/1800/1900	2 × DO 10 × DI	Yes (SMS)	-	Yes	SMS	-	-
SMS-530	2 × RS-232	GSM: 850/900/1800/1900 WCDMA: 850/900/1900/2100	2 × DO 10 × DI	Yes (SMS)	-	Yes	SMS	-	-
GT-531	2 × RS-232 1 × RS-485	GSM: 850/900/1800/1900	-	Yes (SMS, Voice)	Yes	-	Modbus RTU	-	-
SMS-531	2 × RS-232 1 × RS-485	GSM: 850/900/1800/1900 WCDMA: 850/900/1900/2100	-	Yes (SMS, Voice)	Yes	-	Modbus RTU	-	-
GT-534	1 × RS-232 1 × RS-485	GSM: 850/900/1800/1900	2 × DO 6 × DI 1 × AI	Yes (SMS, Voice)	Yes	Yes	SMS	-	-
GT-540	1 × RS-232 1 × RS-485	GSM: 850/900/1800/1900	2 × DO 6 × DI 1 × AI	Yes (GPRS)	Yes	Yes	GPRS	-	-
GT-540P	1 × RS-232 1 × RS-485 GPS	GSM: 850/900/1800/1900	2 × DO 6 × DI 1 × AI	Yes (GPRS)	Yes	Yes	GPRS	-	-
GT-541	1 × RS-232 1 × RS-485	GSM: 850/900/1800/1900	-	-	-	-	GPRS	Yes	-
RMV-531	1 × RS-232 1 × RS-485	GSM: 850/900/1800/1900 WCDMA: 850/900/1900/2100	-	-	-	-	GPRS	Yes	-
GRP-520	1 × RS-232 1 × RS-485	GSM: 850/900/1800/1900 WCDMA: 2100/1900/850	-	-	Yes	-	GPRS	Yes	Yes

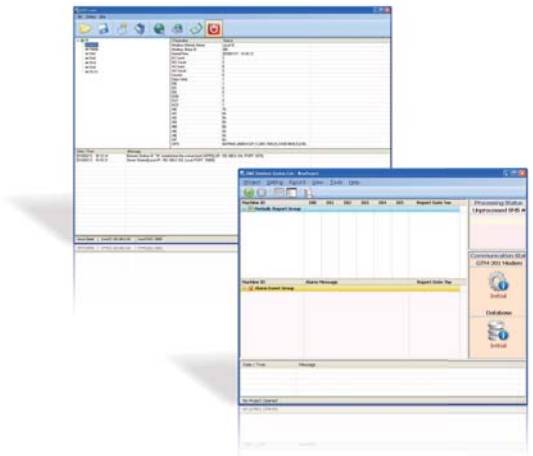
• Mini PAC with 2G/3G Selection Guide

The G-4500 series provided by ICP DAS are M2M (machine to machine) mini programmable controller with a cellular transceiver can monitor industrial equipment that sends live data to the monitoring system, providing real-time status. With optional GPS model, the G-4500 can also be a GPS tracking system. It can be used in vehicle management system or maritime system.

Model Name	OS	Interface	I/O	Frequency (MHz)	LCM (Dot)	GPS	Power Saving	Solar Charging	Case
G-4500-2G	MiniOS7	1 × Ethernet 2 × RS-232 1 × RS-485	3 × DO 3 × DI 8 × AI	2G (GSM/GPRS): 850/900/1800/1900	-	-	-	-	Metal
GD-4500-2G									Plastic
G-4500D-2G	MiniOS7	1 × Ethernet 2 × RS-232 1 × RS-485	3 × DO 3 × DI 8 × AI	2G (GSM/GPRS): 850/900/1800/1900	128 × 64	-	-	-	Metal
GD-4500D-2G									Plastic
G-4500P-2G	MiniOS7	1 × Ethernet 2 × RS-232 1 × RS-485	3 × DO 3 × DI 8 × AI	2G (GSM/GPRS): 850/900/1800/1900	-	YES	-	-	Metal
GD-4500P-2G									Plastic
G-4500PD-2G	MiniOS7	1 × Ethernet 2 × RS-232 1 × RS-485	3 × DO 3 × DI 8 × AI	2G (GSM/GPRS): 850/900/1800/1900	128 × 64	YES	-	-	Metal
GD-4500PD-2G									Plastic
G-4500-3GWA	MiniOS7	1 × Ethernet 2 × RS-232 1 × RS-485	3 × DO 3 × DI 8 × AI	2G (GSM/GPRS): 850/900/1800/1900 3G (UMTS/HSDPA/HSUPA): 2100/1900/850	-	-	-	-	Metal
G-4500D-3GWA	MiniOS7	1 × Ethernet 2 × RS-232 1 × RS-485	3 × DO 3 × DI 8 × AI	2G (GSM/GPRS): 850/900/1800/1900 3G (UMTS/HSDPA/HSUPA): 2100/1900/850	128 × 64	-	-	-	Metal
G-4500P-3GWA	MiniOS7	1 × Ethernet 2 × RS-232 1 × RS-485	3 × DO 3 × DI 8 × AI	2G (GSM/GPRS): 850/900/1800/1900 3G (UMTS/HSDPA/HSUPA): 2100/1900/850	-	YES	-	-	Metal
G-4500PD-3GWA	MiniOS7	1 × Ethernet 2 × RS-232 1 × RS-485	3 × DO 3 × DI 8 × AI	2G (GSM/GPRS): 850/900/1800/1900 3G (UMTS/HSDPA/HSUPA): 2100/1900/850	128 × 64	YES	-	-	Metal

Model Name	OS	Interface	I/O	Frequency (MHz)	LCM (Dot)	GPS	Power Saving	Solar Charging	Case
G-4511-2G	MiniOS7	1 × Ethernet 1 × RS-232 1 × RS-485	3x DO 3x DI 8x AI 1x Relay	2G (GSM/GPRS): 850/900/1800/1900	-	-	YES	for 12V Lead-Acid Battery	Metal
G-4511D-2G	MiniOS7	1 × Ethernet 1 × RS-232 1 × RS-485	3x DO 3x DI 8x AI 1x Relay	2G (GSM/GPRS): 850/900/1800/1900	128 × 64	-	YES	for 12V Lead-Acid Battery	Metal
G-4511P-2G	MiniOS7	1 × Ethernet 1 × RS-232 1 × RS-485	3x DO 3x DI 8x AI 1x Relay	2G (GSM/GPRS): 850/900/1800/1900	-	-	YES	for 12V Lead-Acid Battery	Metal
G-4511PD-2G	MiniOS7	1 × Ethernet 1 × RS-232 1 × RS-485	3x DO 3x DI 8x AI 1x Relay	2G (GSM/GPRS): 850/900/1800/1900	128 × 64	-	YES	for 12V Lead-Acid Battery	Metal

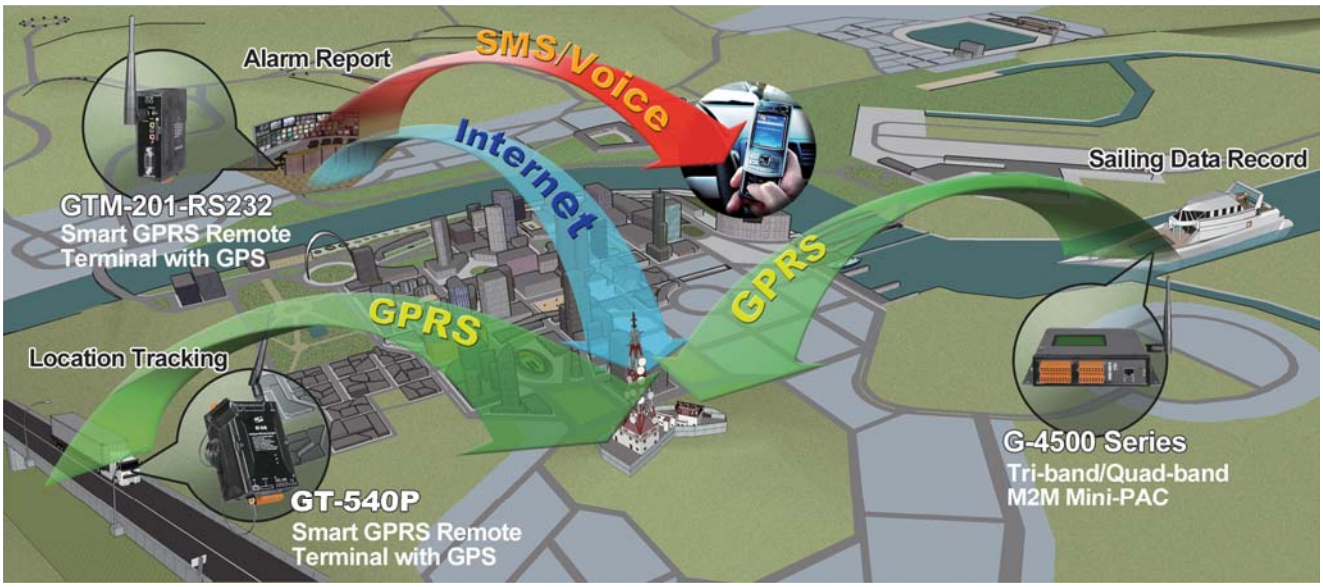
• Software Solutions



ICP DAS provides various software solutions which allow users to manage 2G/3G products more efficiently with easy-to-use interface. The SMS Database System is a GT-53x series management tool which allows the 3rd party software being easily integrated with the modules. The M2M RTU Center is a M2M (Machine to Machine) management software that has a strong core technology for handling data and lets the user save the trouble of dealing with large IO data. The M2M RTU Center can also work with NAPOPC.M2M DA Server, so user can easily access or monitor IO data by using OPC 2.0 Data Access Standards. ICP DAS also provides M2M RTU API Tool for those users who want to develop their own application.

Software Name	Description	Charge
SMS DBS	SMS Monitor/Database System software solution6 for GT-53x series	Free with 3 phone numbers
M2M RTU Center	M2M RTU series management software	Free with 5 device
M2M RTU API Tool	M2M RTU Win32 API library	Free
NAPOPC.M2M DA Server	OPC server for RTU devices	Free

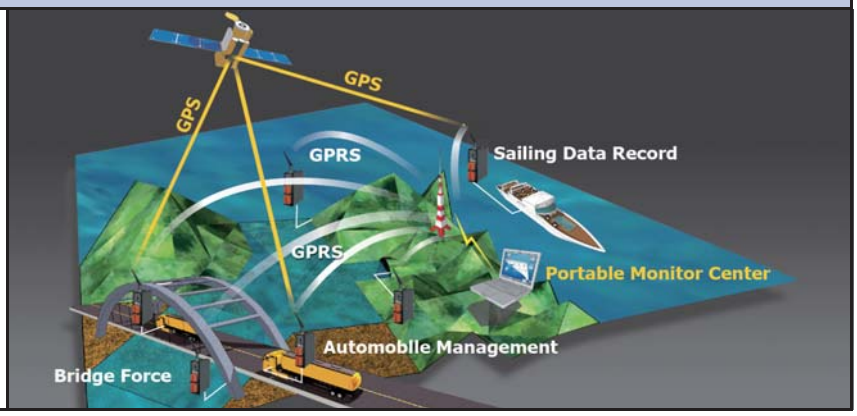
• 2G/3G Wireless Applications



The absorption of ICP DAS Co., Ltd. is to develop cost effective solutions to the industries. In recent years, the significance of communication is expanding exponentially. It is not only people who communicate via internet or telecommunication technologies, but also machines. The technology which allows you to connect your physical resources online is also called M2M Technology. From home application to large scale industrial machines, there are trillian of machines waited to be connected online. The advancement in 2G and 3G technologies has enabled wireless integration with wired-machines more affordable & effective than ever. The live applications are showed below.

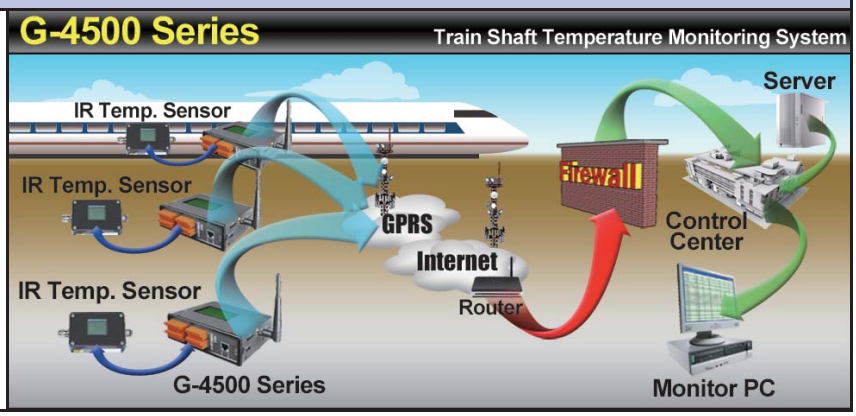
G-4500 Series General Application

By using G-4500 series, user can easily acquire data from any site without wiring limitation. G-4500 can also combine with a GPS module which allows user to monitor the location of moving transportations. To place the G-4500 on a vehicle or ship, users not only monitor its position but also record the fuel consumption.



Temperature Monitoring system

Placed infrared temperature sensors around shafts, and these sensors are connected to **G-4500 series** (M2M Mini-Programmable Automation Control). G-4500 controller will transmit data via GPRS service to Internet back to control center in real-time.

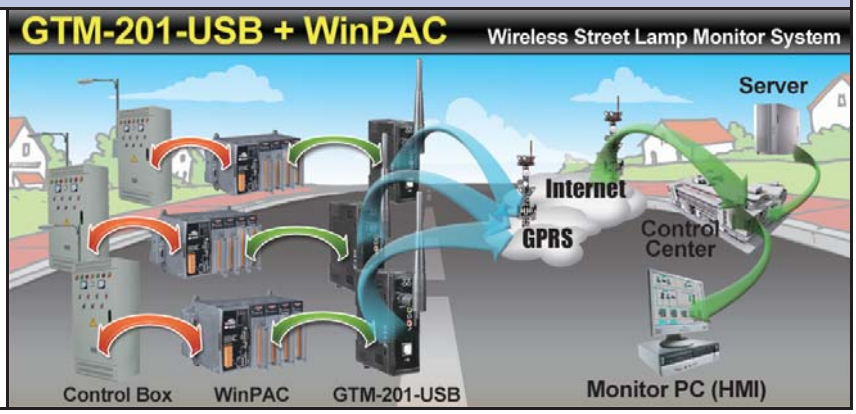


Vending/Gaming Machine Monitoring System

Each machine has a **GT-530** or **GT-534** (Intelligent SMS/GSM Alarm Controller) inside itself. Once the specific circumstances occurred (for example, vending machine ran out of drink), GT-530/GT-534 will automatically send either SMS or voice message to users in program list.

Street Lamp Monitor System

In each control box of street lamp, we placed a **WinPAC** (Windows CE embedded Programmable Automation Controller) and I/O Modules to acquire data from control box. All data will be transmitted back to control center in real-time by using **GTM-201-USB** (Industrial Quad-band GPRS/GSM Modem).



4.2. 2G/3G Modem

GTM-201-RS232
GTM-201-USB

Industrial Quad-band 2G GSM/GPRS Modem

Features

- Quad-band 2G Modem Operating of 850/900/1800/1900 MHz
- Designed for GPRS, Data, Fax, SMS and Voice Applications
- Support TCP Server, TCP Client, UDP Client connection from 2G network
- Support Standard AT Commands
- Include a Digital Input Channel to reset the system
- Provide the MIC Input and Audio (32 Ω) Output Interface
- The RS-232 Port support 9600 to 115200 bps (GTM-201-RS232)
- USB Driver for Windows, WinPAC (WinCE5.0), LinPAC (Linux 2.6) (GTM-201-USB)

Introduction

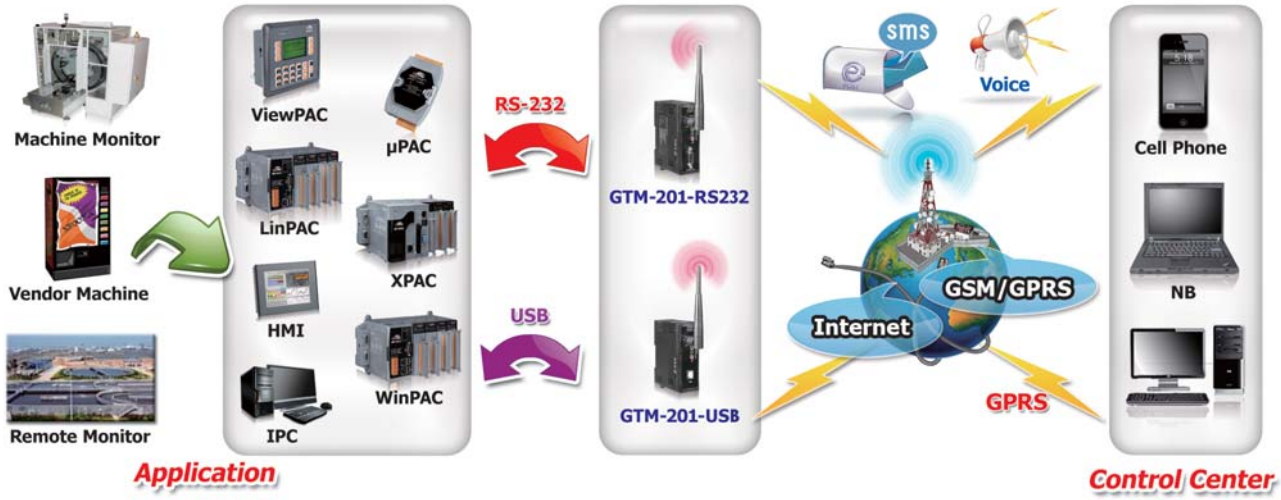
The GTM-201 is a series of industrial Quad-band GSM/GPRS modems with RS-232 and USB interfaces that work at frequencies of GSM 850 MHz, EGSM 900 MHz DCS 1800 MHz and PCS 1900 MHz. The modems utilize the GSM/GPRS network for convenient and inexpensive data transfer from remote instruments, meters, computers or control systems in either live data or packet data acquisition. The GTM-201 series has an integrated TCP/IP stack so that even simple controllers with serial communications ports can be connected to the modem without the need for special installation of drivers. The features of the GTM-201 series allow a variety of PLC and PC applications to take advantage of SMS and GPRS connectivity. The voice interface allows these modems to be also applied to alarm systems with sounds.

Specifications

Models	GTM-201-RS232	GTM-201-USB
2G System		
Frequency Band	Quad-band 850/900/1800/1900 MHz	
GPRS Multi-slot	Class 10/8	
GPRS Mobile Station	Class B	
GPRS Class 10	Max. download speed 85.6 kbps	
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 850/900 MHz); Class 1 (1 W @ 1800/1900 MHz)	
Coding Schemes	CS 1, CS 2, CS 3, CS 4	
SMS	Text and PDU Mode	
Serial Ports		
Serial Standards	RS-232 (DB-9 Female)	USB (B-TYPE) to RS232 (VCP)
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
Baud Rate	9600 bps ~ 115200 bps	
Include Cable	RS-232 9-Pin Female to Male cable (CA-0915)	SB Type A to Type B cable (CA-USB18)
Compatibility	-	USB 1.1 and 2.0 standard
USB Driver Support	-	Windows 98/2000/XP/Vista/7 WinPAC (WinCE5.0) LinPAC (Linux kernel 2.6)
Reset Input		
Input Type	Isolated, 3750 V_{rms}	
On Voltage Level	+3.5 VDC ~ +30 VDC	
Off Voltage Level	+1V Max.	
Input Impedance	3 kΩ, 0.25 W	
LED Indicators		
Power	Red	
GSM/GPRS	Green	
Power		
Protection	Power reverse polarity protection	
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot	
Required Supply Voltage	+10 VDC ~ +30 VDC	
Power Consumption	dle: 25 mA @ 24 VDC; Data Link: 100 ~ 400 mA (peak) @ 24 VDC	
Connection	5-Pin 2.81 mm removable Terminal Block	
Mechanical		
Casing	Plastic	
Flammability	UL 94V-0 materials	
Dimensions (W x L x H)	33 mm x 87 mm x 107 mm	
Installation	DIN-Rail	

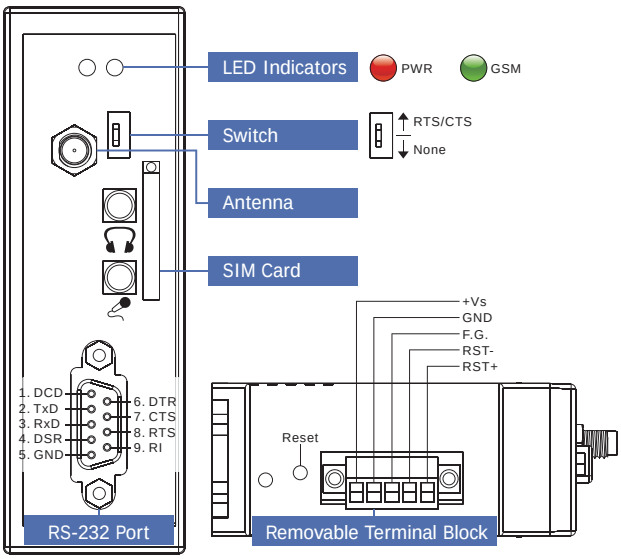
Models	GTM-201-RS232	GTM-201-USB
Environment		
Operating Temperature	-25 ~ +75°C	
Storage Temperature	-40 ~ +80°C	
Humidity	5 ~ 90% RH, Non-condensing	

Applications

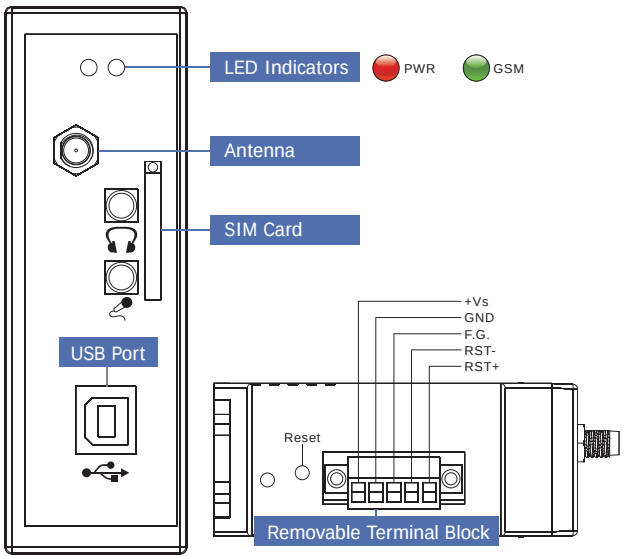


Appearance

GTM-201-RS232

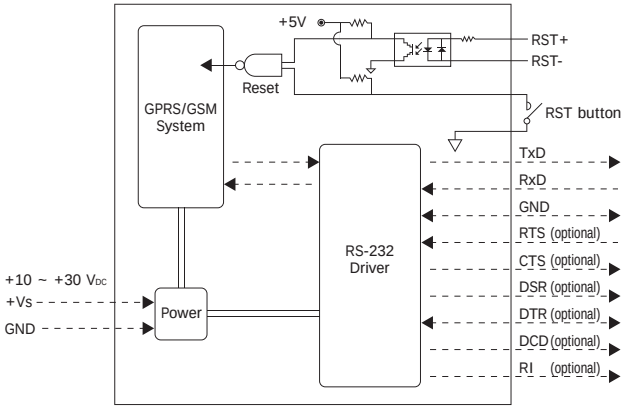


GTM-201-USB

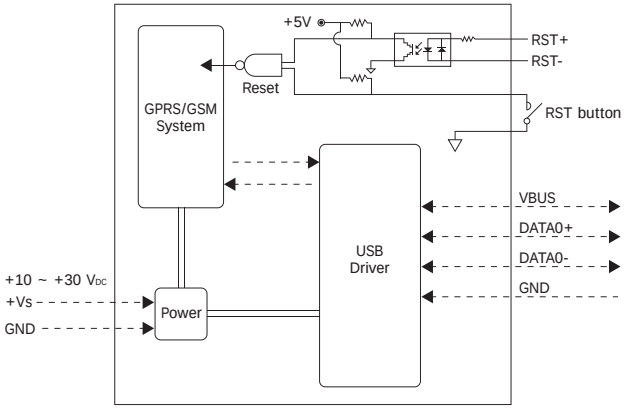


Internal I/O Structure

GTM-201-RS232

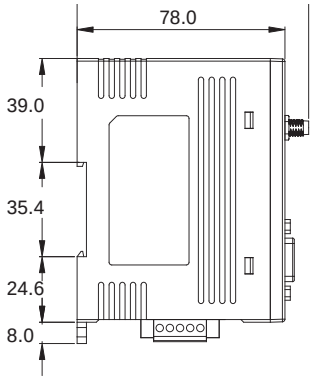


GTM-201-USB

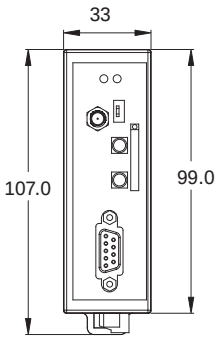


Dimensions (Units: mm)

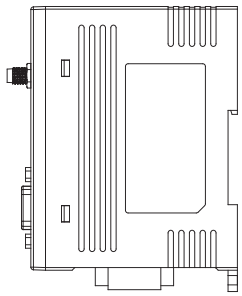
GTM-201-RS232



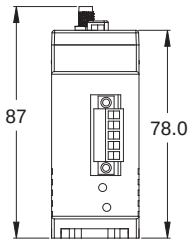
Left Side View



Front View

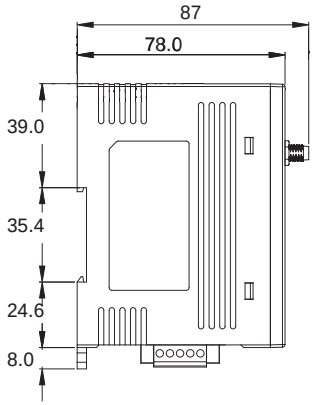


Right Side View

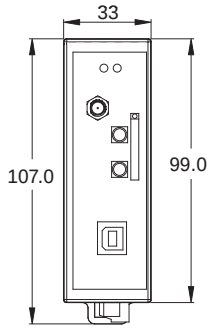


Bottom View

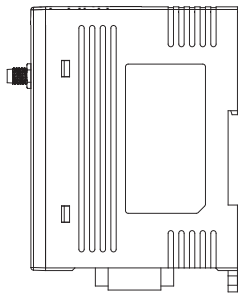
GTM-201-USB



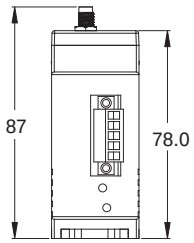
Left Side View



Front View

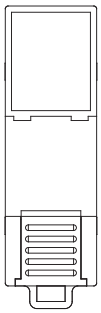


Right Side View

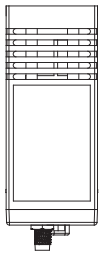


Bottom View

GTM-201-RS232/GTM-201-USB



Rear View



Top View

Ordering Information

GTM-201-RS232 CR	Industrial Quad-band 2G GSM/GPRS modem with RS232 Interface (RoHS)
GTM-201-USB CR	Industrial Quad-band 2G Modem with USB Interface (RoHS)

Accessories

ANT-421-01	3m External GPRS/GSM Antenna

GTM-201-3GWA
GTM-201P-3GWA

Industrial Tri-band 3G WCDMA Modem

Features

- Support 3G Tri-band UMTS/HSDPA/HSUPA 850/1900/2100 MHz
- Support Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
- Designed for Data, SMS and Voice Applications
- Support TCP Server, TCP Client, UDP Client connection from 2G/3G network
- Support Standard AT Commands
- Include a Digital Input Channel uses to reset the system
- Provide the MIC Input and Audio (32 Ω) Output Interface
- The RS-232 Port supports 9600 to 115200 bps
- USB Driver for Windows, WinPAC (WinCE5.0), LinPAC (Linux 2.6)

Introduction

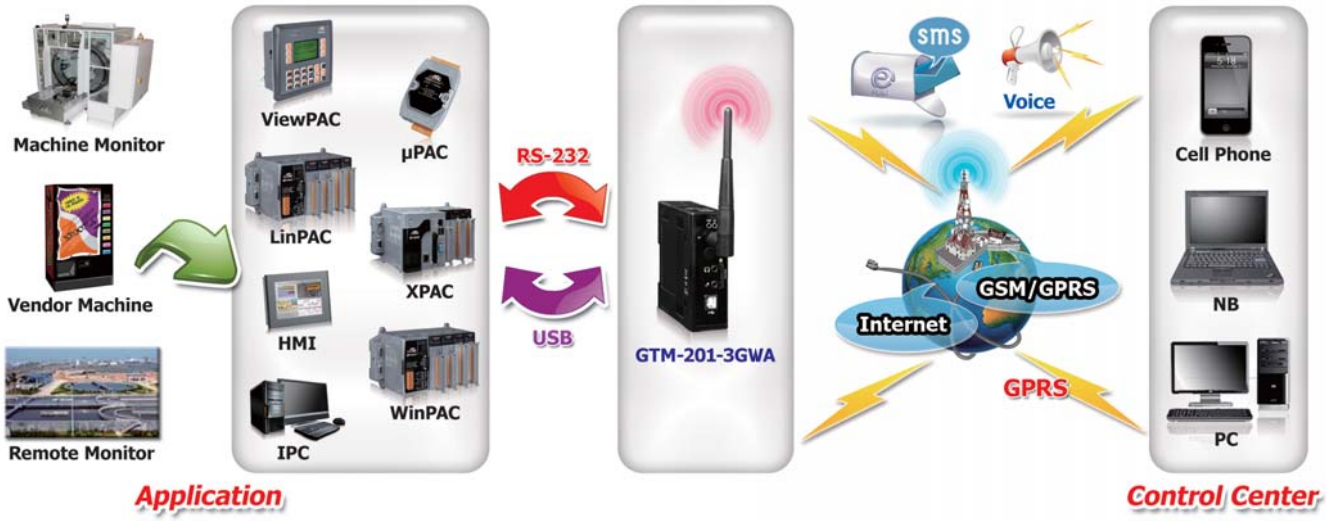
The GTM-201-3GWA/GTM-201P-3GWA is an industrial Tri-band 3G WCDMA cellular modem with RS-232, USB and GPS (only GTM-201P-3GWA) interfaces working on frequencies of Tri-band WCDMA 2100/1900/850 MHz, and Quad-band GSM 850/900/1800/1900 MHz. The modem which supports up to 7.2 Mbps downlink speed and 5.76 Mbps uplink speed services can utilize the 3G/GSM/GPRS network for convenient and inexpensive data transfer from remote instruments, meters, computers or control systems in either live data or packet data. The GTM-201-3GWA/ GTM-201P-3GWA enables internet connection over 3G, when 3G service is available. It automatically selects 3G or GPRS continue to work. Moreover, with the voice interface, these modems can also be applied to the alarm system with sounds.

Specifications

Models	GTM-201-3GWA	GTM-201P-3GWA
3G System		
Frequency Band	UMTS: 2100/1900/850 MHz	
Data Transmission	UMTS/HSDPA/HSUPA Downlink transfer: Max. 7.2 Mbps; Uplink transfer: Max. 5.76 Mbps	
GSM/GPRS System		
Frequency Band	GSM: 850/900/1800/1900 MHz	
GPRS Connectivity	GPRS class 12/10; GPRS station class B	
DATA GPRS	Downlink transfer: Max. 85.6 Kbps; Uplink transfer: Max. 42.8 Kbps	
CSD	Up to 14.4 Kbps	
Coding Schemes	CS 1, CS 2, CS 3, CS 4	
SMS		
SMS	MT, MO, CB, Text and PDU mode	
GPS System		
Support Channels	-	32
Protocol Support	-	NMEA 0183
Comm. Interface		
COM Ports	TxD, RxD, GND	
COM Port Baud Rate	9600 bps ~ 115200 bps	
USB	USB 2.0 (high speed)	
USB Driver Support	Windows 98/2000/XP/Vista/7 LinPAC (Linux kernel 2.6)	
LED Indicators		
Power	Red	
3G/GSM	Green	
Power		
Protection	Power reverse polarity protection	
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot	
Required Supply Voltage	+10 VDC ~ +30 VDC	
Power Consumption	Idle: 25 mA @ 24 VDC; Data Link: 100 ~ 400 mA (peak) @ 24 VDC	
Connection	8-Pin 3.5 mm Removable Terminal Blockhh	

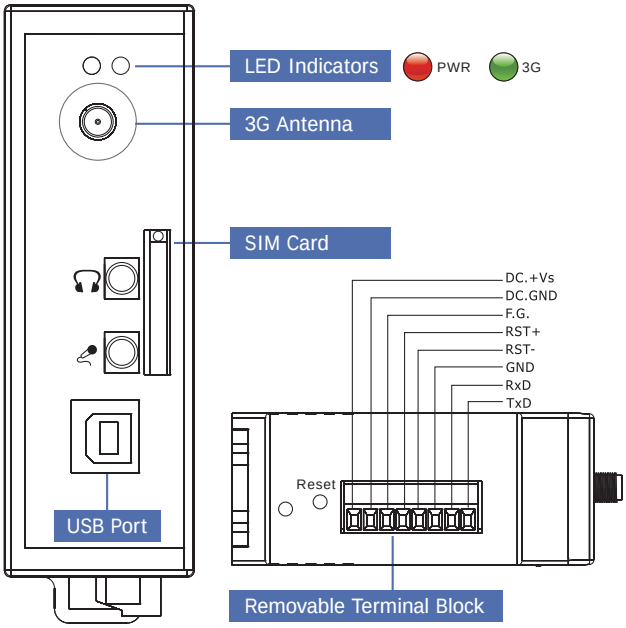
Models	GTM-201-3GWA	GTM-201P-3GWA
Reset Input		
Input Type	Isolated, 3750 Vrms	
On Voltage Level	+3.5 VDC ~ +30 VDC	
Off Voltage Level	+1 VDC Max.	
Input Impedance	3 kΩ, 0.25 W	
Mechanical		
Casing	Plastic	
Flammability	UL 94V-0 materials	
Dimensions (W x L x H)	33 mm x 87 mm x 107 mm	
Installation	DIN-Rail	
Environment		
Operating Temperature	-25 ~ +75°C	
Storage Temperature	-40 ~ +80°C	
Humidity	5 ~ 95% RH, Non-condensing	

Applications

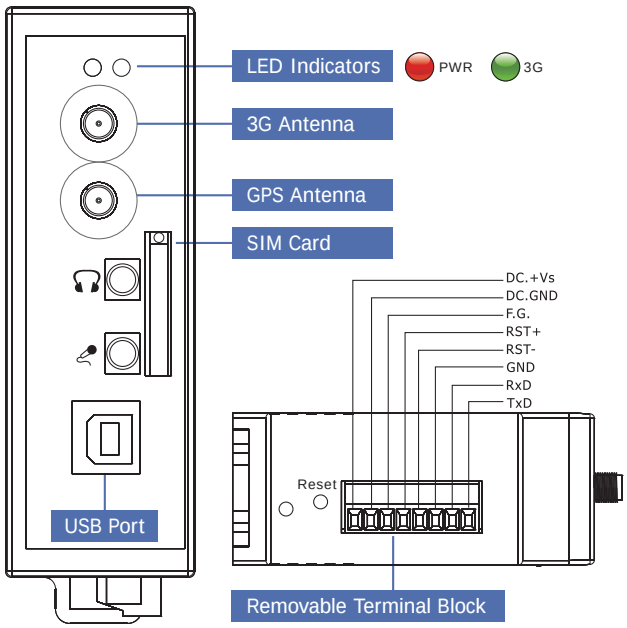


Appearance

GTM-201-3GWA

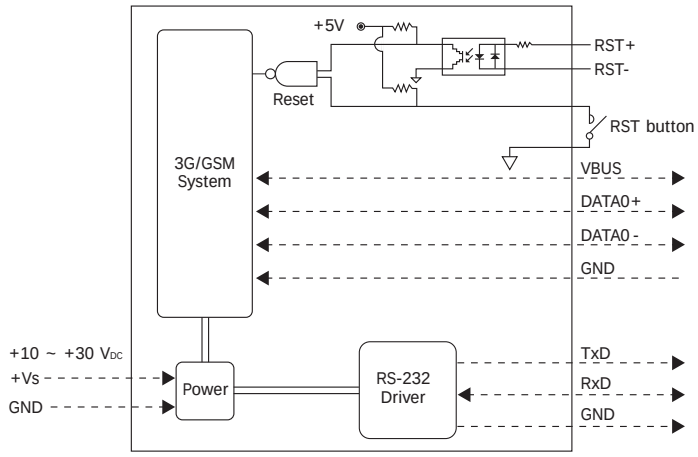


GTM-201P-3GWA



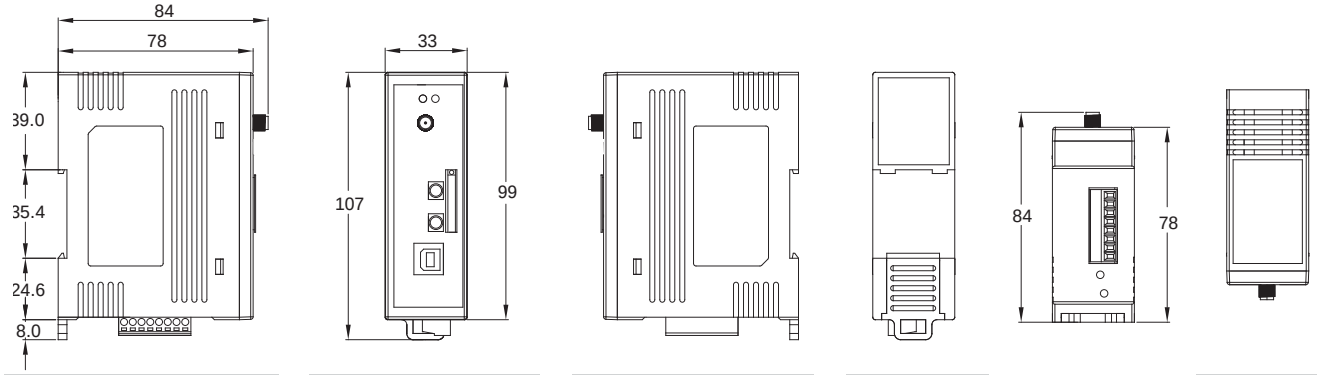
Internal I/O Structure

GTM-201-3GWA/GTM-201P-3GWA



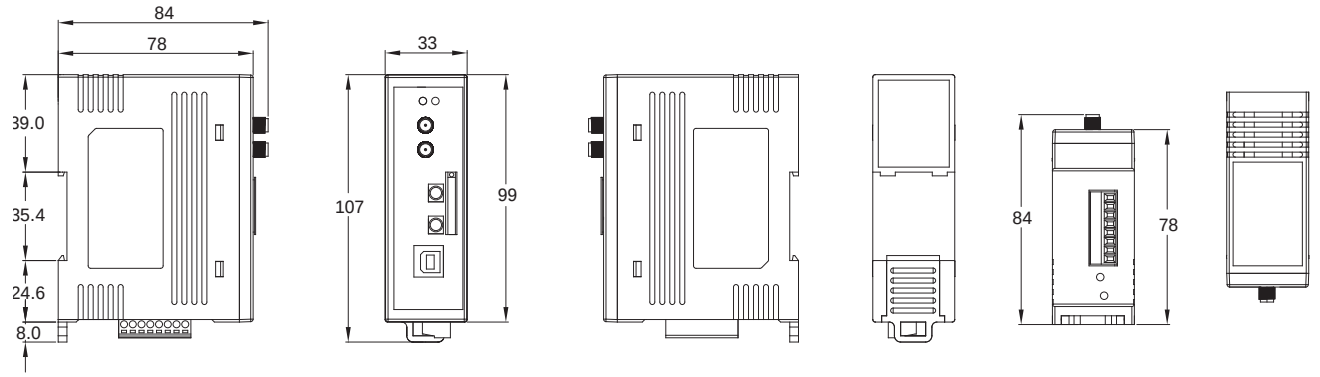
Dimensions (Units: mm)

GTM-201-3GWA



Left Side View | Front View | Right Side View | Rear View | Top View | Bottom View

GTM-201P-3GWA



Left Side View | Front View | Right Side View | Rear View | Top View | Bottom View

Ordering Information

GTM-201-3GWA	Industrial Tri-band 3G WCDMA modem with RS-232 and USB (RoHS)
GTM-201P-3GWA	Industrial Tri-band 3G WCDMA modem with RS-232, USB and GPS (RoHS)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna
ANT-115-03	5 m GPS Active External Antenna

I-8212W/I-8213W

Industrial Quad-band 2G GSM/GPRS Modem

Features

- Quad-band 2G Modem Operating of 850/900/1800/1900 MHz
- Designed for GPRS and SMS Applications
- Support TCP Server, TCP Client, UDP Client connection from 2G network
- Supports 32 channels GPS and NMEA 0183 version 3.01 (I-8213W only)
- Support Standard AT Commands
- Connect any Serial Device to GPRS and the Internet

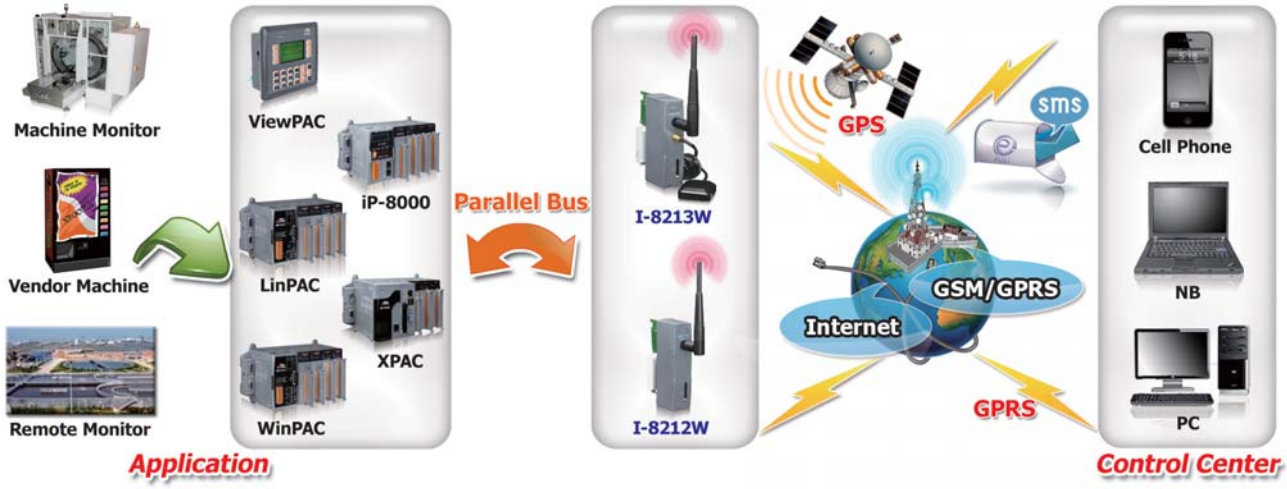
Introduction

The I-8212W/I-8213W are industrial Quad-band GSM/GPRS module with GPS function (I-8213W only) that work on frequencies of GSM 850 MHz, EGSM 900 MHz, DCS 1800 MHz and PCS 1900 MHz. These modules utilize the GSM/GPRS network for convenient and inexpensive data transfer from remote instruments, meters, computers or control systems in either live data or packet data. I-8212W/I-8213W has the integrated TCP/IP stack so that even simple controllers with serial communications ports can be connected to the modem without the need for special driver implementation. With the features of I-8212W/I-8213W, the systems can be SMS and GPRS connection applications with our PAC series like iP-8000, WinPAC, LinPAC or XPAC.

Specifications

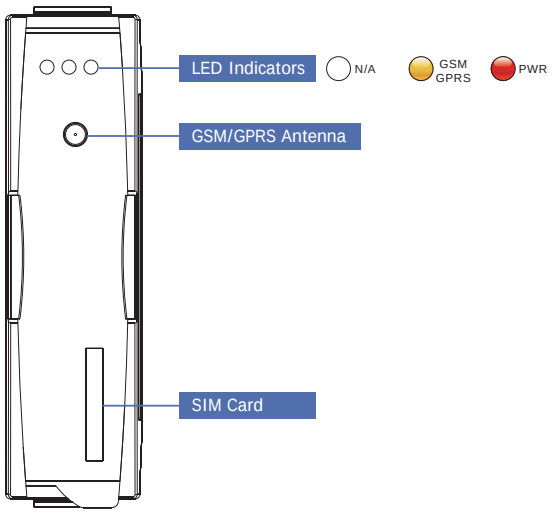
Models	I-8212W	I-8213W
2G System		
Frequency Band	Quad-band: 850/900/1800/1900 MHz	
GPRS Multi-slot	Class 10/8	
GPRS Mobile Station	Class B	
GPRS Class 10	Up to 85.6 kbps download speed	
CSD	Up to 14.4 kbps	
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 850/900 MHz); Class 1 (1 W @ 1800/1900 MHz)	
Coding Schemes	CS 1, CS 2, CS 3, CS 4	
SMS	Text and PDU Mode	
GPS Interface		
Support Channels	-	32
Sensitivity	-	Tracking = up to 159 dBm (with external LNA) Cold start = up to 146 dBm (with external LNA)
Acquisition Time	-	Hot Start (Open Sky) = 2s (typical) Cold Start (Open Sky) = 36s (typical)
Protocol Support	-	NMEA 0 183 version 3.01
LED Indicators		
Power	Red	
GSM/GPRS	Yellow	
GPS	-	Green
Power		
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot	
Power Consumption	Idle: 0.16 A @ 5 V_{DC}; Data Link: 0.2 ~ 1.64 A (peak) @ 5 V_{DC}	
Mechanical		
Casing	Plastic	
Dimensions (W x L x H)	30mm x 85 mm x 114mm	
Environment		
Operating Temperature	-25 ~ +75°C	
Storage Temperature	-40 ~ +80°C	
Humidity	5 ~ 90% RH, Non-condensing	

Applications

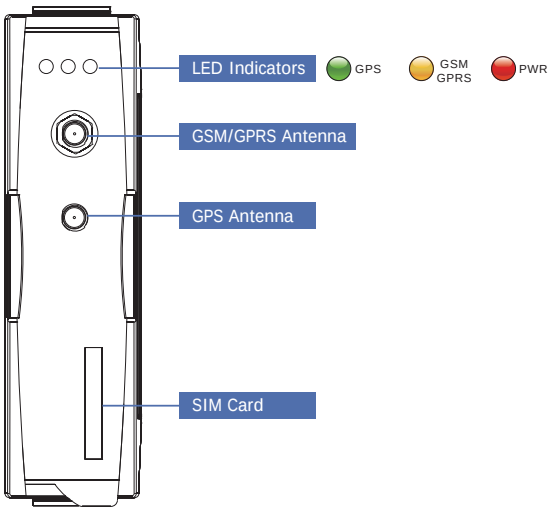


Appearance

I-8212W

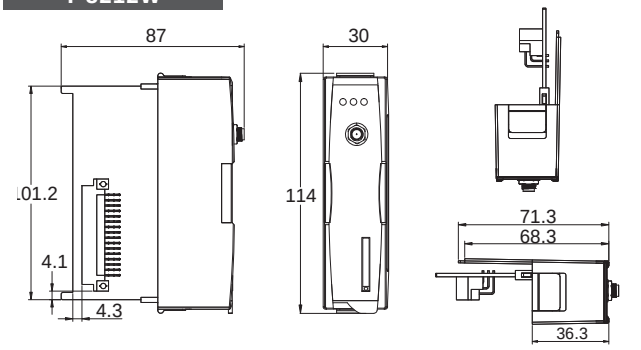


I-8213W



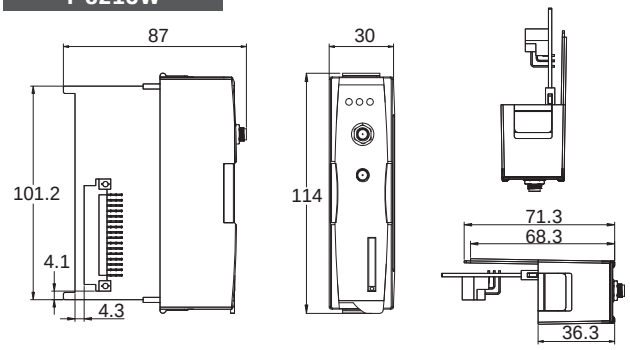
Dimensions (Units: mm)

I-8212W



Left Side View | Front View | Top View

I-8213W



Left Side View | Front View | Top View

Ordering Information

I-8212W CR	Industrial Quad-band 2G GSM/GPRS module (RoHS)
I-8213W CR	Industrial Quad-band 2G GSM/GPRS module with GPS function (RoHS)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna
ANT-115-03	5 m GPS Active External Antenna

I-8212W-3GWA/I-8213W-3GWA

Industrial Tri-band 3G WCDMA module

Features

- Supports WCDMA 2100/1900/850 MHz
- Supports GSM 850/900/1800/1900 MHz
- Supports TCP Server, TCP Client, UDP Client Connection stack from 3G or GPRS
- Supports 32-channels GPS and NMEA v0183 v3.01 (only I-8213W-3GWA)
- Supports Standard AT Commands
- Supports XP-8000, WinPAC-8000, LinPAC-8000, ViewPAC, iPAC-8000

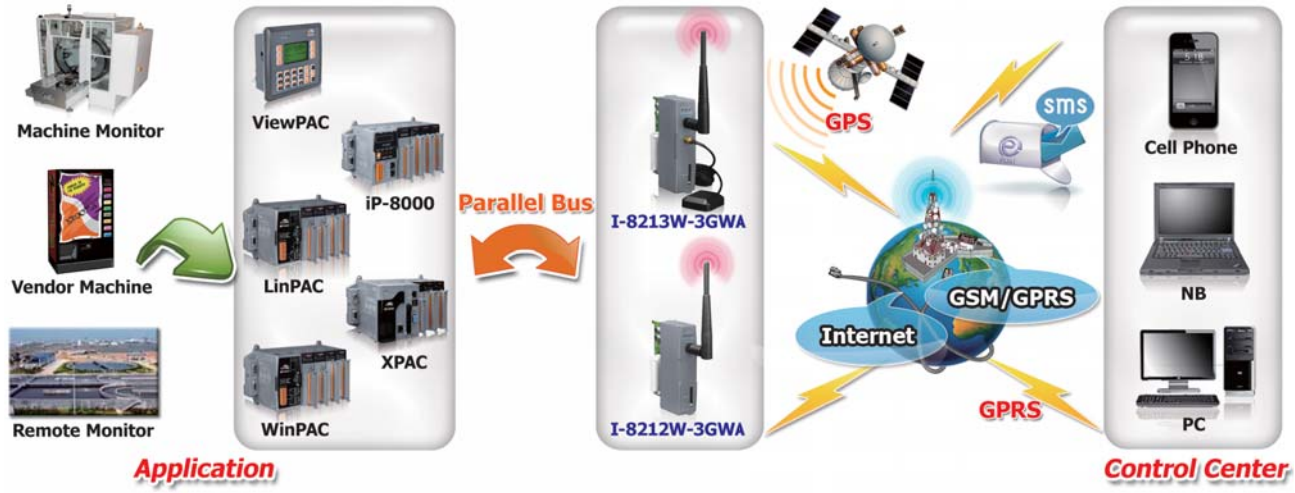
Introduction

The I-8212W-3GWA and I-8213W-3GWA are industrial Tri-band 3G WCDMA modules with GPS function (only I-8213W-3GWA) that work on frequencies of UMTS 2100 / 1900 / 850 MHz and GSM 850 MHz, EGSM 900 MHz, DCS 1800 MHz and PCS 1900 MHz. These modules utilize the 3G or GSM/GPRS network for convenient and inexpensive data transfer from remote instruments, meters, computers or control systems in either live data or packet data. Both the I-8212W-3GWA and I-8213W-3GWA have the integrated TCP/IP stack so that even simple controllers with serial communications ports can be connected to the modem without the need for special driver implementation. With the features of I-8212W-3GWA and I-8213W-3GWA, the systems can be SMS, GPRS and 3G connection applications with our PAC series like iPAC-8000, WinPAC-8000, LinPAC-8000 or XP-8000.

Specifications

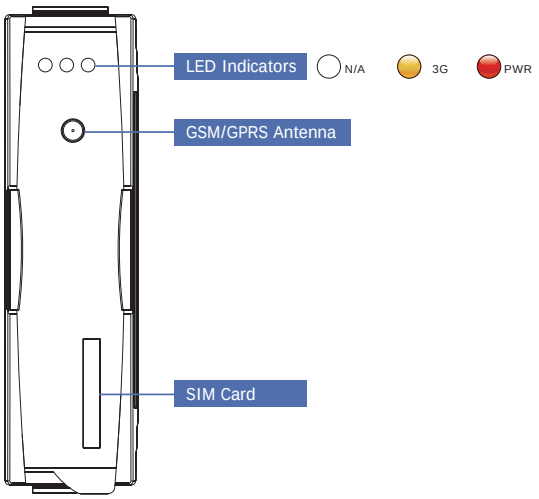
Models	I-8212W-3GWA	I-8213W-3GWA
3G System		
Frequency Band	WCDMA : 2100/1900/850 MHz	
Data Transmission	UMTS / HSDPA / HSUPA Downlink transfer: Max. 7.2Mbps; Uplink transfer: Max 5.76Mbps	
GSM/GPRS System		
Frequency Band	GSM : 850/900/1800/1900 MHz	
GPRS connectivity	GPRS class 12/10; GPRS station class B	
DATA GPRS	Downlink transfer: Max. 85.6 kbps; Uplink transfer: Max 42.8kbps	
CSD	Up to 14.4 kbps	
Coding Schemes	CS 1, CS 2, CS 3, CS 4	
SMS		
SMS	MT, MO, CB, Text and PDU mode	
GPS Interface		
Support Channels	-	32
Sensitivity	-	Tracking = up to -159 dBm (with external LNA)
		Cold start = up to -146 dBm (with external LNA)
Acquisition Time	-	Hot start (Open Sky) = 2 s(typical)
		Cold start (Open Sky) = 36 s(typical)
Protocol Support	-	NMEA 0183 version 3.01
LED Indicators		
Power	Red color	
GPRS	Yellow color	
GPS	-	Green color
Power		
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot	
Power Consumption	Idle: 0.15 A @ 5 VDC; Data Link: 0.2 ~ 1.62 A (peak) @ 5 VDC	
Mechanical		
Casing	Plastic	
Dimensions (W x L x H)	30mm x 85mm x 114mm	
Environment		
Operating Temperature	-25°C ~ +75 °C	
Storage Temperature	-30°C ~ +80 °C	
Humidity	5~95% RH, non-condensing	

Applications

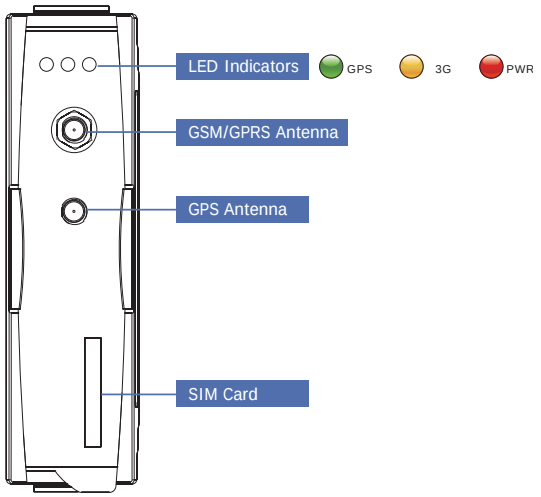


Appearance

I-8212W-3GWA

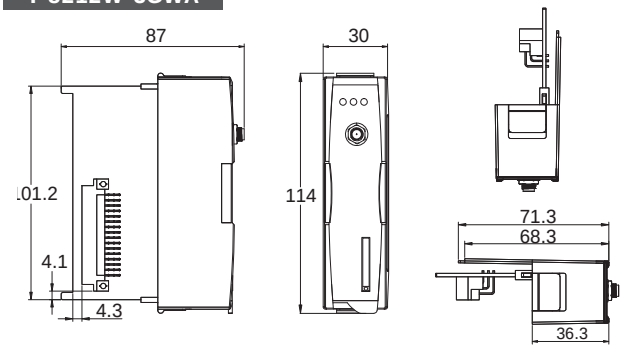


I-8213W-3GWA



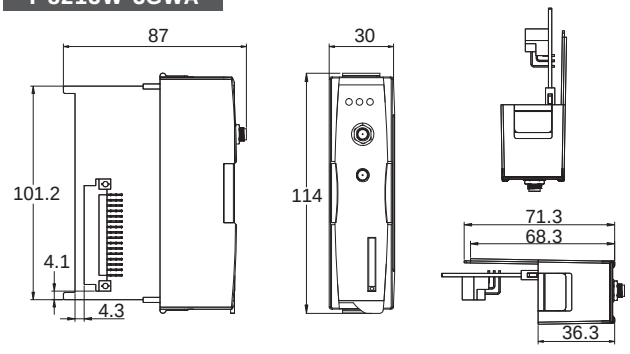
Dimensions (Units: mm)

I-8212W-3GWA



Left Side View | Front View | Top View

I-8213W-3GWA



Left Side View | Front View | Top View

Ordering Information

I-8212W-3GWA CR	Industrial Tri-band 3G WCDMA module (RoHS)
I-8213W-3GWA CR	Industrial Tri-band 3G WCDMA module with GPS function (RoHS)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna
ANT-115-03	5 m GPS Active External Antenna

4.3. Intelligent 2G/3G Module

NEW

GT-530

Intelligent SMS Alarm Controller

Features

- Quad-band 2G Modem Operating of 850/900/1800/1900 MHz
- Identify ASCII or Unicode SMS Automatically
- Support up to 160 ASCII Characters
- Support Max. 70 Unicode Characters
- Built-in ASCII Command and Transparent Communication Modes
- Max. 10 Default Phone Numbers
- Support 3.7 V Li-ion Battery Backup

Introduction

GT-530 is an intelligent SMS controller for industry applications with the simple commands and SMS tunnel function, and power can be input by the external power or Li-Battery. It supports UNICODE or 7 bit format for users to implement sending SMS messages with various languages. Applying GT-530, the SMS report can be sent by defined time or DI/counter event trigger. This can be a remote control and alarm system allowing you to use your mobile phone to monitor and control your business from any location. Its alarm facilities provide a flexible way to distribute critical alarm information to any number of mobile phone users. GT-530 can monitor total 10 digital inputs (or 6 counters). The user can also obtain the status of I/O through SMS messages. The GT-530 also has 2 Digital output which can be activated via DI trigger or SMS to control the lamps, pumps, heaters etc.

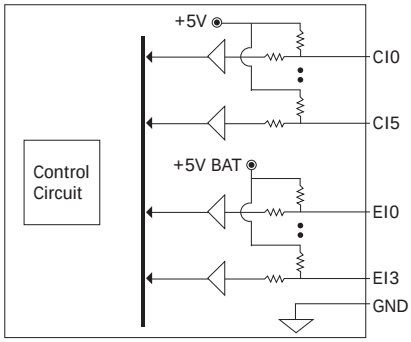
Specifications

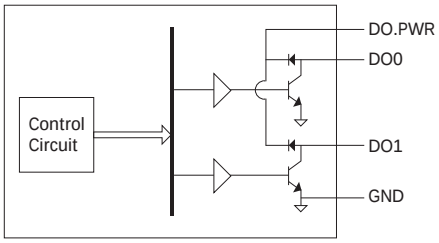
Models	GT-530
System	
CPU	32 bit
SRAM	32 Kbytes
Flash Memory	512 Kbytes
RTC	Gives time (sec, min, hour) & date, leap year compensation
WDT	Yes
2G System	
Frequency Band	Quad-band: 850/900/1800/1900 MHz
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 850/900 MHz); Class 1 (1 W @ 1800/1900 MHz)
Coding Schemes	CS 1, CS 2, CS 3, CS 4
SMS	7 bits and UCS2
Serial Ports	
COM 2	RS-232: TxD, RxD, GND (use for device configuration)
COM 3	RS-232: TxD, RxD, GND (use for communication with other devices)
Baud Rate	9600 bps ~ 115200 bps
Digital Input	
Input Channels	10 Channel (6 Counter 5~40Hz + 4 Channel Digital input powered by external power or Li-battery)
On Voltage Level	+3.5 VDC ~ +30 VDC
Off Voltage Level	+1 V Max.
Digital Output	
Output Channels	2
Output Type	Open Collector Output
Load Voltage	+30 VDC Max.
Load Current	100 mA Max.
Power	
Protection	Power reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10 VDC ~ +30 VDC
Mechanical	
Casing	Plastic
Flammability	UL 94V-0 materials
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-40 ~ +80°C
Humidity	5 ~ 90% RH, Non-condensing

Applications

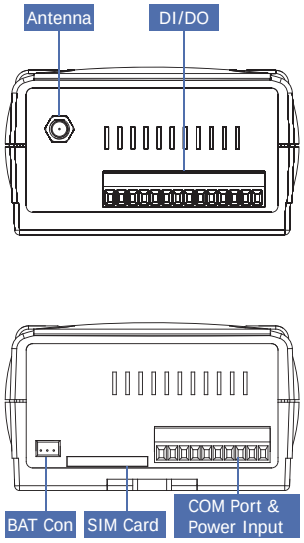
- Signal Alarm and SMS communication
- Home security
- Remote maintenance

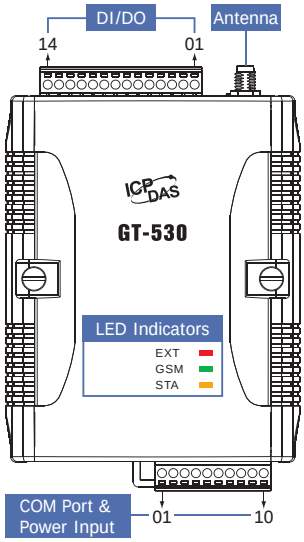
Internal I/O Structure





Appearance

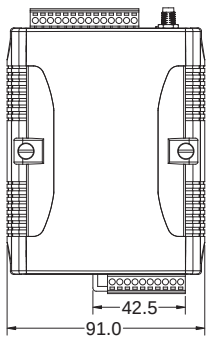




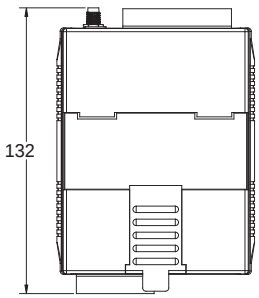
DI/DO		
Terminal No.		Pin Assignment
DI	01	DI0
	02	DI1
	03	DI2
	04	DI3
	05	DI4
	06	DI5
	07	DI6
	08	DI7
	09	DI8
	10	DI9
DO	11	DO0
	12	DO1
	13	DO.PWR
DI/DO	14	Ext.GND

COM Port & Power Input		
Terminal No.		Pin Assignment
COM3 RS-232	01	GND
	02	RxD3
	03	TxD3
COM2 RS-232	04	GND
	05	RxD2
	06	TxD2
N/A	07	N/A
Power Input: +10 VDC ~ +30 VDC	08	DC.+Vs
	09	DC.GND
Frame Ground	10	F.G.

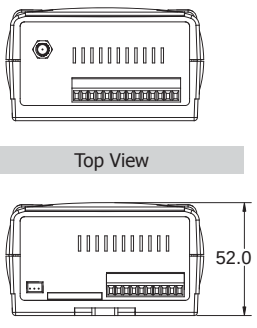
Dimensions (Units: mm)



Front View

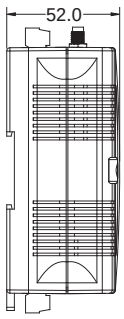


Rear View

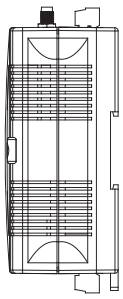


Top View

Bottom View



Left Side View



Right Side View

Ordering Information

GT-530 CR	Intelligent SMS Alarm Controller (RoHS)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna

SMS-530

Intelligent 3G SMS Alarm Controller

Features

- Support Quad-band GSM 850/900/1800/1900 MHz frequency
- Support Quad-band WCDMA 850/900/1900/2100 MHz frequency
- Identify ASCII or Unicode SMS Automatically
- Support max. 70 Unicode Characters
- Support max. 140 ASCII Characters
- Built-in ASCII Commands and SMS tunnel Communication Modes
- Max. 10 Default Phone Numbers
- Support SMS setting and control
- 10 DI (6 Counter), 2 DO, 2 RS-232 port
- Digital input support NC/NO/Counter modes
- Support 3.7 V Li-ion Battery Backup

Introduction

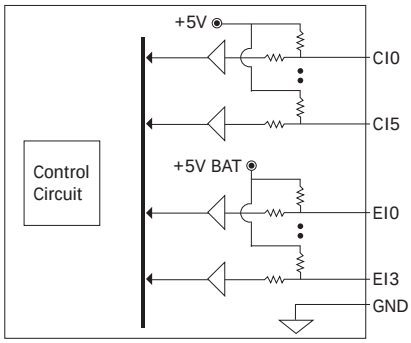
SMS-530 is an intelligent 3G SMS controller for industry applications with the simple commands and SMS tunnel function, and power can be input by external power or Li-ion Battery. Applying SMS-530, the SMS report can be sent by defined time or DI/counter event trigger. This can be a remote control and alarm system allowing you to use your mobile phone to monitor and control your business from any location. Its alarm facilities provide a flexible way to distribute critical alarm information to any number of mobile phone users. SMS-530 can monitor up to 10 digital inputs (6 counters). The SMS-530 also has 2 Digital output which can be activated via DI trigger or SMS to control the lamps, pumps, heaters...etc.

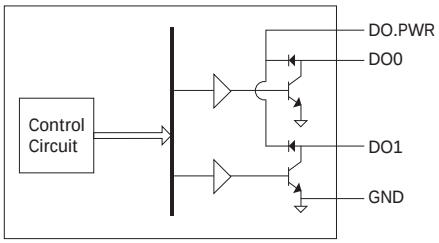
Specifications

Models	SMS-530
System	
CPU	32 bit, Microprocessor inside with 96MHz
RTC	Gives time(sec, min, hour) & date, leap year compensation from 1980 to 2079
WDT(watchdog)	Yes
Comm. Interface	
COM2	RS-232: TxD,RxD,GND for configuration
COM3	RS-232: TxD,RxD,GND for communication with other devices
3G System	
Frequency Band	WCDMA Quad-Band 850/900/1900/2100 MHz
Power Class	Class 3 (250mW @ WCDMA/HSPA)
2G System	
Frequency Band	GSM Quad-Band 850/900/1800/1900 MHz
Coding Schemes	CS 1, CS 2, CS 3, CS 4
SMS	PDU mode
SMS Format	Sending : UCS2 Receiving : UCS2/7bits
Digital Input	
Input Channels	10 Channel (6 Counter 5~40Hz + 4 Channel Digital input powered by external power or Li-battery)
On Voltage Level	+3.5 VDC ~ +30 VDC
Off Voltage Level	+1 V Max.
Digital Output	
Output Channels	2
Output Type	Open Collector Output
Load Voltage	+30 VDC Max.
Load Current	100 mA Max.
General	
Power Requirement	2W; Unregulated +10VDC ~ +30VDC. Support 3.7V Li-battery backup
LEDs	3 indicator LEDs
Mechanical	
Casing	Plastic
Dimensions	91mm x 132mm x 52mm (long*width* high)
Installation	DIN-Rail
Environment	
Operation Temp.	-25 ~ 75°C
Storage Temp.	-40 ~ +80°C
Humidity	5~95% non-condensing

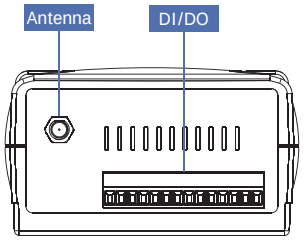
Applications

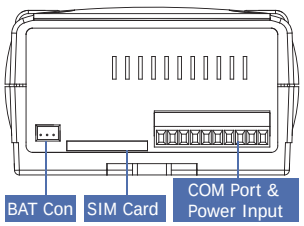
Internal I/O Structure

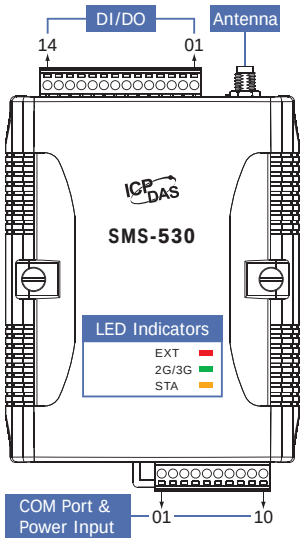




Appearance



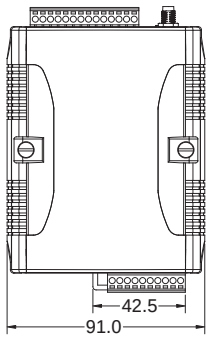




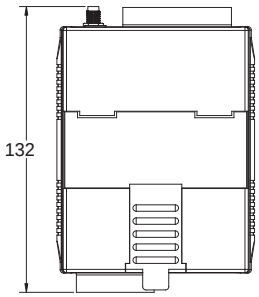
DI/DO		
Terminal No.		Pin Assignment
DI	01	DI0
	02	DI1
	03	DI2
	04	DI3
	05	DI4
	06	DI5
	07	DI6
	08	DI7
	09	DI8
	10	DI9
DO	11	DO0
	12	DO1
	13	DO.PWR
DI/DO	14	Ext.GND

COM Port & Power Input		
Terminal No.		Pin Assignment
COM3 RS-232	01	GND
	02	RxD3
	03	TxD3
COM2 RS-232	04	GND
	05	RxD2
	06	TxD2
N/A	07	N/A
Power Input: +10 VDC ~ +30 VDC	08	DC.+Vs
	09	DC.GND
Frame Ground	10	F.G.

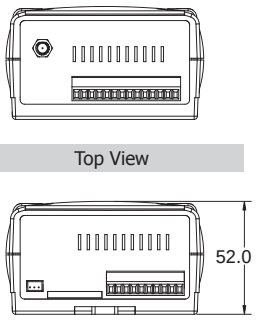
Dimensions (Units: mm)



Front View

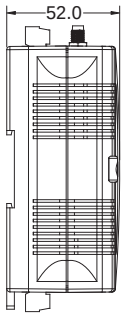


Rear View

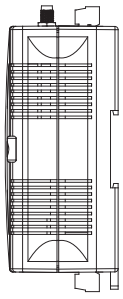


Top View

Bottom View



Left Side View



Right Side View

Ordering Information

SMS-530 CR	Intelligent 3G SMS Alarm Controller (RoHS)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna

GT-531

Intelligent Modbus SMS/GSM Gateway

Features

- Quad-band 2G Modem Operating of 850/900/1800/1900 MHz
- Support Modbus RTU slave protocol
- Support Max. 256 short messages and voice alarms
- Support Max. 70 Unicode Characters
- Escalation and reminder function
- Configurable SMS messages
- Up to 256 mobile phones can be alerted for each alarm point
- The phone numbers can be divided into groups

Introduction

GT-531 is an intelligent Modbus SMS/GSM Gateway for industry M2M applications. It is convenient for users to apply to M2M applications with the host like PC, PLC, HMI and PAC. It supports UNICODE format for users to send SMS messages to the specific mobile phones by Modbus protocol with various language. That can make the current system to M2M applications. Moreover, the GT-531 also supports the sound alarm application with the pre-defined voice files. It can be used to inform operator the urgent event immediately. For managing more GT-53x series remotely, ICP DAS provides SMS DBS software for users to apply in the system. Therefore, the GT-531 can be a powerful tool allowing you to use your mobile phone to monitor and control your business from any location.

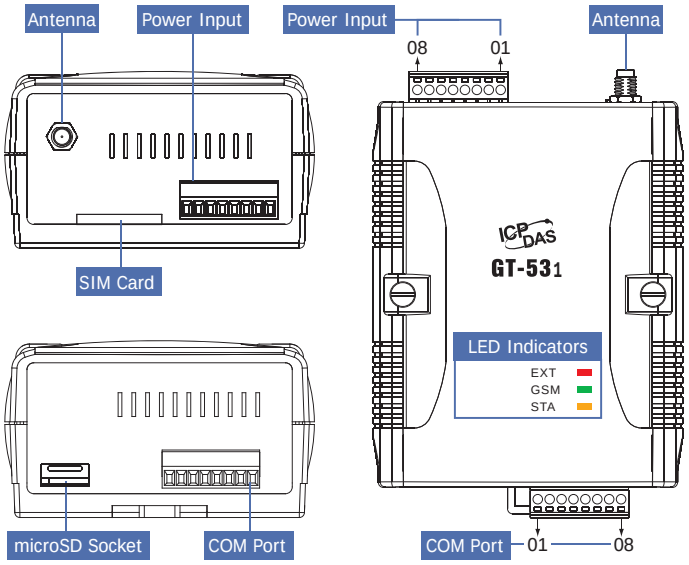
Specifications

Models	GT-531
System	
CPU	32 bit
SRAM	32 Kbytes
Flash Memory	512 Kbytes
RTC	Gives time (sec, min, hour) & date, leap year compensation
WDT	Yes
SD Interface	Yes (2 GB Max.)
2G System	
Frequency Band	Quad-band: 850/900/1800/1900 MHz
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 850/900 MHz); Class 1 (1 W @ 1800/1900 MHz)
Coding Schemes	CS 1, CS 2, CS 3, CS 4
SMS	UCS2
Serial Ports	
COM 1	RS-232: TxD, RxD, GND (use for device configuration and debug)
COM 2	RS-232: TxD, RxD, GND (use for communication with other devices)
COM 3	RS-485: D+, D- (use for communication with other devices)
Baud Rate	9600 bps ~ 115200 bps
Power	
Protection	Power reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10 VDC ~ +30 VDC
Mechanical	
Casing	Plastic
Flammability	UL 94V-0 materials
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-40 ~ +80°C
Humidity	5 ~ 90% RH, Non-condensing

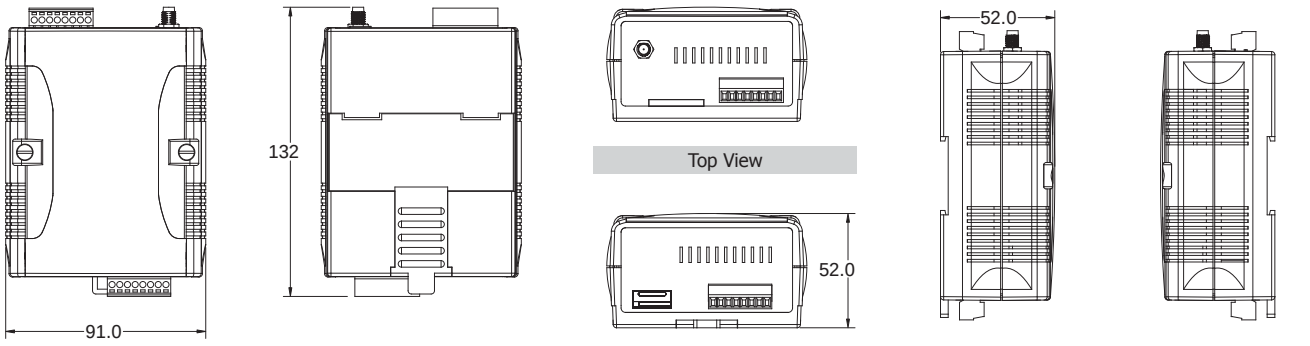
Applications

- Signal Alarm and SMS communication
- Home security
- Remote maintenance

Appearance



Dimensions (Units: mm)



Front View | Rear View | Bottom View | Left Side View | Right Side View

Ordering Information

GT-531 CR	Intelligent Modbus SMS/GSM Gateway (RoHS)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna

SMS-531

Intelligent 3G Modbus SMS/Voice Alarm Controller

Features

- Support Quad-band GSM 850/900/1800/1900 MHz frequency
- Support Quad-band WCDMA 850/900/1900/ 2100 MHz frequency
- Support Modbus RTU slave protocol
- Support max. 256 short messages and voice alarms
- Support max. 70 Unicode Characters
- Up to 256 mobile phones can be alerted for each alarm point
- These phone numbers can be divided into groups
- Configurable SMS messages
- The content of sending SMS message can be changed by Modbus protocol
- Support micro SD /SDHC card. (max. 32G bytes)

Introduction

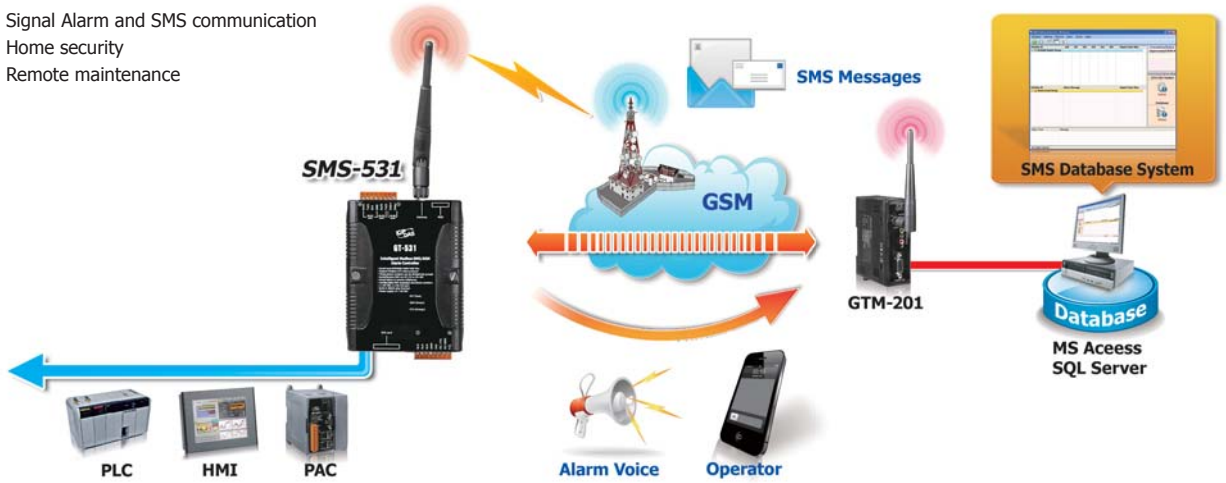
SMS-531 is an intelligent 3G Modbus Gateway for industry M2M applications. It is convenient for users to apply to M2M applications with the host like PC, PLC, HMI and PAC via Modbus RTU communication. It supports UNICODE format for users to send SMS messages to the specific mobile phones by Modbus RTU protocol with various language. That can make the current system to M2M applications. Moreover, the SMS-531 also supports the sound alarm application with the pre-defined voice files. It can be used to inform operator the urgent event immediately. For managing more SMS-5xx series remotely, ICP DAS provides SMS DBS software for users to apply in the system. Therefore, the SMS-531 can be a powerful tool allowing you to use your mobile phone to monitor and control your business from any location.

Specifications

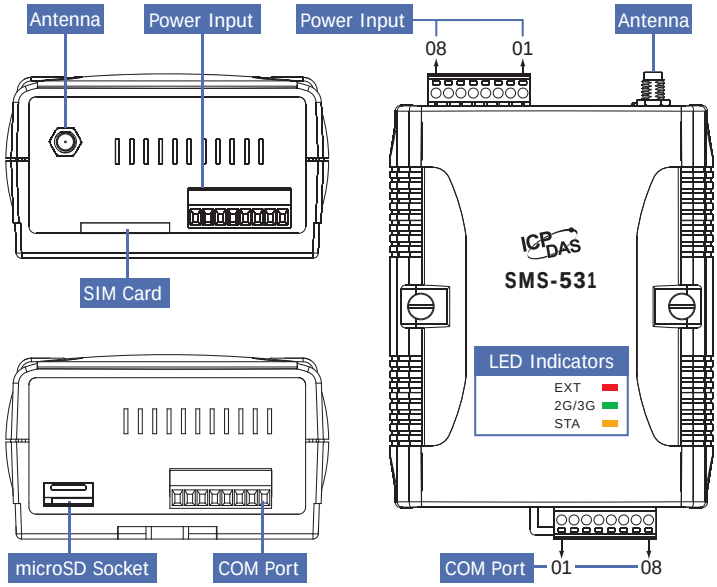
Models	SMS-531
System	
CPU	32 bit Microprocessor
WDT(watchdog)	Yes
Comm. Interface	
COM1	RS-232 : TXD, RXD, GND (Configuration and Debug)
COM2	RS-232 : TXD, RXD, GND (Communicating with the Host)
COM3	RS-485 : D+, D- (Communicating with the Host)
3G System	
Frequency Band	WCDMA Quad-Band 850/900/1900/2100 MHz
GSM System	
Frequency Band	Quad-Band 850/900/1800/1900 MHz
Coding Schemes	CS 1, CS 2, CS 3, CS 4
SMS	PDU mode
SMS Format	Sending : UCS2 Receiving : UCS2/7bits
Power	
Protection	Reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10 VDC ~ +30 VDC
Mechanical	
Casing	Plastic
Dimensions(W x H x D)	91 mm x 132 mm x 52 mm
Installation	DIN-Rail
Environment	
Operation Temp.	-25 ~ +75°C
Storage Temp.	-40 ~ +80°C
Humidity	5~95% non-condensing

Applications

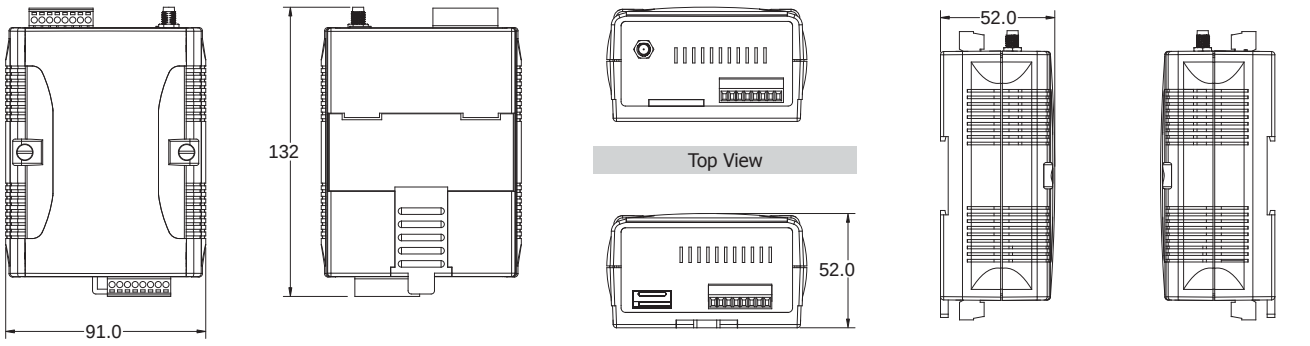
- Signal Alarm and SMS communication
- Home security
- Remote maintenance



Appearance



Dimensions (Units: mm)



Front View | Rear View | Top View | Bottom View | Left Side View | Right Side View

Ordering Information

SMS-531 CR	Intelligent 3G Modbus SMS/Voice Alarm Controller (RoHS)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna

GT-534

Intelligent SMS/GSM Alarm Controller

Features

- Quad-band 2G Modem Operating of 850/900/1800/1900 MHz
- Support SMS DBS software
- Identify ASCII or Unicode SMS Automatically
- Support Max. 140 ASCII and 70 Unicode Characters
- Built-in ASCII Command and Transparent Communication Modes
- Max. 10 Default Phone Numbers
- Voice Alarm and SMS triggered by DI trigger or exceed AI/ Counter preset limits
- DO control by dual-tone multi-frequency
- Support 3.7 V Li-ion Battery Backup

Introduction

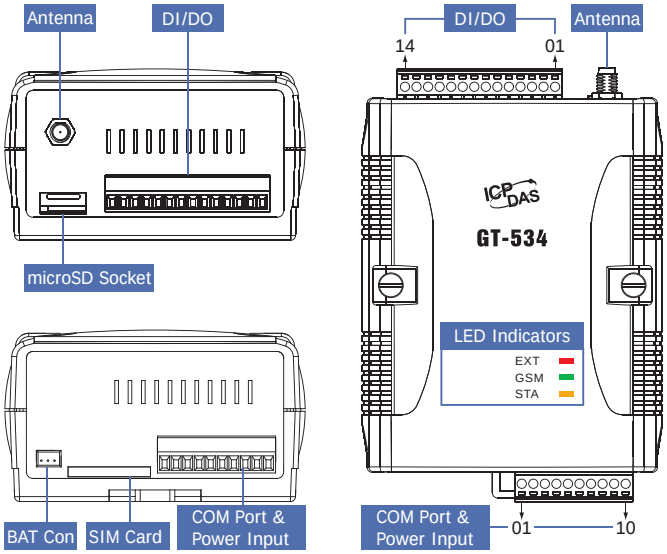
The GT-534 is an intelligent SMS/GSM controller for industry applications with the simple commands and SMS tunnel function, and power can be input by the external power or Li-Battery. It supports UNICODE or 7 bit format for users to implement sending SMS messages with various languages. The GT-534 also provides the sound alarm application with the pre-defined voice files. In addition, the DTMF function of the GT-534 is for the applications with the keypad of phones to control the local I/O. And, With the SMS DBS software of ICP DAS, users can manage the GT-534 in PC centrally.

Specifications

Models	GT-534
2G System	
Frequency Band	Quad-band: 850/900/1800/1900 MHz
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 850/900 MHz); Class 1 (1 W @ 1800/1900 MHz)
Coding Schemes	CS 1, CS 2, CS 3, CS 4
SMS	7 bits and UCS2
Serial Ports	
COM 1	RS-232: TxD, RxD, GND (use for device configuration)
COM 2	RS-485 (Transparency)
Baud Rate	9600 bps ~ 115200 bps
Digital Input	
Input Channels	6 (Wet Contact)
Input Type	Isolated
On Voltage Level	+3.5 VDC ~ 30 VDC
Off Voltage Level	+1 V Max.
Digital Output	
Output Channels	2
Output Type	Isolated
Load Current	100 mA/channel
Analog Input	
Input Channels	1
Resolution	12-bit
Input Range/Type	0 ~ 20 mA
Sample Rate	1 Hz Max.
Power	
Protection	Power reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10 VDC ~ +30 VDC
Mechanical	
Casing	Plastic
Flammability	UL 94V-0 materials
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-40 ~ +80°C
Humidity	5 ~ 90% RH, Non-condensing

Applications

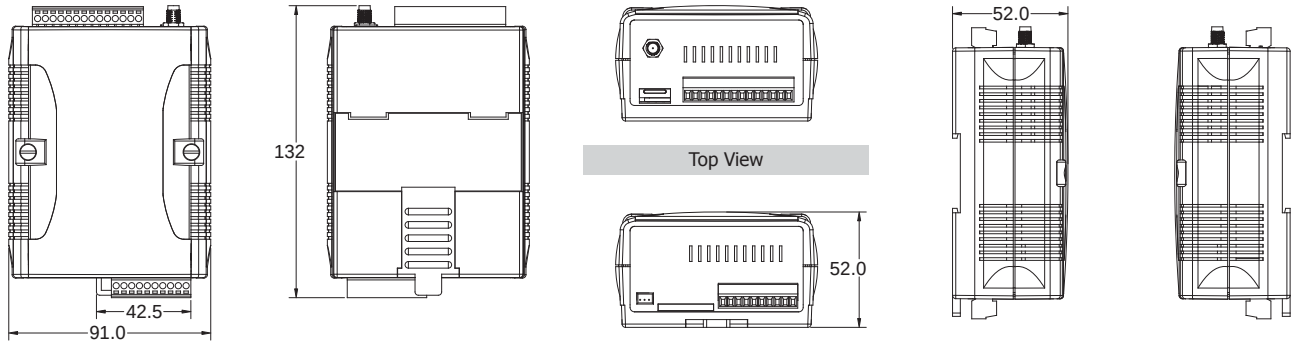
Appearance



DI/DO/AI		
Terminal No.		Pin Assignment
DI	01	DI0
	02	DI1
	03	DI2
	04	DI3
	05	DI4
	06	DI5
	07	DI.COM
DO	08	DO.PWR
	09	DO0
	10	DO1
	11	DO.GND
	12	N/A
AI	13	Ain+
	14	Ain -

COM Port & Power Input		
Terminal No.		Pin Assignment
COM1 RS-232	01	GND
	02	RxD1
	03	TxD1
COM2 RS-485	04	D+
	05	D -
	06	RTS+
	07	RTS -
Power Input: +10 VDC ~ +30 VDC	08	DC.+Vs
	09	DC.GND
Frame Ground	10	F.G.

Dimensions (Units: mm)



Front View | Rear View | Bottom View | Left Side View | Right Side View

Ordering Information

GT-534 CR	Intelligent SMS/GSM Alarm Controller (RoHS, include: 2G micro SD card)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna
BT600	3.7 V 600 mAh Battery
BT1200	3.7 V 1200 mAh Battery

GT-540/GT-540P

Intelligent GPRS Remote Terminal Unit with GPS

Features

- Quad-band 2G Modem Operating of 850/900/1800/1900 MHz
- Automatic/continuous GPRS Link Management
- Support Modbus RTU protocol with Max. 3 Modbus RTU devices.
- Support M2M OPC Server for SCADA system
- Easy-to-use API tool for users to develop their applications by various program development tools
- Can be the GPRS I/O device
- Support data transferring by E-mail
- DO control by dual-tone multi-frequency
- Support 3.7 V Li-ion Battery Backup

Introduction

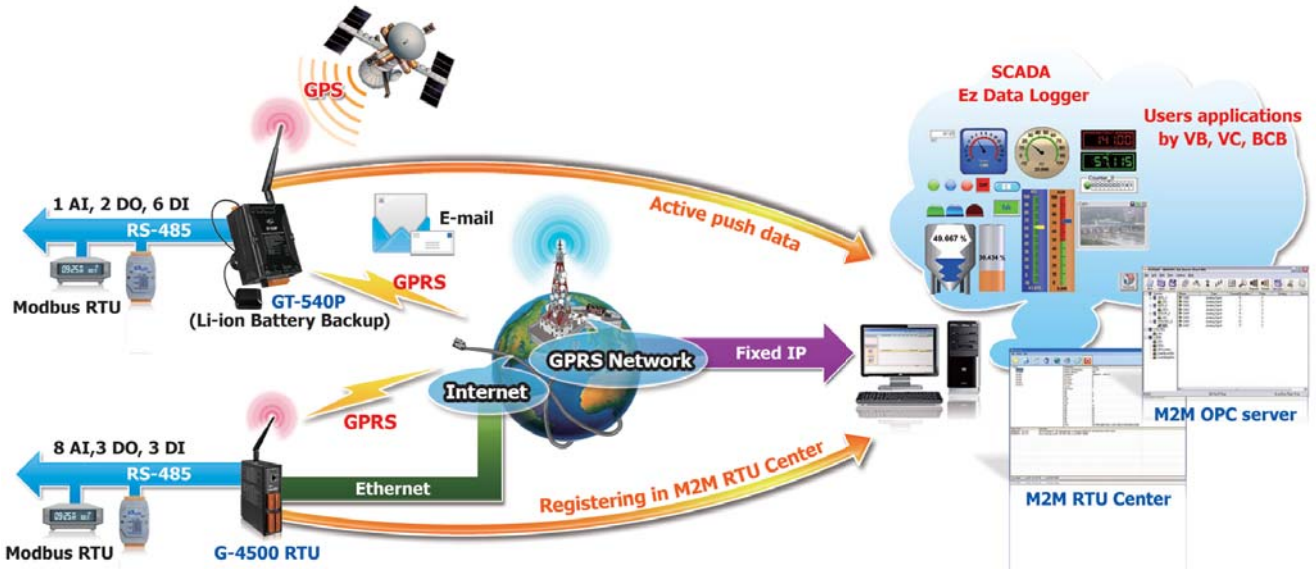
The GT-540/GT-540P is an intelligent Active GPRS Remote Terminal Unit with GPS (GT-540P only). It features GPRS/GSM module, 6 digital inputs, 2 digital outputs, 1 analog input, 2 RS-232, 1 RS-485 and SD interface. It can be used in M2M application fields to transfer the local I/O or Modbus device's data by GPRS by the defined period or DI/AI triggers. The local I/O or GPS data can also be stored in the SD card to become a remote data logger. For another communication path, the unit offers the e-mail mode to transfer the data by e-mail via GPRS for users to choose. The simple I/O linkage function of the module can reach the real time control in local field. It also supports Li-ion battery as another power source when the main power is failed temporarily. Therefore, the GT-540/GT-540P is an ideal solution for environmental monitoring and remote device management for M2M applications.

Specifications

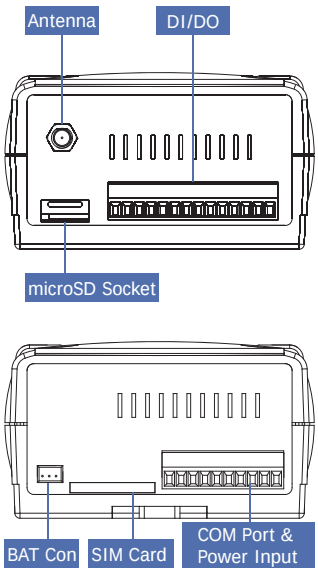
Models	GT-540	GT-540P
System		
CPU	32 bit	
SRAM	64 Kbytes	
Flash Memory	512 Kbytes	
RTC	Gives time (sec, min, hour) & date, leap year compensation	
WDT	Yes	
SD Interface	Yes (2 GB Max.)	
2G System		
Frequency Band	Quad-band: 850/900/1800/1900 MHz	
GPRS Multi-slot	Class 10/8	
GPRS Mobile Station	Class B	
GPRS Class 10	Up to 85.6 kbps download speed	
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 850/900 MHz); Class 1 (1 W @ 1800/1900 MHz)	
Coding Schemes	CS 1, CS 2, CS 3, CS 4	
Serial Ports		
COM 1	RS-232: TxD, RxD, GND (use for device configuration)	
COM 2	RS-232, RS-485 (Transparency)	
GPS System		
Support Channels	-	32
Protocol Support	-	NMEA 0183
Digital Input		
Input Channels	6 (Wet Contact)	
Input Type	Sink or Source, Isolated channel with common power or ground	
On Voltage Level	+3.5 VDC ~ 30 VDC	
Off Voltage Level	+1 V Max.	
Counters	6 (16 bit, 5 ~ 40 Hz), Min. Pulse Width: 25 ms	
Digital Output		
Output Channels	2	
Output Type	Open-Collector (NPN) (100 mA @ 24 VDC)	
Load Voltage / Current	+24 V / 100 mA Max.	

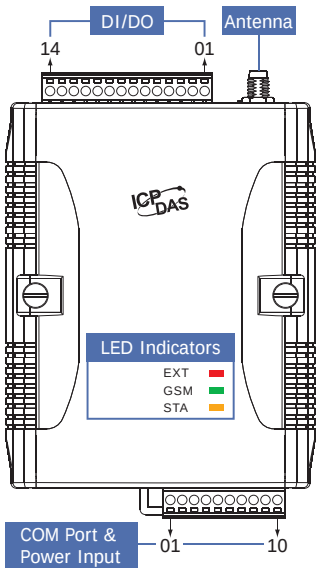
Models	GT-540	GT-540P
Analog Input		
Input Channels	1	
Resolution	12-bit	
Input Range/Type	0 ~ 20 mA	
Power		
Protection	Power reverse polarity protection	
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot	
Required Supply Voltage	+10 VDC ~ +30 VDC	
Mechanical		
Casing	Plastic	
Flammability	UL 94V-0 materials	
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm	
Installation	DIN-Rail	
Environment		
Operating Temperature	-25 ~ +75°C	
Storage Temperature	-40 ~ +80°C	
Humidity	5 ~ 90% RH, Non-condensing	

Applications



Appearance

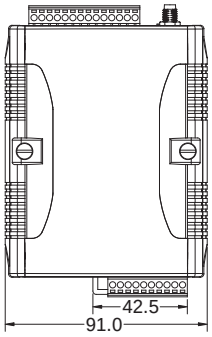




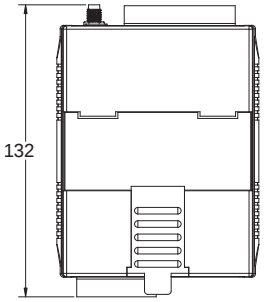
DI/DO/AI		
Terminal No.		Pin Assignment
DI	01	DI0
	02	DI1
	03	DI2
	04	DI3
	05	DI4
	06	DI5
	07	DI.COM
DO	08	DO.PWR
	09	DO0
	10	DO1
	11	DO.GND
	12	N/A
AI	13	Ain+
	14	Ain -

COM Port & Power Input		
Terminal No.		Pin Assignment
COM1 RS-232	01	GND
	02	RxD1
	03	TxD1
COM2 RS-485	04	D+
	05	D -
	06	RTS+
	07	RTS -
Power Input: +10 VDC ~ +30 VDC	08	DC.+Vs
	09	DC.GND
Frame Ground	10	F.G.

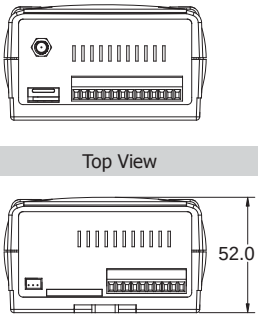
Dimensions (Units: mm)



Front View

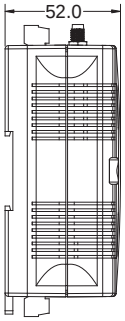


Rear View

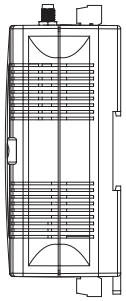


Top View

Bottom View

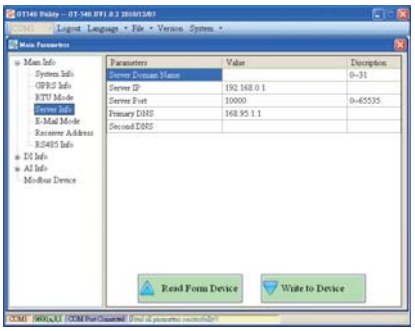


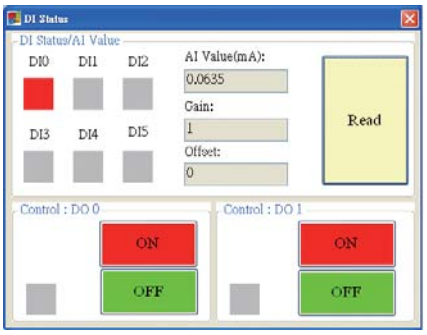
Left Side View



Right Side View

Utility





Ordering Information

GT-540 CR	Intelligent GPRS Remote Terminal Unit (RoHS, include: 2G micro SD card)
GT-540P CR	Intelligent GPRS Remote Terminal Unit with GPS (RoHS, include: 2G micro SD card)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna
ANT-115-03	5 m GPS Active External Antenna
BT600	3.7 V 600 mAh Battery
BT1200	3.7 V 1200 mAh Battery

GT-541

Intelligent Multiport Serial to GPRS Gateway

Features

- Quad-band 2G Modem Operating of 850/900/1800/1900 MHz
- Virtual COM Extend Real COM Ports via GPRS
- Remote Configuration by Virtual COM
- 1 x RS-232 port and 1 x RS-485 port for Virtual COM. 1 x Utility port for Configuration

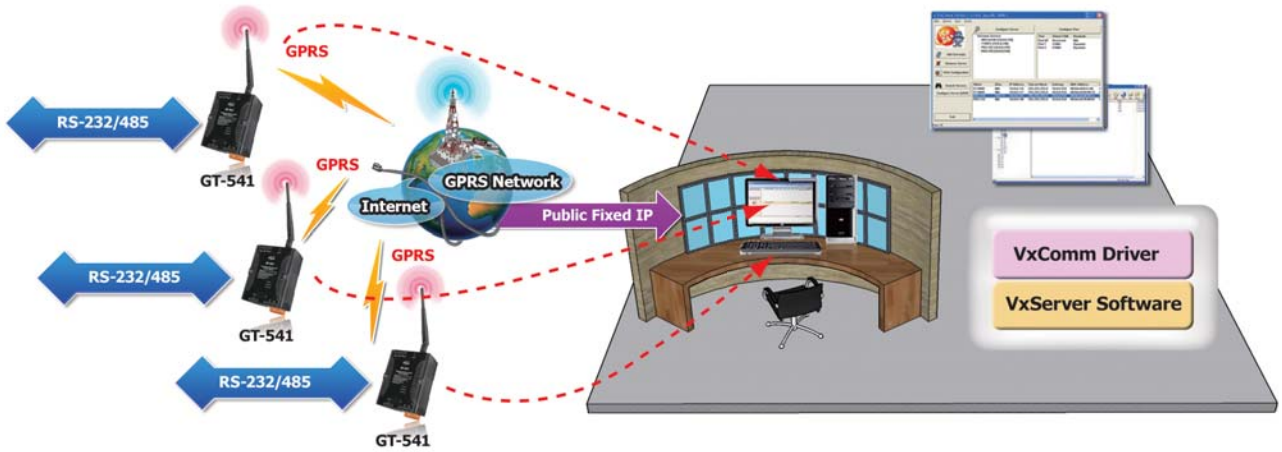
Introduction

GT-541 is an intelligent multiport serial to GPRS gateway for industry M2M applications. It is designed for linking RS-232/485 devices to a GPRS network. The user-friendly VxComm Driver/Utility and VxServer allow users to easily turn the built-in COM ports of the GT-541 into standard COM ports on a PC. By virtue of its protocol independence, a small-core OS and high flexibility, the GT-541 is able to meet the demands of every network-enabled application. M2M solution will improve the service quality and reduce operating costs. Many application areas can be improved by using GT-541.

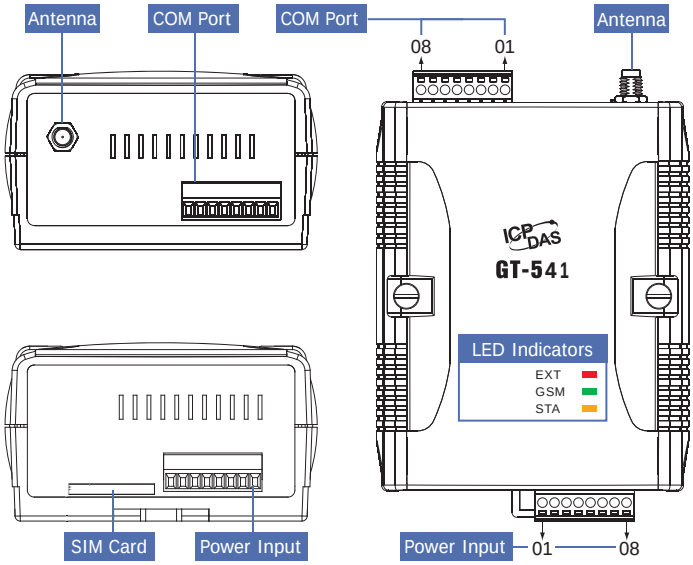
Specifications

Models	GT-541
System	
CPU	32 bit
SRAM	32 Kbytes
Flash Memory	512 Kbytes
WDT	Yes
2G System	
Frequency Band	Quad-band: 850/900/1800/1900 MHz
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 850/900 MHz); Class 1 (1 W @ 1800/1900 MHz)
Coding Schemes	CS 1, CS 2, CS 3, CS 4
Serial Ports	
Unility Port	RS-232: TxD, RxD, GND (use for device configuration and debug)
COM 1	RS-232: TxD, RxD, GND (use for communication with other devices)
COM 2	RS-485: D+, D- (use for communication with other devices)
Baud Rate	2400, 4800, 9600, 19200, 38400, 57600 and 115200 bps
Power	
Protection	Power reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10 VDC ~ +30 VDC
Mechanical	
Casing	Plastic
Flammability	UL 94V-0 materials
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-40 ~ +80°C
Humidity	5 ~ 90% RH, Non-condensing

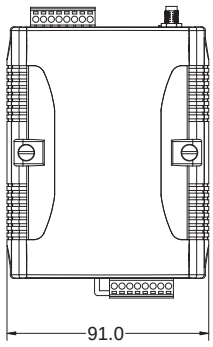
Applications



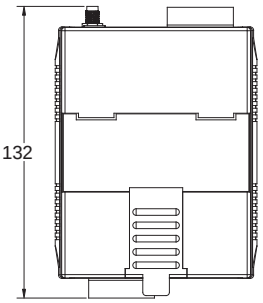
Appearance



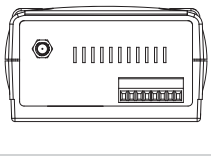
Dimensions (Units: mm)



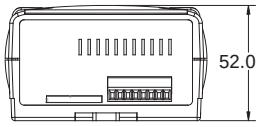
Front View



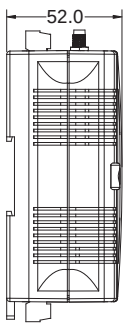
Rear View



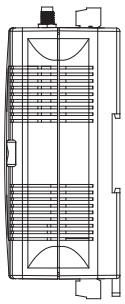
Top View



Bottom View



Left Side View



Right Side View

Ordering Information

GT-541	Intelligent Multiport Serial to GPRS Gateway

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna

RMV-531

Intelligent Multiport Serial to 2G/3G Gateway

Features

- Support WCDMA 850/900/1900/2100 MHz frequency
- Support GPRS 850/900/1800/1900 MHz frequency
- Virtual COM Extend Real COM Ports via GPRS/WCDMA
- Remote Configuration by Virtual COM
- 1 x RS-232 port and 1 x RS-485 port for Virtual COM. 1 x Utility port for Configuration

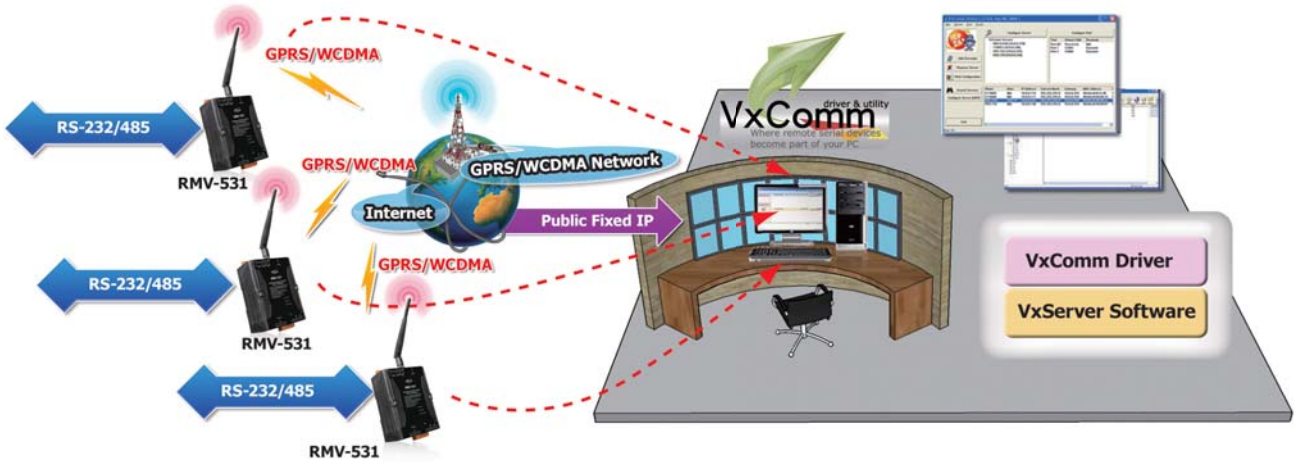
Introduction

RMV-531 is an intelligent multiport serial to 2G/3G gateway for industry M2M applications. It is designed for linking RS-232/485 devices to a GPRS/WCDMA network. The user-friendly Axiom Driver/Utility and VxServer allow users to easily turn the built-in COM ports of the RMV-531 into standard COM ports on a PC. By virtue of its protocol independence, a small-core OS and high flexibility, the RMV-531 is able to meet the demands of every network-enabled application. In addition, the RMV-531 also supports GPRS/WCDMA network automatic re-connection function when the RMV-531 is broke the GPRS/WCDMA network by something happened. M2M solution will improve the service quality and reduce operating costs. Many application areas can be improved by using RMV-531.

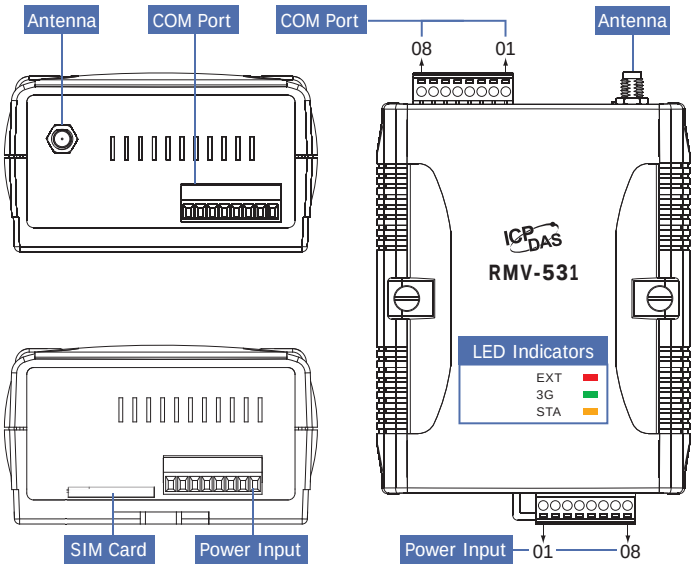
Specifications

Models	RMV-531
System	
CPU	ARM Microprocessor
SRAM	32 Kbytes
Flash Memory	512 Kbytes
WDT(watchdog)	Yes
2G system	
Frequency Band	850/900/1800/1900 MHz
Power class	Class 4 (2 W @ 850/900 MHz) Class 1 (1 W @ 1800/1900 MHz)
3G system	
Frequency Band	850/900/1900/2100 MHz
Power class	Class 3 (250mW @ WCDMA/HSPA)
Serial ports	
Utility port	RS-232: TxD, RxD, GND (use for device configuration and debug)
COM1	RS-232: TxD, RxD, GND (use for communication with other devices)
COM2	RS-485: D+, D- (use for communication with other devices)
Baud Rate	2400, 4800, 9600, 19200, 38400, 57600 and 115200 bps
Power	
Protection	Reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10 VDC ~ +30 VDC
Mechanical	
Casing	Plastic
Flammability	UL 94V-0 materials
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm
Installation	DIN-Rail
Environmental	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +80°C
Ambient Relative Humidity	5 ~ 95% RH, non-condensing

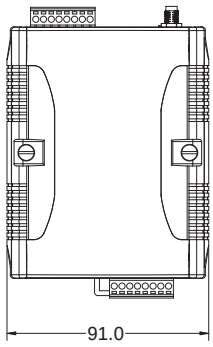
Applications



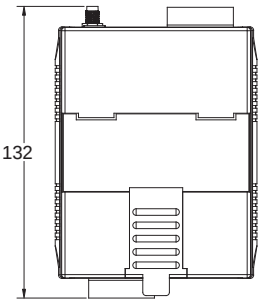
Appearance



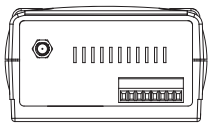
Dimensions (Units: mm)



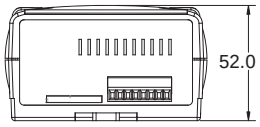
Front View



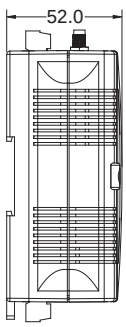
Rear View



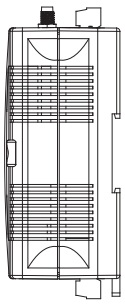
Top View



Bottom View



Left Side View



Right Side View

Ordering Information

RMV-531	Intelligent Multiport Serial to 2G/3G Gateway

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna

GRP-520

Ethernet / Serial port to 3G Gateway

Features

- Support WCDMA 2100/1900/850 MHz
- Support GSM 850 / 900 / 1800 / 1900 MHz
- 10/100 Base-TX compatible ethernet eontroller
- COM port: COM1 (3-wire RS232), COM2 (RS-485), COM3 (3-wire RS232)
- Support Micro SD card
- GPS : 32 channels with All-In-View tracking (option)
- Provide 3G Router function
- Support port mapping function
- Provide Serial Port to 3G Gateway

Introduction

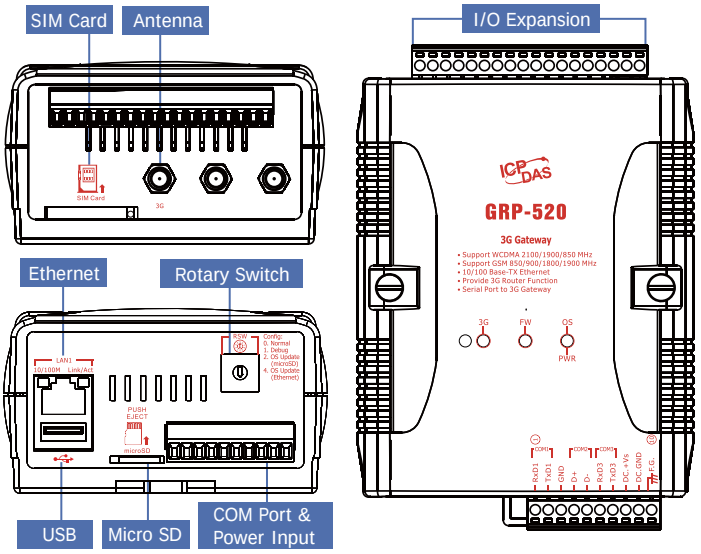
The GRP-520 provided by ICP DAS is a 3G gateway for Ethernet or serial port. With optional GPS model, the GRP-520 can also be a GPS tracking system. It can be used in M2M application fields to transfer the remote I/O, Modbus data or video of the camera via 3G/2G. Within the high performance CPU, the GRP-520 series can handle a large of data and are suit for the hard industrial environment. The GRP-520 series have 3G module, Ethernet interface, and optional GPS module.

Specifications

Models	GRP-520
Software	
3G Gateway	Ethernet and Serial port (1x RS-232, 1x RS-485) to 3G
Embedded service	Web Server, 3G router
System	
CPU	ARM CPU (312MHz)
SRAM	64 MB
Flash	64 MB
EEPROM	16 KB (Data Retention: 40 years; 1,000,000 erase/write cycles)
Expansion Flash Memory	SD Card (Max. 32GB SDHC)
Expansion Disk	USB disk (format : FAT32)
RTC(Real Time Clock)	Provide seconds, minutes, hours, day of week/month, month and year
64-bit Hardware Serial Number	Yes
Watchdog Timer	Yes
LED Indicator	3 LEDs (SYS/PWR, F.W., 3G)
Rotary Switch	Yes (0~9)
GSM System	
Frequency Band	GSM : 850/900/1800/1900 MHz
GPRS connectivity	GPRS class 12/10; GPRS station class B
DATA GPRS	Downlink transfer: Max. 85.6 kbps; Uplink transfer: Max 42.8kbps
3G System	
Frequency Band	WCDMA 2100/1900/850 MHz
Data Transmission	WCDMA / HSDPA / HSUPA Downlink transfer: Max. 7.2Mbps; Uplink transfer: Max 5.76Mbps
GPS System (option)	
Support Channels	32
Protocol Support	NMEA 0183 version 3.01
Comm. Interface	
Ethernet	RJ-45, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)
COM1	RS-232 (RxD, TxD and GND); Non-isolated(Console)
COM2	RS-485 (D2+, D2-); 3000 VDC isolated
COM3	RS-232 (RxD, TxD and GND); Non-isolated
Mechanism	
Casing	Plastic
Dimensions(W x L x H)	91 mm x 132 mm x 52 mm (W x L x H)
Installation	DIN-Rail
Power	
Protection	Power reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10 VDC ~ +30 VDC
Power Consumption	4.8W (200 mA @ 24 VDC)
Environment	
Operation Temp.	-25 ~ +75°C
Storage Temp.	-30 ~ +80°C
Humidity	5~95% non-condensing

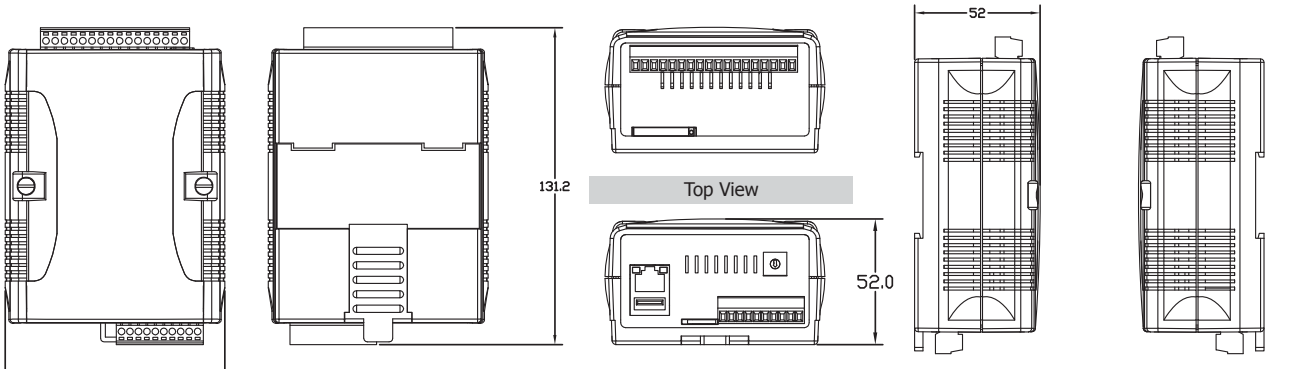
Applications

Appearance



COM Port & Power Input		
Terminal No.		Pin Assignment
COM1	01	RxD1
	02	TxD1
	03	GND
COM2	04	D+
	05	D-
COM3	06	RxD3
	07	TxD3
Power	08	DC.+VS
	09	DC.GND
	10	F.G.

Dimensions (Units: mm)



Front View | Rear View | Top View | Bottom View | Left Side View | Right Side View

Ordering Information

GRP-520	Ethernet and Serial Port to 3G Gateway

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna

4.4. Mini PAC with 2G/3G Modem

G-4500(D)-2G
G-4500P(D)-2G

Quad-band 2G GSM/GPRS M2M Mini-PAC

Features

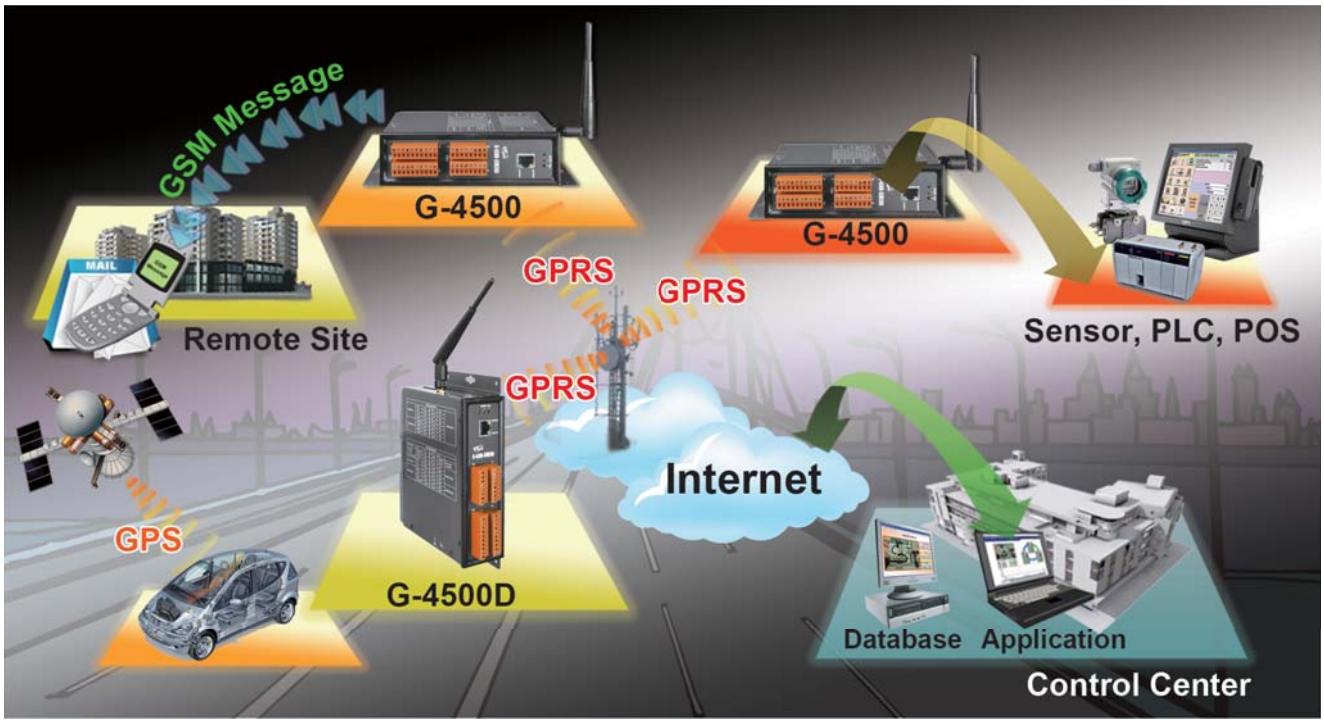
- Embedded MiniOS7, anti-virus
- Support a variety of TCP/IP features, including TCP, UDP, IP, ICMP, ARP
- 10/100Base-TX Ethernet Controller
- COM port: COM1 (5-wire RS-232), COM2 (RS-485), COM3 (3-wire RS-232)
- Built-in self-tuner ASIC controller on RS-485 port
- I/O: 3 channel DI, 3 channel DO, 8 channel AI
- Support SD storage card
- GSM/GPRS: Quad-band 850/900/1800/1900 MHz
- Support TCP server, TCP client, UDP client connection from GPRS
- GPS: 32 channels with All-In-View tracking (option)
- 128 x 64 dots LCM display (only for G-4500D-2G and G-4500PD-2G)
- Support Virtual COM technology
- Support Modbus Protocol
- Free easy-to-use software development toolkits

Introduction

The Quad-band G-4500 series provided by ICP DAS are M2M (Machine to Machine) mini programmable controllers which are widely recommended in the market. They are widely applied in various applications like hydrographic monitoring, intelligent power, flow meter report system and GPS car-tracking system. The G-4500-2G series also features GSM/GPRS module, Ethernet interface, optional GPS module, 3 digital inputs, 3 digital outputs, 8 analog inputs, 2 RS-232 and 1 RS-485 port which can be used in various application field to transfer data by GPRS, SMS, Ethernet or serial bus. By using G-4500 series, a machine can be installed virtually anywhere but still be connected to a support centre. M2M solution will improve the service quality and reduce operating costs. Many application areas can be improved by using G-4500-2G.

Applications

- Remote Control/Monitoring Systems
- Car Monitor Systems
- GIS Systems
- Redundant Communication Systems

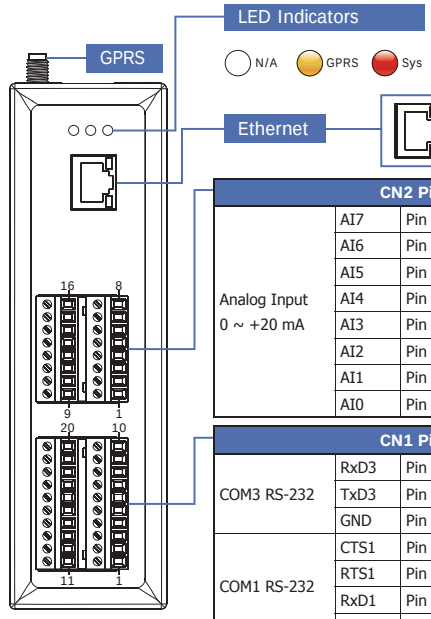


Specifications

Models		G-4500-2G	G-4500D-2G	G-4500P-2G	G-4500PD-2G
System					
CPU		80 MHz			
SRAM		512 Kbytes			
Flash Memory		512 Kbytes			
NVRAM		31 bytes, battery backup, data valid up to 10 years			
EEPROM		16 KB, data retention >40 years. 1,000,000 erase/write cycles			
2G System					
Frequency Band		Quad-band GSM/GPRS: 850/900/1800/1900 MHz			
GPRS Multi-slot		Class 10/8			
GPRS Mobile Station		Class B			
GPRS Class 10		Up to 85.6 kbps download speed			
CSD		Up to 14.4 kbps			
Compliant with GSM Phase 2/2+		Class 4 (2 W @ 850/900 MHz); Class 1 (1 W @ 1800/1900 MHz)			
Coding Schemes		CS 1, CS 2, CS 3, CS 4			
SMS		MT, MO, CB, Text and PDU mode			
Serial Port					
COM1		RS-232 (RxD, TxD, CTS, RTS, GND)			
COM2		RS-485 (D+, D-)			
COM3		RS-232 (RxD, TxD, GND)			
Ethernet		10/100 Base-TX Ethernet controller			
LCD Interface					
General	Effective display area	-	80.61 mm x 14.37 mm (W x H)	-	80.61 mm x 14.37 mm (W x H)
	Module Dimension	-	93 mm x 70 mm x 1.6 mm (W x H x T)	-	93 mm x 70 mm x 1.6 mm (W x H x T)
Life Time		-	Expected life is more than 100,000 hours under normal operation	-	Expected life is more than 100,000 hours under normal operation
GPS Interface					
Support Channels		-		32	
Acquisition Time		-		Hot Start (Open Sky) = 2s (typical) Cold Start (Open Sky) = 36s (typical)	
Protocol		-		MNEA 0183 version 3.01	
Digital Input					
Input Channels		3			
Input Type		Source (Dry Type), Common Ground			
Protocol		On: +1 V Max. Off: +3.5 ~ +30 V			
Digital Output					
Output Channels		3			
Output Type		Open Collector (Sink/NPN)			
Load Voltage		+30 VDC Max.			
Load Current		100 mA Max.			
Analog Input					
Input Channel		8 (Single-ended)			
Resolution		12-bit			
Input Range/Type		0 ~ 20 mA			
Sample Rate		1 KHz Max. (read one channel)			
Power					
Protection		Power reverse polarity protection			
Frame Ground Protection		ESD, Surge, EFT, Hi-Pot			
Required Supply Voltage		15W; Unregulated +10 VDC ~ +30 VDC			
Power Consumption		Idle: 75 mA @ 24 VDC; Data Link: 150 ~ 400 mA (peak) @ 24 VDC			
Mechanical					
Casing		Metal			
Dimensions (W x L x H)		47mm x 142 mm x 168mm			
Installation		DIN-Rail and Wall Mounting			
Environment					
Operating Temperature		-20~ +70°C	-15 ~ +55°C	-20 ~ +70°C	-15 ~ +55°C
Storage Temperature		-40 ~ +80°C	-20 ~ +70°C	-40 ~ +80°C	-20 ~ +70°C
Humidity		5 ~ 90% RH, Non-condensing			

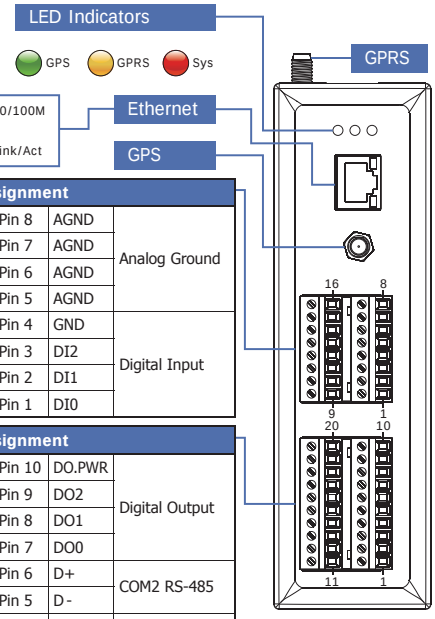
Appearance

G-4500(D)-2G



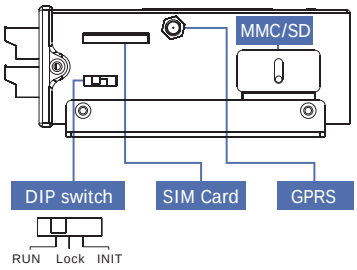
Front View

G-4500P(D)-2G



Front View

G-4500(D)-2G/G-4500P(D)-2G



Top View

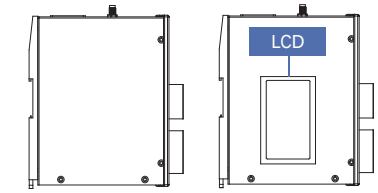
CN2 Pin Assignment

Analog Input 0 ~ +20 mA	AI7	Pin 16	Pin 8	AGND	Analog Ground
	AI6	Pin 15	Pin 7	AGND	
	AI5	Pin 14	Pin 6	AGND	
	AI4	Pin 13	Pin 5	AGND	
	AI3	Pin 12	Pin 4	GND	Digital Input
	AI2	Pin 11	Pin 3	DI2	
	AI1	Pin 10	Pin 2	DI1	
	AI0	Pin 9	Pin 1	DI0	

CN1 Pin Assignment

COM3 RS-232	RxD3	Pin 20	Pin 10	DO.PWR	Digital Output
	TxD3	Pin 19	Pin 9	DO2	
	GND	Pin 18	Pin 8	DO1	
COM1 RS-232	CTS1	Pin 17	Pin 7	DO0	
	RTS1	Pin 16	Pin 6	D+	COM2 RS-485
	RxD1	Pin 15	Pin 5	D-	
	TxD1	Pin 14	Pin 4	GND	Ground For COM1
Power Input: +10 ~ +30 VDC	DC.+VS	Pin 13	Pin 3	DC.+VS	Power Input: +10 ~ +30 VDC
	DC.GND	Pin 12	Pin 2	DC.GND	
	N/A	Pin 11	Pin 1	F.G.	Frame Ground

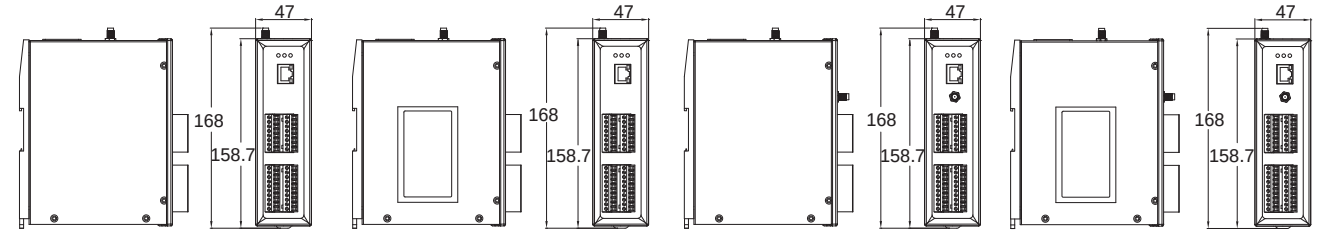
G-4500(P)-2G GD-4500(P)-2G / G-4500(P)D-2G GD-4500(P)D-2G



Right Side View

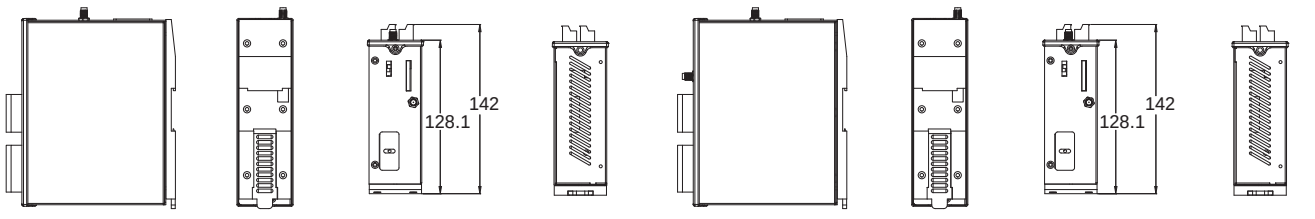
Dimensions (Units: mm)

G-4500-2G / G-4500D-2G / G-4500P-2G / G-4500PD-2G



Right Side View | Front View | Right Side View | Front View | Right Side View | Front View | Right Side View | Front View

G-4500(D)-2G / G-4500P(D)-2G



Left Side View | Rear View | Top View | Bottom View | Left Side View | Rear View | Top View | Bottom View

Ordering Information

G-4500-2G CR	Quad-band M2M Mini-Programmable Automation Controller (RoHS)
G-4500D-2G CR	Quad-band M2M Mini-Programmable Automation Controller with LCD display (RoHS)
G-4500P-2G CR	Quad-band M2M Mini-Programmable Automation Controller with GPS Function (RoHS)
G-4500PD-2G CR	Quad-band M2M Mini-Programmable Automation Controller with LCD display and GPS Function (RoHS)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna
ANT-115-03	5 m GPS Active External Antenna

NEW

G-4500(D)-3GWA
G-4500P(D)-3GWA

Tri-band 3G WCDMA M2M Mini-PAC

Features

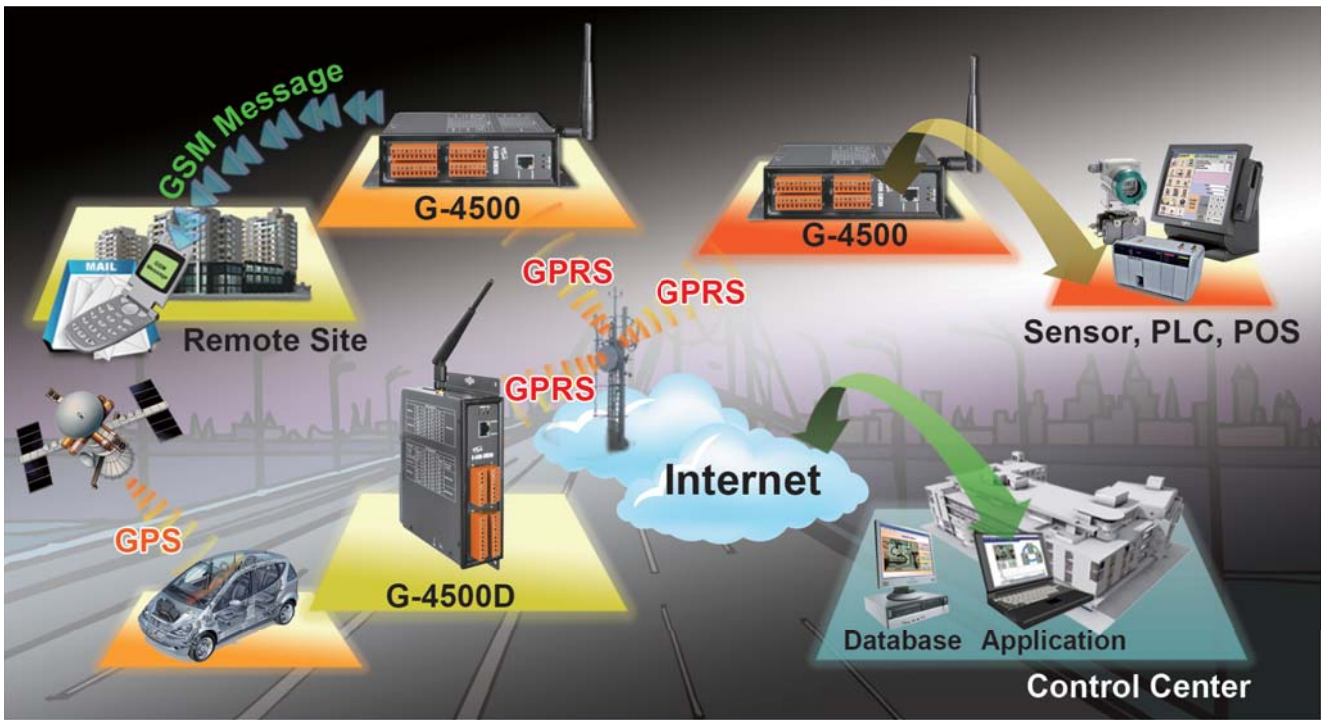
- Embedded MiniOS7, anti-virus
- Support a variety of TCP/IP features, including TCP, UDP, IP, ICMP, ARP
- 10/100Base-TX Ethernet Controller
- COM port: COM1 (5-wire RS-232), COM2 (RS-485), COM3 (3-wire RS-232)
- Support SD storage card
- Tri-band 850/1900/2100 MHz WCDMA supporting UMTS/HSDPA/HSUPA
- Quad-band 850/900/1800/1900 MHz GSM supporting GPRS
- Support TCP server, TCP client, UDP client connection stack
- GPS : 32 channels with All-In-View tracking (option)
- 128 x 64 dots LCM display (only for G-4500D-3GWA and G-4500PD-3GWA)
- Support Virtual COM technology
- Support Modbus Protocol
- Free easy-to-use software development toolkits

Introduction

The G-4500 series provided by ICP DAS are M2M (Machine to Machine) mini programmable controllers with a cellular transceiver can monitor industrial equipment that sends live data to the monitoring system, providing real-time status. With optional GPS model, the G-4500 can also be a GPS tracking system. It can be used in vehicle management system or maritime system. Within the high performance CPU, the G-4500 series can handle a large of data and suit for the harsh industrial environment. The G-4500-3GWA series features 3G/GSM module, Ethernet interface, optional GPS module, 3 digital inputs, 3 digital outputs, 8 analog inputs, 2 RS-232 and 1 RS-485 port.

Applications

- Remote Control/Monitoring Systems
- Car Monitor Systems
- GIS Systems
- Redundant Communication Systems

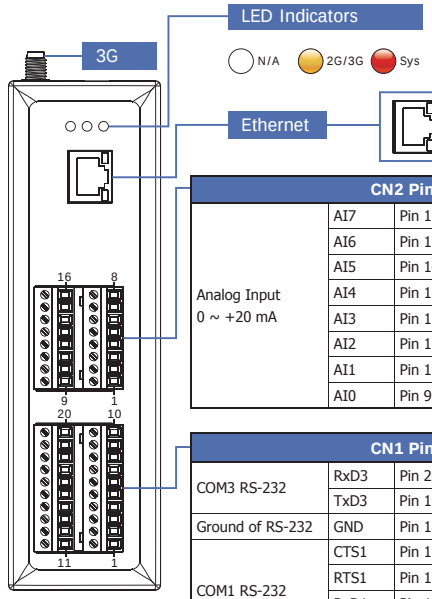


Specifications

Models	G-4500-3GWA	G-4500D-3GWA	G-4500P-3GWA	G-4500PD-3GWA
System				
CPU	80 MHz			
SRAM	512 Kbytes			
Flash Memory	512 Kbytes			
NVRAM	31 bytes, battery backup, data valid up to 10 years			
EEPROM	16 KB, data retention >40 years. 1,000,000 erase/write cycles			
2G/3G System				
Frequency Band	3G UMTS/HSDPA/HSUPA: Tri-band 850/1900/2100 MHz, 2G GSM/GPRS: Quad-band 850/900/1800/1900 MHz			
3G Data Transmission	Downlink: Max. 7.2 Mbps; Uplink: Max. 5.76 Mbps			
2G Data Transmission	Downlink: Max. 85.6 kbps; Uplink: Max. 42.8 kbps			
2G Connectivity	GPRS class 12/10; GPRS station class B			
Serial Port				
COM1	RS-232 (CTS, TRS, RxD, TxD, GND)			
COM2	RS-485 (D+, D-)			
COM3	RS-232 (RxD, TxD, GND)			
Ethernet	10/100 Base-TX Ethernet controller			
LCD Interface				
General – Effective display area	-	80.61 mm x 14.37 mm (W x H)	-	80.61 mm x 14.37 mm (W x H)
General – Module Dimension	-	93 mm x 70 mm x 1.6 mm (W x H x T)	-	93 mm x 70 mm x 1.6 mm (W x H x T)
Life Time	-	Expected life is more than 100,000 hours under normal operation	--	Expected life is more than 100,000 hours under normal operation
GPS Interface				
Support Channels	-		32	
Acquisition Time	-		Hot Start (Open Sky) = 2s (typical) Cold Start (Open Sky) = 36s (typical)	
Protocol	-		NMEA 0183 version 3.01	
Digital Input				
Input Channels	3			
Input Type	Source (Dry Type), Common Ground			
On Voltage Level	+1 V Max.			
Off Voltage Level	+3.5 VDC ~ +30 VDC			
Digital Output				
Output Channels	3			
Output Type	Open Collector (Sink/NPN)			
Load Voltage	+30 VDC Max.			
Load Current	100 mA Max.			
Analog Input				
Input Channel	8 (Single-ended)			
Resolution	12 bit			
Input Range/Type	0 ~ 20 mA			
Sample Rate	1 KHz Max. (read one channel)			
Power				
Protection	Power reverse polarity protection			
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot			
Required Supply Voltage	15 W; Unregulated +10 VDC ~ +30 VDC			
Power Consumption	Idle: 75 mA @ 24 VDC; Data Link: 150 ~ 400 mA (peak) @ 24 VDC			
Mechanical				
Casing	Metal			
Dimensions (W x L x H)	47mm x 142 mm x 168mm			
Installation	DIN-Rail and Wall mounting			
Environment				
Operating Temperature	-20~ +70°C	-15 ~ +55°C	-20 ~ +70°C	-15 ~ +55°C
Storage Temperature	-40 ~ +80°C	-20 ~ +70°C	-40 ~ +80°C	-20 ~ +70°C
Humidity	5 ~ 90% RH, Non-condensing			

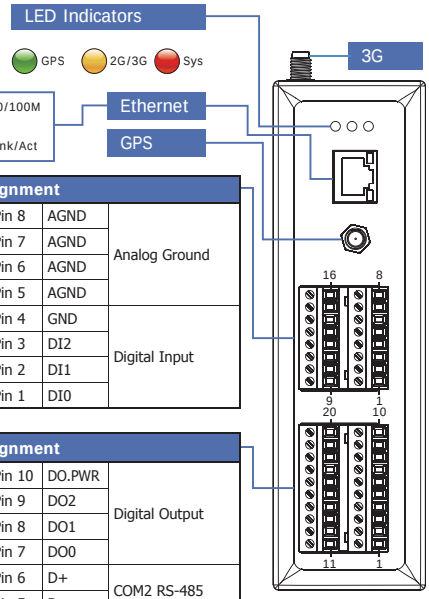
Applications

G-4500-3GWA/G-4500D-3GWA



Front View

G-4500P-3GWA/G-4500PD-3GWA



Front View

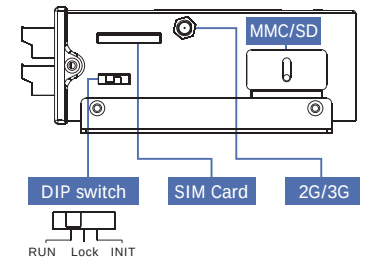
CN2 Pin Assignment

Analog Input 0 ~ +20 mA	AI7	Pin 16	Pin 8	AGND	Analog Ground
	AI6	Pin 15	Pin 7	AGND	
	AI5	Pin 14	Pin 6	AGND	
	AI4	Pin 13	Pin 5	AGND	
	AI3	Pin 12	Pin 4	GND	Digital Input
	AI2	Pin 11	Pin 3	DI2	
	AI1	Pin 10	Pin 2	DI1	
	AI0	Pin 9	Pin 1	DI0	

CN1 Pin Assignment

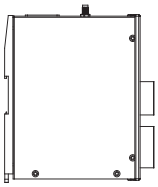
COM3 RS-232	RxD3	Pin 20	Pin 10	DO.PWR	Digital Output
	TxD3	Pin 19	Pin 9	DO2	
Ground of RS-232	GND	Pin 18	Pin 8	DO1	
COM1 RS-232	CTS1	Pin 17	Pin 7	DO0	
	RTS1	Pin 16	Pin 6	D+	COM2 RS-485
	RxD1	Pin 15	Pin 5	D-	
	TxD1	Pin 14	Pin 4	GND	Ground For RS-232
Power Input: +10 ~ +30 VDC	DC.+Vs	Pin 13	Pin 3	DC.+Vs	Power Input: +10 ~ +30 VDC
	DC.GND	Pin 12	Pin 2	DC.GND	
	N/A	Pin 11	Pin 1	F.G.	Frame Ground

G-4500-3GWA/G-4500D-3GWA
G-4500P-3GWA/G-4500PD-3GWA

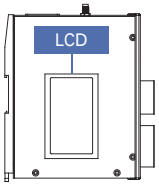


Top View

G-4500-3GWA
G-4500P-3GWA



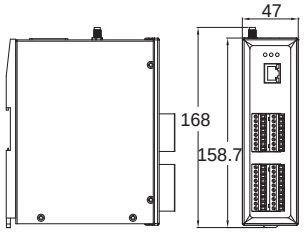
G-4500D-3GWA
G-4500PD-3GWA



Right Side View

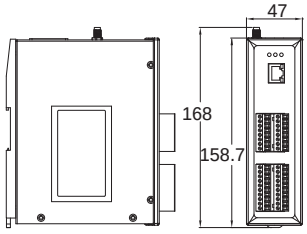
Dimensions (Units: mm)

G-4500-3GWA



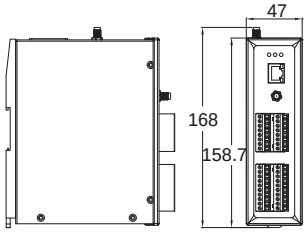
Right Side View | Front View

G-4500D-3GWA



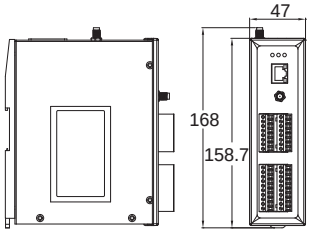
Right Side View | Front View

G-4500P-3GWA



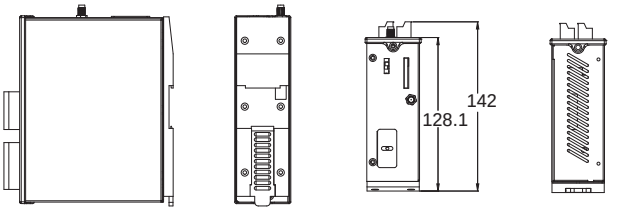
Right Side View | Front View

G-4500PD-3GWA



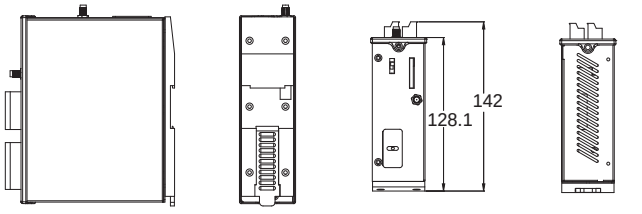
Right Side View | Front View

G-4500(D)-3GWA



Left Side View | Rear View | Top View | Bottom View

G-4500P(D)-3GWA



Left Side View | Rear View | Top View | Bottom View

Ordering Information

G-4500-3GWA CR	Tri-band 3G WCDMA M2M Mini-Programmable Automation Controller (RoHS)
G-4500D-3GWA CR	Tri-band 3G WCDMA M2M Mini-Programmable Automation Controller with LCD display (RoHS)
G-4500P-3GWA CR	Tri-band 3G WCDMA M2M Mini-Programmable Automation Controller with GPS function (RoHS)
G-4500PD-3GWA CR	Tri-band 3G WCDMA M2M Mini-Programmable Automation Controller with LCD display and GPS function (RoHS)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna
ANT-115-03	5 m GPS Active External Antenna

G-4511 Series

M2M Power Saving PAC with Solar Charger

Features

- Embedded MiniOS7, anti-virus
- Support GSM 850 / 900 / 1800 / 1900 MHz.
- Solar charger for Lead acid battery
- 10/100 Base-TX compatible Ethernet controller
- COM port: COM1 (5-wire RS232), COM2 (RS-485)
- I/O: 3 DI, 3 DO, 8 AI, 1 relay DO
- Support SD card.
- Built-in RTC, NVRAM, EEPROM
- 128*64 dots LCM display (option)
- GPS : 32 channels with All-In-View tracking (option)
- Support TCP ,UDP client connection over GPRS

Introduction

The G-4511 series are M2M (Machine to Machine) Power Saving PAC with a cellular transceiver and a solar charger. It can be used in hydrologic monitoring or mudslide monitoring system. With optional GPS model, the G-4511 can also be a GPS tracking system for vehicle management or maritime system. The features of G-4511-2G series: Solar charger, GSM module, Ethernet interface, optional GPS module, 3 digital inputs, 3 digital outputs, 8 analog inputs, 1 relay output.

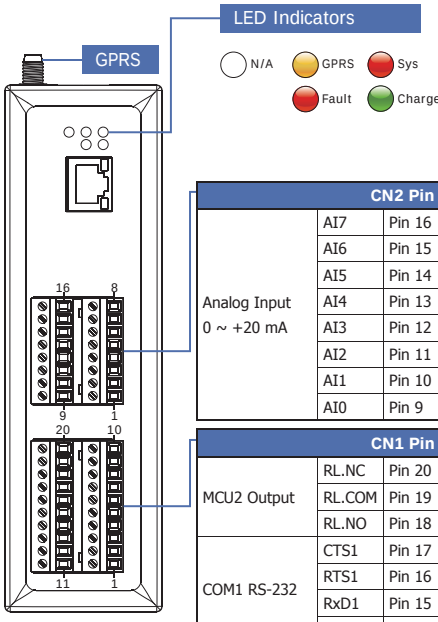
Applications

Specifications

Models		G-4511-2G	G-4511D-2G	G-4511P-2G	G-4511PD-2G
CPU		80 MHz internal microprocessor			
SRAM/Flash		512K/512K , real time clock, watchdog timer			
NVRAM		31 bytes, battery backup, data valid up to 10 years			
EEPROM		16 KB, retention > 40 years. 1,000,000 erase/write cycles			
Comm. Interface					
COM ports		COM1:5-wire RS-232; COM2: RS-485			
Ethernet		10/100 Base-TX Ethernet controller			
GSM Interface					
Frequency Band		GSM 850/900/1800/1900 MHz			
GPRS connectivity		GPRS class 10/8; GPRS station class B			
SMS		MT, MO, CB, Text and PDU mode			
Digital Input					
Input Channel		3			
Input Type		Source(Dry Type), Common Ground			
Off Voltage Level		+1 V max.			
On Voltage Level		+3.5 ~ +30 V			
Isolated Voltage		Non-isolated			
Digital Output					
Output Channel		3			
Output Type		Open Collector (Sink/NPN)			
Load Voltage		+30 VDC max.			
Load Current		100 mA max.			
Isolated Voltage		Non-isolated			
Analog Input					
Input Channel		8			
Resolution		12 - bit			
Input Range/Type		0 ~ 20 mA			
Sample Rate		1 KHz max. (Read one channel)			
Accuracy		+/- 2 LSB (+/- 0.0097 mA)			
Isolated Voltage		2500Vrms 3000Dc to DC			
Relay					
Output Channel / Type		1 / Form C			
Input Range		2A@30 Vdc ; 0.25 A @250 Vac			
Mechanical endurance		typ. 10^8 operations			
GPS Interface					
Support Channels		-		32	
Sensitivity		-		Tracking = up to -159 dBm (with external LNA) Cold start = up to -146 dBm (with external LNA)	
Acquisition Time		-		Hot start (Open Sky) = 2 s(typical) Cold start (Open Sky) = 36 s(typical)	
Protocol Support		-		NMEA 0183 version 3.01	
LCD Interface					
General	Effective display area	-	80.61 mm x 14.37 mm (W x H)	-	80.61 mm x 14.37 mm (W x H)
	Module Dimension	-	93 mm x 70 mm x 1.6 mm (W x H x T)	-	93 mm x 70 mm x 1.6 mm (W x H x T)
Life Time		-	Expected life is more than 100,000 hours under normal operation	-	Expected life is more than 100,000 hours under normal operation
Power (Solar Input)					
Protection		Power reverse polarity protection			
Frame Ground Protection		ESD, Surge, EFT, Hi-Pot			
Power Requirement		+10 VDC ~ +30 VDC , (Max. Voltage of Solar Panel must less +30V)			
Power Consumption		Sleep: 7 mA@12V; Idle: 75 mA @ 24 VDC; Data Link: 150 ~ 400 mA (peak) @ 24 VDC			
Lead Acid Battery Requirement					
Battery		12V Lead-Acid Battery			
Charging Voltage		Voltage of Power Input must be over +16V			
LED Indicators					
System		Red			
GSM		Yellow			
GPS		-		Green	
Charging / Fault		Green / Red			
Mechanical					
Casing		Metal			
Dimensions		47 mm x 142 mm x 168 mm (W x L x H)			
Installation		DIN-Rail and Wall mount			
Environment					
Operating Temperature		-20 ~ +70 °C	-15 ~ +55 °C	-20 ~ +70 °C	-15 ~ +55 °C
Storage Temperature		-40 ~ +80 °C	-20 ~ +70 °C	-40 ~ +80 °C	-20 ~ +70 °C
Humidity		5~90% RH, non-condensing			

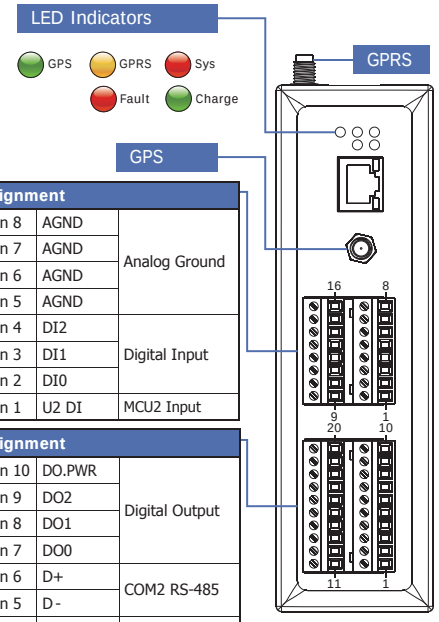
Appearance

G-4511(D)-2G



Front View

G-4511P(D)-2G



Front View

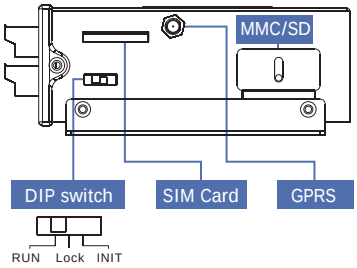
CN2 Pin Assignment

Analog Input 0 ~ +20 mA	AI7	Pin 16	Pin 8	AGND	Analog Ground
	AI6	Pin 15	Pin 7	AGND	
	AI5	Pin 14	Pin 6	AGND	
	AI4	Pin 13	Pin 5	AGND	
	AI3	Pin 12	Pin 4	DI2	Digital Input
	AI2	Pin 11	Pin 3	DI1	
	AI1	Pin 10	Pin 2	DI0	
	AI0	Pin 9	Pin 1	U2 DI	MCU2 Input

CN1 Pin Assignment

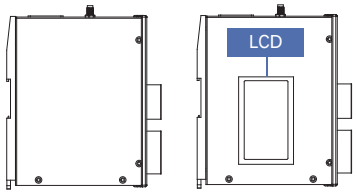
MCU2 Output	RL.NC	Pin 20	Pin 10	DO.PWR	Digital Output
	RL.COM	Pin 19	Pin 9	DO2	
	RL.NO	Pin 18	Pin 8	DO1	
COM1 RS-232	CTS1	Pin 17	Pin 7	DO0	
	RTS1	Pin 16	Pin 6	D+	COM2 RS-485
	RxD1	Pin 15	Pin 5	D-	
	TxD1	Pin 14	Pin 4	GND	Ground For COM1
Power Input: +10 ~ +30 VDC	DC.+VS	Pin 13	Pin 3	BAT.+VS	12V Lead Acid
	DC.GND	Pin 12	Pin 2	BAT.+GND	Battery
	N/A	Pin 11	Pin 1	F.G.	Frame Ground

G-4511(D)-2G/G-4511P(D)-2G



Top View

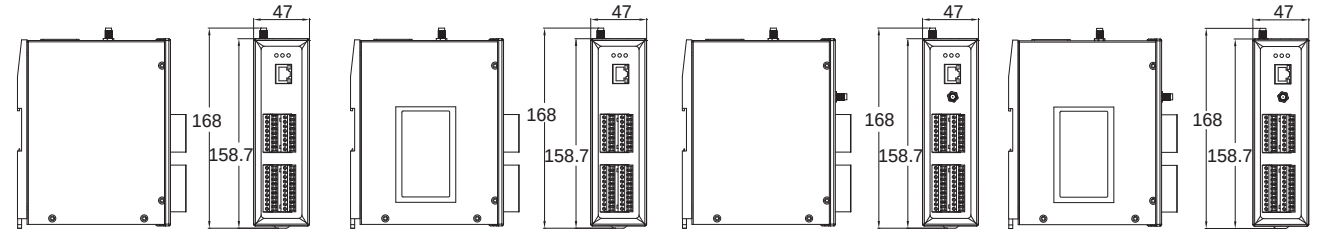
G-4511(P)-2G / G-4511(P)D-2G



Right Side View

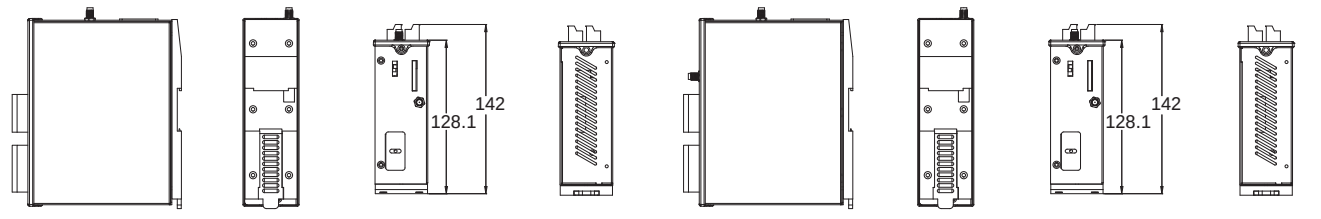
Dimensions (Units: mm)

G-4511-2G / G-4511D-2G / G-4511P-2G / G-4511PD-2G



Right Side View | Front View | Right Side View | Front View | Right Side View | Front View | Right Side View | Front View

G-4511(D)-2G / G-4511P(D)-2G



Left Side View | Rear View | Top View | Bottom View | Left Side View | Rear View | Top View | Bottom View

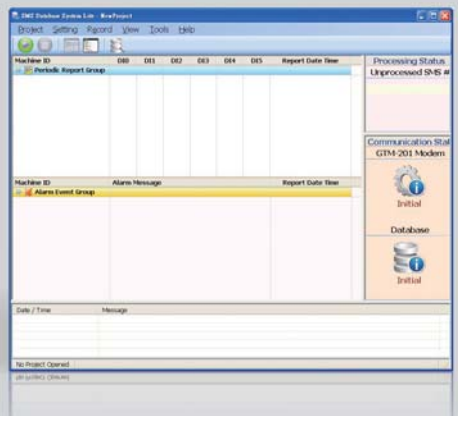
Ordering Information

G-4511-2G CR	Quad-band M2M Power Saving PAC with Solar charger (RoHS)
G-4511D-2G CR	Quad-band M2M Power Saving PAC with Solar charger and LCD display (RoHS)
G-4511P-2G CR	Quad-band M2M Power Saving PAC with Solar charger and GPS Function (RoHS)
G-4511PD-2G CR	Quad-band M2M Power Saving PAC with Solar charger, LCD display and GPS Function (RoHS)

Accessories

ANT-421-01	3 m External GPRS/GSM Antenna
ANT-115-03	5 m GPS Active External Antenna

4.5. Software Solutions



SMS DBS

SMS Database System

Features

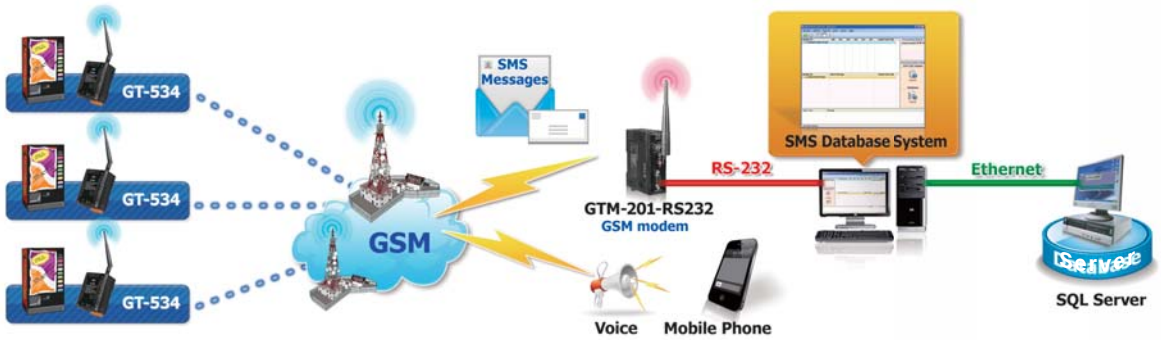
- Quickly and easily build a GT-53x management system
- Support MS SQL Server and MS Access 2003 Database
- Provide backup mechanism in local sites: when experiencing unexpected disconnection and not able to transmit and store data in remote SQL Server database, the data will be safely kept in local sites
- Allow to view real-time or historical data of SMS messages sent by GT-53x series
- Support filter function that enables to receive SMS messages by specific phone numbers
- Support Windows 2000, Windows XP, Windows Vista, Windows 7
- Support GT-530, GT-531, and GT-534

Introduction

ICP DAS's SMS Database System is a software solution that allows to manage remote GT-53x series more efficiently. GT-53x series are intelligent GSM controllers great for use in industry applications; they feature easy-to-use interface, SMS tunnel function voice communication and can be powered with an external power supply or Li-Battery. They support UNICODE and 7 bit format that allows users to send SMS messages in various languages; the SMS messages can be sent at user-defined time or whenever a predefined DI/counter event is triggered. With SMS Database System, it enables remote monitoring and database system for GT-53x, therefore, allows the 3rd party software tools being easily integrated with GT-53x series as well as users' applications.

Applications

Remote Maintenance



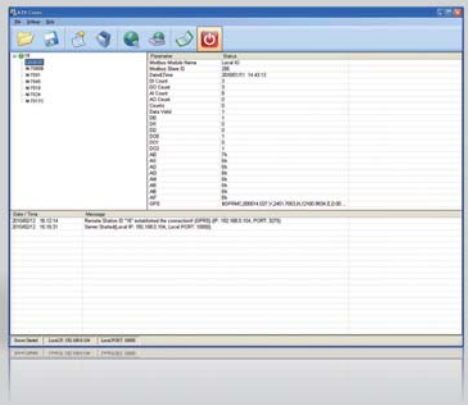
Vendor Machine Automation

Version Comparison

Version	Max. Phone Number Supported	Database	License
SMS Database System Lite v1.0	3	MS Access 2003	Free
SMS Database System Pro v1.0	Unlimited	MS SQL Server / MS Access 2003	Charge

Ordering Information

SMS DBS	SMS Monitor/Database System Software for GT-53x series



M2M RTU Center

M2M RTU Series Management Software

Features

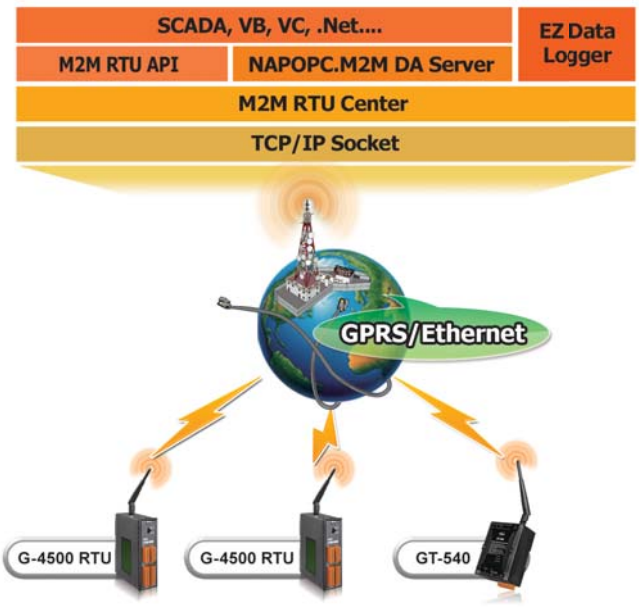
- RTU series Management tool
- Support up to 128 M2M RTU devices
- Easy and quick to build a Remote monitor system
- Windows-based software
- Support NAPOPC.M2M server, EzDatalog and M2M API tool of ICP DAS
- Allow any Modbus device connecting to GPRS/Ethernet via RTU devices.

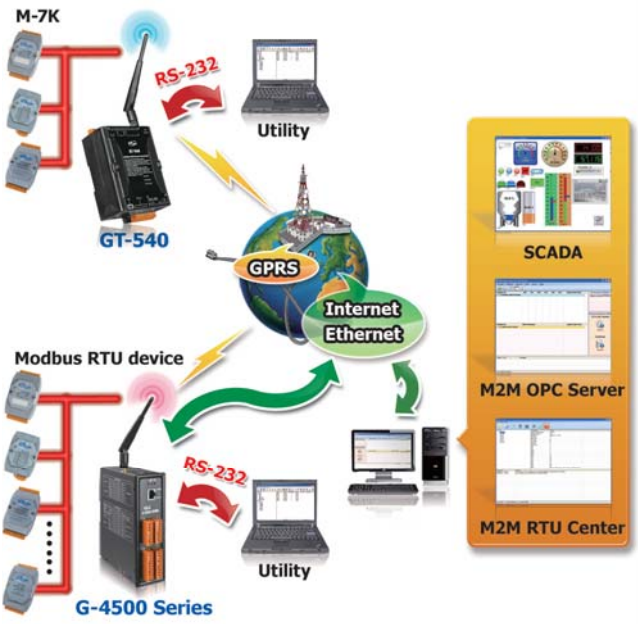
Introduction

The M2M RTU Center provided by ICP DAS is a M2M (Machine to Machine) management software that has a strong core technology for handling data and lets the user save the trouble of dealing with large IO data. The RTU Center supports the G-4500 series, GT-540 and other RTU products from ICP DAS and allows users to manage these RTU devices remotely. It is not only monitor the local IO and GPS data but also IO data of Modbus RTU devices. With M2M RTU Center, users can easily establish a remote system by using EZ Data Logger or OPC Client of user's SCADA to access data.

Software Architecture and Application

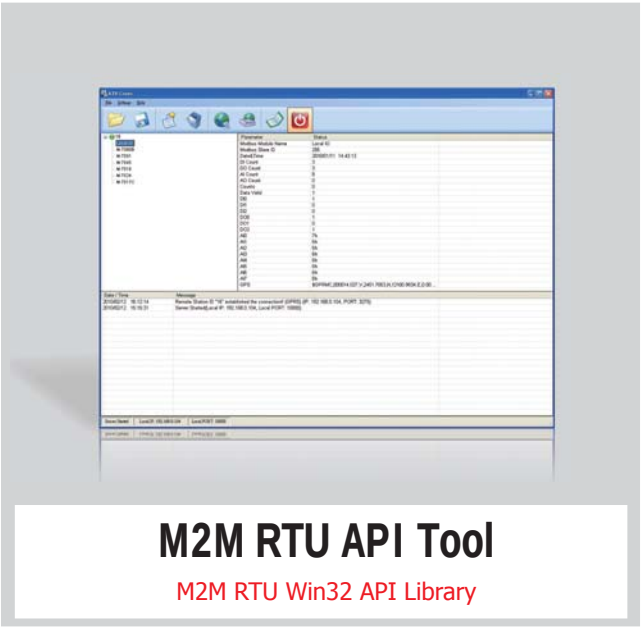
When users want to use the following software or others to their system with RTU products of ICP DAS, M2M RTU Center must be executed at the same time.





Product Support

Product	Description
RTU firmware	Management Firmware that supports G-4500 Series
GT-540	Intelligent GPRS Remote Terminal Unit



M2M RTU API Tool

M2M RTU Win32 API Library

Features

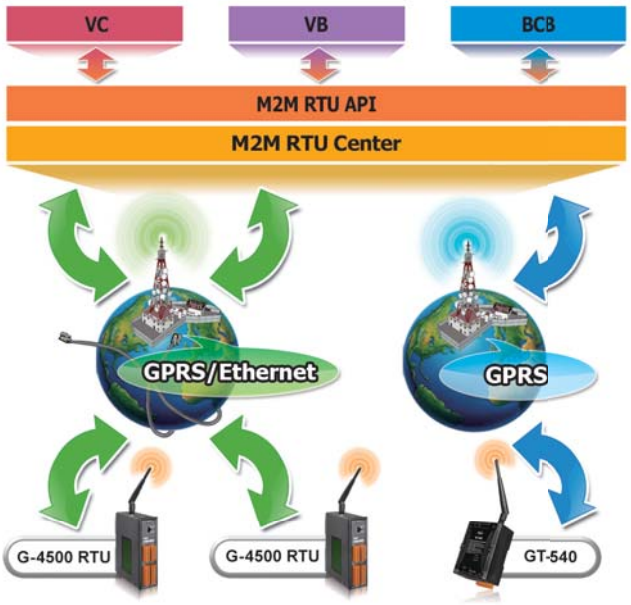
- Provide simple API functions for users to reduce the development time
- Easy to perform M2M RTU devices status monitoring and control
- Up to 128 M2M RTU devices can be managed
- Allow any Modbus device connecting to GPRS/Ethernet via RTU devices.
- Easily manage and control distributed remote devices via GPRS/Ethernet
- Support for M2M RTU products from ICP DAS

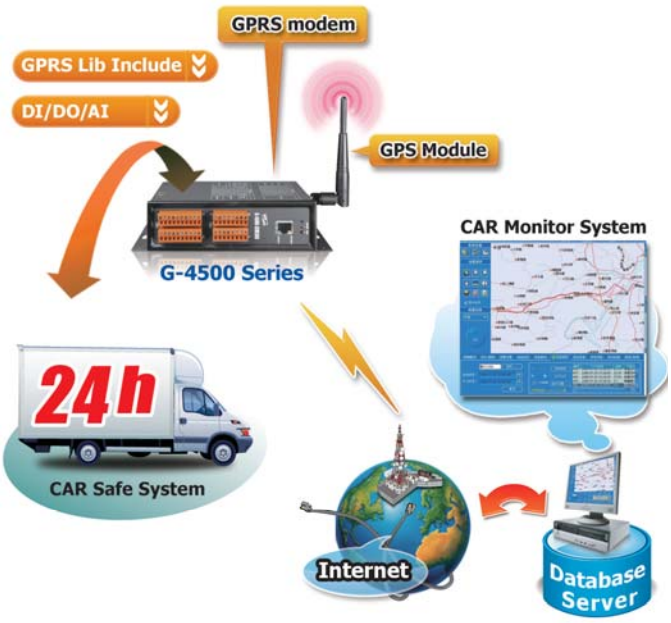
Introduction

M2M RTU API Tools is a Win32 API Library for M2M RTU products (G-4500 RTU, GT-540…) from ICP DAS. It provides the seamless connection between a user-designed system and M2M RTU products. With APIs of the library, programmer can access M2M RTU devices by developing program using most integrated development environments, such as VC, VB, BCB, visual studio.Net… etc. It is easy to integrate these GPRS RTU devices to various applications including real time data and database management system. Therefore, the Library can help users to apply the ICP DAS M2M RTU products in their applications to monitor the data and sends them out in real time to the control center through GPRS or Ethernet Network. Also, by combining a GPS (optional) with M2M GPRS RTU, they suddenly become a tracking system which you can often find out in the car system, marine system, etc.

Software Architecture and Application

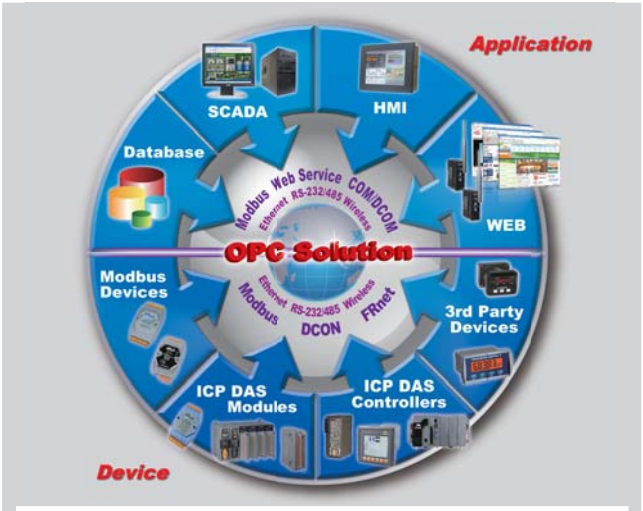
When users want to use the following software or others to their system with RTU products of ICP DAS, M2M RTU Center must be executed at the same time.





Product Support

Product	Description
RTU firmware	Management Firmware that supports G-4500 Series
GT-540	Intelligent GPRS Remote Terminal Unit



NAPOPC.M2M DA Server

OPC Server for RTU Devices

Features

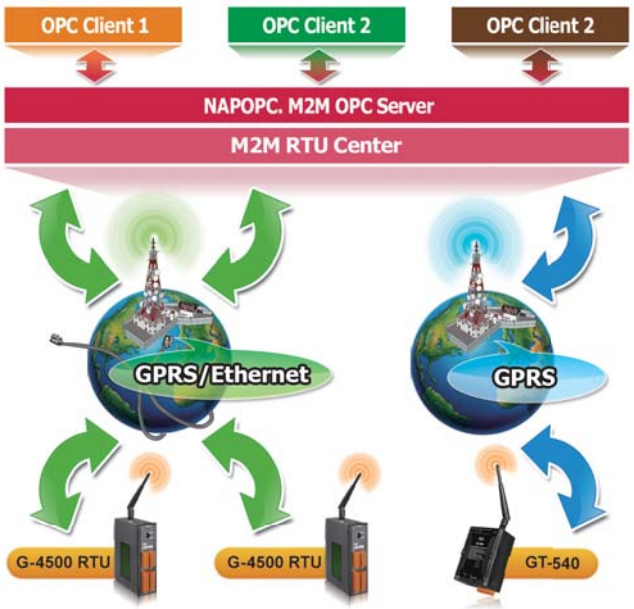
- Provide an Explorer-style user interface.
- Provide multi-thread communication to communicate with RTU devices
- Support searching RTU devices automatically
- Allow any Modbus device connecting to GPRS/Ethernet via RTU devices.
- Real-time monitoring and controlling for RTU devices

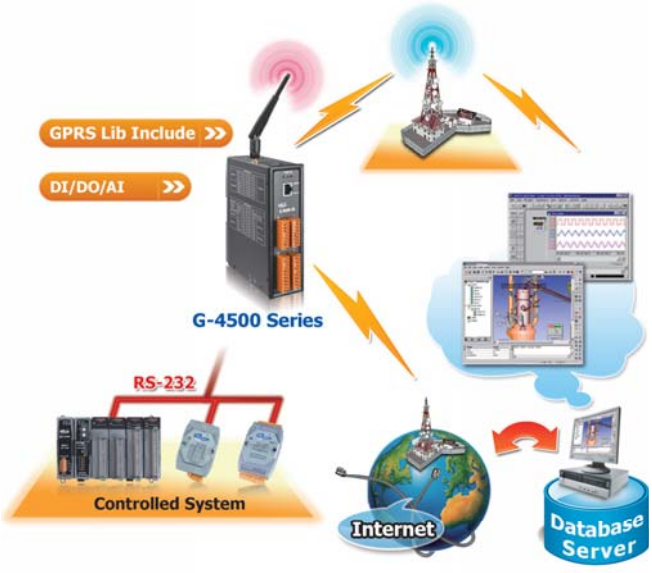
Introduction

ICP DAS NAPOPC.M2M DA Server is an OPC software package operated as an OPC driver of a HMI or SCADA system. It provides seamless connection with GPRS RTU products (G-4500 RTU, GT-540…) from ICP DAS to SCADA system (InduSoft, Wonderware, iFix, Citec, LabView and etc) following OPC 2.0 Data Access Standards. By using NAPOPC.M2M DA server and ICP DAS RTU products not only monitors the data but sends them out in real time to the control center through GPRS or Ethernet Network. Also, by combining a GPS (optional) with G-4500 RTU, it suddenly becomes a tracking system which you can often find out in the car system, marine system, etc.

Software Architecture and Application

M2M RTU Center is the M2M (Machine to Machine) management software of ICP DAS that has a strong core technology for handling data and lets the user save the trouble of dealing with large IO data. NAPOPC M2M server would get/set these RTU devices through M2M RTU Center. The architecture and application are as following.



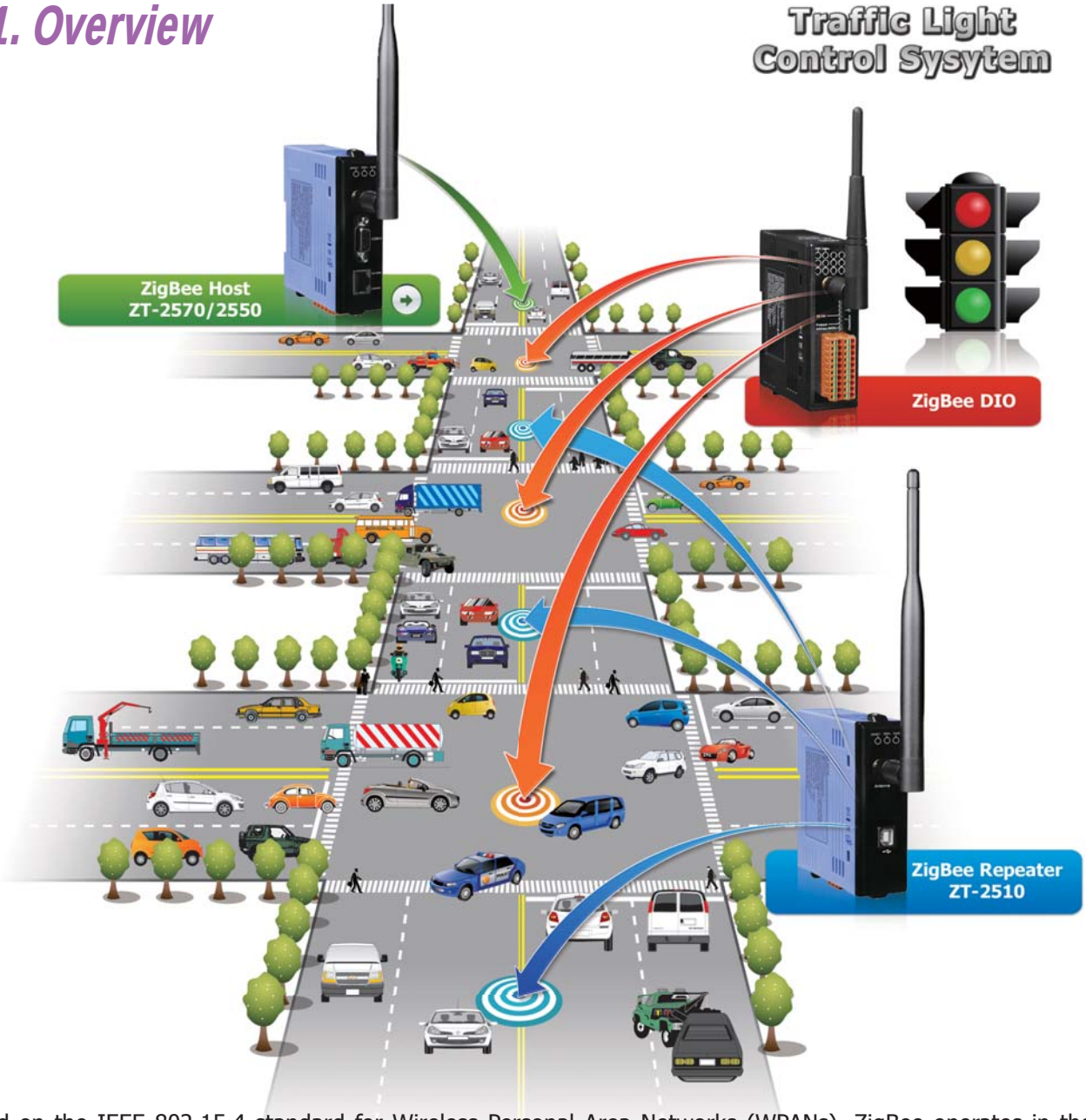


Product Support

Product	Description
RTU firmware	Management Firmware that supports G-4500 Series
GT-540	Intelligent GPRS Remote Terminal Unit

ZigBee Products

5.1. Overview



Based on the IEEE 802.15.4 standard for Wireless Personal Area Networks (WPANs), ZigBee operates in the ISM radio bands and works as a general purpose, inexpensive, self-organizing, mesh network that can be used for industrial control, embedded sensing, medical data collection, smoke and intruder warning, building automation, and home automation, etc.

ZigBee uses a basic master-slave configuration that is suited to the static star networks of many infrequently used devices that talk via small data packets. ICP DAS provides various ZigBee products such as Ethernet/ RS-232/RS-485 to ZigBee converters, ZigBee repeater and ZigBee wireless I/O modules.

Advantages & Benefits

- ISM 2.4 GHz operating frequency and fully compliant 2.4 G IEEE 802.15.4 ZigBee specifications
- Wireless transmission range up to 100m (Line of sight)
- Provide friendly GUI configuration software (Windows Version)
- Support three different types of ZigBee devices (Coordinator, Full function device, Reduced function device) in a ZigBee network.
- Support three topologies (MESH, STAR, CLUSTER TREE) defined in the IEEE 802.15.4

• ZigBee Common Features

Advantages & Benefits

- ISM 2.4 GHz operating frequency and fully compliant 2.4 G IEEE 802.15.4 ZigBee specifications
- Wireless transmission range up to 100m (Line of sight)
- Provide friendly GUI configuration software (Windows Version)
- Support three different types of ZigBee devices (Coordinator, Full function device, Reduced function device) in a ZigBee network.
- Support three topologies (MESH, STAR, CLUSTER TREE) defined in the IEEE 802.15.4

• ZigBee Converter Selection Guide

In some existing systems that use an Ethernet, RS-485 or RS-232 network, it is sometimes difficult to extend the new devices due to building structure issues, wiring problems or other reasons. The ZigBee Converter can be easily added to an existing system in order to extend the network

Model Name	Interface	Module Type	Transmit Power	Antenna	Distance (LOS)
ZT-2550	1 × RS-232 1 × RS-485	Coordinator (Host)	11 dBm (FCC Certificated), Max. 19 dBm	2.4GHz - 5dBi Omni-Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2551	1 × RS-232 1 × RS-485	Router (Slave)	11 dBm (FCC Certificated), Max. 19 dBm	2.4GHz - 5dBi Omni-Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2570	1 × RS-232 1 × RS-485 1 × Ethernet	Coordinator (Host)	11 dBm (FCC Certificated), Max. 19 dBm	2.4GHz - 5dBi Omni-Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2571	1 × RS-232 1 × RS-485 1 × Ethernet	Router (Slave)	11 dBm (FCC Certificated), Max. 19 dBm	2.4GHz - 5dBi Omni-Directional antenna	700 m (Typical) 1 km (Max.)

• ZigBee I/O Selection Guide

ICP DAS provides varies ZigBee I/O modules. Each module has standard 4 kV ESD protection and 3000/3750 V_{DC} intra-module isolation. Users can easily configure the module address, Protocol, Checksum, ZT-PID, ZT-ch and type code by rotary and DIP switch.

Model Name	Protocol	Input Channel	Output Channel	Transmit Power	Antenna	Distance (LOS)
ZT-2015	DCON Modbus RTU	6 × AI	-	11 dBm	2.4GHz - 5dBi Omni -Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2017	DCON Modbus RTU	8 × AI	-	11 dBm	2.4GHz - 5dBi Omni -Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2017C	DCON Modbus RTU	8 × AI (Current only)	-	11 dBm	2.4GHz - 5dBi Omni -Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2018	DCON Modbus RTU	8 × AI	-	11 dBm	2.4GHz - 5dBi Omni -Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2024	DCON Modbus RTU	-	4 × AO	11 dBm	2.4GHz - 5dBi Omni -Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2026	DCON Modbus RTU	2 × DI 4 × AI	2 × DO 2 × AO	11 dBm	2.4GHz - 5dBi Omni -Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2042	DCON Modbus RTU	-	4 × DO 4 × Relay Out	11 dBm	2.4GHz - 5dBi Omni -Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2043	DCON Modbus RTU	-	14 × DO	11 dBm	2.4GHz - 5dBi Omni -Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2052	DCON Modbus RTU	8 × DI	-	11 dBm	2.4GHz - 5dBi Omni -Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2053	DCON Modbus RTU	14 × DI	-	11 dBm	2.4GHz - 5dBi Omni -Directional antenna	700 m (Typical) 1 km (Max.)
ZT-2060	DCON Modbus RTU	6 × DI	4 × Relay Out	11 dBm	2.4GHz - 5dBi Omni -Directional antenna	700 m (Typical) 1 km (Max.)

5.2. ZigBee Converters

ZT-2550/ZT-2551

RS-485/RS-232 to ZigBee Converter

Features

- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4 G (IEEE802.15.4/ZigBee Specifications)
- Fully Compliant with ZigBee Pro (ZigBee 2007)
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- RS-232/RS-485/Ethernet Interface Supported

Introduction

The ZT-2550 and ZT-2551 series modules are small-sized wireless ZigBee converters based on the IEEE802.15.4 standard that allow RS-232, RS-485 interface to be converted to a personal area ZigBee network. The typical transmission of ICP DAS ZT series ZigBee products is 700 meters (LOS, line of sight), with a transmission frequency range of between 2.405 GHz and 2.48 GHz, separated into 5 MHz sectors, providing 16 channels and 16384 PAN IDs. ZT-2000 series is not only a long distance wireless converter but also can act a ZigBee router to extend the transmission range and improve the quality of wireless signal.

ZT-2000 series products are specification for a suite of high level communication protocols using small, low-power digital radios module, which are fitted the ZigBee 2007 (ZigBee Pro) of ZigBee Alliance. In the ZigBee network, it is only allowed one ZigBee Host and called "ZigBee Coordinator", ZT-2550 series products, are used to initialize and manager the routing. In addition, One ZigBee network are able to manager 255 ZigBee router and responsible for receiving or bypassing data from parent or child node.

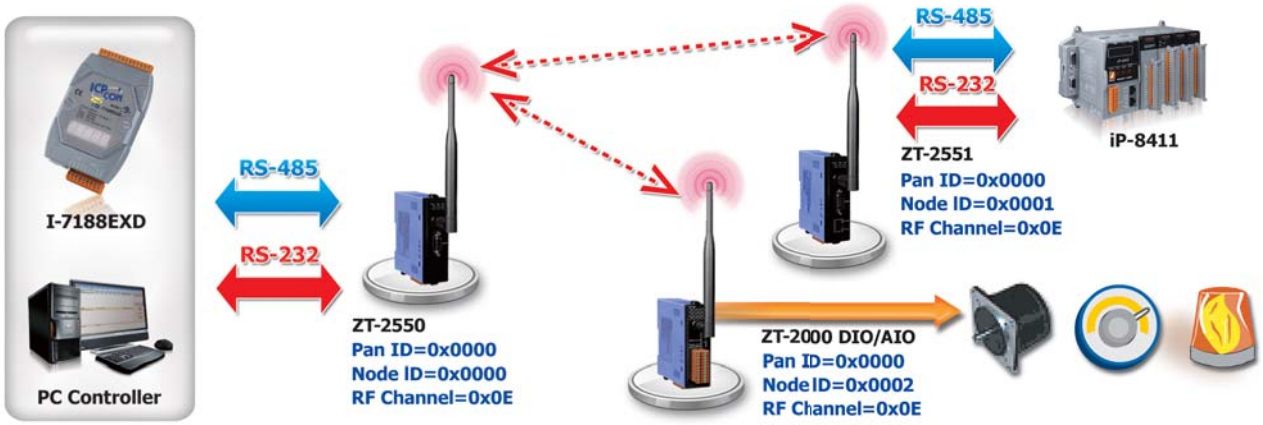
A Windows compatible GUI configuration utility is available. The utility allows users to set different configurations based on the type of application, together with several of required ZigBee variables such as Pan ID. The friendly user interface is also helping user be familiar with ZT-2000 series.

Specifications

Models		ZT-2550 (ZigBee Coordinator)	ZT-2551 (ZigBee Router)
Hardware			
MCU Module		8-bit microprocessor	
Temporary Buffer Size		400 Bytes	
LED Indicators	ZigBee Net	Green	
	ZigBee RxD	Yellow	
	Power	Red	
Communication Interface			
COM 0	RS-232	RS-232 (TxD, RxD and GND);	
		D-Sub 9 Female, Non-isolated	D-Sub 9 Male, Non-isolated
	RS-485	RS-485 (DATA+, DATA-; internal ASIC self-tuner); Non-isolated	
	Data Format	N81/O71/E71/N82/O81/E81	
Power			
Protection		Power reverse polarity protection	
EMS Protection		ESD, Surge, EFT	
Required Supply Voltage		+10 VDC ~ +30 VDC	
Power Consumption		1 W	
Mechanical			
Casing		Plastic	
Flammability		UL 94V-0 fire-retardant materials	
Dimensions (W x L x H)		33 mm x 78 mm x 107 mm	
Installation		DIN-Rail	
Environment			
Operating Temperature		-25 ~ +75°C	
Storage Temperature		-40 ~ +80°C	
Relative Humidity		5 ~ 95% RH, Non-condensing	

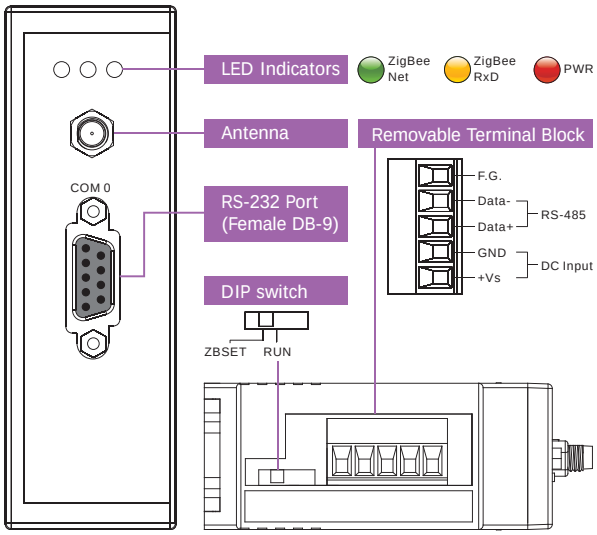
Models	ZT-2550 (ZigBee Coordinator)	ZT-2551 (ZigBee Router)
Wireless		
RF Channel	16	
RF Transmit Power	11 dBm	
Antenna (2.4 GHz)	5 dBi Omni-Directional antenna	
Transmit Range (LOS)	700 m (Typical)	
Max. Slaves Supported	255	
EMI Certification	CE/FCC, FCC ID	

Applications

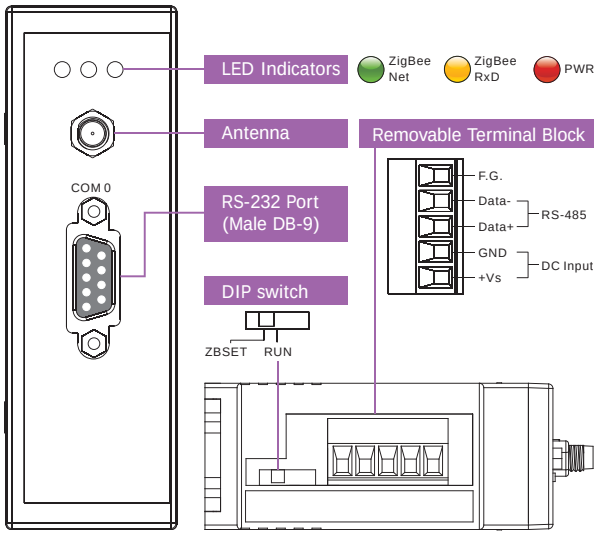


Appearance

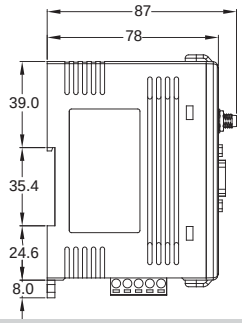
ZT-2550



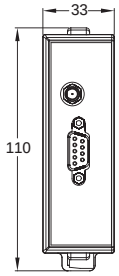
ZT-2551



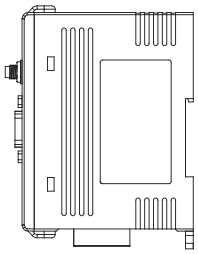
Dimensions (Units: mm)

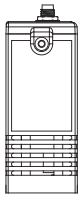


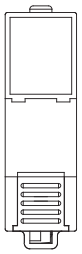
Left Side View

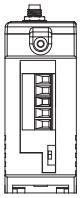


Front View


Right Side View

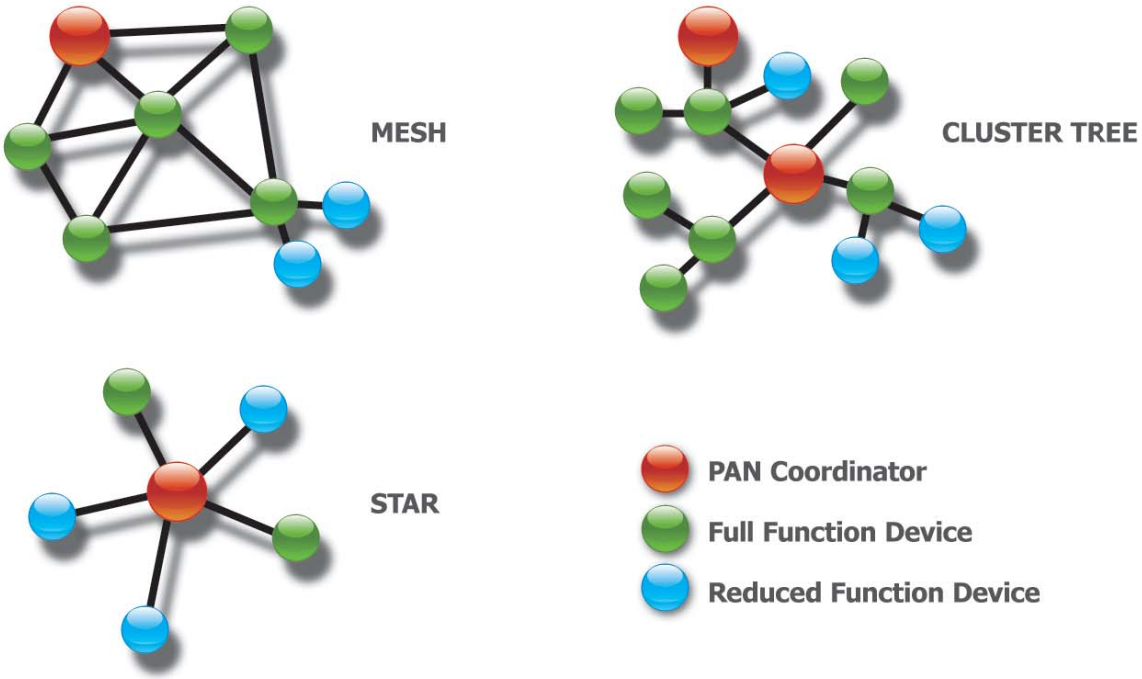

Top View


Rear View


Bottom View

Operation Mode

There are three topologies defined in the IEEE 802.15.4 standard, Star, Cluster Tree and Mesh.



Ordering Information

ZT-2550 CR	RS-485/RS-232 to ZigBee Converter (Host, ZigBee Coordinator) (RoHS)
ZT-2551 CR	RS-485/RS-232 to ZigBee Converter (Slave, ZigBee Router) (RoHS)

Accessories

ZT-2550 CR	RS-485/RS-232 to ZigBee Converter (Host, ZigBee Coordinator) (RoHS)
ZT-2551 CR	RS-485/RS-232 to ZigBee Converter (Slave, ZigBee Router) (RoHS)
ZT-2570 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Host, ZigBee Coordinator) (RoHS)
ZT-2571 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Slave, ZigBee Router) (RoHS)
ZT-2000 DIO series	Wireless digital input and digital output ZigBee I/O device
ZT-2000 AIO series	Wireless differential analog input and analog output ZigBee I/O device

ZT-2570/ZT-2571

Ethernet/RS-485/RS-232 to ZigBee Converter

Features

- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4 G (IEEE802.15.4/ZigBee Specifications)
- Fully Compliant with ZigBee ZigBee Pro (ZigBee 2007)
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- RS-232/RS-485/Ethernet Interface Supported

Introduction

The ZT-2570 and ZT-2571 series modules are small-sized wireless ZigBee converters based on the IEEE802.15.4 standard that allow RS-232, RS-485 and Ethernet interface to be converted to a personal area ZigBee network. The typical transmission of ICP DAS ZT series ZigBee products is 700 meters (LOS, line of sight), with a transmission frequency range of between 2.405 GHz and 2.48 GHz, separated into 5 MHz sectors, providing 16 channels and 16384 PAN IDs. ZT-2000 series is not only a long distance wireless converter but also can act a ZigBee router to extend the transmission range and improve the quality of wireless signal.

ZT-2000 series products are specification for a suite of high level communication protocols using small, low-power digital radios module, which are fitted the ZigBee 2007 (ZigBee Pro) of ZigBee Alliance. In the ZigBee network, it is only allowed one ZigBee Host and called "ZigBee Coordinator", ZT-2570 series products, are used to initialize and manager the routing. In addition, One ZigBee network are able to manager 255 ZigBee router and responsible for receiving or bypassing data from parent or child node.

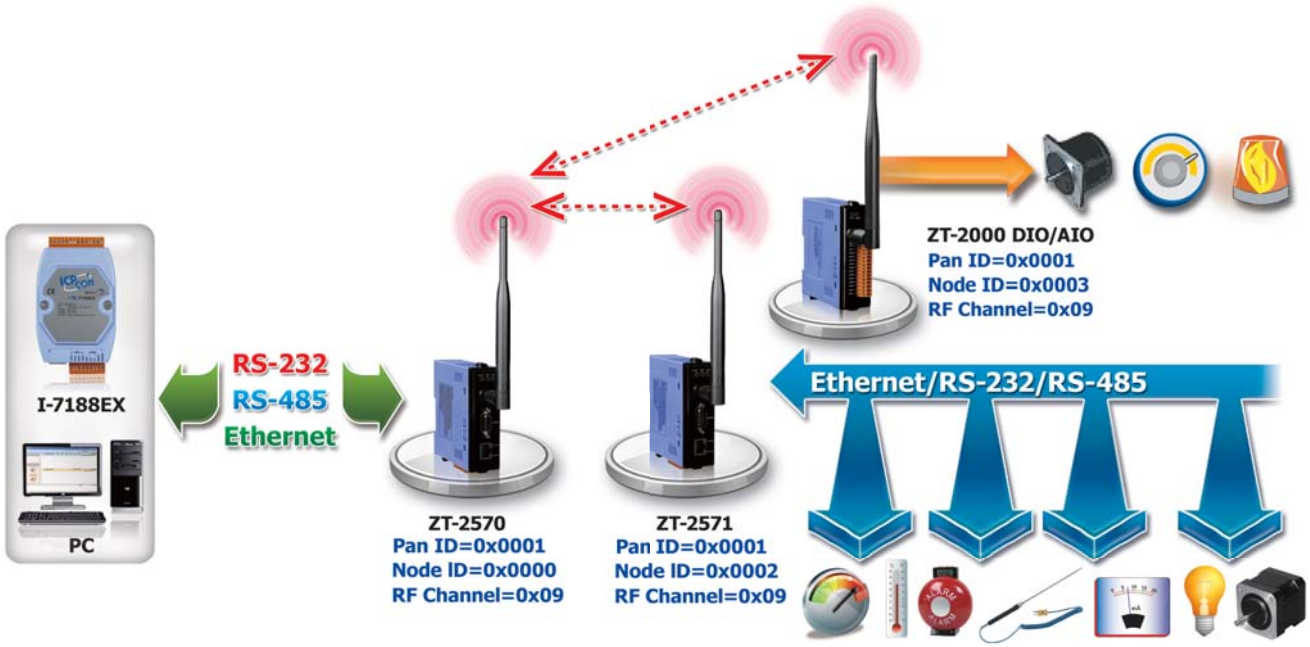
A Windows compatible GUI configuration utility is available. The utility allows users to set different configurations based on the type of application, together with several of required ZigBee variables such as Pan ID. The friendly user interface is also helping user be familiar with ZT-2000 series.

Specifications

Models		ZT-2570 (ZigBee Coordinator)	ZT-2571 (ZigBee Router)
Hardware			
CPU		80186, 80 MHz or compatible	
Temporary Buffer Size		2300 Bytes	
LED Indicators	ZigBee Net	Green	
	ZigBee RxD	Yellow	
	Power	Red	
Communication Interface (COM0)			
RS-232		RS-232 (TxD, RxD and GND);	
		D-Sub 9 Female, Non-isolated	D-Sub 9 Male, Non-isolated
RS-485		RS-485 (DATA+, DATA-; internal ASIC self-tuner); Non-isolated	
Baud Rate		1200 ~ 115200 bps	
Data Bit		7, 8	
Parity Check		Even, Odd, None	
Stop Bit		1, 2	
Communication Interface (Ethernet)			
Ethernet		10/100 Base-TX (Auto-negotiating, auto_MDI/MDI-X, LED indicators)	
Power			
Protection		Power reverse polarity protection	
EMS Protection		ESD, Surge, EFT	
Required Supply Voltage		+10 VDC ~ +30 VDC	
Power Consumption		2.5 W (Max.)	
Mechanical			
Casing		Plastic	
Flammability		UL 94V-0 materials	
Dimensions (W x L x H)		33 mm x 78 mm x 107 mm	
Installation		DIN-Rail	

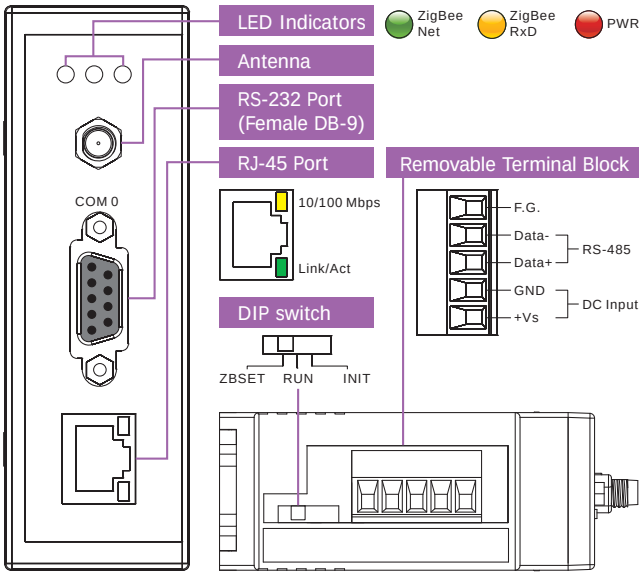
Models	ZT-2570 (ZigBee Coordinator)	ZT-2571 (ZigBee Router)
Environment		
Operating Temperature	-25 ~ +75°C	
Storage Temperature	-40 ~ +80°C	
Relative Humidity	5 ~ 95% RH, Non-condensing	
Wireless		
RF Channel	16	
RF Transmit Power	11 dBm	
Antenna (2.4 GHz)	5 dBi Omni-Directional antenna	
Transmit Range (LOS)	700 m (Typical)	
Max. Slaves Supported	255	
EMI Certification	CE/FCC, FCC ID	

Applications

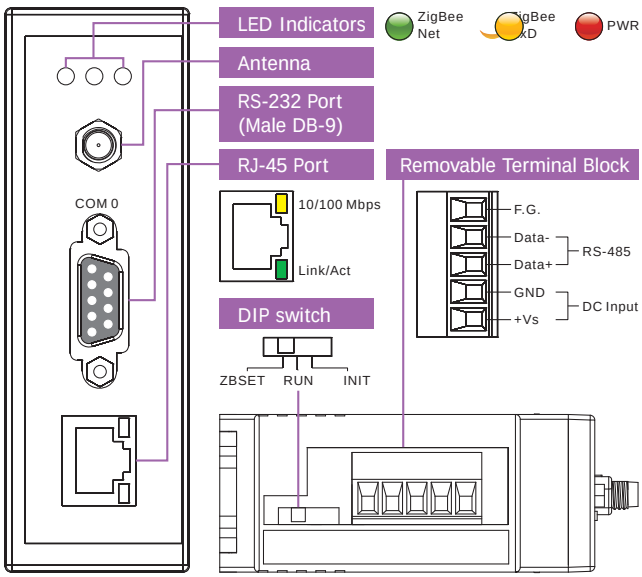


Appearance

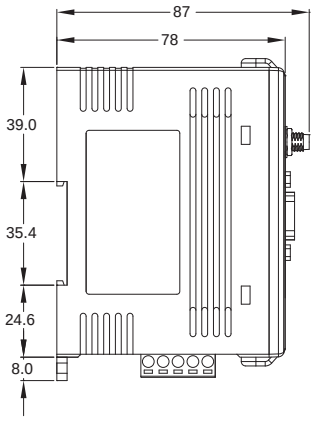
ZT-2570



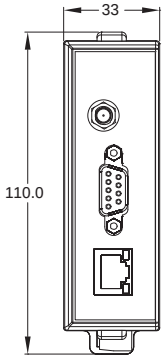
ZT-2571



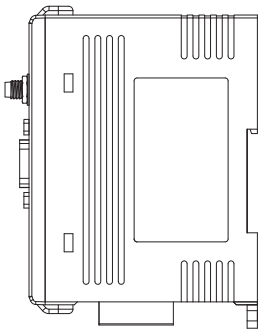
Dimensions (Units: mm)

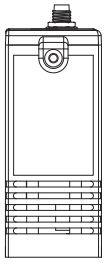


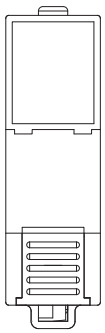
Left Side View

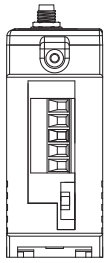


Front View


Right Side View


Top View


Rear View


Bottom View

Ordering Information

ZT-2570 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Host, ZigBee Coordinator) (RoHS)
ZT-2571 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Slave, ZigBee Router) (RoHS)

Accessories

ZT-2550 CR	RS-485/RS-232 to ZigBee Converter (Host, ZigBee Coordinator) (RoHS)
ZT-2551 CR	RS-485/RS-232 to ZigBee Converter (Slave, ZigBee Router) (RoHS)
ZT-2570 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Host, ZigBee Coordinator) (RoHS)
ZT-2571 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Slave, ZigBee Router) (RoHS)
ZT-2000 DIO series	Wireless digital input and digital output ZigBee I/O device
ZT-2000 AIO series	Wireless differential analog input and analog output ZigBee I/O device

5.3. ZigBee I/O Modules

ZT-2015

Wireless 6-channel RTD Input Module
with 3-wire RTD Lead Resistance Elimination

Features

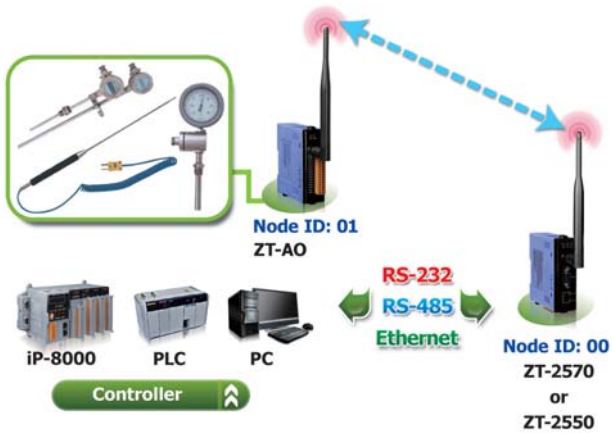
- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4G /ZigBee Specifications
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- 3-wire RTD Input with Lead Resistance Elimination
- Individual Channel Configuration
- Open Wire Detection
- Overvoltage Protection

Introduction

The ZT-2015 offers 6 wireless input channels, each of which can be connected to different kinds of RTD sensors. It features automatic compensation for 3-wire RTD, with long-distance measurement capabilities so that it can measure accurately regardless of the length of the wires. Also the ZT-2015 is fully RoHS-compliant and has qualification for 4 kV ESD protection as well as 3000 VDC intra-module isolation. Users can easily configure the module address, protocol, checksum, ZigBee PANID, ZigBee channel and type code settings using a combination of rotary and DIP switches.

Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.



System Specifications

Communication Interface	
Wireless Standards	ZigBee 2007 Pro
Transmission Power	11 dBm (FCC Certificated)
2.4 GHz Antenna	5 dBi Omni directional
Transmission range (LOS)	700 m(Typical)
Certification	CE/FCC, FCC ID
Max. Slaves in a ZigBee Network	255
ZB-100R/ZB-100T Support	Yes
Protocols	Supports DCON and Modbus RTU Protocols
Hot Swap	Rotary and DIP switch
LED Indicators	
Power	1 LED, red
ZigBee Communication	1 LED, green
Isolation	
Intra-module Isolated, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for Power Line, Communication Line and each Channel, ±8 kV Air for Random Point
EFT (IEC 61000-4-4)	±4 kV for Power Line
Surge (IEC 61000-4-5)	±3 kV for Power Line
Power	
Consumption	1.5 W Max.
Mechanical	
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x L x H)	33 mm x 87 mm x 110 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +80 °C
Relative Humidity	10 ~ 90% RH, Non-condensing

I/O Specifications

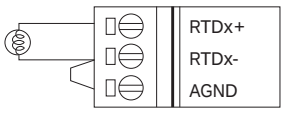
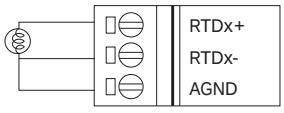
Analog Input	
Input Channels	6
Input Type	2/3-wire RTD
RTD Types	Pt100, Pt1000, Ni120, Cu100, Cu1000
Resolution	16-bit
Sampling Rate	12 Samples/Sec. (Total)
Accuracy	+/-0.05%
Zero Drift	+/-0.5 μV/°C
Span Drift	+/-20 μV/°C
Common Mode Rejection	150 dB
Normal Mode Rejection	100 dB
Open Wire Detection	Yes
Overvoltage Protection	120 VDC/110 VAC
Individual Channel Configuration	Yes
3-wire RTD Lead Resistance Elimination	Yes

RTD Type Setting (TT)

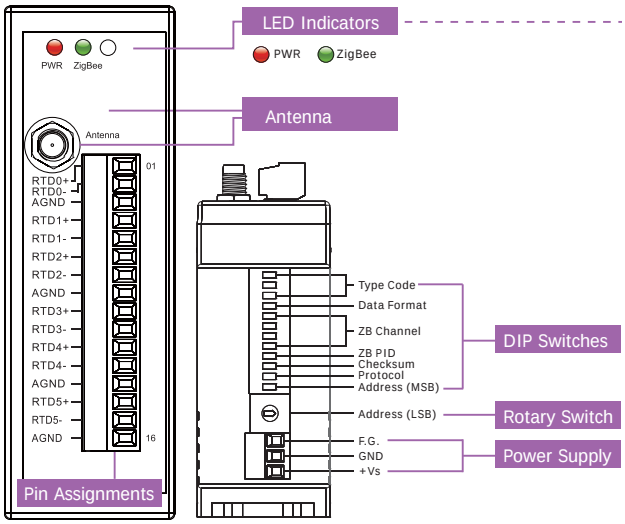
Type Code	RTD Type	Temperature Range
20	Platinum 100, α=0.00385	-100 ~ +100°C
21	Platinum 100, α= 0.00385	0 ~ +100°C
22	Platinum 100, α= 0.00385	0 ~ +200°C
23	Platinum 100, α= 0.00385	0 ~ +600°C
24	Platinum 100, α= 0.003916	-100 ~ +100°C
25	Platinum 100, α= 0.003916	0 ~ +100°C
26	Platinum 100, α= 0.003916	0 ~ +200°C
27	Platinum 100, α= 0.003916	0 ~ +600°C

Type Code	RTD Type	Temperature Range
28	Nickel 120	-80 ~ +100°C
29	Nickel 120	0 ~ +100°C
2A	Platinum 1000, α= 0.00385	-200 ~ +600°C
2E	PT 100, α= 0.00385	-200 ~ +200°C
2F	PT 100, α= 0.003916	-200 ~ +200°C
80	PT 100, α= 0.00385	-200 ~ +600°C
81	PT 100, α= 0.003916	-200 ~ +600°C

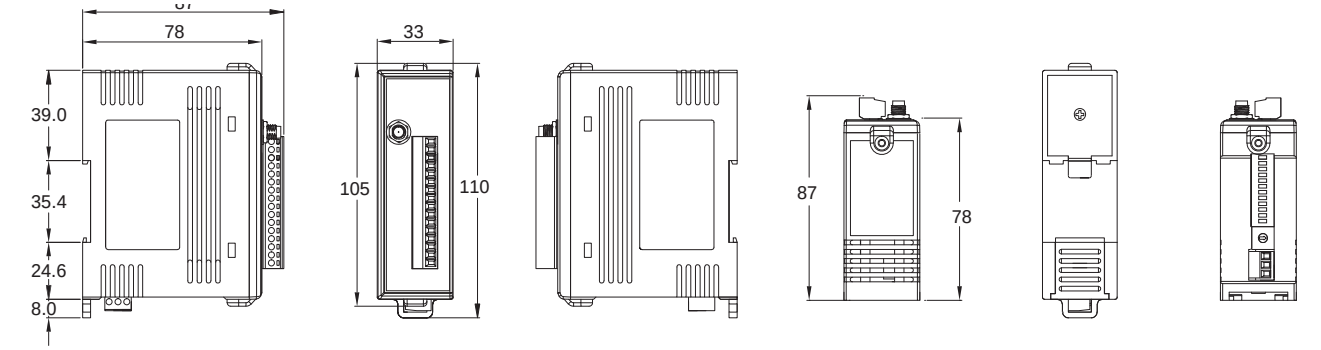
Wiring

	CH0, 1, 2, 5 and 6
2-wire RTD	
3-wire RTD	

Appearance



Dimensions (Units: mm)



Left Side View | Front View | Right Side View | Top View | Rear View | Bottom View

Ordering Information

ZT-2015 CR	Wireless 6-channel RTD Input Module with 3-wire RTD Lead Resistance Elimination (RoHS) (Long Range)

Important Note: Zigbee Data Acquisition modules need a Zigbee host converter to coordinate the data transmission route. Please remember to order a ZT-2550, ZT-2570 ZigBee host converter when you purchase Zigbee Data Acquisition products.

Accessories

MDR-20-24	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting
ZT-2510 CR	ZigBee Repeater (RoHS)
ZT-2550 CR	RS-485/RS-232 to ZigBee Converter (Host)
ZT-2570 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Host) (RoHS)

ZT-2017

Wireless 8-channel Analog Input Module with High Voltage Protection

Features

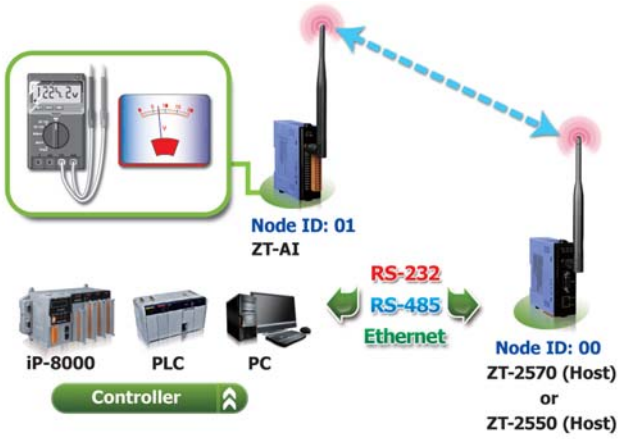
- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4G /ZigBee Specifications
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- 8 Differential Analog Input Channels (mV, V)
- Individual Channel Configuration
- Overvoltage Protection up to 240 Vrms

Introduction

The ZT-2017 is a wireless 16-bit, 8-channel differential analog input ZigBee module that provides a programmable input range on all analog channels (+/-150 mV, +/-500 mV, +/-1 V, +/-5 V or +/-10 V) . Each analog channel can be configured for an individual input range and has a high 240 Vrms overvoltage protection. Users can easily to configure the module address, protocol, checksum, ZigBee PANID, ZigBee channel and type code settings using a combination of rotary and DIP switches.

Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.



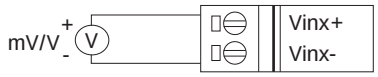
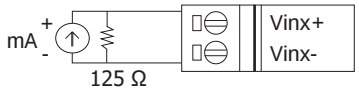
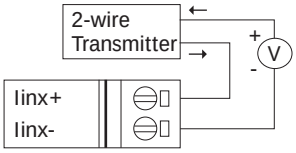
System Specifications

Communication Interface	
Wireless Standards	ZigBee 2007 Pro
Transmission Power	11 dBm(FCC Certificated) (Max 19 dBm)
2.4 GHz Antenna	5 dBi Omni directional
Transmission Range (LoS)	700 m (Typical)
Certification	CE/FCC, FCC ID
Max. Slaves in a ZigBee Network	255
ZB-100R/ZB-100T Support	-
Protocols	Supports DCON and Modbus RTU Protocols
Hot Swap	Rotary and DIP switch
LED Indicators	
Power	1 LED, red
ZigBee Communication	1 LED, green
Power	
Power Consumption	1.4 W Max.
Mechanical	
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x L x H)	33 mm x 87 mm x 110 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +80 °C
Relative Humidity	10 ~ 90% RH, Non-condensing

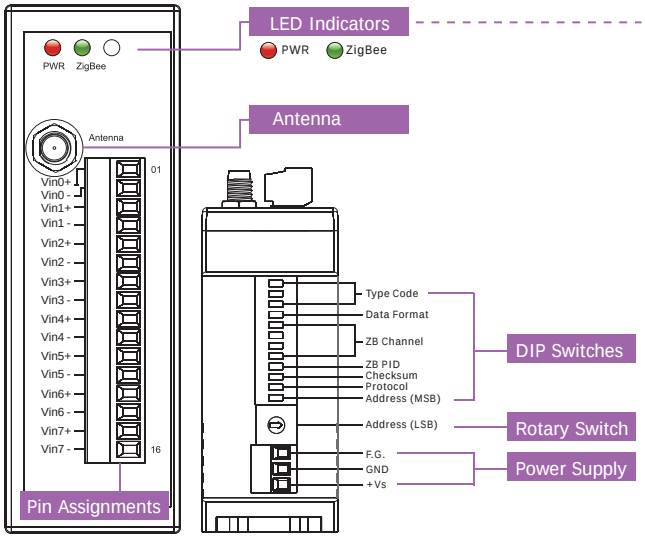
I/O Specifications

Analog Input	
Input Channels	8 Differential
Input Types	+/-10 V, +/-5 V, +/-1V, +/-500 mV, +/-150 mV or -20 mA ~ +20 mA (Requires Optional External 125 Ω Resistor)
Resolution	16-bit
Sampling Rate	16-bit, 10 Samples/Sec. (Total)
Accuracy	+/-0.1% of FSR
-3dB Bandwidth	15.7 Hz
Zero Drift	+/-20 μV/°C
Span Drift	+/-25 ppm/°C
Common Mode Rejection	86 dB
Normal Mode Rejection	100 dB
Input Impedance	>2 MΩ
Overvoltage Protection	240 V_{rms}
Individual Channel Configuration	Yes
Intra-module Isolation, Field-to-Logic	3000 V_{DC}
ESD Protection	+/-4 kV contact for each channel

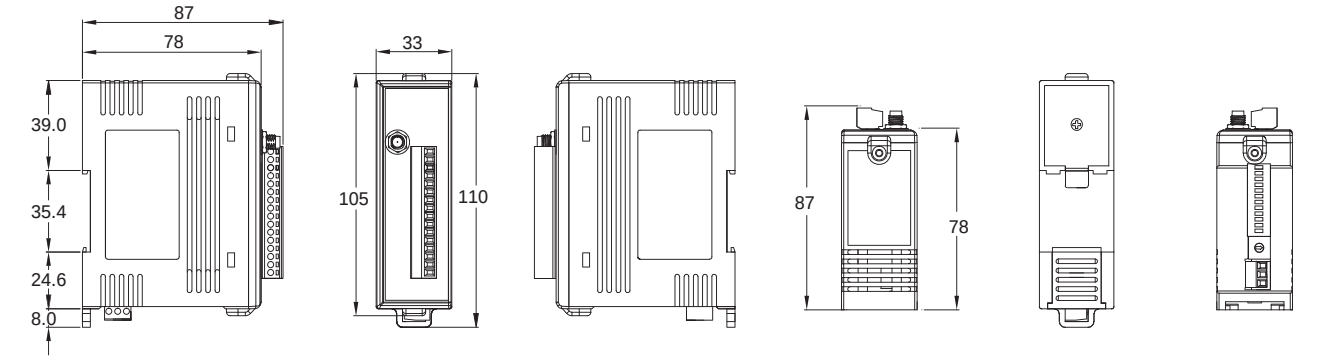
Wiring

Analog Input	**Current Input** 
	Current Input  Requires Optional External 125 Ω Resistor
	Transmitter Input 

Appearance



Dimensions (Units: mm)



Left Side View | Front View | Right Side View | Top View | Rear View | Bottom View

Ordering Information

ZT-2017 CR	Wireless 8-channle Analog Input Module with High Voltage Protection (RoHS)(Long Range)

Important Note: Zigbee Data Acquisition modules need a Zigbee host converter to coordinate the data transmission route. Please remember to order a ZT-2550, ZT-2570 ZigBee host converter when you purchase Zigbee Data Acquisition products.

Accessories

MDR-20-24	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting
ZT-2510 CR	ZigBee Repeater (RoHS)
ZT-2550 CR	RS-485/RS-232 to ZigBee Converter (Host)
ZT-2570 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Host) (RoHS)

ZT-2017C

Wireless 8-channel Current Input Module
with High Common Voltage Protection

Features

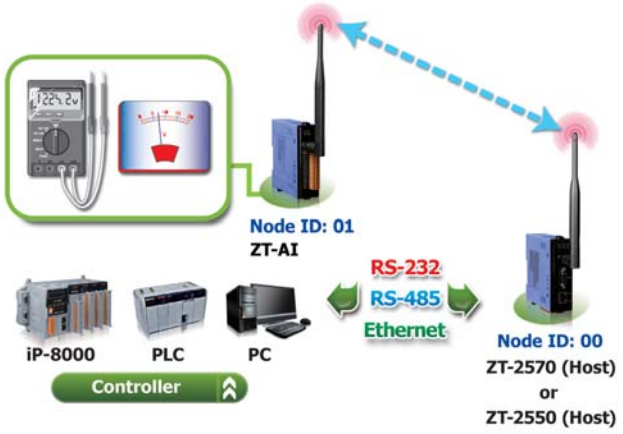
- SM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4G /ZigBee Specifications
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- 8 Differential Current Input Channels
- Individual Channel Configuration
- Open Wire Detection for 4 ~ 20 mA

Introduction

The ZT-2017C is a wireless 16-bit, 8-channel differential analog input ZigBee module that provides a programmable input range on all analog channels (-20 mA ~ +20 mA, 0 ~ +20 mA or +4 ~ +20 mA) . Each analog channel can be configured for an individual range and has a high 200 VDC common voltage protection. The module Supports open wire detection for 4 ~ 20 mA. Users can easily configure the module address, protocol, checksum, ZigBee PANID, ZigBee channel and type code settings using a combination of rotary and DIP switches.

Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.



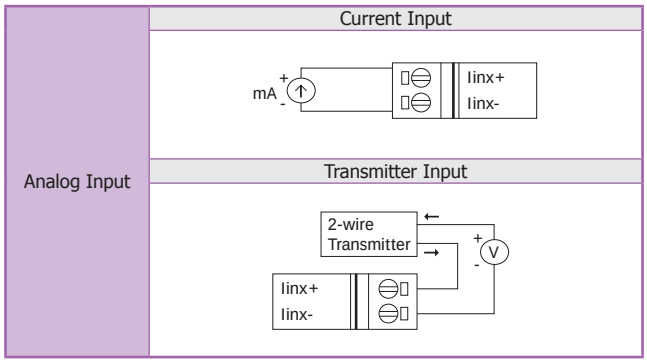
System Specifications

Communication Interface	
Wireless Standards	ZigBee 2007 Pro
Transmission Power	11 dBm(FCC Certificated) (Max 19 dBm)
2.4 GHz Antenna	5 dBi Omni directional
Transmission Range (LoS)	700 m (Typical)
Certification	CE/FCC, FCC ID
Max. Slaves in a ZigBee Network	255
ZB-100R/ZB-100T Support	-
Protocols	Supports DCON and Modbus RTU Protocols
Hot Swap	Rotary and DIP switch
LED Indicators	
Power	1 LED, red
ZigBee Communication	1 LED, green
Power	
Power Consumption	1.4 W Max.
Mechanical	
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x L x H)	33 mm x 87 mm x 110 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +80 °C
Relative Humidity	10 ~ 90% RH, Non-condensing

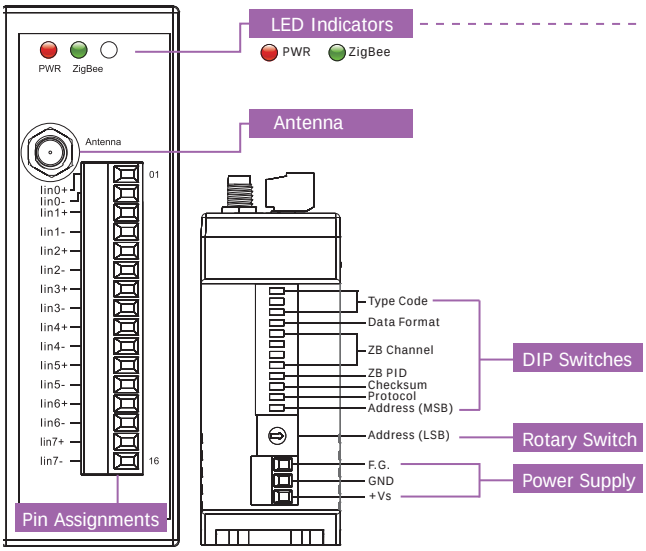
I/O Specifications

Analog Input	
Input Channels	8 Differential
Input Types	-20 mA ~ +20 mA, 0 mA ~ +20 mA or +4 mA ~ +20 mA
Resolution	16-bit
Sampling Rate	16-bit, 10 Samples/Sec. (Total)
Accuracy	+/-0.1% of FSR
-3dB Bandwidth	15.7 Hz
Zero Drift	+/-20 μV/°C
Span Drift	+/-25 ppm/°C
Common Mode Rejection	86 dB
Normal Mode Rejection	100 dB
Input Impedance	125 Ω
Common Voltage	+/- 200 VDC
Individual Channel Configuration	Yes
Open Wire Detection for 4 ~ 20 mA	Yes
Intra-module Isolation, Field-to-Logic	3000 VDC
ESD Protection	+/-4 kV contact for each channel

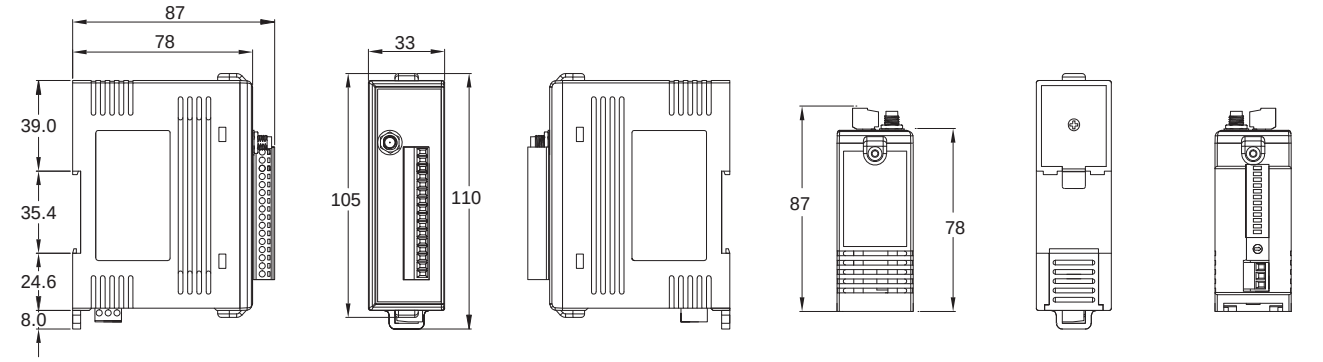
Wiring



Appearance



Dimensions (Units: mm)



Left Side View | Front View | Right Side View | Top View | Rear View | Bottom View

Ordering Information

ZT-2017C CR	Wireless 8-channle Current Input Module with High Common Voltage Protection (RoHS)(Long Range)

Important Note: Zigbee Data Acquisition modules need a Zigbee host converter to coordinate the data transmission route. Please remember to order a ZT-2550, ZT-2570 ZigBee host converter when you purchase Zigbee Data Acquisition products.

Accessories

MDR-20-24	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting
ZT-2510 CR	ZigBee Repeater (RoHS)
ZT-2550 CR	RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)
ZT-2570 CR	Ethernet/RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)

ZT-2018

Wireless 8-ch Analog Input Module with High Voltage Protection

Features

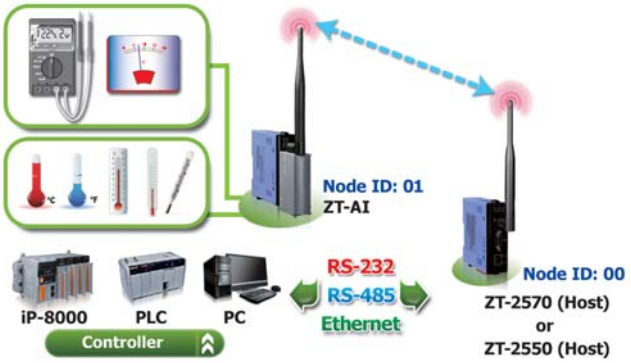
- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4G /ZigBee Specifications
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- 8 Differential Analog Input Channels (TC, mV, V)
- Individual Channel Configuration
- Open Thermocouple Detection
- Overvoltage Protection up to 240 Vrms

Introduction

The ZT-2018 a wireless 16-bit, 8-channel differential analog input module with an extremely high quality protection mechanism where overvoltage protection is up to 240 V_{rms}. Input type includes current, voltage as well as thermocouple. and is much more suitable for harsh environments. Moreover, a newly-added feature that enables open thermocouple detection makes the ZT-2018 more attractive than ever. The ZT-2018 is also qualified for 4 kV ESD protection and 3000 V_{DC} intra-module isolation. Users can easily configure the module address, protocol, checksum, ZT-PID, ZT-channel and type code settings using a combination of rotary and DIP switches.

Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.



I/O Specifications

Analog Input	
Input Channels	8 Differential
Input Types	+/-15 mV, +/-50 mV, +/-100 mV, +/-500 mV, +/-1V, +/-2.5V, +/-20 mA, 0 ~ 20 mA or 4 ~ 20 mA Thermocouple (J, K, T, E. R. S, B, N, C, L, M, $L_{DIN43710}$) (Requires Optional External 125 Ω Resistor for current input).
Resolution	16-bit
Sampling Rate	10 Samples/Sec. (Total)
Accuracy	+/-0.1% of FSR
-3dB Bandwidth	15.7 Hz
Zero Drift	+/-10 μV/°C
Span Drift	+/-25 ppm/°C
Common Mode Rejection	86 dB min.
Normal Mode Rejection	100 dB
Input Impedance	>400 kΩ
Open Thermocouple Detection	Yes
Overvoltage Protection	240 V_{rms}
Intra-module Isolation, Field-to-Logic	3000 V_{DC}
ESD Protection	+/-4 kV contact for each channel

Thermocouple Type

Type Code	Temperature Range	Type Code	Temperature Range
J	-210 ~ +760°C	B	0 ~ +1820°C
K	-270 ~ +1372°C	N	-270 ~ +1300°C
T	-270 ~ +400°C	C	0 ~ +2320°C
E	-270 ~ +1000°C	L	-200 ~ +800°C
R	0 ~ +1768°C	M	-200 ~ +100°C
S	0 ~ +1768°C	L2 (DIN43710)	-200 ~ +900°C

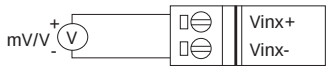
System Specifications

Communication Interface	
Wireless Standards	ZigBee 2007 Pro
Transmission power	11 dBm (FCC Certificated) (Max 19 dBm)
2.4 GHz Antenna	5 dBi Omni directional
Transmission Range (LoS)	700 m (Typical)
Certification	CE/FCC,FCC ID
Max. Slaves in a zigbee network	255
ZB-100R/ZB-100T Supported	-
Protocols	Supports DCON and Modbus RTU Protocols
Hot Swap	Rotary and DIP switch
LED Indicators	
Power	1 LED, red
ZigBee Communication	1 LED, green
Power	
Power Consumption	1.2 W Max.
Mechanical	
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x L x H)	33 mm x 86 mm x 110 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +80 °C
Relative Humidity	10 ~ 90% RH, Non-condensing

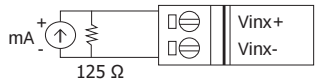
Wiring

Analog Input

Voltage Input

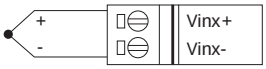


Current Input

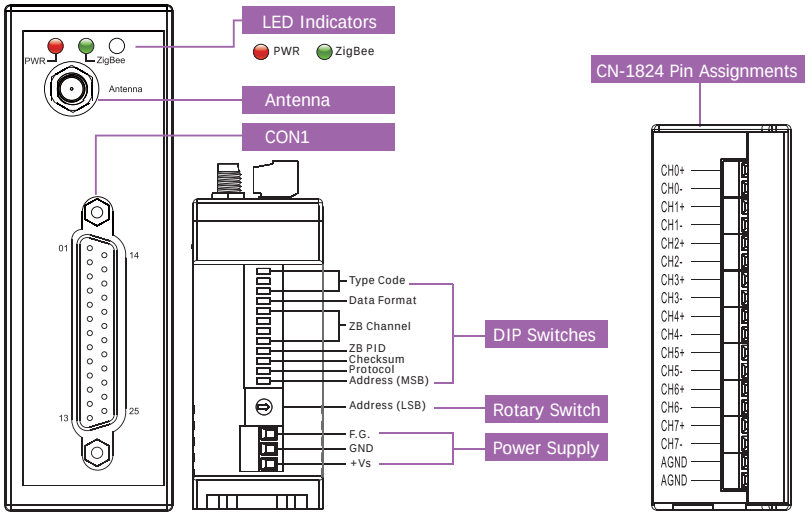


Requires Optional External 125 Ω Resistor

Thermocouple Input

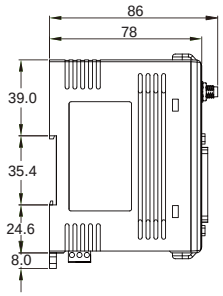


Appearance

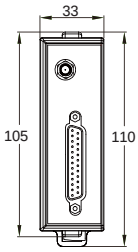


Dimensions (Units: mm)

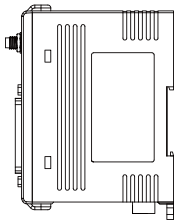
ZT-2018



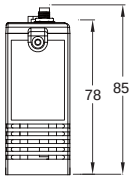
Left Side View



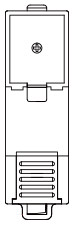
Front View



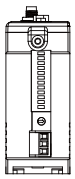
Right Side View



Top View

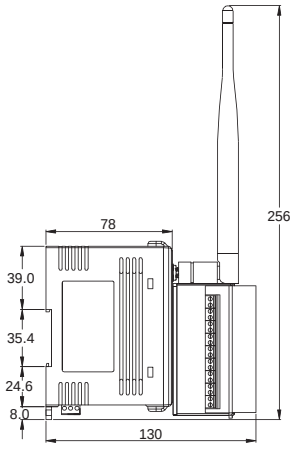


Rear View

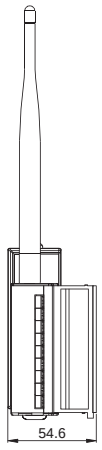


Bottom View

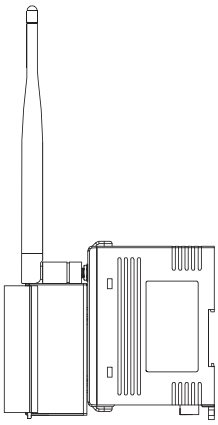
ZT-2018 + CN1824



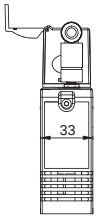
Left Side View



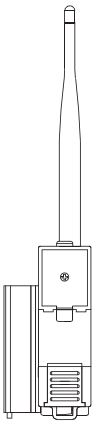
Front View



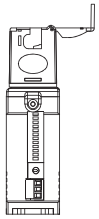
Right Side View



Top View



Rear View



Bottom View

Ordering Information

ZT-2018 CR	Wireless 8-channle Analog Input Module with High Voltage Protection (RoHS) (Long Range)

Important Note: Zigbee Data Acquisition modules need a Zigbee host converter to coordinate the data transmission route. Please remember to order a ZT-2550, ZT-2570 ZigBee host converter when you purchase Zigbee Data Acquisition products.

Accessories

MDR-20-24	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting
ZT-2510 CR	ZigBee Repeater (RoHS)
ZT-2550 CR	RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)
ZT-2570 CR	Ethernet/RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)

ZT-2024

Wireless 4-channle Voltage/Current Output Module

Features

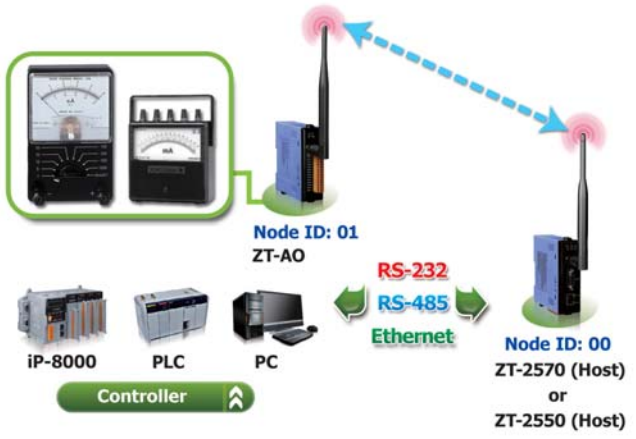
- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4G /ZigBee Specifications
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- 4 Analog Output Channels (V, mA)

Introduction

The ZT-2024 is a 12-bit, 4-channel analog output wireless ZigBee module that provides a programmable output range an all channels, including 0 ~ +10 VDC, -10 VDC ~ +10 VDC, 0 ~ +5 VDC, -5 VDC ~ +5 VDC, 0 ~ +20 mA or +4 mA ~ +20 mA. There are also options for configuring the power-on value and the safe value. The module address, protocol, checksum, ZigBee PANID, ZigBee channel and type code settings can be easily configured settings using a combination of rotary and DIP switches.

Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.



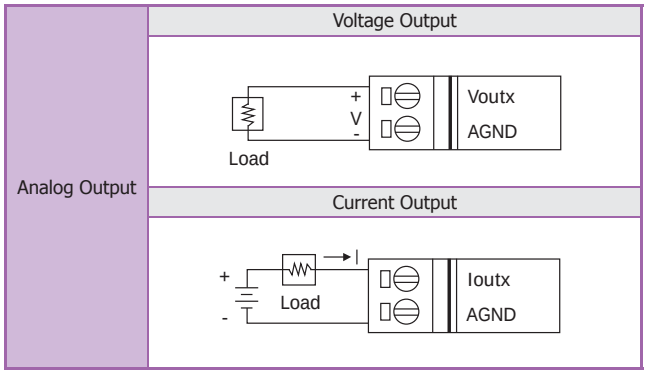
System Specifications

Communication Interface	
Wireless Standards	ZigBee 2007 Pro
Transmission Power	11 dBm (FCC Certificated) (Max 19 dBm)
2.4 GHz Antenna	5 dBi Omni directional
Transmission Range (LoS)	700 m (Typical)
Certification	CE/FCC, FCC ID
Max. Slaves in a ZigBee Network	255
ZB-100R/ZB-100T Support	-
Protocols	Supports DCON and Modbus RTU Protocols
Hot Swap	Rotary and DIP switch
LED Indicators	
Power	1 LED, red
ZigBee Communication	1 LED, green
Power	
Power Consumption	2.2 W Max.
Mechanical	
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x L x H)	33 mm x 87 mm x 110 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +80 °C
Humidity	10 ~ 90% RH, Non-condensing

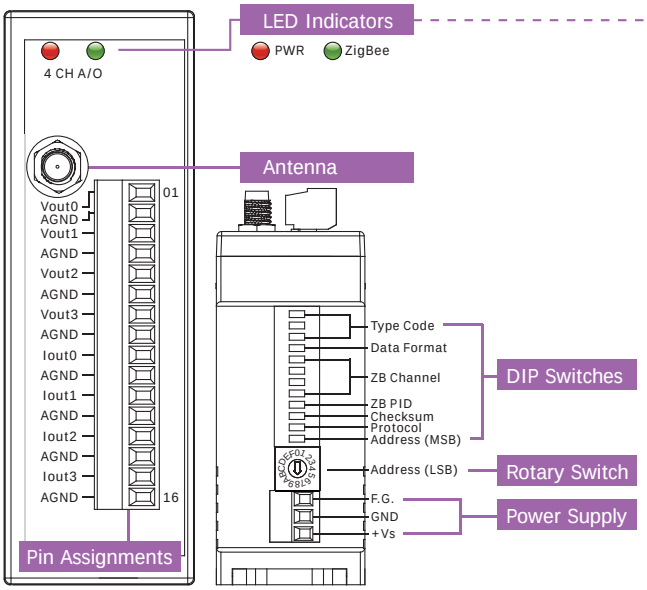
I/O Specifications

Analog Output	
Output Types	0 ~ +10 VDC, -10 VDC ~ +10 VDC, 0 ~ +5 VDC, -5 VDC ~ +5 VDC, 0 ~ +20 mA, +4 mA ~ +20 mA
Resolution	12-bit
Accuracy	+/-0.1% of FSR
Zero Drift	+/-30 μV/°C
Span Drift	+/-25 ppm/°C
Programmable Output Slope	0.125 to 2048 mA/ second
	0.0625 to 1024 V/ second
Voltage Output Capability	10 V @ 10 mA
Current Load Resistance	External +24 V power : 1050 Ω
Power-on and Safe Value	Yes
Intra-module Isolation, Field-to-Logic	2500 VDC
ESD Protection	+/-4 kV contact for each channel

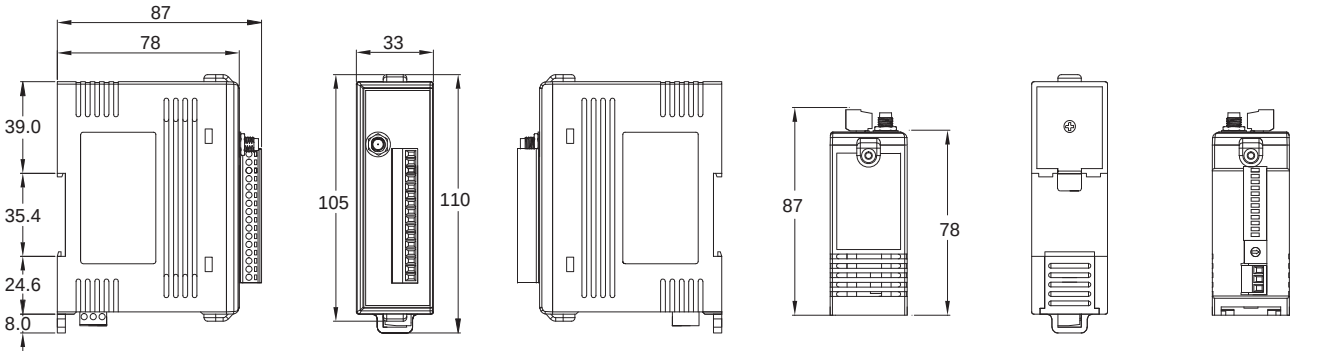
Wiring



Appearance



Dimensions (Units: mm)



Left Side View | Front View | Right Side View | Top View | Rear View | Bottom View

Ordering Information

ZT-2024 CR	Wireless 4-channle Voltage/Current Output Module (RoHS)(Long Range)

Important Note: Zigbee Data Acquisition modules need a Zigbee host converter to coordinate the data transmission route. Please remember to order a ZT-2550, ZT-2570 ZigBee host converter when you purchase Zigbee Data Acquisition products

Accessories

MDR-20-24	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting
ZT-2510 CR	ZigBee Repeater (RoHS)
ZT-2550 CR	RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)
ZT-2570 CR	Ethernet/RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)

ZT-2026

Wireless 4-channel Voltage Input, 2-channel Voltage Output, 2-channel Digital Input and 2-channel Digital Output Module

Features

- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4G /ZigBee Specifications
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- 4 AI, 2 AO, 2 DI and 2 DO Channels
- Individual Channel Configuration
- Overvoltage Protection is up to 240 Vrms

Introduction

The ZT-2026 is a wireless ZigBee module that offers 4 differential analog input channels, 2 analog output channels, 2 digital input channels and 2 digital output channels and provides a programmable analog input and output range. Each analog input channel can be configured to an individual range and each has 240 Vrms overvoltage protection. There are also options for a power-on value and a safe value. Users can easily configure the module address, protocol, checksum, ZT-PID, ZT-channel and type code settings using a combination of rotary and DIP switches.

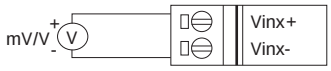
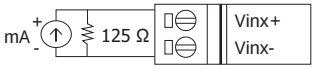
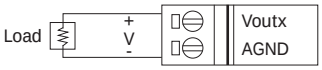
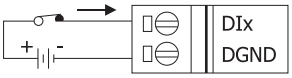
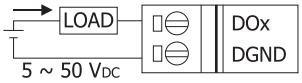
System Specifications

Communication Interface	
Wireless Standards	ZigBee 2007 Pro
Transmission Power	11 dBm(FCC Certificated) (Max 19 dBm)
2.4 GHz Antenna	5 dBi Omni directional
Transmission Range (LoS)	700 m (Typical)
Certification	CE/FCC, FCC ID
Max. Slaves in a ZigBee Network	255
ZB-100R/ZB-100T Support	-
Protocols	Supports DCON and Modbus RTU Protocols
Hot Swap	Rotary and DIP switch
LED Indicators	
Power	1 LED, red
ZigBee Communication	1 LED, green
Isolation	
Intra-module Isolated, Field-to-Logic	2500 VDC (for AI, AO, DI and DO)
EMS Protection	
ESD (IEC 61000-4-2)	4 kV Contact for Power Line, Communication Line and each Channel, 8 kV Air for Random Point
EFT (IEC 61000-4-4)	4 kV for Power Line
Power	
Input Voltage Range	+10 VDC ~ +30 VDC (Reverse Polarity Protection)
Power Consumption	2.1 W Max.
Mechanical	
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x L x H)	33 mm x 87 mm x 110 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +80 °C
Relative Humidity	10 ~ 90% RH, Non-condensing

I/O Specifications

Analog Input	
Input Channels	4 Differential
Input Types	+/-10 V, +/-5 V, +/-1 V, +/-500 mV, +/-150 mV or -20 mA ~ +20 mA (Requires Optional External 125 Ω Resistor)
Resolution	16-bit
Sampling Rate	10 Samples/Second (Total)
Accuracy	+/-0.1% of FSR
-3dB Bandwidth	15.7 Hz
Zero Drift	+/-20 μV/°C
Span Drift	+/-25 ppm/°C
Common Mode Rejection	86 dB
Normal Mode Rejection	100 dB
Input Impedance	>2 MΩ
Overvoltage Protection	240 Vrms
Individual Channel Configuration	Yes
Analog Output	
Output Channels	2
Output Types	+/-10 VDC, +/-5 VDC, 0 ~ 10 VDC or 0 ~ 5 VDC
Resolution	12-bit
Accuracy	+/-0.1% of FSR
Zero Drift	+/-30 μV/°C
Span Drift	+/-25 ppm/°C
Programmable Output Slope	0.0625 ~ 512 V/Second
Voltage Capability	20 mA @ 10 V
Power-on and Safe Value	Yes
Digital Input	
Input Channels	2 (Sink)
On Voltage Level	3.5 VDC ~ 50 VDC
Off Voltage Level	1 VDC Max.
Input Impedance	10 KΩ
Event Counters	Channels : 2
	Max. Count: 16-bit (65535)
	Max. Input Frequency: 50 Hz
	Min. Pulse Width: 10 ms
Digital Output	
Output Channels	2 (Sink)
Output Types	Isolated Open Collector
Max. Load Current	700 mA/channel
Load Voltage	+5 VDC ~ +50 VDC
Short Circuit Protection	Yes

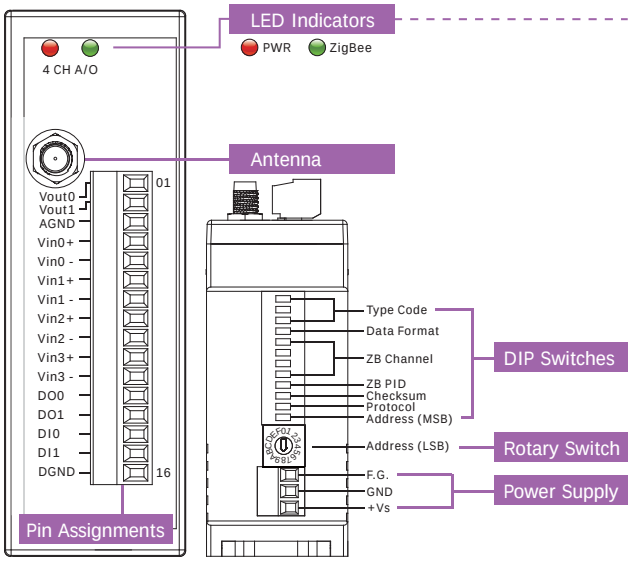
Wiring

Analog Input	Voltage Input	
	Current Input	 Requires Optional External 125 Ω Resistor
Analog Output	Voltage Output	
Digital Input /Counter	OFF <1 VDC, ON +3.5 ~ +50 VDC (Sink)	
Digital Output	Open Collector (Sink)	

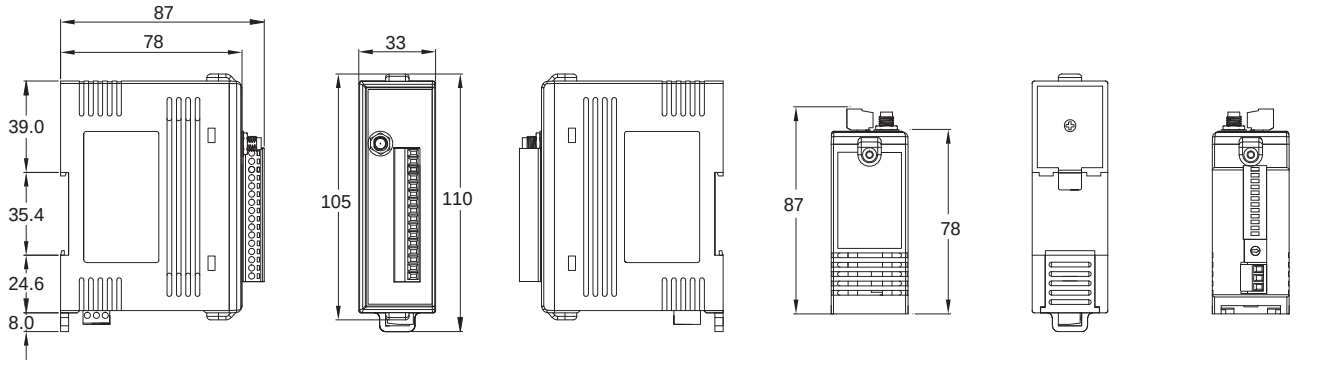
Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.

Appearance



Dimensions (Units: mm)



Left Side View | Front View | Right Side View | Top View | Rear View | Bottom View

Ordering Information

ZT-2026 CR	Wireless 4-ch Voltage Input, 2-channle Voltage Output, 2-channle Digital Input and 2-channle Digital Output Module (RoHS) (Long Range)

Important Note: Zigbee Data Acquisition modules need a Zigbee host converter to coordinate the data transmission route. Please remember to order a ZT-2550, ZT-2570 ZigBee host converter when you purchase Zigbee Data Acquisition products.

Accessories

MDR-20-24	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting
ZT-2510 CR	ZigBee Repeater (RoHS)
ZT-2550 CR	RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)
ZT-2570 CR	Ethernet/RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)

ZT-2042

Wireless 4-channel PhotoMOS Relay Output and 4-channel Open Collector Output Module

Features

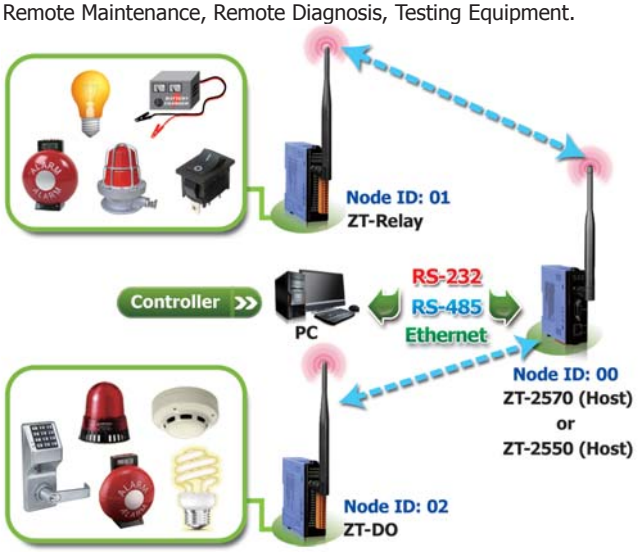
- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4G /ZigBee Specifications
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- 4 PhotoMOS Relay Output Channels and 4 Open Collector Digital Output Channels
- Short Circuit Protection

Introduction

The ZT-2042 offers 4 PhotoMOS relay output channels and 4 sink-type digital output channels with short circuit protection. Each channel features photo couple isolation. The ZT-2042 has 8 LED indicators to display the DO channel status. 4kV ESD protection and 3000 VDC intra-module isolation are the standard. Users can easily configure the module address, protocol, checksum, ZB-PID and ZB-channel settings using a combination of rotary and DIP switches.

Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.



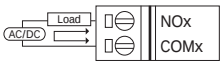
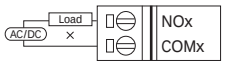
System Specifications

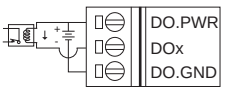
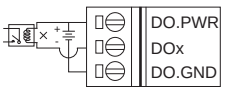
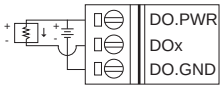
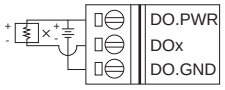
Communication Interface	
Wireless Standards	ZigBee 2007 Pro
Transmission Power	11 dBm (FCC Certificated) (Max 19 dBm)
2.4 GHz Antenna	5 dBi Omni directional
Transmission Range (LoS)	700 m (Typical)
Certification	CE/FCC, FCC ID
Max. Slaves in a ZigBee Network	255
ZB-100R/ZB-100T Support	-
Protocols	Supports DCON and Modbus RTU Protocols
Hot Swap	Rotary and DIP switch
LED Indicators	
Power	1 LED, red
ZigBee Communication	1 LED, green
Digital Output	8 LEDs, red
Isolation	
Intra-module Isolated, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	4 kV Contact for Power Line, Communication Line and each Channel, 8 kV Air for Random Point
EFT (IEC 61000-4-4)	4 kV for Power
Surge (IEC 61000-4-5)	3 kV for Power
Power	
Power Consumption	1.32 W Max.
Mechanical	
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x L x H)	33 mm x 87 mm x 110 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +80°C
Relative Humidity	10 ~ 90% RH, Non-condensing

I/O Specifications

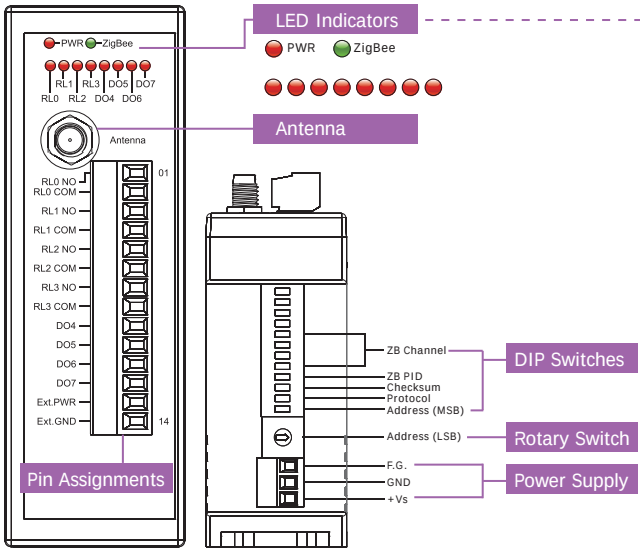
Relay Output	
Output Channels	4
Output Types	PhotoMOS Relay, Form A
Load Voltage	60 VDC/VAC
Max. Load Current	60 V/1.0 A (Operating Temperature: -25 ~ +40°C)
	60 V/0.8 A (Operating Temperature: +40 ~ +60°C)
	60 V/0.7 A (Operating Temperature: +60 ~ +75°C)
Power-on Time	5.0 ms
Power-off Time	0.5 ms
Digital Output	
Output Channels	4 (Sink)
Output Types	Isolated Open Collector
Max. Load Current	700 mA/channel
Load Voltage	+5 VDC ~ +50 VDC
Power-off Time	0.5 ms
External Power Reversed Protection and Short Circuit Protection	Yes
Current Limited Protection	1.1 A

Wiring

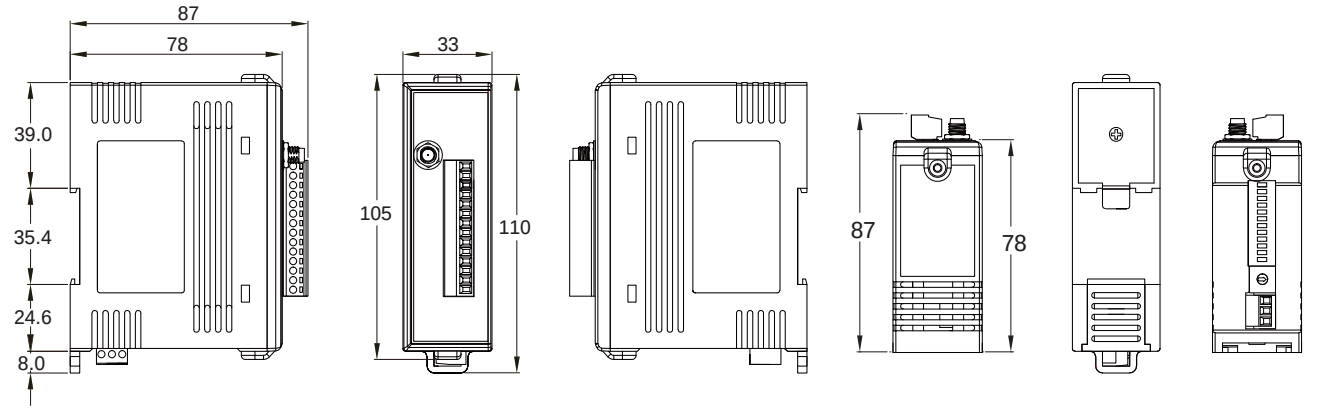
Relay Output	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
From A Relay Contact	Relay ON	Relay OFF
		

Digital Output	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Drive Relay	Relay ON	Relay OFF
		
Resistance Load	Relay ON	Relay OFF
		

Appearance



Dimensions (Units: mm)



Left Side View | Front View | Right Side View | Top View | Rear View | Bottom View

Ordering Information

ZT-2042 CR	Wireless 4-channel PhotoMOS Relay Output and 4-channel Open Collector Output Module (RoHS) (Long Range)

Important Note: Zigbee Data Acquisition modules need a Zigbee host converter to coordinate the data transmission route. Please remember to order a ZT-2550, ZT-2570 ZigBee host converter when you purchase Zigbee Data Acquisition products.

Accessories

MDR-20-24	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting
ZT-2510 CR	ZigBee Repeater (RoHS)
ZT-2550 CR	RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)
ZT-2570 CR	Ethernet/RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)

ZT-2043

Wireless 14-channel Isolated Digital Output Module

Features

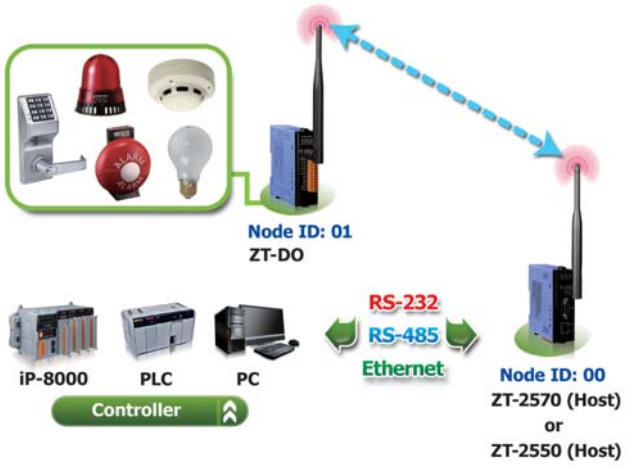
- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4G /ZigBee Specifications
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- 14 Digital Output Channels for Open Collector
- Short Circuit Protection

Introduction

The ZT-2043 offers 14 sink type digital output channels with short circuit protection. All channels feature photo-couple isolation. The ZT-2043 includes 14 LED indicators to display the DO channel status. 4 kV ESD protection and 3750 VDC intra-module isolation are the standard. Users can easily configure the module address, protocol, checksum, ZigBee PANID, ZigBee channel settings using a combination of rotary and DIP switches.

Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.



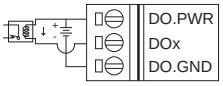
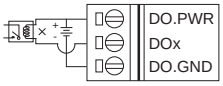
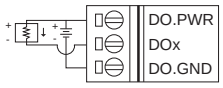
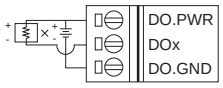
System Specifications

Communication Interface	
Wireless Standards	ZigBee 2007 Pro
Transmission Power	11 dBm (FCC Certificated) (Max 19 dBm)
2.4 GHz Antenna	5 dBi Omni directional
Transmission Range (LoS)	700 m (Typical)
Certification	CE/FCC, FCC ID
Max. Slaves in a ZigBee Network	255
ZB-100R/ZB-100T Support	-
Protocols	Supports DCON and Modbus RTU Protocols
Hot Swap	Rotary and DIP switch
LED Indicators	
Power	1 LED, red
ZigBee Communication	1 LED, green
Digital Output	14 LEDs, red
Isolation	
Intra-module Isolation, Field to Logic	3750 VDC
EMS Protection	
ESD (IEC 61000-4-2)	4 kV Contact for Power Line, Communication Line and each Channel, 8 kV Air for Random Point
EFT (IEC 61000-4-4)	4 kV for Power
Surge (IEC 61000-4-5)	3 kV for Power
Power	
Power Consumption	0.84 W Max.
Mechanical	
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x L x H)	33 mm x 87 mm x 110 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +80°C
Relative Humidity	10 ~ 90% RH, Non-condensing

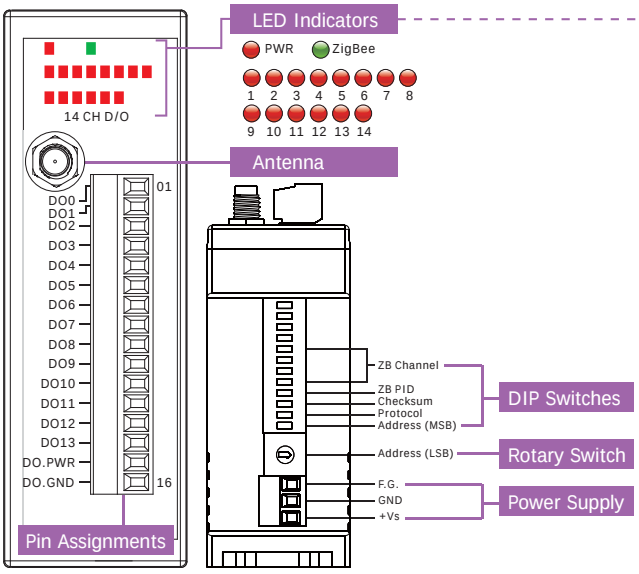
I/O Specifications

Digital Output	
Output Channels	14 (Sink)
Output Types	Isolated Open Collector
Max. Load Current	700 mA/channel
Load Voltage	+5 VDC ~ +50 VDC
External Power Reversed Protection and Short Circuit Protection	Yes
Current Limited Protection	1.1 A

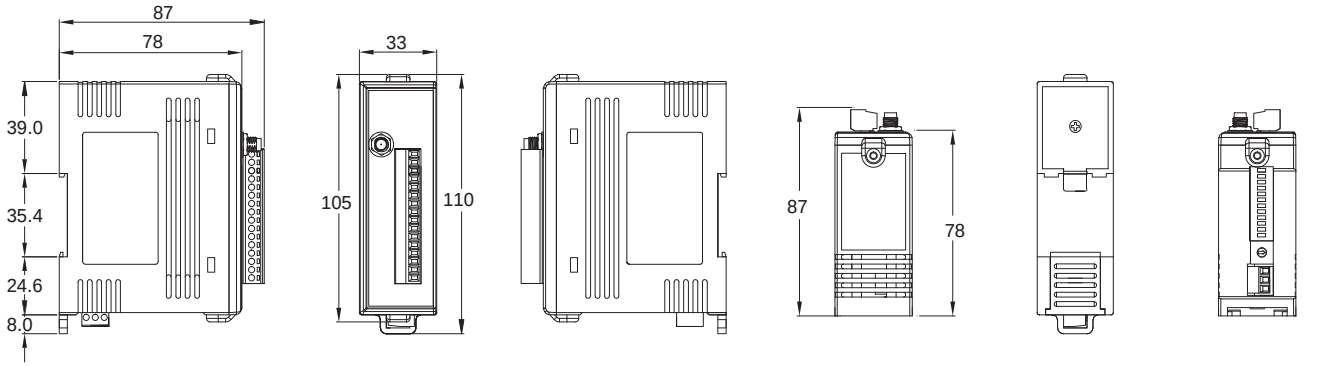
Wiring

Digital Output	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Drive Relay	Relay ON	Relay OFF
		
Resistance Load	Relay ON	Relay OFF
		

Appearance



Dimensions (Units: mm)



Left Side View | Front View | Right Side View | Top View | Rear View | Bottom View

Ordering Information

ZT-2043 CR	Wireless 14-channel Isolated Digital Output Module (RoHS) (Long Range)

Important Note: Zigbee Data Acquisition modules need a Zigbee host converter to coordinate the data transmission route. Please remember to order a ZT-2550, ZT-2570 ZigBee host converter when you purchase Zigbee Data Acquisition products.

Accessories

MDR-20-24	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting
ZT-2510 CR	ZigBee Repeater (RoHS)
ZT-2550 CR	RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)
ZT-2570 CR	Ethernet/RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)

ZT-2052

Wireless 8-channel Isolated Digital Input Module with 16-bit Counters

Features

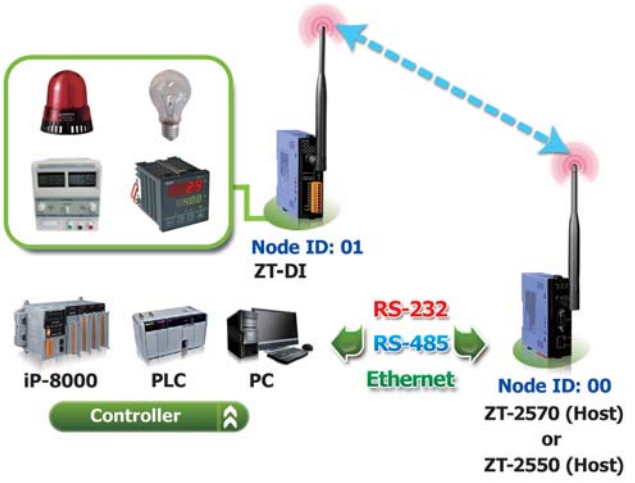
- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4G IEEE 802.15.4/ZigBee Specifications
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- 8 Wet Contact Digital Input Channels
- Supports 16-bit Counters for Digital Input Channels

Introduction

The ZT-2052 offers 8 digital input channels, each of which features photocouple isolation. In addition, you can choose either sink-type or source-type input via wire connections. All channels are able to be used as 16-bit counters. The ZT-2052 has 8 LED indicators to display the channel status and also includes 4 kV ESD protection and 3000 VDC intra-module isolation. Users can easily configure the module address, protocol, checksum, ZB-PID and ZB-channel settings using a combination of rotary and DIP switches.

Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.



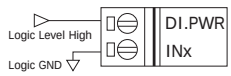
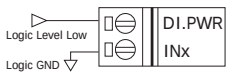
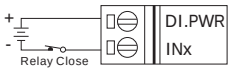
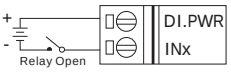
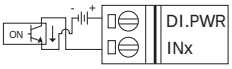
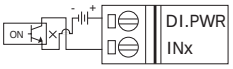
System Specifications

Model	ZT-2052
Communication Interface	
Wireless Standards	ZigBee, IEEE 802.15.4
Transmission Power	11 dBm
2.4 GHz Antenna	5 dBi Omni directional
Transmission Range (LoS)	700 m (Typical) 1 km (Max.)
Certification	-
Max. Slaves in a ZigBee Network	255
Protocols	Supports DCON and Modbus RTU Protocols
Hot Swap	Rotary and DIP switch
LED Indicators	
Power	1 LED, red
ZigBee Communication	1 LED, green
Digital Input	8 LEDs, green
Power	
Power Consumption	1 W Max.
Mechanical	
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x L x H)	33 mm x 87 mm x 110 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +80°C
Relative Humidity	10 ~ 90% RH, Non-condensing

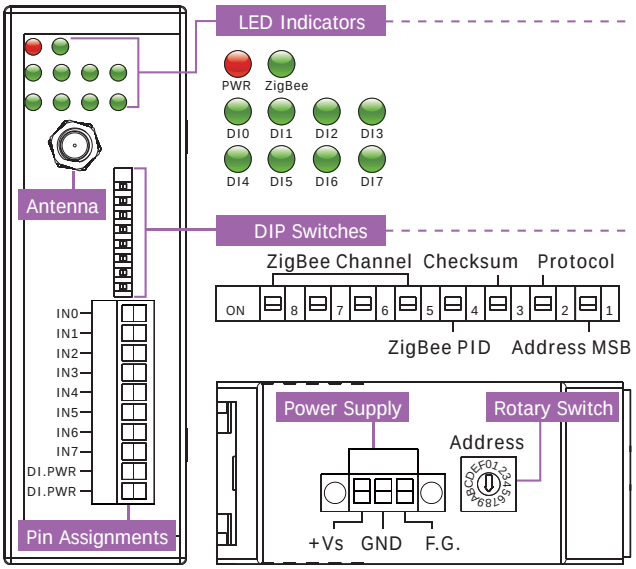
I/O Specifications

Model		ZT-2052
Digital Input		
Input Channels		8
Wet Contact (Sink/Source)	On Voltage Level:	+3.5 VDC ~ +30 VDC
	Off Voltage Level	+1 VDC Max.
Input Impedance		3 kΩ, 0.33 W
Counter	Channels	8
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Intra-module Isolation, Field to Logic		3750 Vrms
ESD Protection		+/-4 kV contact for each channel

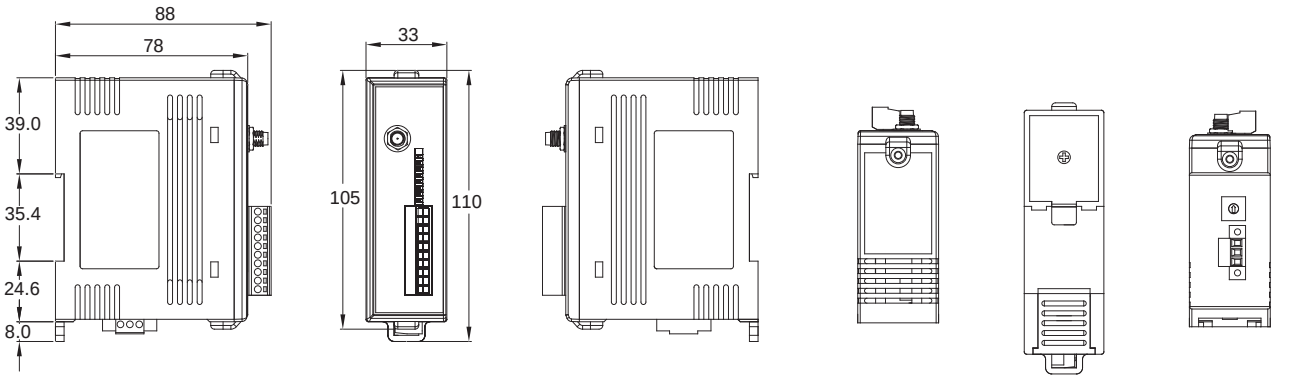
Wiring

Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
TTL/ CMOS Logic	Voltage > 3.5V	Voltage < 1V
		
Relay Contact	Relay ON	Relay OFF
		
Open Collector	Open Collector ON	Open Collector OFF
		

Appearance



Dimensions (Units: mm)



Left Side View | Front View | Right Side View | Top View | Rear View | Bottom View

Ordering Information

ZT-2052 CR	Wireless 8-channel Isolated Digital Input Module with 16-bit Counters (RoHS)

Important Note: ZigBee Data Acquisition modules need a ZigBee host converter to coordinate the data transmission route. Please remember to order a ZT-2550 or ZT-2570 ZigBee host converter when you purchase ZigBee Data Acquisition Products.

Accessories

MDR-20-24	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting
ZT-2510 CR	ZigBee Repeater (RoHS)
ZT-2550 CR	RS-485/RS-232 to ZigBee Converter (Host)
ZT-2570 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Host) (RoHS)

ZT-2053

Wireless 14-channel Isolated Digital Input Module

Features

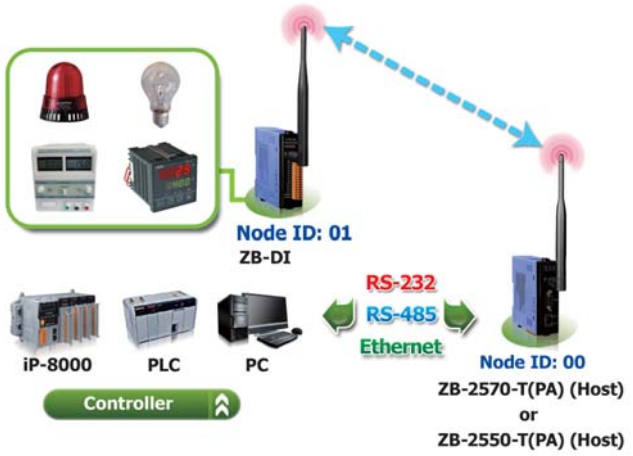
- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4G /ZigBee Specifications
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- 14 Dry or Wet Contact Digital Input Channels
- Supports 16-bit Counters for Digital Input Channels

Introduction

The ZT-2053 offers 14 digital input channels which can be used for either dry or wet contact. Its effective distance for dry contact is up to 500 meters. All channels are able to be used as 16-bit counters. The ZT-2053 includes 14 LED indicators to display the channel status as well as 4 kV ESD protection and 3750 Vrms intra-module isolation. Users can easily to configure the module address, protocol, checksum, ZigBee PANID, ZigBee channel settings using a combination of rotary and DIP switches.

Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.



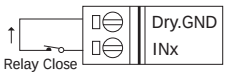
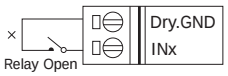
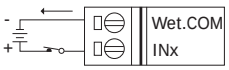
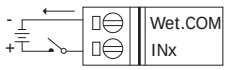
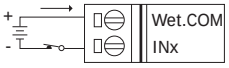
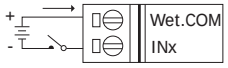
System Specifications

Communication Interface	
Wireless Standards	ZigBee 2007 Pro
Transmission Power	11 dBm (FCC Certificated) (Max 19 dBm)
2.4 GHz Antenna	5 dBi Omni directional
Transmission Range (LoS)	700 m (Typical)
Certification	CE/FCC, FCC ID
Max. Slaves in a ZigBee Network	255
ZB-100R/ZB-100T Support	-
Protocols	Supports DCON and Modbus RTU Protocols
Hot Swap	Rotary and DIP switch
LED Indicators	
Power	1 LED, red
ZigBee Communication	1 LED, green
Digital Input	14 LEDs, green
Power	
Intra-module Isolation, Field to Logic	3750 VDC
EMS Protection	
ESD (IEC 61000-4-2)	4 kV Contact for Power Line, Communication Line and each Channel, 8 kV Air for Random Point
EFT (IEC 61000-4-4)	4 kV for Power
Surge (IEC 61000-4-5)	3 kV for Power
Power	
Power Consumption	0.72 W Max.
Mechanical	
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x L x H)	33 mm x 87 mm x 110 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +80°C
Relative Humidity	10 ~ 90% RH, Non-condensing

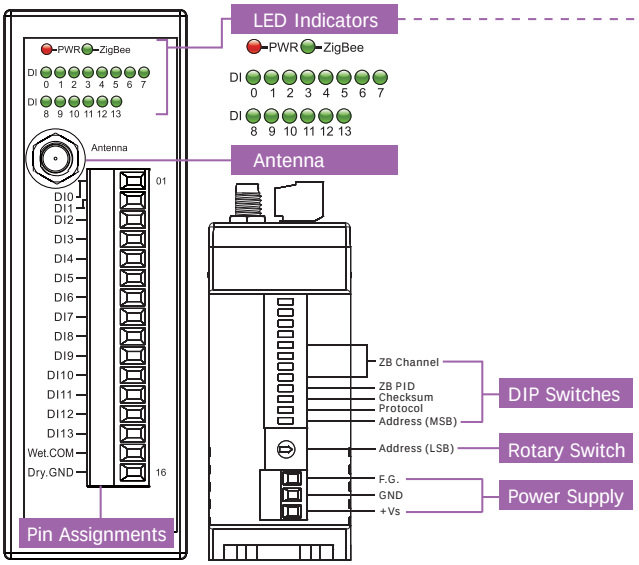
I/O Specifications

Digital Input	
Input Channels	14
Dry Contact (Sink)	On Voltage Level: Close to GND
	Off Voltage Level: Open
	Effective Distance for Dry Contact: 500 m Max.
Wet Contact (Sink/Source)	On Voltage Level: +3.5 VDC ~ +30 VDC
	Off Voltage Level: +1 VDC Max.
Input Impedance	3 kΩ, 0.33 W
Counter	Channels: 14
	Max. Count: 16-bit (65535)
	Max. Input Frequency: 100 Hz
	Min. Pulse Width: 5 ms

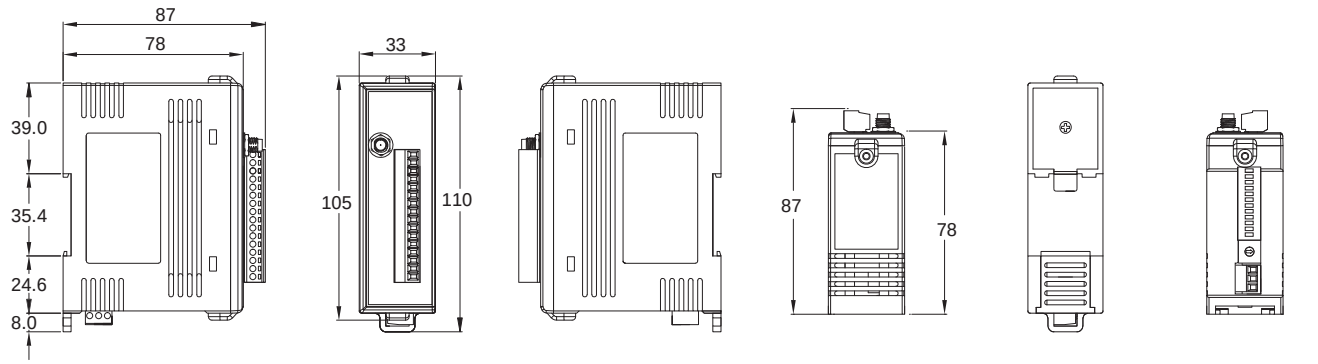
Wiring

Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Dry Contact	Relay ON	Relay OFF
		
Wet Contact (Source)	Voltage > 3.5V	Voltage < 1V
		
Wet Contact (Sink)	Open Collector ON	Open Collector OFF
		

Appearance



Dimensions (Units: mm)



Left Side View | Front View | Right Side View | Top View | Rear View | Bottom View

Ordering Information

ZT-2053 CR	Wireless 14-channel Isolated Digital Input Module (RoHS) (Long Range)

Important Note: Zigbee Data Acquisition modules need a Zigbee host converter to coordinate the data transmission route. Please remember to order a ZT-2550, ZT-2570 ZigBee host converter when you purchase Zigbee Data Acquisition products.

Accessories

MDR-20-24	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting
ZT-2510 CR	ZigBee Repeater (RoHS)
ZT-2550 CR	RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)
ZT-2570 CR	Ethernet/RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)

ZT-2060

Wireless 6-channel Isolated Digital Input and 4-channel Relay Output Module

Features

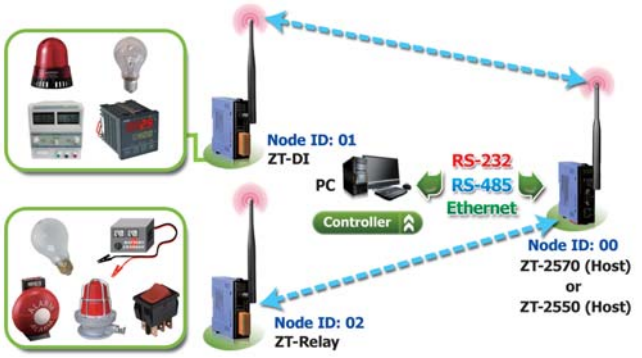
- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4G IEEE 802.15.4/ZigBee Specifications
- Wireless Transmission Range up to 700 m
- GUI Configuration Software (Windows Version)
- 6 Digital Input Channels and 4 Relay Output Channels
- All Channels Can Be Used As 16-bit Counters

Introduction

The ZT-2060 offers 4 Form A power relay output channels and 6 digital input channels, each of which features photocouple isolation. In addition, you can choose sink-type or source-type input via wire connections. All channels are able to be used as 16-bit counters. The ZT-2060 has 10 LED indicators to display the channel status, and has 4 kV ESD protection and 3000 VDC intra-module isolation. Users can easily configure the module address, protocol, checksum, ZigBee PANID, ZigBee channel settings using a combination of rotary and DIP switches.

Applications

Building Automation, Factory Automation, Machine Automation, Remote Maintenance, Remote Diagnosis, Testing Equipment.



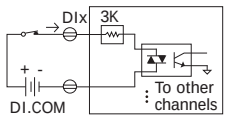
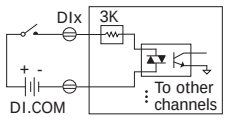
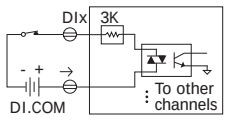
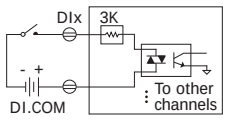
System Specifications

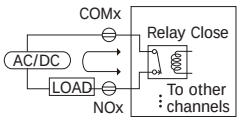
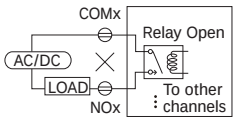
Communication Interface	
Wireless Standards	ZigBee 2007 Pro
Transmission Power	11 dBm (FCC Certificated)
2.4 GHz Antenna	5 dBi Omni directional
Transmission Range (LoS)	700 m (Typical)
Certification	CE/FCC, FCC ID
Max. Slaves in a ZigBee Network	255
Protocols	Supports DCON and Modbus RTU Protocols
Hot Swap	Rotary and DIP switch
LED Indicators	
Power	1 LED, Red
ZigBee Communication	1 LED, Green
Digital Input and Output	6 Green LEDs for Digital Input 4 Red LEDs for Relay Output
Isolation	
Intra-module Isolated, Field-to-Logic	2500 VDC
EMS Protection	
ESD (IEC 61000-4-2)	4 kV Contact for Power Line, Communication Line and each Channel, 8 kV Air for Random Point
EFT (IEC 61000-4-4)	4 kV for Power Line
Surge (IEC 61000-4-5)	3 kv for Power Line
Power	
Input Voltage Range	+10 VDC ~ +30 VDC
Power Consumption	1.4 W Max.
Mechanical	
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x L x H)	33 mm x 94 mm x 110 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +80°C
Relative Humidity	10 ~ 90% RH, Non-condensing

I/O Specifications

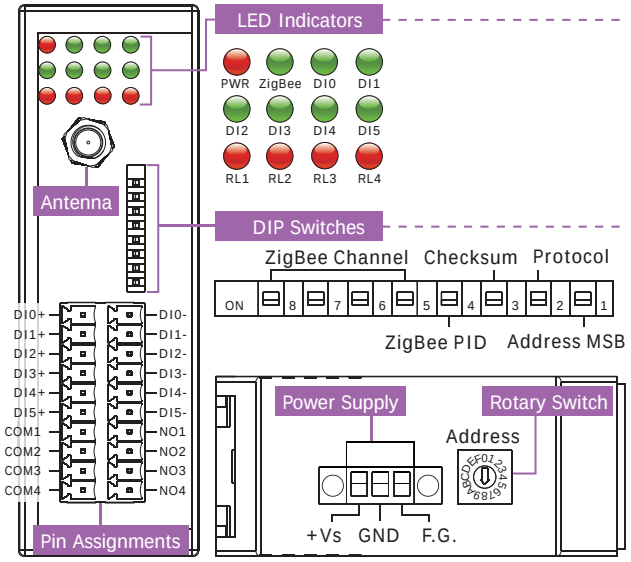
Digital Input		
Input Channels		6
Types		Wet Contact (Sink/Source)
On Voltage Level		+3.5 VDC ~ +30 VDC
Off Voltage Leve		+1 VDC Max.
Input Impedance		3 kΩ, 0.33 W
Counter	Channels	6
	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
Relay Output		
Output Channels		4
Types		Power Relay, Form A (SPST N.O)
Operating Voltage Range		250 VAC or 30 VDC
Max. Load Current		5 A
Operate Time		6 ms
Release Time		3 ms
Electrical Life (Resistive Load)	VDE	5 A @ 250 VAC 30,000 ops (10 ops/minute) at 75°C
		5 A @ 30 VDC 70,000 ops (10 ops/minute) at 75°C
	UL	5 A @ 250 VAC/30 VDC 6,000 ops
		3 A @ 250 VAC/30 VDC 100,000 ops
Mechanical Life		2 x 10^7 ops at no load (300 ops/minute)
Power-on Value		Yes, Programmable
Safe Value		Yes, Programmable

Wiring

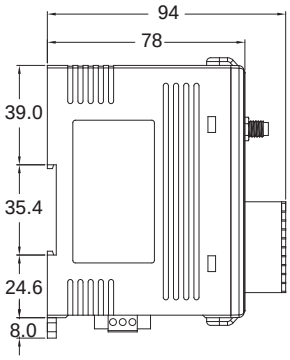
Digital Input/ Counter	ON State Readback as 1	OFF State Readback as 0
Sink	+3.5 ~ +30 V_{DC}	OPEN or <1 V_{DC}
		
Source	+3.5 ~ +30 V_{DC}	OPEN or <1 V_{DC}
		

Power Relay	ON State Readback as 1	OFF State Readback as 0
Relay Output		

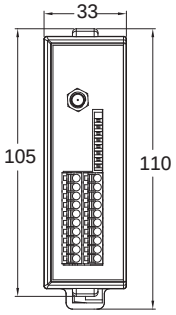
Appearance



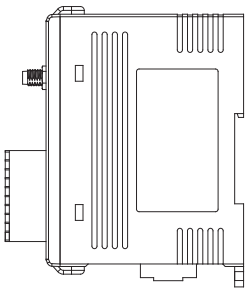
Dimensions (Units: mm)



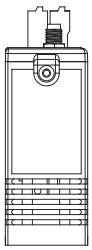
Left Side View



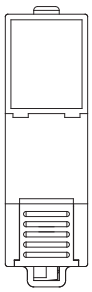
Front View



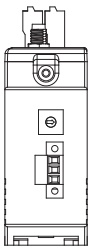
Right Side View



Top View



Rear View



Bottom View

Ordering Information

ZT-2060 CR	Wireless 6-channel Isolated Digital Input and 4-channel Relay Output Module (RoHS)

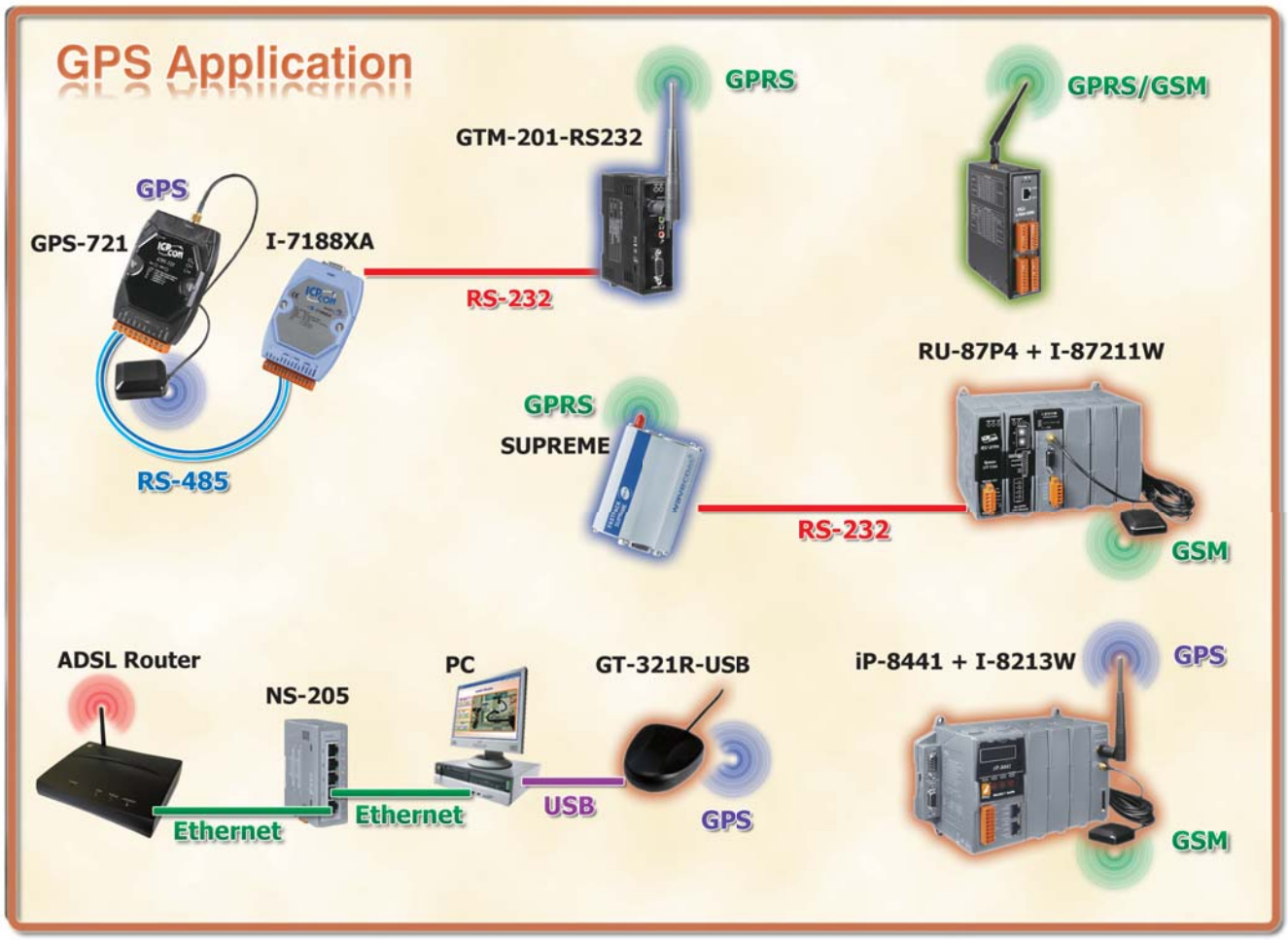
Important Note: ZigBee Data Acquisition modules need a ZigBee host converter to coordinate the data transmission route. Please remember to order a ZT-2550 or ZT-2570 ZigBee host converter when you purchase ZigBee Data Acquisition Products.

Accessories

MDR-20-24	24 V_{DC}/1.0 A, 24 W Power Supply with DIN-Rail Mounting
ZT-2510 CR	ZigBee Repeater (RoHS)
ZT-2550 CR	RS-485/RS-232 to ZigBee Converter (Host)
ZT-2570 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Host) (RoHS)

GPS Products

6.1. Overview



The Global Positioning System (GPS) is a space-based global navigation satellite system (GNSS) that provides reliable location and time information anytime and anywhere on the Earth when and where there is an unobstructed line of sight to four or more GPS satellites. ICP DAS provides various GPS products which are designed for rapid startup time and high performance in foliage and urban canyon environment.

Advantages & Benefits

- Support up to 66-channel GPS and NMEM v0183 v3.01
- Apply for Automotive, Marine or Personal positioning and navigation
- Current time from Satellite
- Easy installation

• GPS Product Selection Guide

GPS (Global Positioning System) is widely used for driving navigation, geographic monitoring, fleet management and cargo tracking, etc. We also can use GPS for industrial application according to its longitude and latitude value and UTC time. ICP DAS provides various modules for different applications. Some are pure GPS data receivers and some add DO channels. Some even can generate a UTC synchronized 1 PPS (Pulse Per Second).

Model Name	GPS Channels	SBAS	GPS Output Interface	GSM/GPRS	Digital Output	Protocol/ Interface	Description
GTM-201P-3GWA	32	WAAS, EGNOS, MSAS	USB/RS-232	Yes	-	-	GPs Receiver
GT-321R-USB	12	WAAS, EGNOS	RS-232	-	-	-	GPS Receiver
GT-321R-RS232	12	WAAS, EGNOS	USB	-	-	-	GPS Receiver
I-87211W	32	WAAS, EGNOS, MSAS	RS-232	-	2	DCON/*Note1	GPS Receiver and 2 DO Module
I-8213W	32	WAAS, EGNOS, MSAS	*Note2	Yes (TCP/IP protocol) *Note3	-	-	GPS Receiver and GPRS Controller Module
GPS-721	32	WAAS, EGNOS, MSAS	RS-232	-	1	DCON/RS-485	GPS Receiver and 1 DO Module

[*Note1] The support list of MCU (Main Control Unit) and I/O expansion unit are: XPAC, WinPAC, LinPAC, iPAC, ViewPAC, U-87P1/2/4/8, USB-87P1/2/4/8, I-8000, I-8KE4/8, I-8KE4/8-MTCP, I-87K4/5/8/9

[*Note2] Gets GPS Information from Parallel bus (API). The support list of MCU: XPAC, WinPAC, LinPAC, iPAC, ViewPAC, etc.

[*Note3] Gets GSM/GPRS Information from Parallel bus (API). This GPRS/GSM module is integrated with the TCP/IP protocol, Extended TCP/IP AT commands. The support list of MCU : XPAC, WinPAC, LinPAC, iPAC, ViewPAC, etc.

6.2. GPS Receivers

GT-321R-USB
GT-321R-RS232
GPS Receiver

Features

- GPS Receiver with 12 parallel channel
- 4100 simultaneous time-frequency search bins
- SBAS (WAAS, EGNOS) support
- -140 dBm acquisition sensitivity
- -150 dBm tracking sensitivity
- <10 second hot start
- <50 second cold start
- 5 m CEP accuracy
- USB/RS232 Interface

Introduction

With a miniature form factor, the GT-321R-RS232/USB GPS Receiver module utilizes 12-channel GPS technology and is designed for rapid startup time and high performance in foliage and urban canyon environments. The GT-321R-RS232/USB applies the latest semiconductor technology so as to provide robust performance, enhanced position and velocity filtering for smooth navigation, onboard patch antenna and RS-232/USB driver for simple interfacing.
The GT-321R is optimized for applications requiring good performance, low cost and maximum flexibility. It is suitable for a wide range of applications including asset tracking and monitoring. Satellite-based augmentation systems (SBAS) such as EGNOS and WAAS are supported to yield improved accuracy.

Specifications

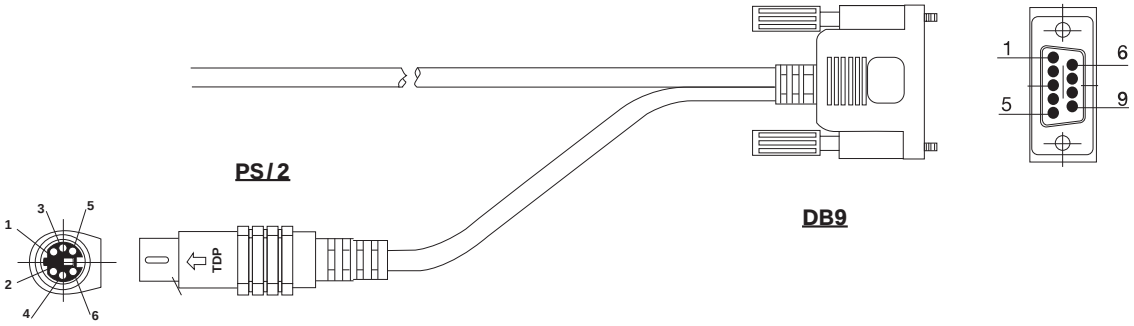
Models	GT-321R-RS232	GT-321R-USB
General		
General	L1 frequency, C/A code, 12 Parallel Channels	
Sensitivity	-165 dBW minimum	-140 dBm acquisition -150 dBm tracking
Update Rate	1 Hz	
Reacquisition	100 millisecond	
Accuracy		
Position	25 m CEP S/A off	5 m CEP
Velocity	0.1 m/sec S/A off	0.1 m/sec
Startup time		
Cold Start	120 sec	<50 sec (typical)
Warm Start	40 sec	<25 sec (typical)
Hot Start	10 sec	<10 sec
Dynamics		
Altitude	-1000 m ~ +18,000 m	<18,000 m
Velocity	500 m/sec	515 m/sec
Acceleration	+/-4 g	4 g
Communication Interface		
Serial Port	Standard RS-232	USB
Protocols		
Baud Rate	4800/9600 baud, 8-None-1	4800 baud, 8-None-1
Datum	219 standard datum; WGS-84 (default)	
NMEA Messages	GGA, GSA, GSV, RMC, GLL, VTG	GGA, GLL, GSA, GSV, RMC, VTG, ZDA
Power		
Required Supply Voltage	3.8 ~ 8 VDC	
Power Consumption	<100 mW	
Mechanical		
Dimensions (L x W x D)	60 mm x 50 mm x 22 mm	
Weight	25 g	
Environment		
Operating Temperature	-40 ~ +85°C	
Storage Temperature	-55 ~ +100°C	-55 ~ +90°C
Relative Humidity	5 ~ 95% RH, Non-condensing	

Applications

The GT-321R-RS232/USB is a high performance, low power consumption, small size, very easy integrated GPS receiver. It can be used as a satellite navigator for map applications running on a PC or a notebook. The GT-321R-RS232/USB GPS receiver will track satellites at a time while providing fast time-to-first-fix and one second navigation updates. Combining this Receiver with an embedded controller module plus Data Acquisition modules/daughter boards and using some simple programming, Mobile Assets can be tracked as well as other sensor data being reported.

Pin Assignments

GT-321R-RS232

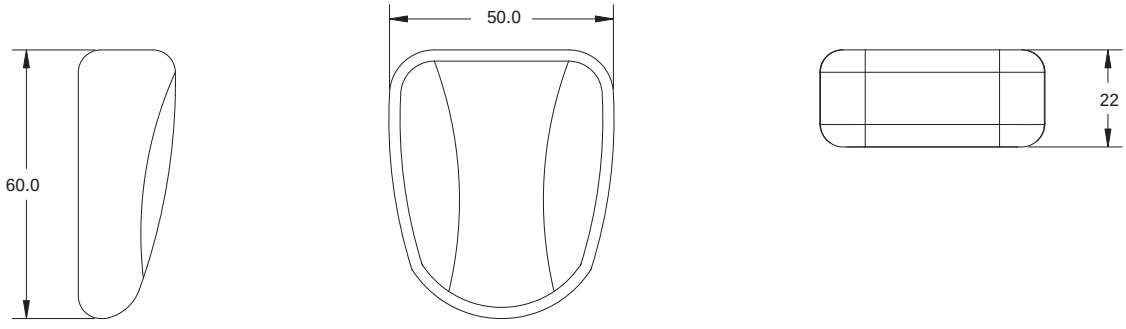


PS/2	
Terminal No.	Pin Assignment
01	N/C
02	N/C
03	GND
04	VCC
05	N/C
06	N/C

DB9			
Pin Assignment	Terminal No.		Pin Assignment
N/C	19	06	N/C
TX	18	07	N/C
RX	17	08	N/C
N/C	16	09	N/C
GND	15		

9-pin Male
D-Sub Connector

Dimensions (Units: mm)



Left Side View | Front View | Top View

Ordering Information

GT-321R-USB CR	GPS Receiver USB Interface (RoHS)
GT-321R-RS232 CR	GPS Receiver RS-232 Interface (RoHS)

I-87211W

GPS Receiver and 2 DO, 1 PPS Output Module with GPS Active External Antenna

Features

- Support PACs and Remote I/O expansion units of ICP DAS
- Support 66-channel GPS
- RS-232 supports NEMA v0183 v3.01 format or DCON protocol
- Built-in 2-channel DO, 1-channel PPS (1 pulse/s)
- PPS: 100 ms pulse output/sec for precise timekeeping and time measurement
- Capable of SBAS (WAAS, EGNOS, MSAS)

Introduction

I-87211W module features high sensitivity, low power and ultra small form factor. This GPS module is powered by MediaTek solution, it can provide you with superior sensitivity and performance even in urban canyon and dense foliage environment.

Applications

- Satellite time correction
- Personal positioning and navigation
- Automotive navigation
- Marine navigation

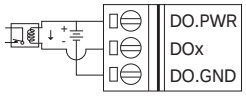
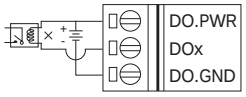
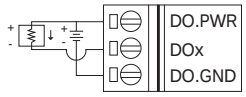
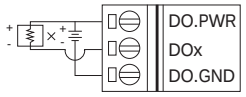
I/O Specifications

Digital Output	
Output Channel	2 (Sink)
Output Type	Non-isolated Open Collector
Output Current	100 mA
Load Voltage	+5 VDC ~ +30 VDC

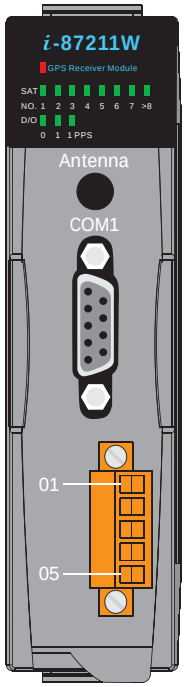
System Specifications

Models	I-87211W
GPS Receiver	
Chip	MediaTek solution
Frequency	L1 1575.42 MHz, C/A code
Support Channel	32
Position Accuracy	Capable of SBAS (WAAS, EGNOS, MSAS)
Max. Altitude	<18,000 m
Max. Velocity	<515 m/s
Startup Time	Cold Start (Open Sky) = 42 s (typical)
Sensitivity	Tracking = Up to -158 dBm
	Cold start = Up to -142 dBm
Protocol Support	NMEA 0183 version 3.01
GPS Output	
1 PPS	Pulse per second output (Default 100 ms pulse/sec)
RS-232 Interface	GPS information output
LED Indicators	
Power/Communication	1 LED
Digital Output	3 LEDs
GPS	8 LEDs
Power	
Power Consumption	0.75 W (Max.)
Mechanical	
Dimensions (W x L x H)	30 mm x 91 mm x 114 mm
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +75°C
Humidity	5 ~ 95% RH, Non-condensing

Wiring

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

Appearance

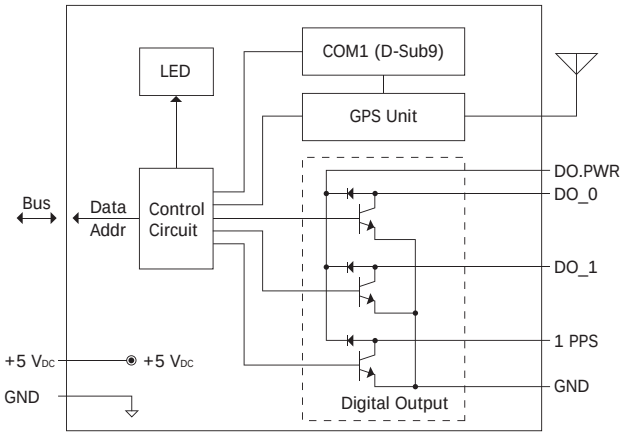


Pin Assignment	Terminal No.	Pin Assignment
-	01	06 -
GPS_TxD	02	07 -
GPS_RxD	03	08 -
-	04	09 -
GND	05	

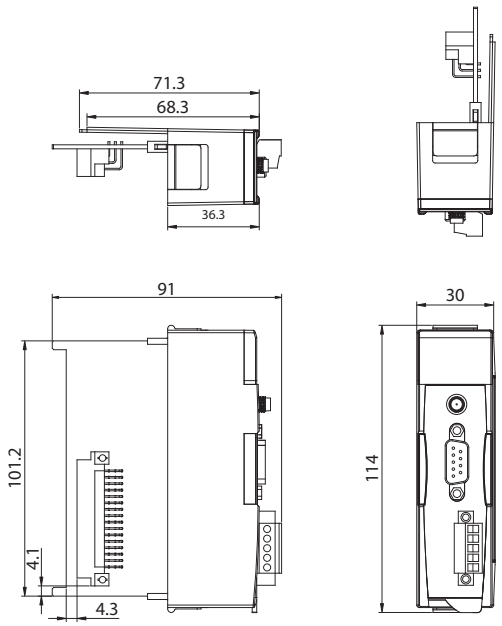
COM1 — 9-Pin Female D-Sub Connector

Terminal No.	Pin Assignment
01	DO.PWR
02	DO_0
03	DO_1
04	1 PPS
05	GND

Internal I/O Structure



Dimensions (Units: mm)



Ordering Information

I-87211W CR	GPS Receiver Module with 2 DO and 1 PPS output, includs ANT-115-03 (Gray Cover) (RoHS)

Accessories

ANT-115-03 CR	4PI81K0000001	5 m GPS Active External Antenna (SMA Plug) (RoHS)

GPS-721

GPS Receiver and 2 DO, 1 PPS Output Module with GPS Active External Antenna

Features

- Support 66-channel GPS
- RS-485 supports DCON protocol
- RS-232 supports NEMA v0183 v3.01 format or DCON protocol
- Built-in 1-channel DO, 1-channel PPS (1 pulse/sec), 1 RS-485, and 1 RS-232
- PPS: 100 ms pulse output/sec for precise timekeeping and time measurement
- Capable of SBAS (WAAS, EGNOS, MSAS)

Introduction

GPS-721 module features high sensitivity, low power and ultra small form factor. This GPS module is powered by MediaTek solution, it provides you with superior sensitivity and performance even in urban canyon and dense foliage environment.

Applications

- Satellite time correction
- Personal positioning and navigation
- Automotive navigation
- Marine navigation

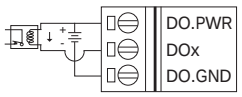
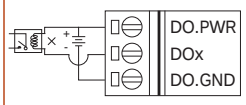
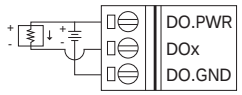
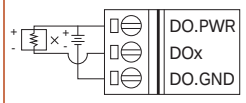
I/O Specifications

Digital Output	
Output Channel	1 (Sink)
Output Type	Non-isolated Open Collector
Output Current	100 mA
Load Voltage	+5 VDC ~ +30 VDC

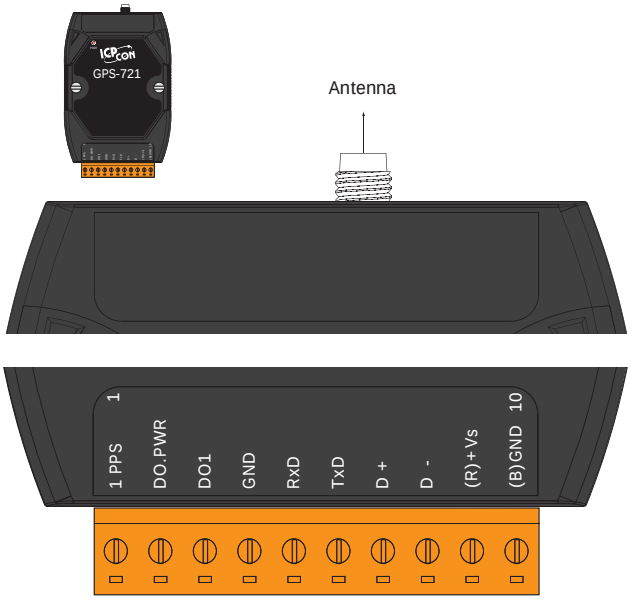
System Specifications

Models	GPS-721
GPS Receiver	
Chip	MediaTek solution
Frequency	L1 1575.42 MHz, C/A code
Support Channel	32
Position Accuracy	Capable of SBAS (WAAS, EGNOS, MSAS)
Max. Altitude	<18,000 m
Max. Velocity	<515 m/s
Startup Time	Cold Start (Open Sky) = 42 s (typical)
Sensitivity	Tracking = Up to -158 dBm
	Cold start = Up to -142 dBm
Protocol Support	NMEA 0183 version 3.01
GPS Output	
1 PPS	Pulse per second output (Default 100 ms pulse/sec)
RS-232 Interface	GPS information output
LED Indicators	
Power/Communication	1 LED
GPS	3 LEDs
Power	
Protection	Power reverse polarity protection
Frame Ground for ESD Protection	Yes
Required Supply Voltage	+10 VDC ~ +30 VDC (Non-regulated)
Power Consumption	0.8 W
Mechanical	
Dimensions (W x H x D)	72 mm x 117 mm x 35 mm
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-40 ~ +85°C
Humidity	5 ~ 95% RH, Non-condensing

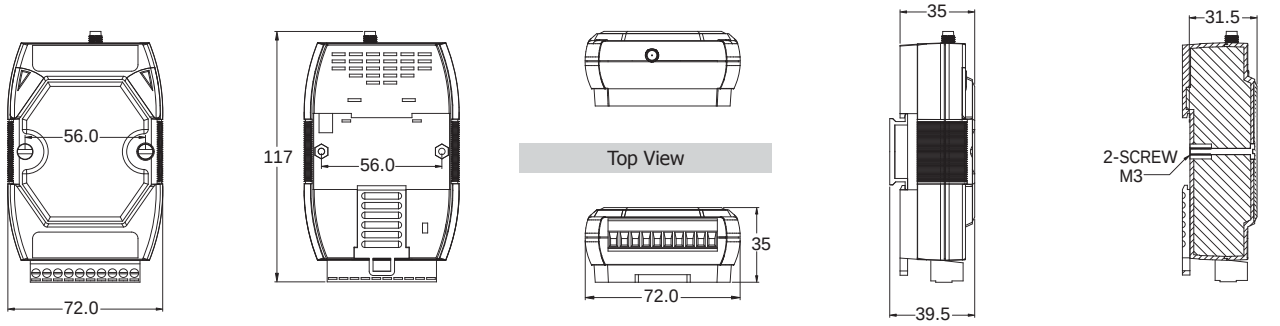
Wiring

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

Appearance

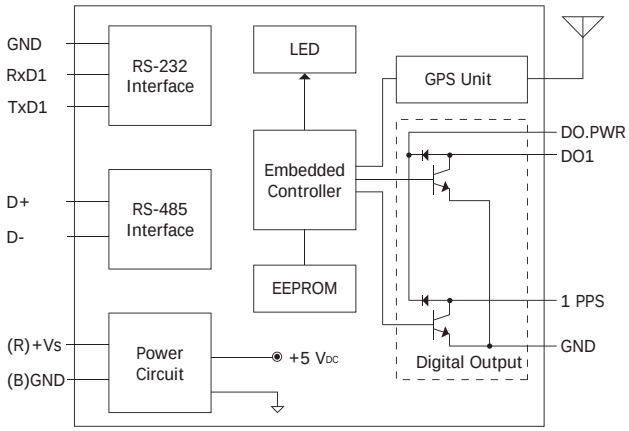


Dimensions (Units: mm)



Front View | Rear View | Top View | Bottom View | Din-Rail Mounting Bracket | Side View

Internal I/O Structure



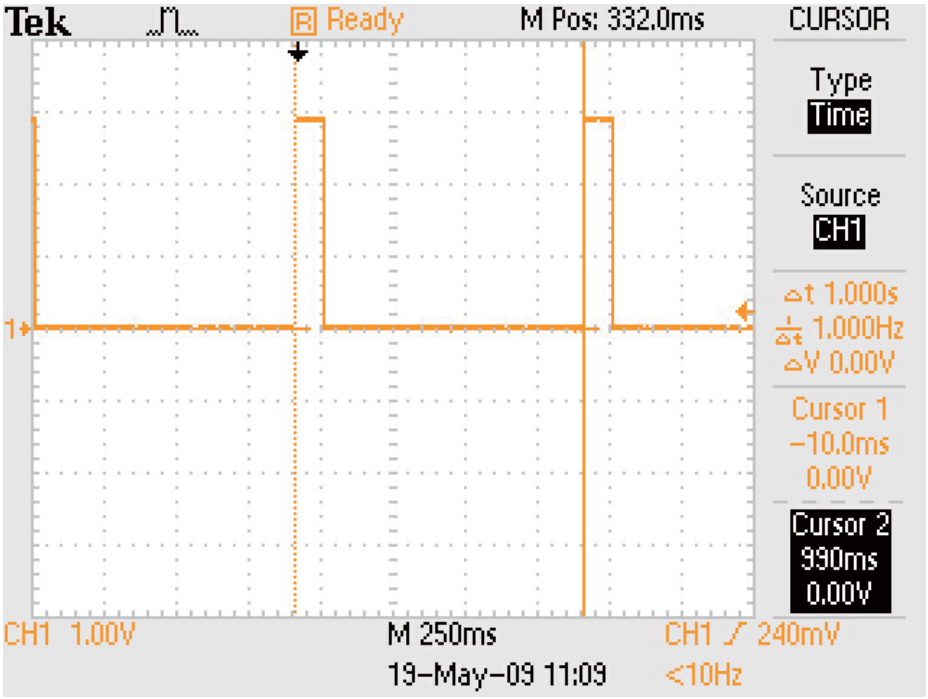
Ordering Information

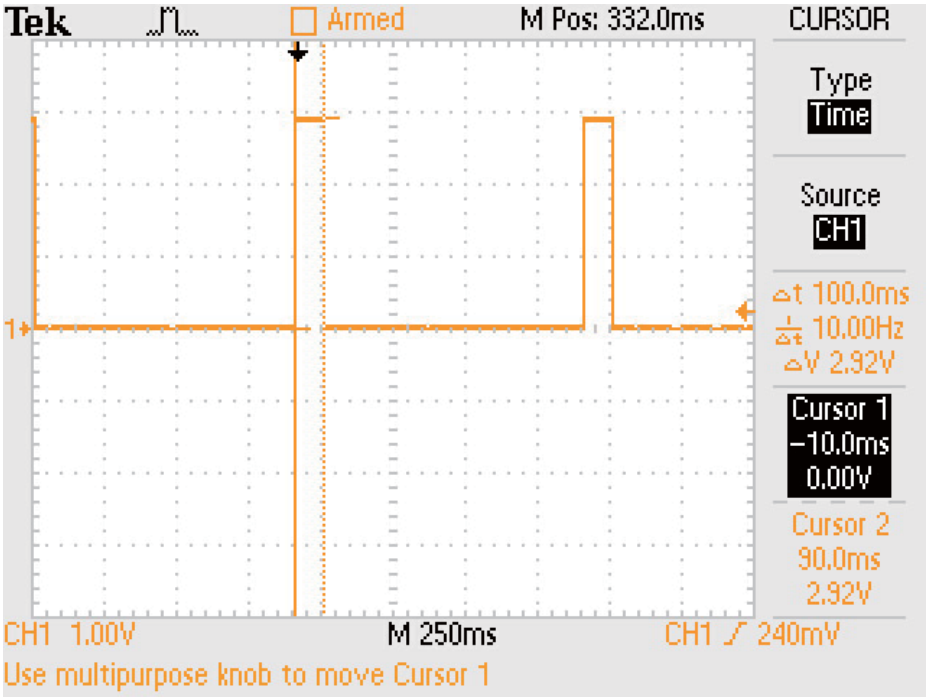
GPS-721 CR	GPS Receiver and 1 DO, 1 PPS Output Module (RoHS)

Accessories

ANT-115-03 CR	4PI81K0000001	5 m GPS Active External Antenna (SMA Plug) (RoHS)

1 Pulse Per Second (Pulse duration is 100 ms/pulse)





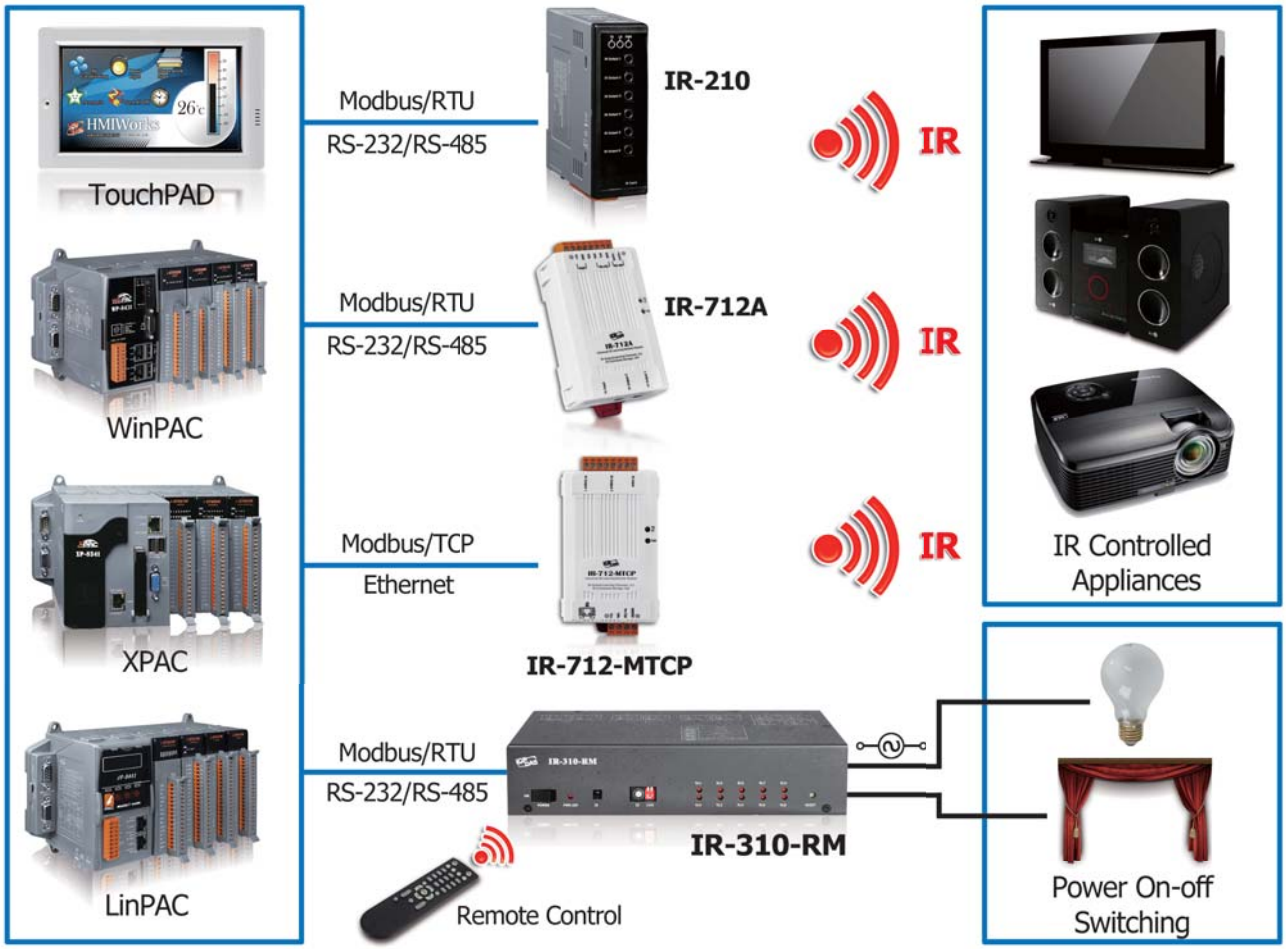
The Global Positioning System can also be used as a time reference for radio clocks, but require an accurate 1PPS output to be reliably used for time signals.

A Pulse per second (PPS) is an electrical signal that very precisely indicates the start of a second. PPS signals are output by various types of precision clock, including some models of GPS receivers. Depending on the source, properly operating PPS signals have an accuracy ranging from a few nanoseconds to a few milliseconds.

PPS signals are used for precise timekeeping and time measurement. One increasingly common use is in computer timekeeping, including the NTP protocol. Since GPS is considered a stratum-0 source, a common use for the PPS signal is to connect it to a PC using a low-latency, low-jitter wire connection and allow a program to synchronize with it: this makes the PC a stratum-1 time source. Note that because the PPS signal does not specify the time, but merely the start of a second, one must combine the PPS function with another time source that provides the full date and time in order to ascertain the time accurately and precisely.

Infrared Products

7.1. Overview



Infrared (IR) light is invisible to human being because its wavelength is below the visible spectrum. The consumer electronics industry has been employing the infrared (around 940nm) for a long time. Invisibility, low power consumption and low cost are the reason why IR is chosen for remote control purpose. Because IR behaves as a normal light, the target devices require line-of-sight to be controlled by an IR remote control. There are many IR sources all around, however, modulation of IR signal at emitter side and demodulation at the receiver side are done to diminish the interference of ambient light. The IR signal is often modulated at a frequency between 30 kHz and 60 kHz which are commonly used in consumer electronics. These appliances usually apply various IR protocols and commands of their own without a unified standard. If IR commands can be collected and integrated with the control interface, it can serve convenience and flexibility for the HA/BA applications.

ICP DAS has developed several IR modules to help users to integrate various IR appliances into control systems. With the PACs, touchPADs, LC series modules and other related products of ICP DAS, users can easily establish their home/building automation systems.

• Infrared Product Selection Guide

IR series products are now classified into IR Learning Remote Module and IR Controlled Power Relay Module. The former is for collecting and emitting IR remote commands of various appliances. The latter are the power relay modules with IR remote function for relay control.

IR Learning Remote Module

Model Name	IR Output	IR Learning Input	IR Command Storage	Communication interface	Communication Protocol
IR-210	6	1	224	RS-232/RS-485	Modbus/RTU
IR-712A	2	1	224	RS-232/RS-485	Modbus/RTU
IR-712-MTCP	2	1	512	Ethernet	Modbus/TCP

* Brand list of appliances which can be learned by the IR Learning Remote Modules
  URL: http://m2m.icpdas.com/IR-210/list_EN.pdf

IR Controlled Power Relay Module

Model Name	Relay Output	Contact Rating	Comm. interface	Comm. Protocol	IR Remote Commands	IR sensor
IR-310-RM	10 (Form C)	5A@220VAC x 6 10A@220VAC x 4	RS-232 / RS-485	Modbus/RTU	Custom: 64 cmds Built-in: 32 cmds	On-board / Receiver cable

Accessories

Part No.	Description
CA-IR-SH2251	Single-headed IR emitter cable (with adhesive pad, Ø 3 mm IRED, 2.5 m)
CA-IR-SH2252	Dual-headed IR emitter cable (with adhesive pad, Ø 3 mm IRED, 2.5 m)
CA-IR-SH2251-5	Single-headed IR emitter cable (with adhesive pad, Ø 5 mm IRED, 2.5 m)
CA-IR-SH2252-5	Dual-headed IR emitter cable (with adhesive pad, Ø 5 mm IRED, 2.5 m)
CA-IR-SH2251-360	Semi-sphere-headed IR diffuser cable (with adhesive pad, 2.5 m)
CA-IR-001	IR receiver cable (3 m)
CA-002	DC connector to 2-wire power cable (0.3 m)
FRA05-S12-SU	12 V/0.58 A (max) Power Supply
L108E	IR Learning Remote Control

7.2. Universal IR Learning Remote Module

IR-210

Universal IR Learning Remote Module

Features

- 6 IR output channels
- 1 IR learning input
- Supports IR carrier freq.: 32.768, 36, 37.037, 38, 40, 56 kHz
- IR Commands Storage: 224 IR commands
- Communication interface: RS-232 and RS-485
- Supports Modbus/RTU protocol with FC6 and FC16
- Assignable Modbus Network IDs: 1~247
- Baud rate settings: 9600 ~ 115200 bps
- Configurable NONE / ODD / EVEN parity and 1 or 2 stop bits
- Provides transmitting / learning / power indication LEDs

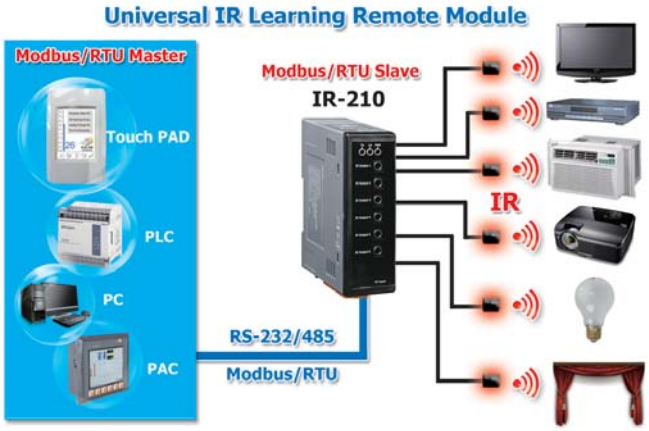
Introduction

IR-210 is a universal IR learning remote module which can learn IR remote commands of various electronic devices. The learning results can be stored in the module or saved to a file. IR-210 supplies 6 IR output channels for individual and simultaneous remotely control on multiple appliances. The accompanied RS-232 and RS-485 interfaces with Modbus/RTU protocol provide an easy way of remote control by the Modbus master devices. The application can be home entertainment devices, video conferencing, light control and e-Classroom service etc. IR-210 is well-suited for smart home and building automation.

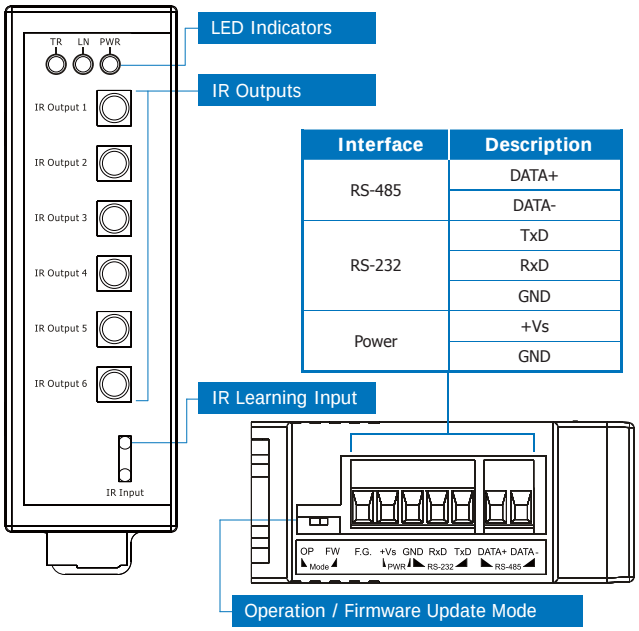
Specifications

Models		IR-210
IR Interface		
IR Output Ch		6
IR Learning Input		1 channel. Supports 6 IR carrier frequencies: 32.768, 36, 37.037, 38, 40, 56 kHz.
IR Cmds Storage		224
Serial Interface		
COM1		RS-232 (TxD, RxD, GND), RS-485 (DATA+, DATA-)
Baud Rate		9600, 19200, 38400, 57600, 115200 bps
Protocol		Modbus/RTU (slave)
LED Indicator		
LED		3 LEDs: TR (IR Transmitting) / LN (IR Learning) / PWR (Power)
Power		
Power Supply		+10 ~ +30 VDC
Power Consumption		
Power Consumption	Stand By	0.65 W
	Using 1 IR output	2.3 W
	Using 6 IR Outputs	11.9 W (Max.)
Mechanism		
Installation		DIN-Rail mounting
Dimensions		33 mm x 107 mm x 78 mm (W x H x D)
Dip Switch		FW (Firmware update mode) / OP (Firmware operation mode)
Environmental		
Operating Temp.		-25°C ~ +75°C
Storage Temp.		-30°C ~ +80°C
Humidity		10%~90%, non-condensing

Applications

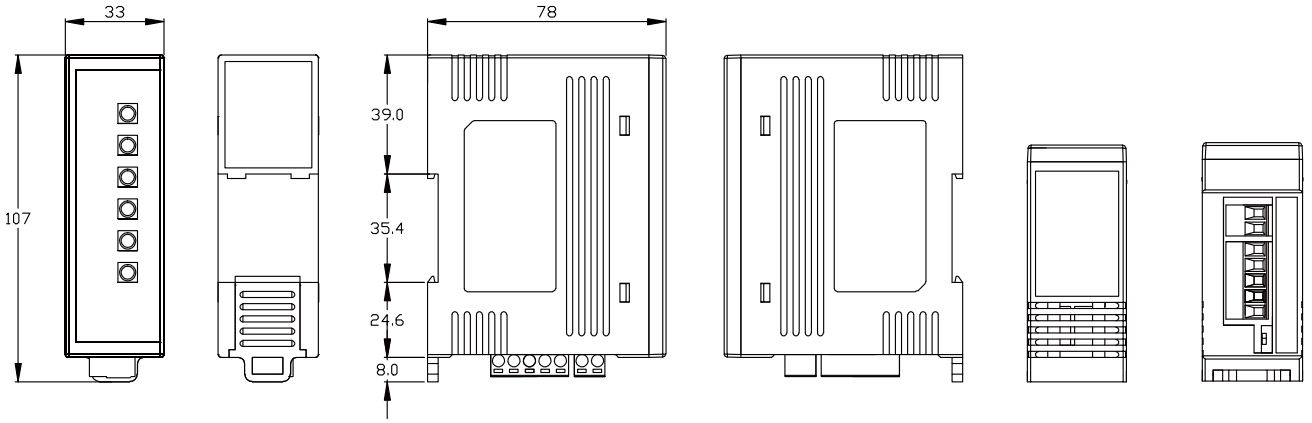


Appearance



Interface	Description
RS-485	DATA+
	DATA-
RS-232	TxD
	RxD
	GND
Power	+Vs
	GND

Dimensions (Units: mm)



Front View | Rear View | Left Side View | Right Side View | Bottom View | Top View

Ordering Information

IR-210 CR	Universal IR Learning Remote Module (6 IR outputs, Modbus/RTU), with 2 CA-IR-SH2251 & 1 CA-0910 (RoHS)
IR-210-5 CR	Universal IR Learning Remote Module (6 IR outputs, Modbus/RTU), with 2 CA-IR-SH2251-5 & 1 CA-0910 (RoHS)

Accessories

CA-IR-SH2251	Single-headed IR emitter cable (with adhesive pad, Ø 3 mm IRED, 2.5 m)
CA-IR-SH2252	Dual-headed IR emitter cable (with adhesive pad, Ø 3 mm IRED, 2.5 m)
CA-IR-SH2251-5	Single-headed IR emitter cable (with adhesive pad, Ø 5 mm IRED, 2.5 m)
CA-IR-SH2252-5	Dual-headed IR emitter cable (with adhesive pad, Ø 5 mm IRED, 2.5 m)

IR-712A

Universal IR Learning Remote Module

Features

- 2 IR output channels
- 1 IR learning input
- Supports IR carrier freq.: 32.768, 36, 37.037, 38, 40, 56 kHz
- IR Commands Storage: 224 IR commands
- Communication interface: RS-232 and RS-485
- Supports Modbus/RTU protocol with FC6 and FC16
- Assignable Modbus Network IDs: 1~247
- Baud rate settings: 9600 ~ 115200 bps
- Configurable NONE / ODD / EVEN parity and 1 or 2 stop bits
- Provides transmitting / learning / power indication LEDs

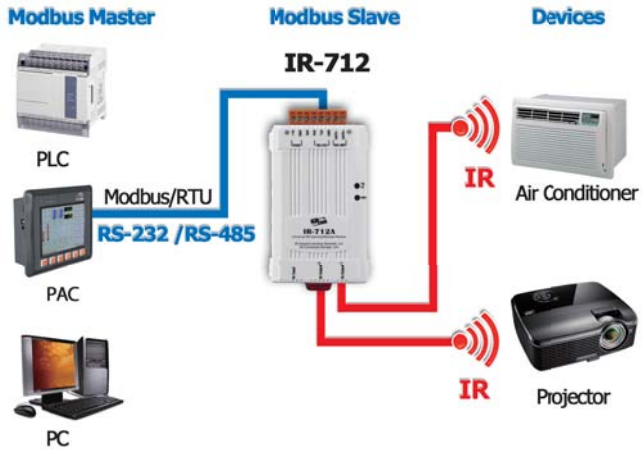
Introduction

IR-712A is a universal IR learning remote module which can learn IR remote commands of various electronic devices. The learning results can be stored in the module or saved to a file. IR-712A supplies 2 IR output channels for individual and simultaneous remotely control on multiple appliances. The accompanied RS-232 and RS-485 interfaces with Modbus/RTU protocol provide an easy way of remote control by the Modbus master devices. The application can be home entertainment devices, video conferencing, light control and e-Classroom service etc.IR-712A is well-suited for smart home and building automation.

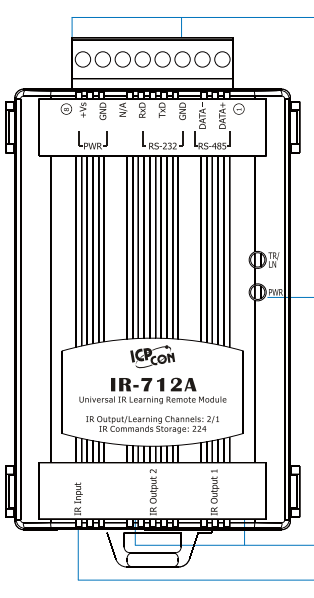
Specifications

Models		IR-712A
IR Interface		
IR Output Ch		2
IR Learning Input		1 channel. Supports 6 IR carrier frequencies: 32.768, 36, 37.037, 38, 40, 56 kHz.
IR Cmds Storage		224
Serial Interface		
COM1		RS-232 (TxD, RxD, GND)
COM2		RS-485 (DATA+, DATA-)
Baud Rate		9600, 19200, 38400, 57600, 115200 bps
Protocol		Modbus/RTU (slave)
LED Indicator		
LED		2 LEDs: TR/LN (IR Transmitting/Learning) and PWR (Power)
Power		
Power Supply		+10 ~ +30 VDC
Power Consumption	Stand By	0.58 W
	Using 1 IR output	2.2 W
	Using 2 IR Outputs	3.85 W (Max.)
Mechanism		
Installation		DIN-Rail mounting
Dimensions		52 mm x 93 mm x 27 mm (W x H x D)
Dip Switch		FW (Firmware update mode) / OP (Firmware operation mode)
Environmental		
Operating Temp.		-25°C ~ +75°C
Storage Temp.		-30°C ~ +80°C
Humidity		10%~90%, non-condensing

Applications

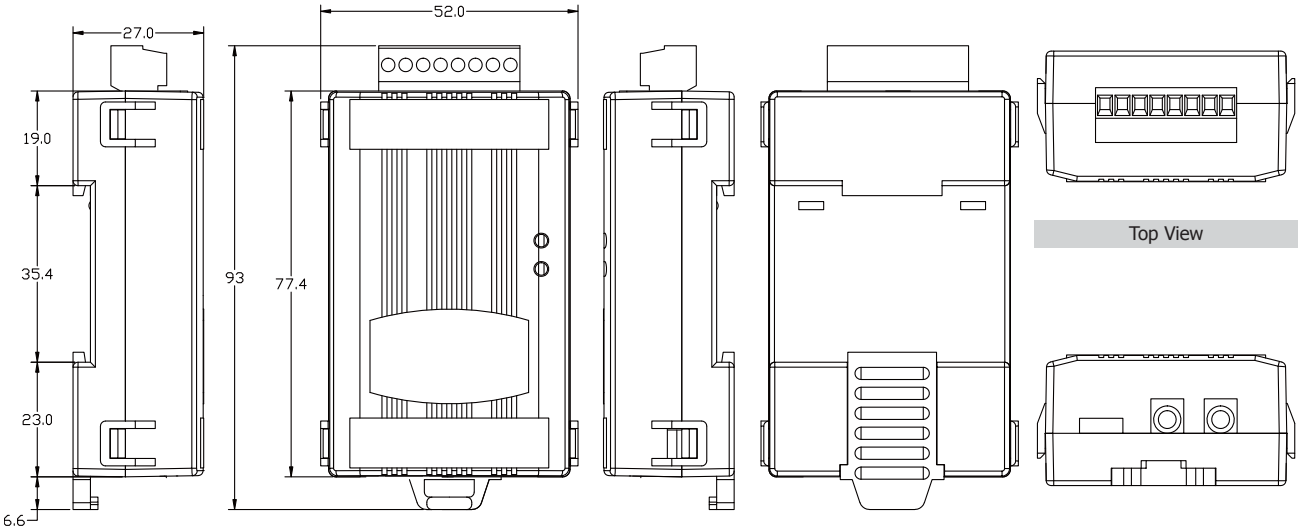


Appearance



Interface	Description
RS-485	DATA+
	DATA-
RS-232	TxD
	RxD
	GND
Power	+Vs
	GND

Dimensions (Units: mm)



Ordering Information

IR-712A CR	Universal IR Learning Remote Module (2 IR outputs, Modbus/RTU), with 2 CA-IR-SH2251 & 1 CA-0910 (RoHS)
IR-712A-5 CR	Universal IR Learning Remote Module (2 IR outputs, Modbus/RTU), with 2 CA-IR-SH2251-5 & 1 CA-0910 (RoHS)

Accessories

CA-IR-SH2251	Single-headed IR emitter cable (with adhesive pad, Ø 3 mm IRED, 2.5 m)
CA-IR-SH2252	Dual-headed IR emitter cable (with adhesive pad, Ø 3 mm IRED, 2.5 m)
CA-IR-SH2251-5	Single-headed IR emitter cable (with adhesive pad, Ø 5 mm IRED, 2.5 m)
CA-IR-SH2252-5	Dual-headed IR emitter cable (with adhesive pad, Ø 5 mm IRED, 2.5 m)

Available soon

IR-712-MTCP

Universal IR Learning Remote Module

Features

- 2 IR output channels
- 1 IR learning input
- Supports IR carrier freq.: 32.768, 36, 37.037, 38, 40, 56 kHz
- IR Commands Storage: 512 IR commands
- Communication interface: Ethernet
- Supports Modbus/TCP protocol with FC6 and FC16
- Provides transmitting / learning / power indication LEDs

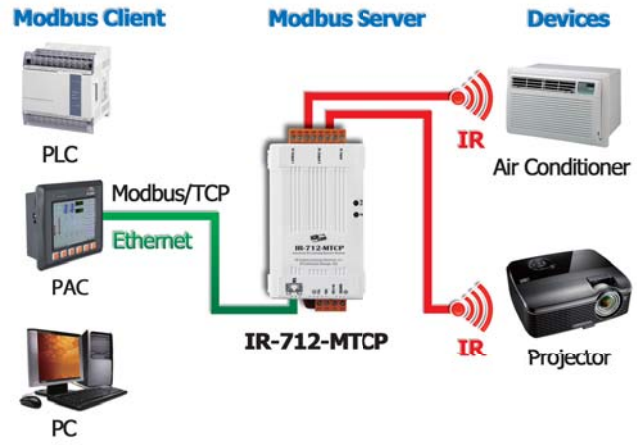
Introduction

IR-712-MTCP is a universal IR learning remote module which can learn IR remote commands of various electronic devices. The learning results can be stored in the module or saved to a file. IR-712-MTCP supplies 2 IR output channels for IR remote control on multiple appliances. The Ethernet interface with Modbus/TCP protocol provides an easy way of remote control by the Modbus client devices. The application can be home entertainment devices, video conferencing, light control and e-Classroom service etc. IR-712-MTCP is well-suited for smart home and building automation.

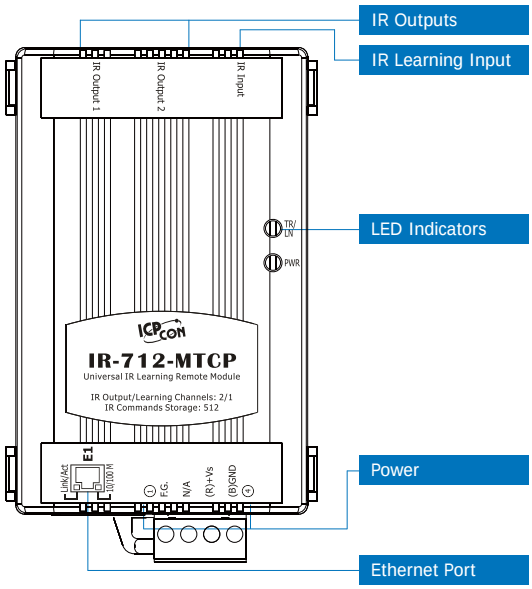
Specifications

Models		IR-712-MTCP
IR Interface		
IR Output Ch		2
IR Learning Input		1 channel. Supports 6 IR carrier frequencies: 32.768, 36, 37.037, 38, 40, 56 kHz.
IR Cmds Storage		512
Ethernet Interface		
Ethernet Port		10/100 Base-TX, 8-Pin RJ-45 x1
Protocol		Modbus/TCP (server)
LED Indicator		
LED		2 LEDs: TR/LN (IR Transmitting/Learning) and PWR (Power)
Power		
Power Supply		+10 ~ +30 VDC
Power Consumption	Stand By	0.58 W
	Using 1 IR output	2.2 W
	Using 2 IR Outputs	3.85 W (Max.)
Mechanism		
Installation		DIN-Rail mounting
Dimensions		52 mm x 85 mm x 27 mm (W x H x D)
Dip Switch		FW (Firmware update mode) / OP (Firmware operation mode)
Environmental		
Operating Temp.		-25°C ~ +75°C
Storage Temp.		-30°C ~ +80°C
Humidity		10% ~ 90%, non-condensing

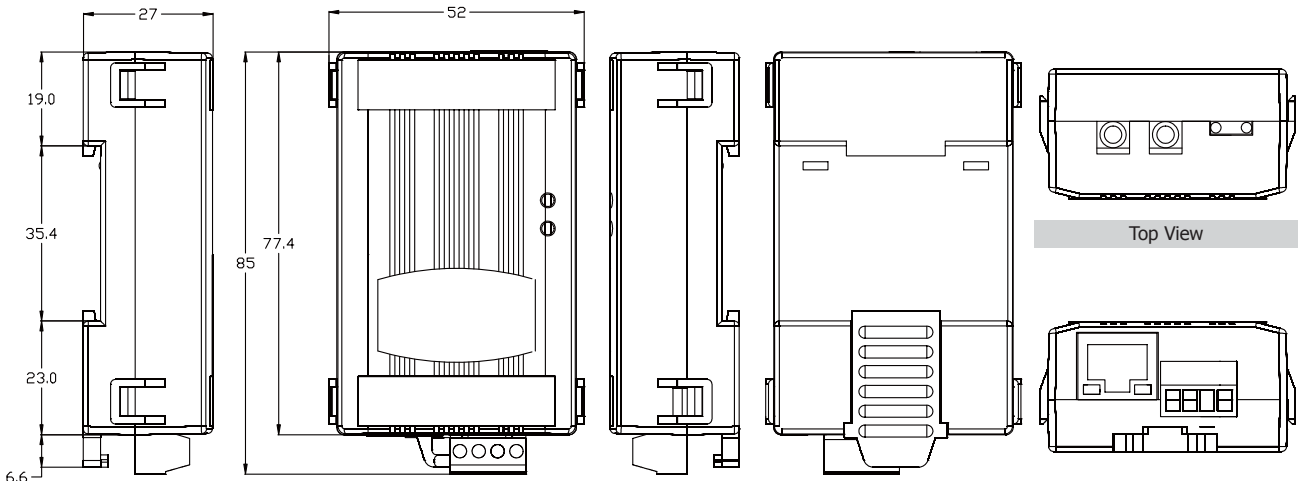
Applications



Appearance



Dimensions (Units: mm)



Ordering Information

IR-712-MTCP CR	Universal IR Learning Remote Module (2 IR outputs, Modbus/TCP), with 2 CA-IR-SH2251 (RoHS)
IR-712-MTCP-5 CR	Universal IR Learning Remote Module (2 IR outputs, Modbus/TCP), with 2 CA-IR-SH2251-5 (RoHS)

Accessories

CA-IR-SH2251	Single-headed IR emitter cable (with adhesive pad, Ø 3 mm IRED, 2.5 m)
CA-IR-SH2252	Dual-headed IR emitter cable (with adhesive pad, Ø 3 mm IRED, 2.5 m)
CA-IR-SH2251-5	Single-headed IR emitter cable (with adhesive pad, Ø 5 mm IRED, 2.5 m)
CA-IR-SH2252-5	Dual-headed IR emitter cable (with adhesive pad, Ø 5 mm IRED, 2.5 m)

7.3. IR Controlled Power Relay Module

IR-310-RM

IR Controlled 10-ch High Power Relay Module

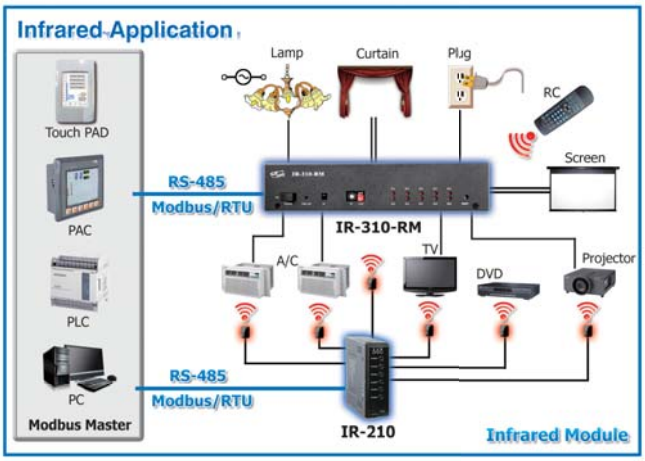
Features

- 10 channels high power relays: 10A x 4, 5A x 6
- Supports IR commands (custom:64, built-in:32) for relay control
- NO & NC terminals for each channel
- Protection circuit for each channel
- Supports maximum 5 sets of interlocked relay pairs
- Power-on values and power failure memory
- RS-232 and RS-485 serial interface
- Supports Modbus/RTU protocol (Slave)
- Modbus Network IDs: 1 ~ 15 (HW); 1 ~ 247 (SW)

Introduction

IR-310-RM is a 10-channel high power relay module designed for the power control of various appliances. The relay module can switch up to 10 A loads. There are NO/NC switches and protection circuit for each channel. The relays can be controlled independently or sequentially by serial communication with Modbus RTU protocol, as well as by wireless IR remote control. There are also maximum 5 interlocked relay pairs for interlocked switching. The application field can be manual/automatic power switch, light scenario control and energy conservation etc.

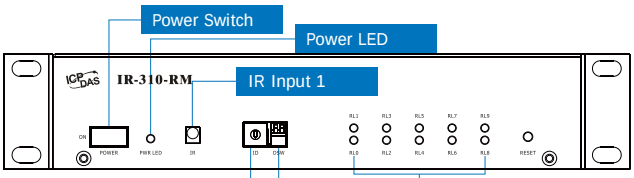
Applications



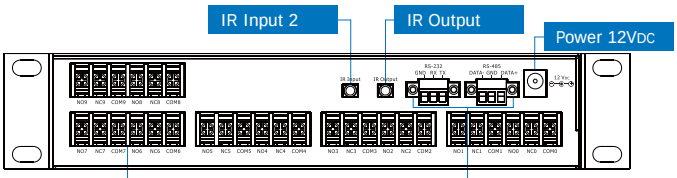
Specifications

Models	IR-310-RM	
Relay Output		
Number of Outputs	10	
Relay Types	Form C relay SPDT	
Contact Rating	5 A @ 220 VAC for RL0, RL1 & RL6 ~ RL9 10 A @ 220 VAC for RL2 ~ RL5	(Operating tempearture: 25°C)
Serial Interface		
COM Port	RS-232 (TxD, RxD, GND) / RS-485 (DATA+, DATA-)	
Format	Parity: None, Databits: 8, Stopbits: 1	
Baud Rate	9600 ~ 115200 bps	
Protocol	Modbus/RTU (Slave)	
Modbus Net ID	Hardware: 1 ~ 15; Software: 1 ~ 247	
IR interface		
IR input 1	On-board IR receiver	
IR input 2	3.5 mm audio jack (for CA-IR-001)	
IR Remote Commands	Custom 64 IR commands (#0 ~ #63) corresponding to self-defined relay states. Built-in 32 IR commands (#192 ~ #223) corresponding to built-in relay states.	
LED		
LED Display	1 LED as power indication. 10 LEDs as relay output indicators	
Power		
Power Supply	+ 12 VDC	
Power Consumption	6.5 W (Max.)	
Mechanical		
Dimensions(W x H x D)	220 mm x 48 mm x 113 mm	
Environmental		
Operating Temperature	-25 ~ +75°C	
Storage Temperature	-30 ~ +80°C	
Humidity	10 ~ 90%, non-condensing	

Appearance



DSW	Mode
	Normal
	Sequential
	Init
	Emitting built-in IR cmds

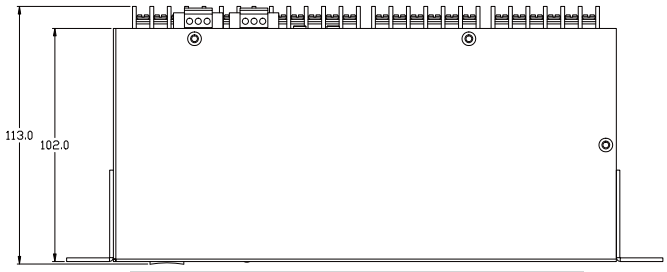


Relay Pins	Description
NO0~9	Normally Open
NC0~9	Normally Closed
COM0~9	Common

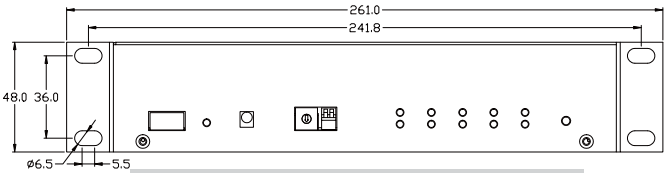
Serial port	Pin
RS-485	DATA+
	GND
	DATA-
RS-232	TxD
	RxD
	GND

Dimensions (Units: mm)

Rack Mount

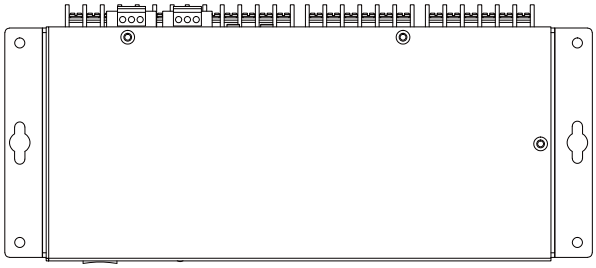


Top View

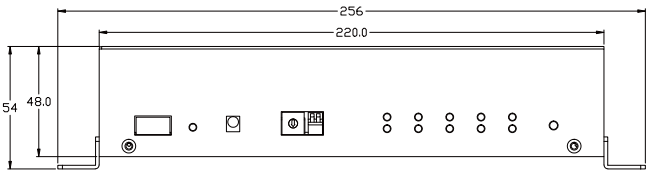


Front View

Wall Mount

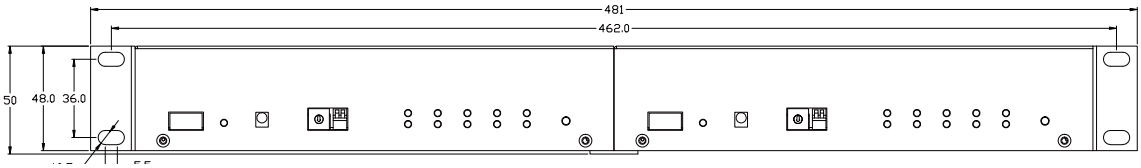


Top View



Front View

Rack Mount 1U (19-inch rack)



Front View

Ordering Information

IR-310-RM CR	IR Controlled 10-channel High Power Relay Module (RoHS)

Accessories

CA-IR-001	IR receiver cable (3 m)
CA-IR-SH2251-5	Single-headed IR emitter cable (with adhesive pad, Ø 5 mm IRED, 2.5 m)
FRA05-S12-SU	12 V/0.58 A (max) Power Supply
CA-002	DC connector to 2-wire power cable (0.3 m)
L108E	IR Learning Remote Control

7.4. Application

ISaGRAF PAC with the IR Remote Application

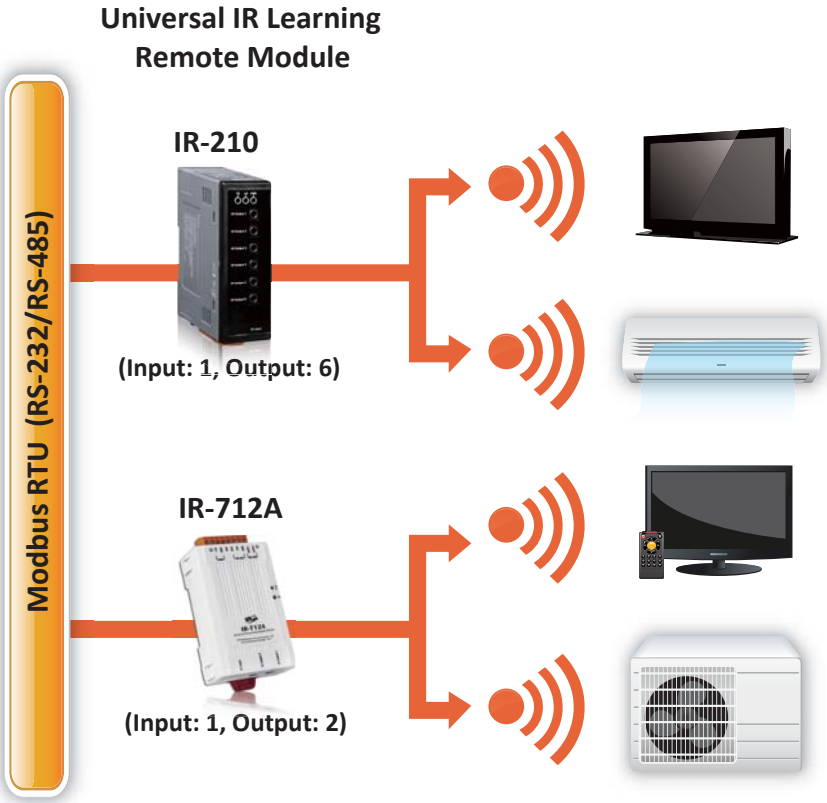
ISaGRAF PAC

ISaGRAF WinCE PAC

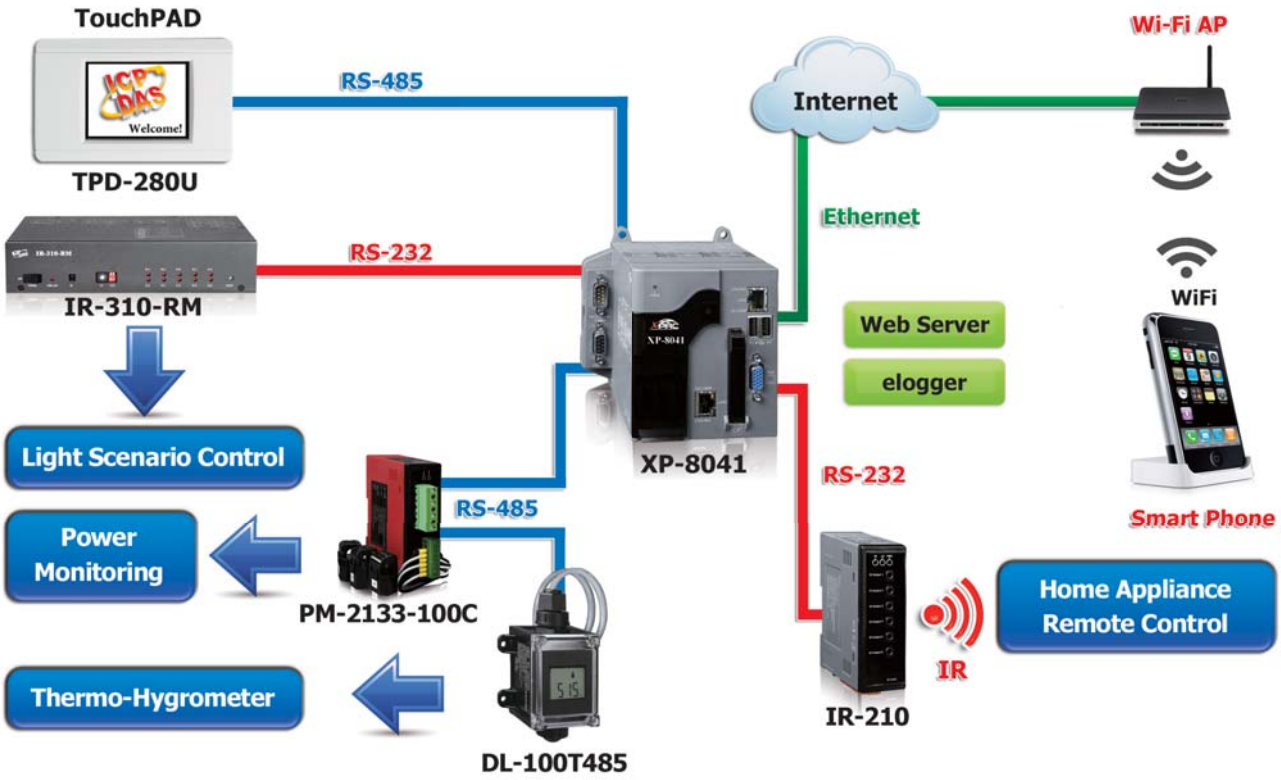
XPAC	XP-8xx7-CE6
WinPAC	WP-8xx7 WP-5xx7
ViewPAC	VP-2xW7

ISaGRAF MiniOS PAC

µPAC	µPAC-5xx7 µPAC-7186EG I-7188EG/XG
iPAC	iP-8xx7 I-8xx7
ViewPAC	VP-2117



Smart Home Application



Accessories

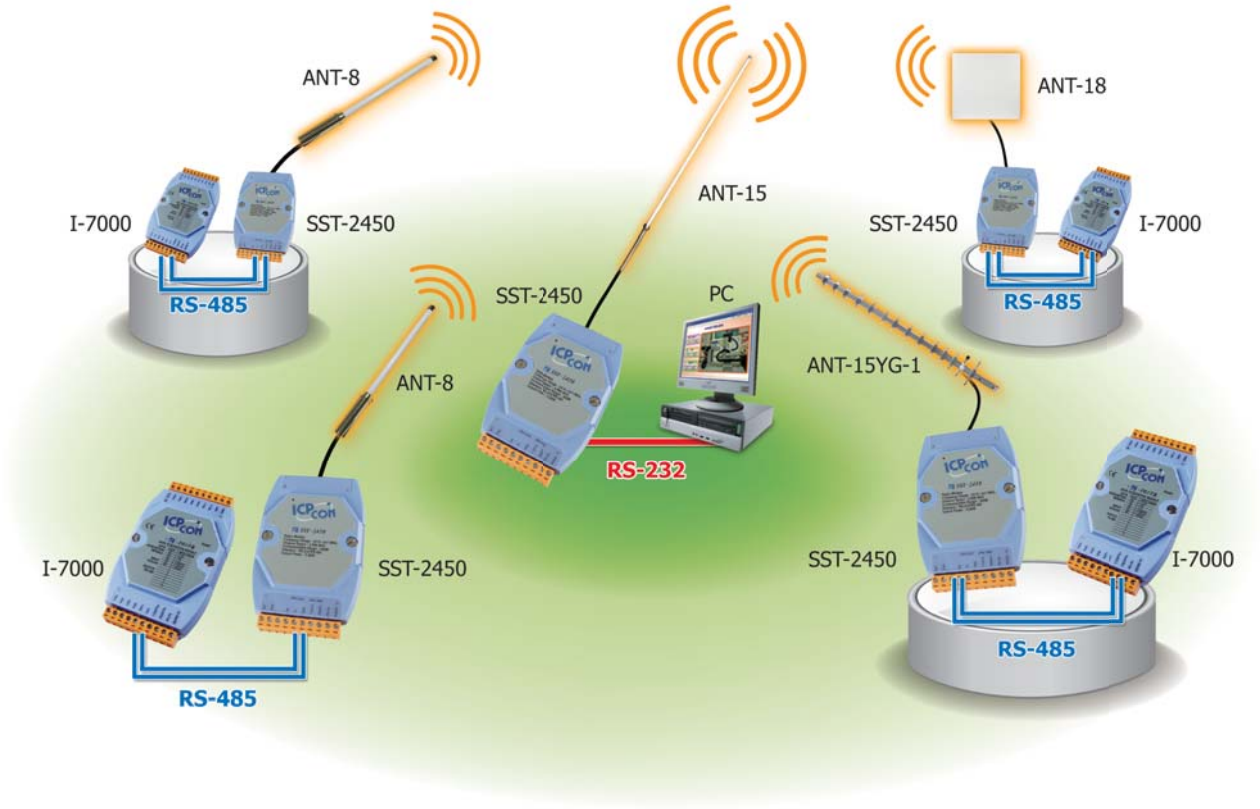
8.1. Applications & Selection Guides

• Applications

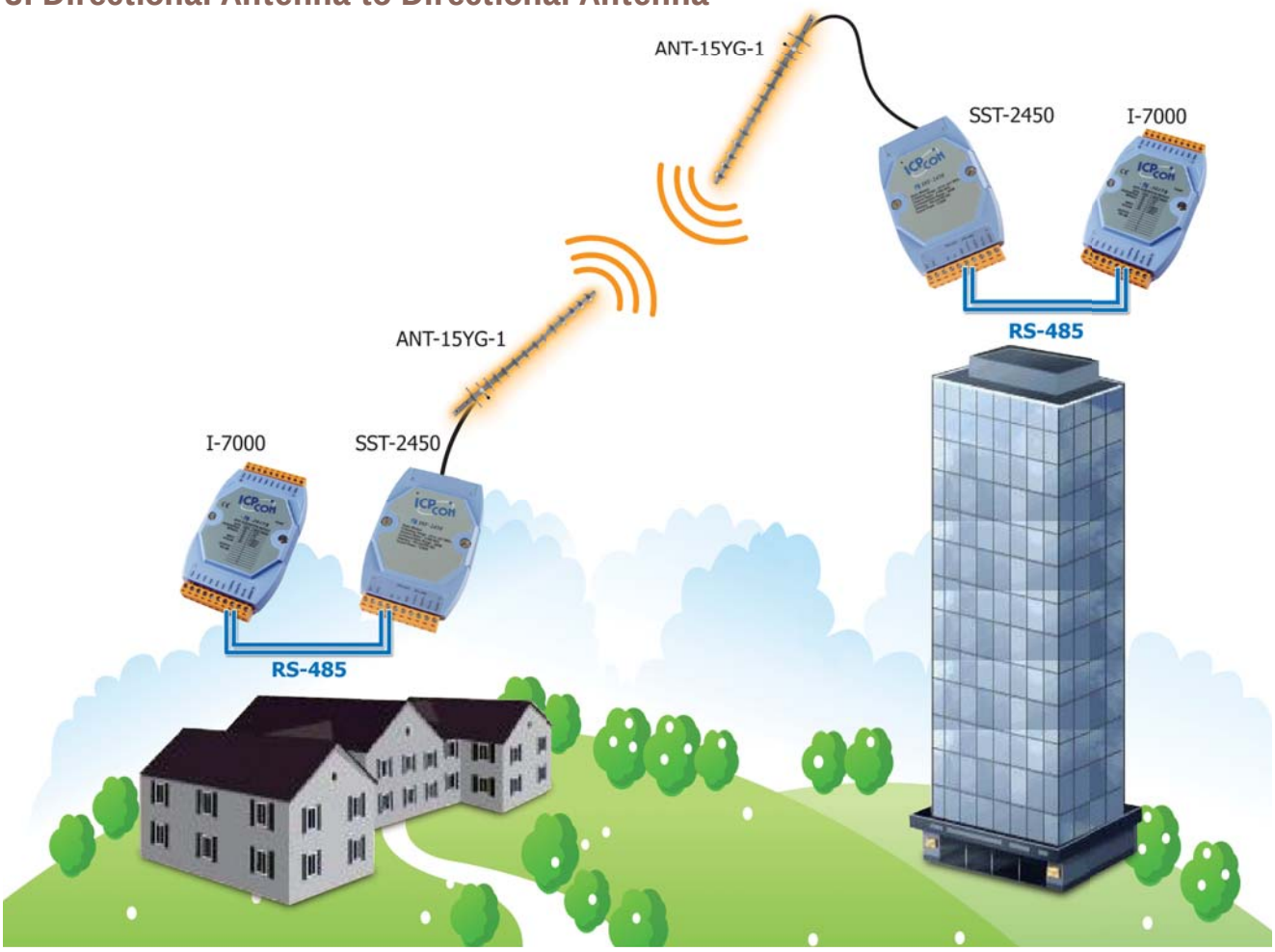
1. Omni-directional Antenna to Omni-directional Antenna

Note: As the antennas rely on line-of-sight for connection, they should be placed at the same height.

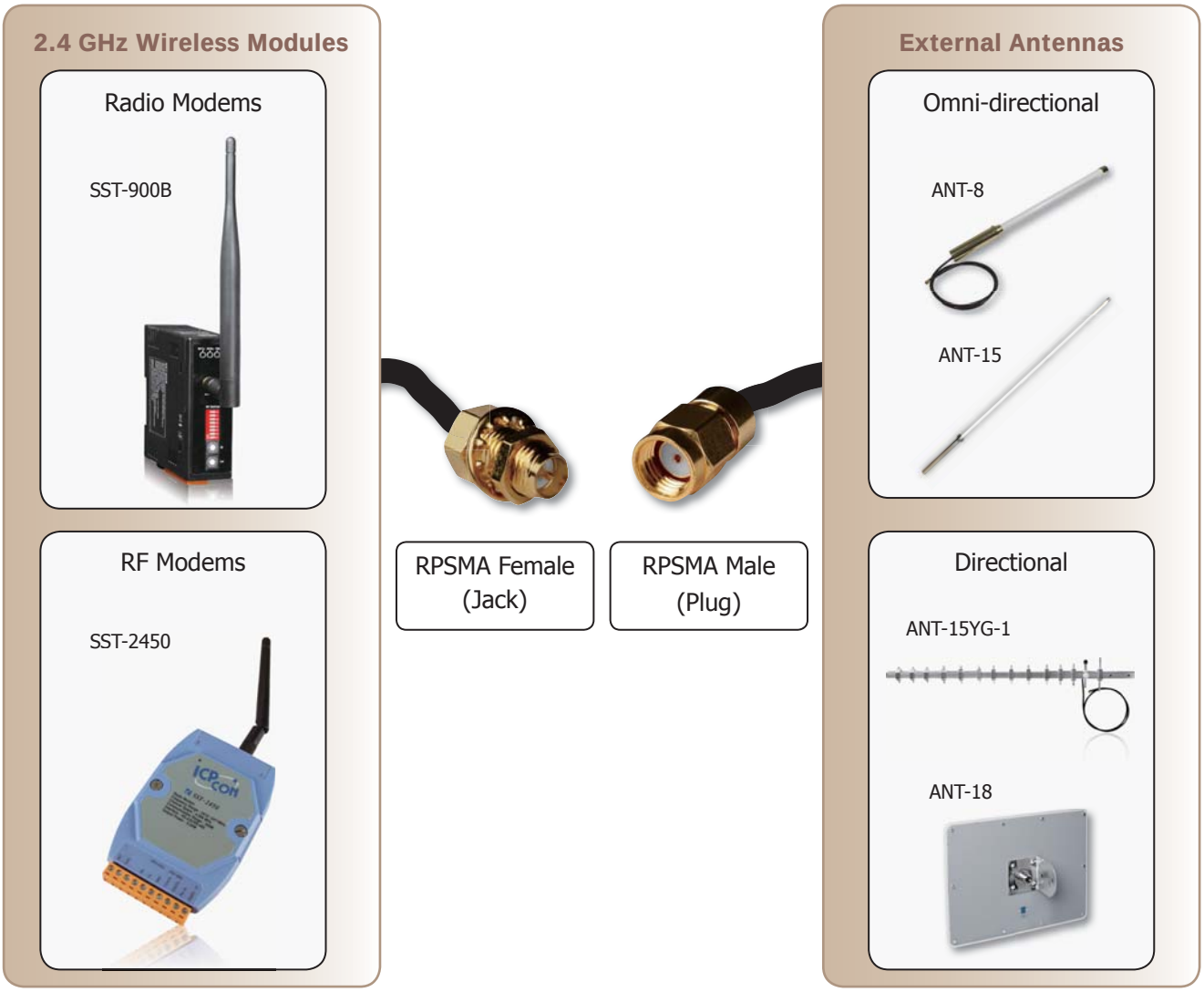
2. Omni-directional Antenna to Directional Antenna



3. Directional Antenna to Directional Antenna



4. Connector Type for 2.4 GHz Antenna



• Selection Guide

2.4 GHz Omni-directional Antennas

Model Name	Ordering Information	Connector	Radiation	Band	Gain (dBi)	Note
ANT-8	1 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Omni-Directional	2.4 ~ 2.5 GHz	8	Dipole
ANT-15	5 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Omni-Directional	2.4 ~ 2.5 GHz	15	Dipole

2.4 GHz Directional Antennas

Model Name	Ordering Information	Connector	Radiation	Band	Gain (dBi)	Note
ANT-15YG-1	5 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Directional	2.4 ~ 2.5 GHz	15	Yagi
ANT-18	9 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Directional	2.4 ~ 2.5 GHz	18	Panel

8.2. 2.4 GHz Omni-directional External Antenna

ANT-8

1 km, 2.4 GHz External Antenna

Features

- 802.11b/g
- 10 dBi
- N Type Female (Jack)
- N Type Male (Plug) to RP SMA Male (Plug) Cable

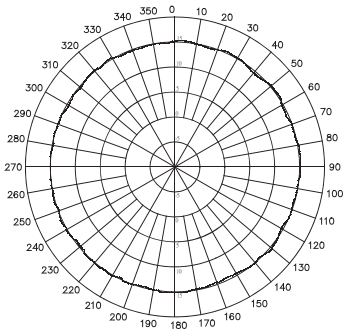
Introduction

ANT-8 is a 10 dBi Antenna

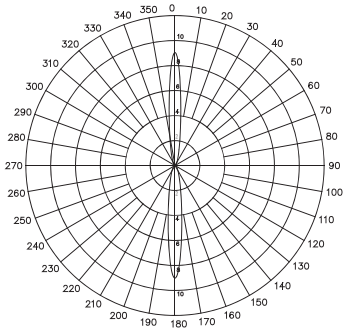
Applications

For ZigBee and SST-2450 Products

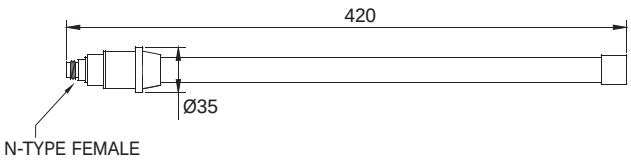
H-PLANE FIELD PATTERNS



E-PLANE FIELD PATTERNS



Dimensions (Units: mm)



Specifications

Antenna Type	
Operating Environment	Indoor or Outdoor
Radiation	Directional Sector
Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Gain	9 dBi
VSWR	1.3:1 (Max.)
Polarization	Linear
HPBW/Horizontal	360°
HPBW/Vertical	10°
Power Handing	15 W (Max.)
Impedance	50 Ω +/-5 Ω
Cable	-
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-20 ~ +60°C
Radome Material	Glass fiber
Weight	430 g
Dimensions (L x W)	420 mm x φ35 mm

Ordering Information

ANT-8	1 km, 2.4 GHz External Antenna (Omnidirectional) Gain: 8 dBi
Includes	3S004 x 1 HDF 200 Cable, 1 m N Type Male to SMA Male

Important Note: Distance data is for reference only.
Actual results may be different depending on the environment.

Accessories

3S005	HDF 200 Cable, 3 Meter Long N Type Male to SMA Male
3S006	HDF 200 Cable, 5 Meter Long N Type Male to SMA Male

ANT-15

5 km, 2.4 GHz External Antenna

Features

- 802.11b/g
- 15 dBi
- N Type Female (Jack)
- N Type Male (Plug) to RP SMA Male (Plug) Cable

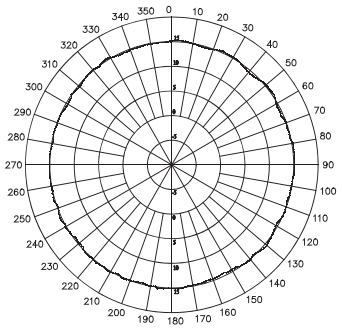
Introduction

ANT-15 is a 15 dBi Antenna

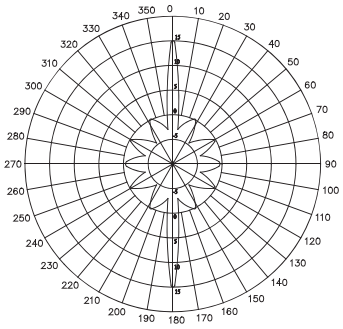
Applications

For ZigBee and SST-2450 Products

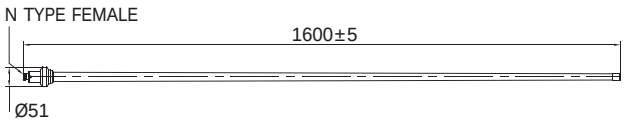
H-PLANE FIELD PATTERNS



E-PLANE FIELD PATTERNS



Dimensions (Units: mm)



Specifications

Antenna Type	
Operating Environment	Outdoor
Radiation	Directional Sector
Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Gain	15 dBi
VSWR	1.3:1 (Max.)
Polarization	Linear
HPBW/Horizontal	360°
HPBW/Vertical	10°
Power Handing	20 W (Max.)
Impedance	50 Ω +/-5 Ω
Cable	RG-58, 100 cm
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-20 ~ +60°C
Radome Material	Glass fiber
Weight	1050 g
Dimensions (L x W)	1600 mm x 35 mm

Ordering Information

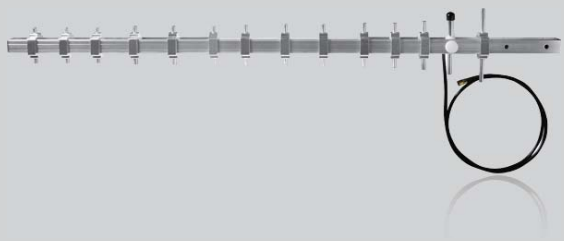
ANT-15	5 km, 2.4 GHz External Antenna (Omnidirectional) Gain: 15 dBi
Includes	3S004 x 1 HDF 200 Cable, 1 m N Type Male to SMA Male

Important Note: Distance data is for reference only.
Actual results may be different depending on the environment.

Accessories

3S005	HDF 200 Cable, 3 Meter Long N Type Male to SMA Male
3S006	HDF 200 Cable, 5 Meter Long N Type Male to SMA Male

8.3. 2.4 GHz Directional External Antenna



ANT-15YG-1

5 km, 2.4 GHz External Antenna

Features

- 802.11b/g
- 15 dBi
- N Type Female (Jack)
- N Type Male (Plug) to RP SMA Male (Plug) Cable
- Yagi Antenna

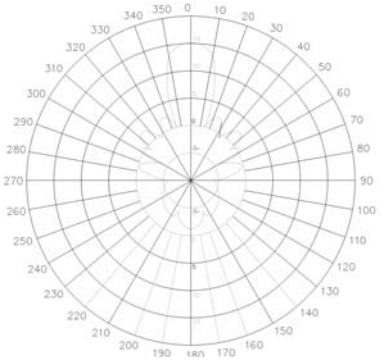
Introduction

ANT-15YG is a 15 dBi Antenna

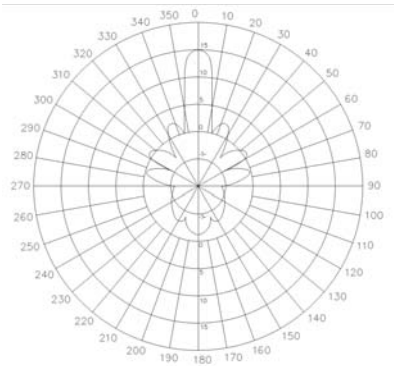
Applications

For ZigBee and SST-2450 Products

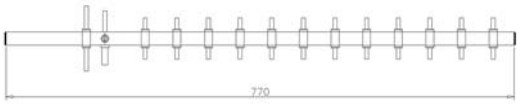
H-PLANE FIELD PATTERNS



E-PLANE FIELD PATTERNS



Dimensions (Units: mm)



Specifications

Antenna Type	
Operating Environment	Outdoor
Radiation	Directional Sector
Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Gain	15 dBi
VSWR	1:1.5 (Max.)
Polarization	Linear
HPBW/Horizontal	25°
HPBW/Vertical	15°
Power Handing	15 W (Max.)
Impedance	50 Ω
Cable	RG-58, 100 cm
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-40 ~ +80°C
Radome Material	Aluminum
Weight	570 g
Dimensions (L x W)	770 mm x 50 mm x 45 mm

Ordering Information

ANT-15YG-1	5 km, 2.4 GHz External Antenna (Directional) Gain: 15 dBi

Important Note: Distance data is for reference only.
Actual results may be different depending on the environment.

Accessories

3S005	HDF 200 cable, 3 meter long N type male to RP-SMA male
3S001-1	RG58A/U 1 Meter Long SMA male to RP-SMA male

ANT-18

9 km, 2.4 GHz External Antenna

Features

- 802.11b/g
- 15 dBi
- N Type Female (Jack)
- N Type Male (Plug) to RP SMA Male (Plug) Cable
- Panel Antenna

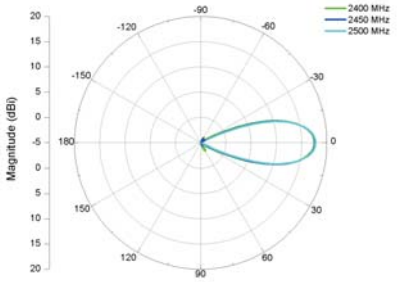
Introduction

ANT-18 is a 18 dBi Antenna

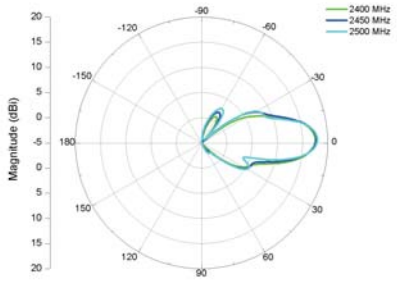
Applications

For ZigBee and SST-2450 Products

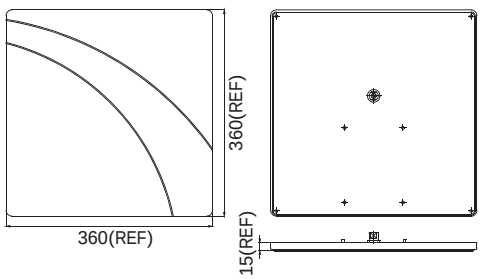
H-PLANE Co-polarization Pattern



V-PLANE Co-polarization Pattern



Dimensions (Units: mm)



Specifications

Antenna Type	
Operating Environment	Outdoor
Radiation	Directional Patch
Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Gain	18 dBi
VSWR	1.5:1 (Max.)
Polarization	Vertical
HPBW/Horizontal	15°
HPBW/Vertical	15°
Power Handing	50 W (cw)
Impedance	50 Ω
Cable	RG-58, 100 cm
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-40 ~ +80°C
Radome Material	ABS
Weight	1600 g
Dimensions (L x W x H)	360 mm x 360 mm x 16 mm

Ordering Information

ANT-18	9 km, 2.4 GHz External Antenna (Directional) Gain: 18 dBi
Includes	3S004 x 1 HDF 200 Cable, 1 m N Type Male to SMA Male

Important Note: Distance data is for reference only.
Actual results may be different depending on the environment.

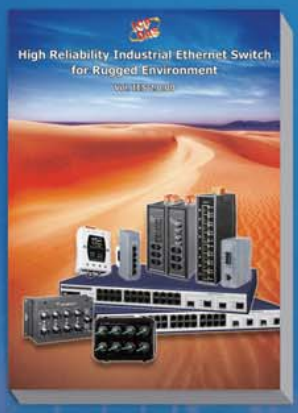
Accessories

3S005	HDF 200 Cable, 3 Meter Long N Type Male to SMA Male
3S006	HDF 200 Cable, 5 Meter Long N Type Male to SMA Male

左右頁問題

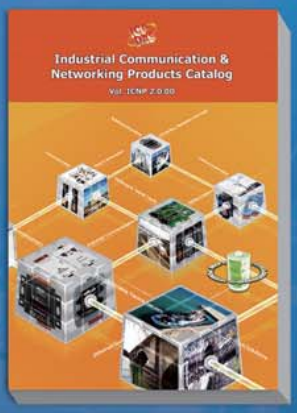
少一頁資料

ICP DAS Catalogs & Brochure



High Reliability Industrial Ethernet Switch Catalog

- Managed Ethernet Switches
- Unmanaged Ethernet Switches
  PoE Ethernet Switches
- Media Converters
- Real-time Redundant Ring Ethernet Switches
- IP67 Waterproof Switches
- Cyber-Ring Ethernet Self-healing Technlolgy

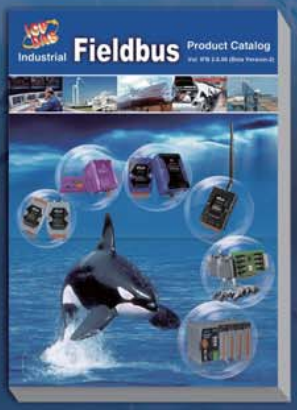


Industrial Communication & Networking Products Catalog

- Multi-port Serial Cards
- Programmable Device Servers (Serial-to-Ethernet)
- Converters, Repeaters and Hubs
- Fieldbus Solutions
- Ethernet Switches

PAC Products Catalog

- XP-8000-Atom Series
- XP-8000 Series
- WP-8000 Series
- LP-8000 Series
- iP-8000 Series
- ViewPAC Series
- MotionPAC Series
- I/O Expansion Units
- I/O Modules
- 5000 Series
- 7188/7186 Series

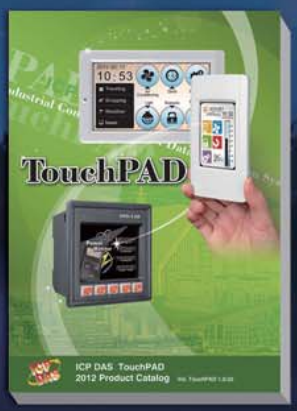


Industrial Fieldbus

- RS-485
- Industrial Ethernet
- Profinet
- CAN bus
- CANopen
- Devicenet
- J1939
- PROFIBUS
- HART
- Ethernet/IP
- BACnet

I/O Expansion Units and Remote I/O Modules Products Catalog

- RS-485 Remote I/O Modules
- Ethernet Remote I/O Modules
- FRnet I/O Modules
- CAN bus Remote I/O Modules
- PROFIBUS Remote I/O Modules



Touch HMI Devices Brochure

- TPD-430 Series
- TPD-280 Series
- VPD-130 Series

ICP DAS CO., LTD.

Taiwan (Headquarters)
Website: http://www.icpdas.com
E-mail: sales@icpdas.com
TEL : +886-3-597-3366 FAX : +886-3-597-3733

China
Website: http://www.icpdas.com.cn
E-mail: sales_sh@icpdas.com.cn
TEL : +86-21-6247-1722 FAX : +86-21-6247-1725

Europe
Website: http://www.icpdas-europe.com
E-mail: info@icpdas-europe.com
TEL : +49 (0) 7121-14324-0 FAX : +49 (0) 7121-14324-90

USA
Website: http://www.icpdas-usa.com
E-mail: sales@icpdas-usa.com
TEL : +1-310-517-9888 FAX : +1-310-517-0998

Local Distributor