





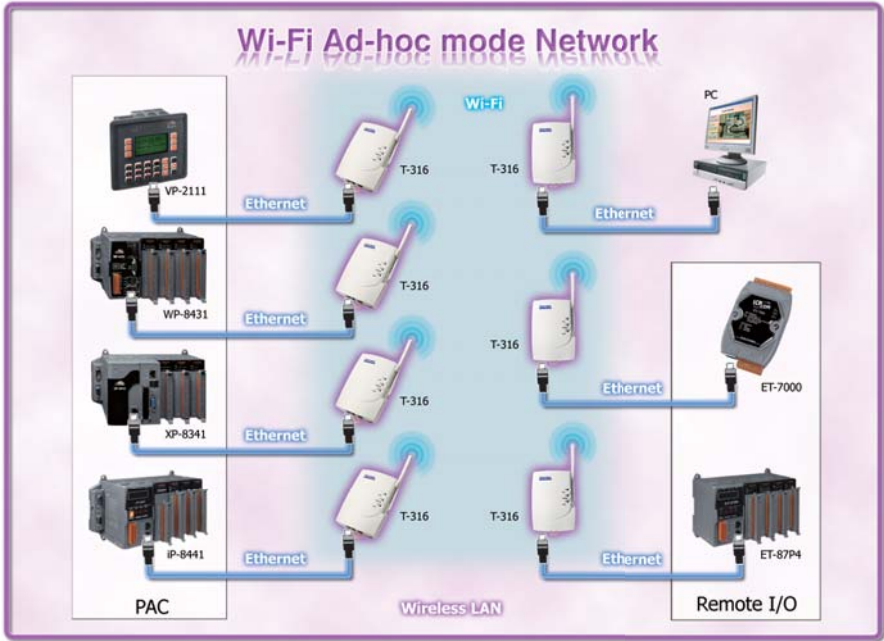
Wireless Solutions

5

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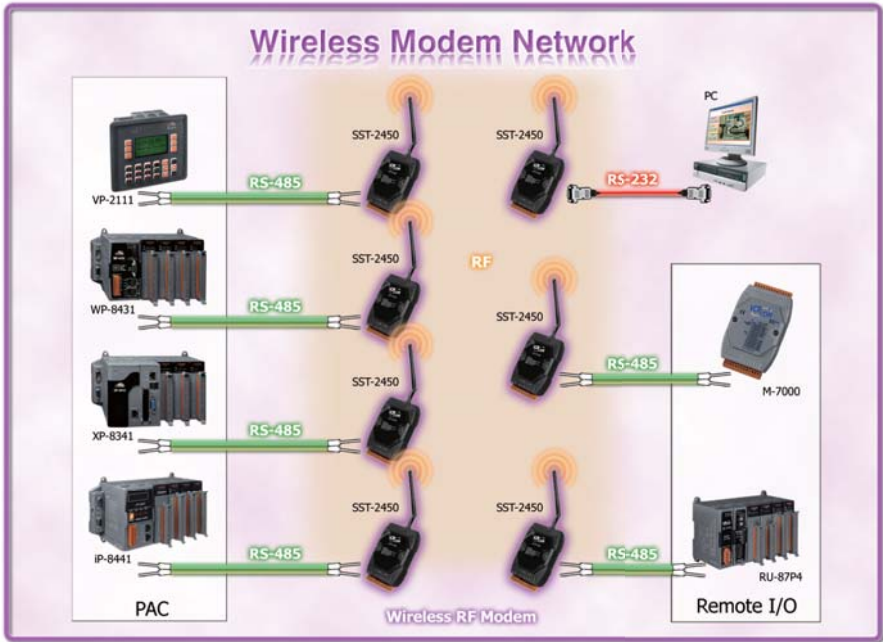
5.1. Wireless LAN & Wireless Modems

Wireless LAN



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. By taking full advantage of the integrated Web Server capability, configuration of the T-316 can easily be performed via a simple Web browser user interface.

Wireless Modems



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 a host and remote sensors. It is also useful for those applications where the installation of cable wire is inconvenient. The SST-2450 can be used not only in peer-to-peer mode, but also in a multi-point structure.

The SST-2450 is based on a direct sequence spread spectrum using RF technology, operating in the ISM bands with a frequency range of 2410.496 MHz to 2471.936 MHz and a channel spacing of 4.096 MHz.



Features

- 802.11b Ethernet Client
- Web-based Configuration
- Web-based Firmware Upgrades
- 64/128-bit WEP
- No Driver Installation Required
- Plug and Play Operation
- Directional 6dBi Gain Antenna
- AP Priority List
- Small and Compact
- DIN-Rail Mountable

Introduction

The T-316 is an Ethernet LAN to wireless LAN converter. It requires no software or drivers to be installed and the configuration process is very simple. The current hardware system or currently running programs do not need to be modified in order to enjoy the benefits of wireless transmission.

Operating Modes

Ad-hoc Mode

An Ad-hoc network is formed using a number of wireless stations (without an Access Point) and communicates via radio waves. 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.

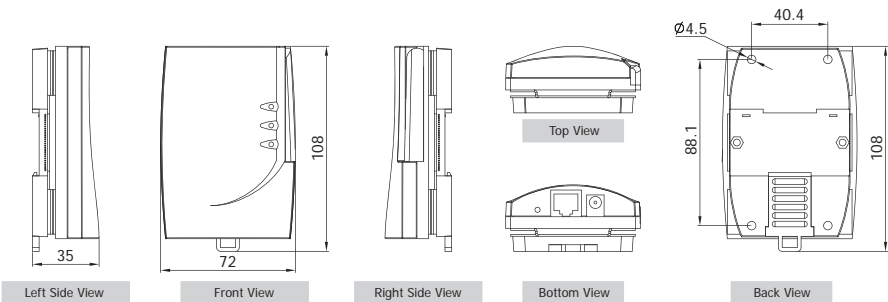
Applications



Specifications

Wireless		
Standard	IEEE 802.11b DSSS (2.4 GHz ISM radio band)	
Data Rate	11 Mbps, 5.5 Mbps, 1 Mbps (Auto scaling)	
Transmit Power	+15 dBm (typical)	
Data Rate Sensitivity	11 Mbps	-84 dBm
	5.5 Mbps	-87 dBm
	1 Mbps	-90 dBm
Modulation	11 Mbps	CCK
	5.5 Mbps	CCK
	1 Mbps	DBPSK
Antenna	Internal patch antenna with diversity	
Transmission Range	100 m	
General		
System Interface	Ethernet (RJ-45)	
LAN	802.3 compliant for wired LAN	
LED Indicators		
Power	Yes	
RF Activity	Yes	
LAN Activity	Yes	
Power		
Operating Voltage	+3.3 Voc +/-5 % or +5.0 Voc +/-5 %	
Current Consumption	500 mA (max.)	
Mechanical		
Dimensions (W x H x D)	72 mm x 108 mm x 35 mm	
Weight	250 g	
Environment		
Operating Temperature	0 °C ~ +55 °C	
Humidity	10 ~ 95% RH, non-condensing	

Dimensions (Unit: mm)



Ordering Information

T-316	Smart WLAN Ethernet Client
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Features

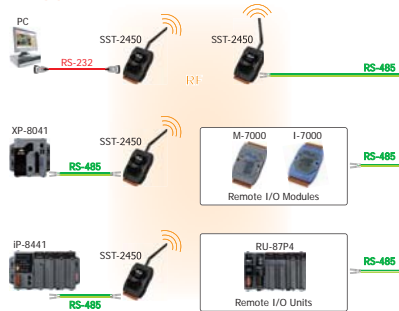
- Half-duplex up to 57600 bps
- Internal Self-Tuner
- ISM Band 2.4 GHz
- Supports Full-duplex and Half-duplex communication
- Spread Spectrum Technology



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.

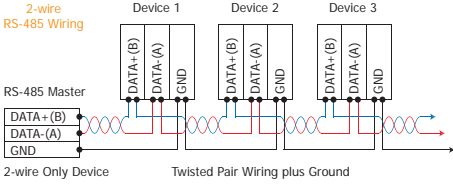
Applications



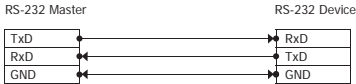
Specifications

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	MSK/G	
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 Mcbps/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, Rx/D, 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	N, 8, 1 or E, 8, 1	
Power		
Operating Voltage	+10 V _{cc} ~ +30 V _{cc}	
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 °C ~ +50 °C	
Storage Temperature	-20 °C ~ +70 °C	
Humidity	0 ~ 90% RH, non-condensing	

Wiring



3-wire RS-232 Wiring

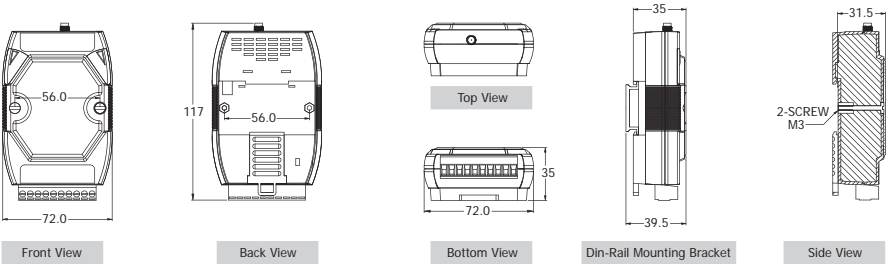


Pin Assignments

Terminal No.	Pin Assignment
01	SET
02	GND
03	--
04	RxD
05	TxD
06	GND
07	(Y) DATA+
08	(G) DATA-
09	(R) +Vs
10	(B) GND



Dimensions (Unit: mm)



Ordering Information

SST-2450	2450 MHz Wireless Modem
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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
ANT-21	12 km, 2.4 GHz External Antenna (Directional). Gain: 21 dBi
ANF-2401	1 W Amplifier

Available soon


SST-900

900 MHz Wireless Modem

Features

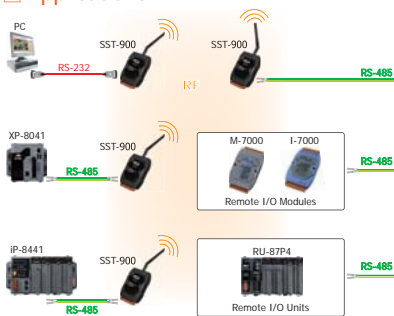
- Half-duplex up to 115200 bps
- Internal Self-Tuner
- ISM Band 900 MHz



Introduction

The SST-900 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-900 can be used not only in peer-to-peer mode but also in a multi-point structure.

Applications

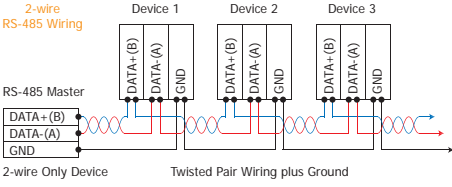


Specifications

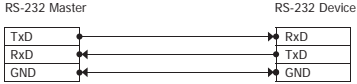
Wireless		
Operating Frequency Range	915 MHz (902 MHz ~ 928 MHz)	
Channel Spacing	1.5 MHz	
Transmit Power	15 dBm	
Number of Channel	16	
Transmission Range	Typical 300 m	
Data Bit Error Rate	< 1/1000 @ -102 dBm	
Antenna		
Type	3 dBi Omni-directional, bendable	
Connector	Reverse-Polarity SMA-Jack	
Serial Link		
Interface	RS-232	TxD, Rx/D, GND
	RS-485	D+, D-; internal self-tuner ASIC; Non-isolated
Max. Data Transfer Rate (Half-duplex Mode)	115200 bps	
Data Format	N, 8, 1 or E, 8, 1	
Power		
Operating Voltage	+10 V _{DC} ~ +30 V _{DC}	
Mechanical		
Dimensions (W x H x D)	72 mm x 117 mm x 35 mm	
Environment		
Operating Temperature	-10 °C ~ +50 °C	
Storage Temperature	-20 °C ~ +70 °C	
Humidity	0 ~ 90% RH, non-condensing	

Wiring

2-wire RS-485 Wiring



3-wire RS-232 Wiring

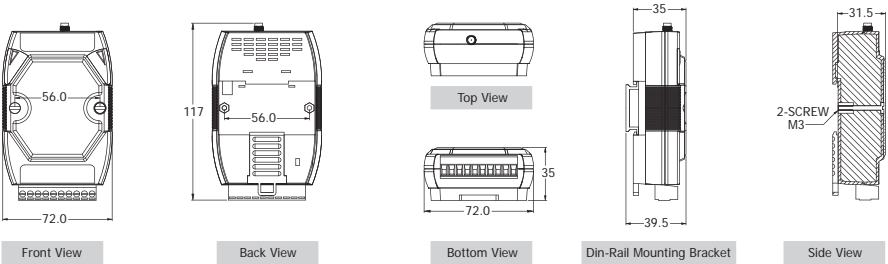


Pin Assignments

Terminal No.	Pin Assignment
01	SET
02	GND
03	--
04	RxD
05	TxD
06	GND
07	(Y) DATA+
08	(G) DATA-
09	(R) +Vs
10	(B) GND



Dimensions (Unit: mm)



Ordering Information

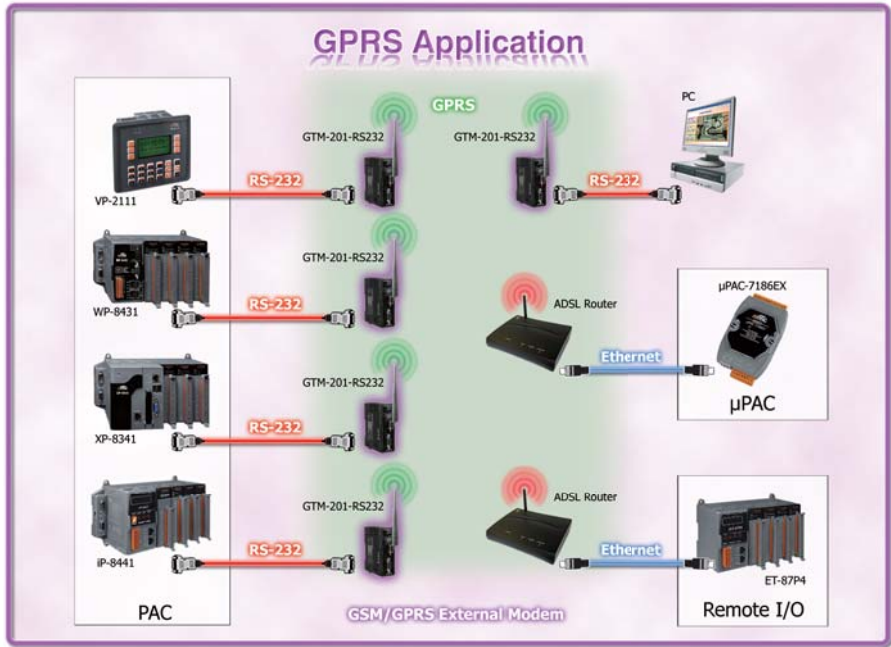
SST-900	900 MHz Wireless Modem
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5.2. GPRS/GSM Wireless Products

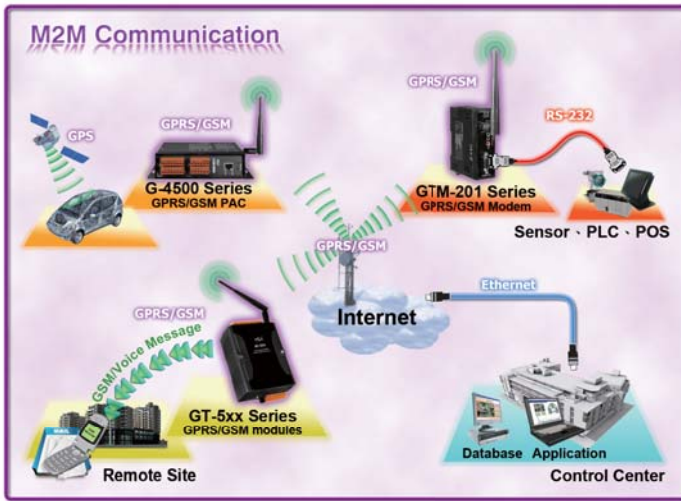
ICP DAS GPRS/GSM wireless solutions are uniquely designed to meet the challenges of implementing and Managing a small, medium and large number of unmanned remote devices as well as mobile terminals using the GPRS/GSM network. The ICP DAS GPRS/GSM wireless system is comprised of intelligent GPRS/GSM modems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

Advantages & Benefits

- ◆ There is no need to build an expensive fixed line network, saving substantially costs
- ◆ Plug & Play - Enable any device to be connected to the Internet via serial port over a GSM/GPRS network
- ◆ Communications - The most efficient method of handling data over a GPRS/GSM wireless network and the Internet
- ◆ Complete - A full turnkey solution that is designed for both fixed and mobile machine-to-machine applications



The Supreme has the same versatile Plug & Play form factor as previous M1306 products, and is packed with a host of new features that will carry your applications well into the future. For μPAC users, we provide GPRS, GSM and SMS lib files that allow you to quickly create custom application. For PAC users, the necessary software tools for GPRS, GSM and SMS are built to the OS.



Product	Functions	Applications
 <p>GTM-201 series</p>	<p>Industrial GSM/GPRS modems</p> <ul style="list-style-type: none"> • Quad-band 850/900/1800/1900 MHz • Different communication interfaces are provided, including RS-232 and USB, etc. • Uses AT commands • Designed for GPRS, data, fax, SMS and voice applications • Industrial design with surge protection • Supports TCP Server, TCP client, UDP client connection from GPRS 	<ul style="list-style-type: none"> • Equipment automation • Remote monitoring systems • Remote Data acquisition systems • For the PC based/PLC/PAC-based applications
 <p>GT-5xx series</p>	<p>Intelligent GPRS/GSM modules</p> <ul style="list-style-type: none"> • Quad-band 850/900/1800/1900 MHz • Can act as a GPRS or SMS gateway module • SMS reception and transmission • Connect any serial device to GPRS and the Internet • Easily monitor remote processes • Plug and play. No special programming Knowledge required • Support for Voice alarm via GSM network • GUI-based Utility • Industrial design with surge protection 	<ul style="list-style-type: none"> • Remote data monitoring and control • Water, gas and oil flow metering • Power station monitoring and control • Traffic signal monitoring and control • Remote I/O monitoring systems • Home automation • Vendor machine management systems • Voice alert system
 <p>G-4500 series</p>	<p>Multi-function GPRS/GSM PACs</p> <ul style="list-style-type: none"> • Supports a variety of TCP/IP features, including TCP, UDP, IP, ICMP and ARP, etc. • 10/100 BASE-T NE2000 compatible Ethernet Controller • Built-in Self-Tuner ASIC controller on the RS-485 port • Support the Modbus Protocol • GPS function • Free easy-to-use software development toolkits • Industrial design with surge protection 	<ul style="list-style-type: none"> • Fleet management • Commercial vehicle monitoring and driver performance monitoring • Rental car monitoring and theft recovery • Emergency (ambulance and fire engine) • Hydrology monitoring systems



GTM-201-RS232 GTM-201-USB

Industrial Quad-band GPRS/GSM Modems

Features

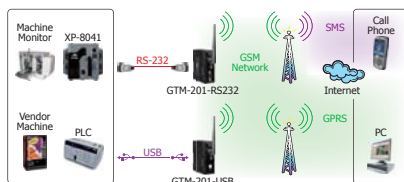
- Quad-band GSM/GPRS Modem Operating of 850/900/1800/1900 MHz
- Designed for GPRS, Data, Fax, SMS and Voice Applications
- Supports TCP Server, TCP Client, UDP Client Connection from GPRS
- Supports Standard AT Commands
- Includes a Digital Input Channel to reset the System
- Provide 3.5 mm stereo jack for Audio Interface
- LED Indicators for GSM and Power Indication
- High reliability in harsh environments
- The RS-232 Port supports 9600 to 115200 bps (GTM-201-RS232)
- USB Driver for Windows, WinPAC (WinCE5.0), LinPAC (Linux 2.6) (GTM-201-USB)
- DIN-Rail mountable



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 allows 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.

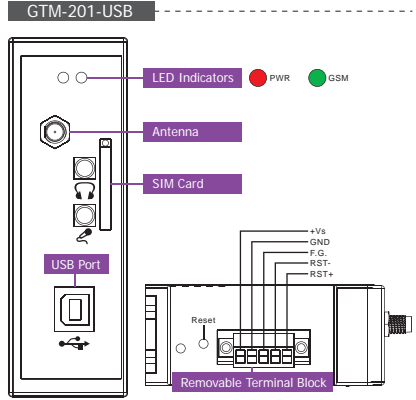
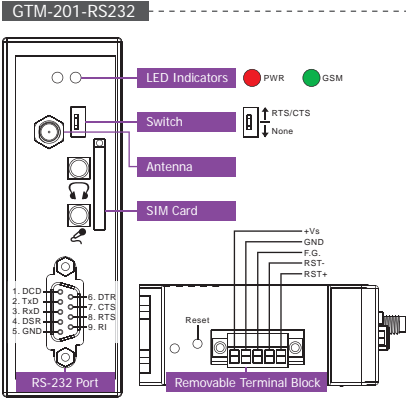
Applications



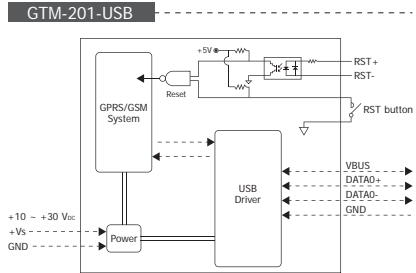
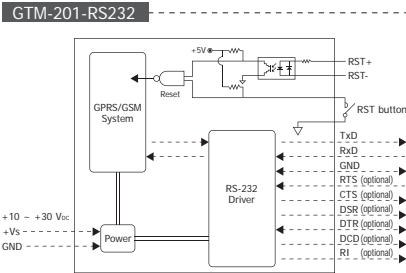
Specifications

Models	GTM-201-RS232	GTM-201-USB
GSM/GPRS System		
GPRS/GSM 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	
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	
Serial Ports		
Serial Standards	RS-232 (DB-9 Female)	USB (B-TYPE) to RS232(VCP)
RS-232	TxD, Rx/D, RTS, CTS, DTR, DSR, DCD, RI, GND	TxD, Rx/D, DTR, DSR, DCD, RI, GND
Baud Rate	9600 bps ~ 115200 bps	
Include Cable	RS-232 9-Pin Female to Male cable (CA-0915)	USB Type A to Type B cable (CA-USB18)
Compatibility	-	USB 1.1 and 2.0 standard
USB Driver Support	-	Windows 98 and 2000 Windows XP and XP 64-bit Windows Vista and Vista 64-bit WinPAC (WinCE 5.0) LinPAC (Linux kernel 2.6)
Reset Input		
Input Type	Isolated, 3750 V _{rms}	
On Voltage Level	+3.5 V _{DC} ~ +30 V _{DC}	
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 V _{DC} ~ +30 V _{DC}	
Power Consumption	Idle: 25 mA @ 24 V _{DC} ; Data Link: 100 ~ 400 mA (peak) @ 24 V _{DC}	
Connection	5-Pin 3.81 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	
Environment		
Operating Temperature	-25 °C ~ +55 °C	
Storage Temperature	-40 °C ~ +80 °C	
Humidity	5 ~ 90% RH, non-condensing	

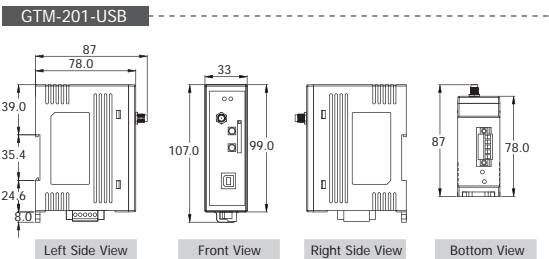
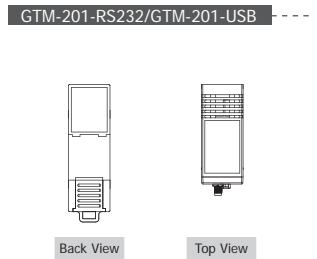
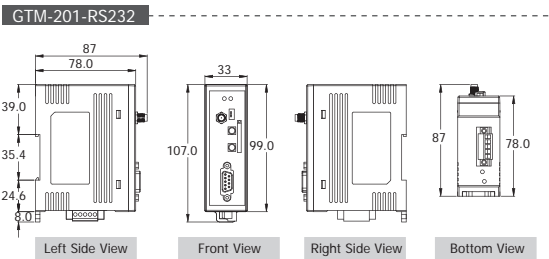
Appearance



Internal I/O Structure



Dimensions (Unit: mm)



Ordering Information

GTM-201-RS232 CR	Industrial Quad-band GPRS/GSM Modem with RS-232 Interface (RoHS)
GTM-201-USB CR	Industrial Quad-band GPRS/GSM Modem with USB Interface (RoHS)

Accessories

ANT-421-01	3m external GPRS/GSM antenna
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Features

- Support 900/1800/1900 MHz Tri-band frequency
- Identify ASCII or Unicode SMS Automatically
- Supports max. 140 ASCII Characters
- Supports max. 70 Unicode Characters
- Built-in ASCII Commands and Transparent Communication Modes
- Max. 10 Default Phone Numbers
- Industrial Design with Surge Protection
- Support SMS setting and control
- 10 DI (6 Counter), 2 DO, 2 RS-232 port
- Digital input support NC/NO/Counter modes
- Send alarm SMS by DI trigger or exceed Counter preset limits
- Support simple command to send SMS via RS-232
- Supports DC +10 V_{oc} ~ +30 V_{oc} Power Input
- Supports 3.7 V Li-Ion Battery Backup



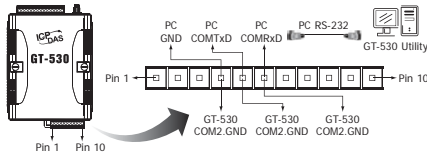
Introduction

GT-530 is an intelligent SMS controller for industry applications with the simple commands and SMS tunnel function, and power can be input by external power or Li-ion Battery. It supports UNICODE or 7 bit format for users to send SMS messages with in 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 up to 10 digital inputs (6 counters). The user can also interrogate 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.

Tool Menu



Status Line



I/O Specifications

Digital Input	
Input Channel	10 (6 DI can set as counter + 4 DI work with Li-ion battery)
On Voltage Level	+3.5 V _{oc} ~ +30 V _{oc}
Off Voltage Level	+1V max.
Digital Output	
Output Channel	2
Output Type	Open Collector Output
Load Voltage	+24 V _{oc} max.
Load Current	500 mA max.

LED Indicators

Digital Input			
EXT (red)	On	The external Power is active	
	Off	The external Power is not active	
STA (orange)	EXT on	Normal	PIN code is wrong
		Blinking (1 sec)	Always on or off
GSM (green)	Off (sleep mode) blinking (1 sec) (wake up)	Always on	Blinking per 50 ms
	Blinking 3 sec	Modem normal	
	On	Modem fail (or Blinking(not 3 sec))	

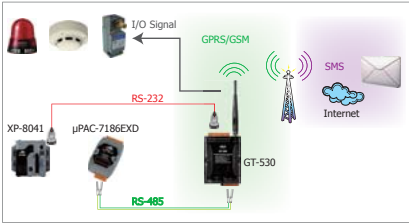
System Specifications

GSM/GPRS System	
GPRS/GSM Tri-band	900/1800/1900 MHz
GPRS Multi-slot	Class 10/8
GPRS Mobile Station	Class B
GPRS Class 10	Max. download speed 85.6 kbps
CSD	Up to 14.4 kbps
Compliant with GSM Phase 2/2+	Class 4 (2 W @ 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	
COM2	RS-232: Tx/D, Rx/D, GND
COM3	RS-232: Tx/D, Rx/D, GND
Power	
Protection	Reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10 V _{oc} ~ +30 V _{oc} with 600 mAh Li-ion battery backup (Option: 1200 mAh)
Mechanical	
Casing	Plastic
Flammability	UL 94V-0 materials
Dimensions (W x H x D)	91 mm x 132 mm x 52 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +55 °C
Storage Temperature	-40 °C ~ +80 °C
Humidity	5 ~ 95% RH, non-condensing

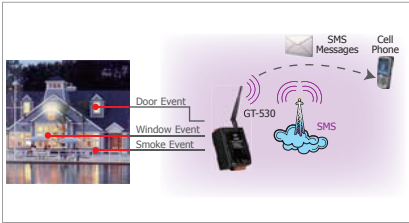
Applications

Machine, Standby Power Generator, Electrical Panels, Pumps, Vending Machines, Fire alarm Panels, Gas monitoring System, HVAC system, Door security, etc.

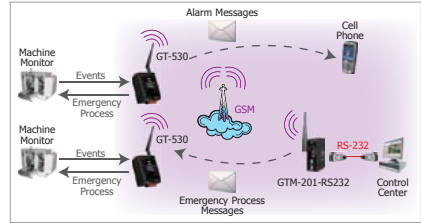
Signal Alarm and SMS Communication System



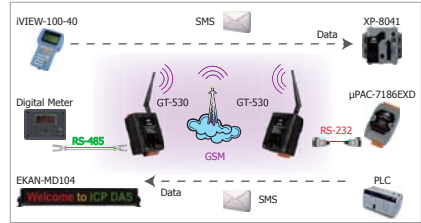
Home Security System



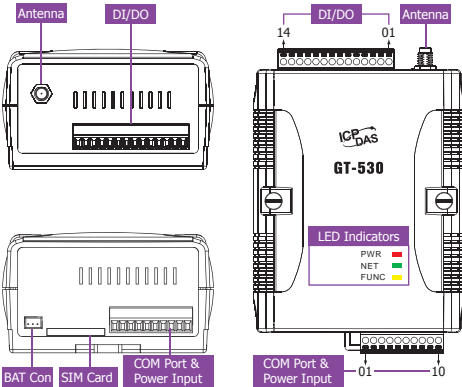
Remote Maintenance System



SMS Tunnel Communication System

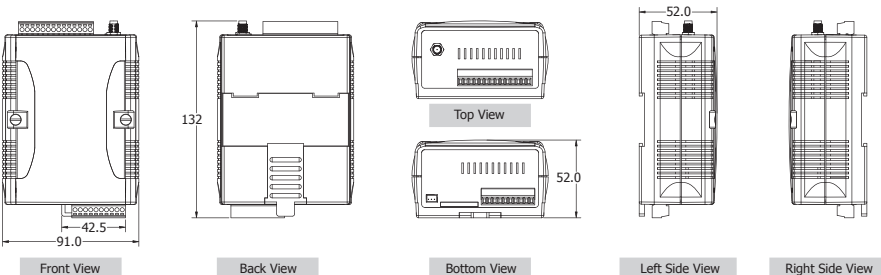


Appearance



DI/DO		COM Port & Power Input	
Terminal No.	Pin Assignment	Terminal No.	Pin Assignment
01	D10	COM3	01 GND
02	D11	RS-232	02 Rx/D1
03	D12		03 Tx/D1
04	D13	COM2	04 GND
05	D14	RS-232	05 Rx/D2
06	D15		06 Tx/D2
07	D16	N/A	07 N/A
08	D17	Power Input:	08 DC.+Vs
09	D18	+10 V _{oc} ~ +30 V _{oc}	09 DC.GND
10	D19	Frame Ground	10 F.G.
DO	11 DO0		
	12 DO1		
	13 DO.PWR		
DI/DO	14 Ext.GND		

Dimensions (Unit: mm)



Ordering Information

GT-530 CR	Intelligent SMS Alarm Controller (RoHS)
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Accessories

3S003	External GPRS/GSM Antenna
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Features

- Built-in 32 bit, 72 MHz CPU
- COM port: COM1 (5-wire RS-232), COM2 (RS-485),
- I/O: 6 channels DI, 2 channels DO, 1 channel AI
- Supports microSD Storage Card
- Quad-band 850/900/1800/1900 MHz
- Automatic/continuous GPRS Link Management
- Support Modbus RTU protocol to connect to Max 3 Modbus RTU devices via RS-485 port
- Support I/O data logger file transferring by E-mail
- Support M2M.OPC server and M2M.API tools
- Local I/O linkage function to make the simple local control
- Support 3.7V 600 mAH Li-battery



Introduction

The GT-540 is an Intelligent Active GPRS Remote Terminal Unit. It can be used in M2M application fields to transfer the local I/O or Modbus device's data via GPRS by the defined period or DI/AI triggers. The local I/O data can also be stored in the SD card to become a remote data logger. In addition, the GT-540 also offers the e-mail mode to transfer the data by e-mail via GPRS for users to choose. With The simple I/O linkage function, the GT-540 can reach the real time control in local field.

I/O Specifications

Digital Input	
Input Channel	6
Input Type	Sink or Source, Isolated channel with common power or ground
Wet Contact	On Voltage Level: +3.5 V _{cc} ~ +30 V _{cc} Off Voltage Level: +1 V _{cc} max.
Digital Output	
Output Channel	2
Output Type	Open Collector (NPN)
Load Voltage	+30 V _{cc} max.
Max. Load Current	100 mA/channel
Analog Input	
Input Channel	1
Resolution	12-bit
Input Range/Type	0 ~ 20 mA
Sample Rate	1 kHz max. (Read one channel)

LED Indicators

Digital Input			
EXT (red)	On	The external Power is active	
	Off	The external Power is not active	
STA (orange)	EXT on	Normal	GSM Fail
		Blinking (1 sec)	Always on or off
GSM (green)	Blinking 3 sec	Modem normal	
	Off	Modem fail (or Blinking(not 3 sec))	

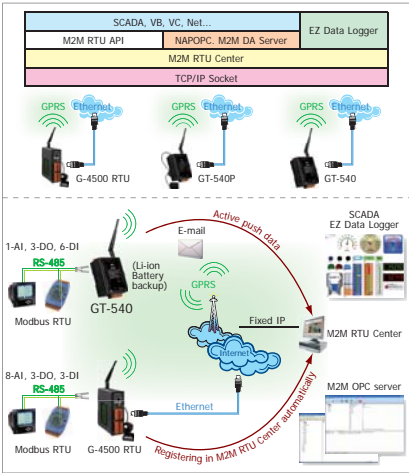
System Specifications

GSM/GPRS System	
GPRS/GSM 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
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
Serial Ports	
COM1	RS-232: Tx/D, Rx/D, GND
COM2	RS-232, RS-485 (Transparency)
Power	
Protection	Reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, HI-Pot
Required Supply Voltage	+10 V _{cc} ~ +30 V _{cc}
Power Consumption	Idle: 35 mA @ 24 V _{cc} Data Link: 150 ~ 400 mA (peak) @ 24 V _{cc}
Mechanical	
Casing	Plastic
Flammability	UL 94V-0 materials
Dimensions (W x H x D)	91 mm x 132 mm x 52 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +55 °C
Storage Temperature	-40 °C ~ +80 °C
Humidity	5 ~ 95% RH, non-condensing

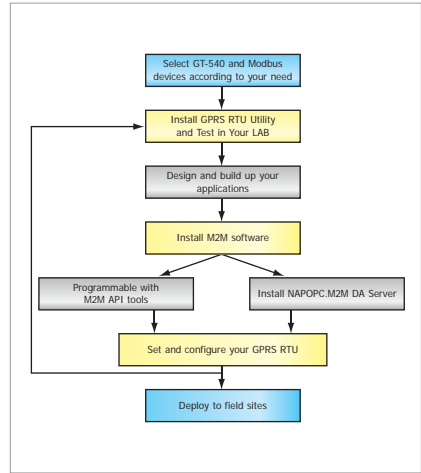
Applications

Machine, Standby Power Generator, Electrical Panels, Pumps, Vending Machines, Fire alarm Panels, Gas monitoring System, HVAC system, Door security, etc.

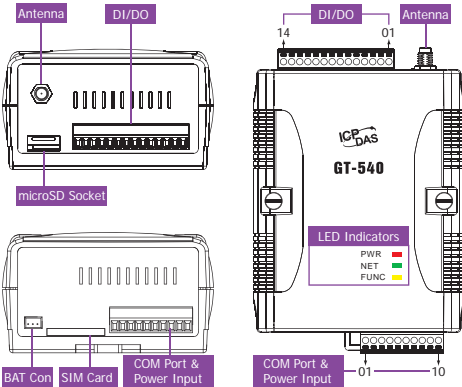
Software Solutions



Application Flow Chart

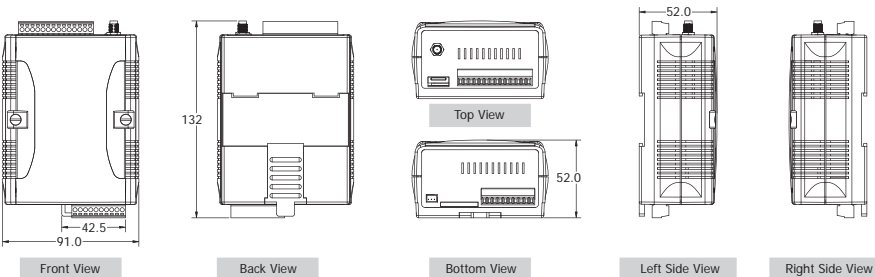


Appearance



DI/DO		COM Port & Power Input		
Terminal No.	Pin Assignment	Terminal No.	Pin Assignment	
DI	01 DI0	COM1 RS-232	01 RxD1	
	02 DI1		02 TxD1	
	03 DI2		COM2 RS-232	03 RxD2
	04 DI3			04 TxD2
	05 DI4	Ground for COM	05 GND	
	06 DI5		COM2 RS-485	06 D+
	07 DI6			07 D-
	08 DI7	Power Input: +10 V _{cc} ~ +30 V _{cc}	08 DC+ Vs	
	09 DO0		09 DC.GND	
	DO	10 DO1	Frame Ground	10 F.G.
		11 DO2		
		12 DO3		
		13 DO.PWR		
DI/DO	14 Ext.GND			

Dimensions (Unit: mm)



Ordering Information

GT-540 CR	Intelligent GPRS Remote Terminal Unit (RoHS)
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Accessories

ANT-421-01	3m external GPRS/GSM antenna
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NEW


G-4500(D)-SIM340/ G-4500P(D)-SIM340

M2M Mini-Programmable Automation Controller Series

Features

- Embedded MiniOS7, anti-virus
- Supports a variety of TCP/IP features, including TCP, UDP, IP, ICMP, AR
- 10/100 Base-TX NE2000 Compatible Ethernet Controller
- COM1 (5-wire RS-232), COM2 (RS-485), COM3 (3-wire RS-232)
- Built-in Self-Tuner ASIC Controller on the RS-485 Port
- I/O: 3-ch DI, 3-ch DO, 8-ch AI
- Supports SD Storage Card
- GPRS/GSM: Tri-band 900/1800/1900 MHz, Quad-band 850/900/1800/1900 MHz (optional)
- GPS: 16-ch with All-In-View Tracking (optional)
- Support TCP Server, TCP Client, UDP Client Connection from GPRS
- 128 x 64-dots LCM Display (only for G-4500D(PD)-SIM340)
- Supports Virtual COM Technology
- Supports the Modbus Protocol
- Built-in RTC, NVRAM, EEPROM
- High reliability in harsh environments
- Free Easy-to-use Software Development Toolkits



Introduction

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

Applications

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

Specifications

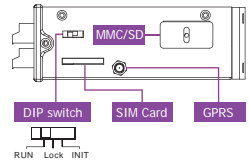
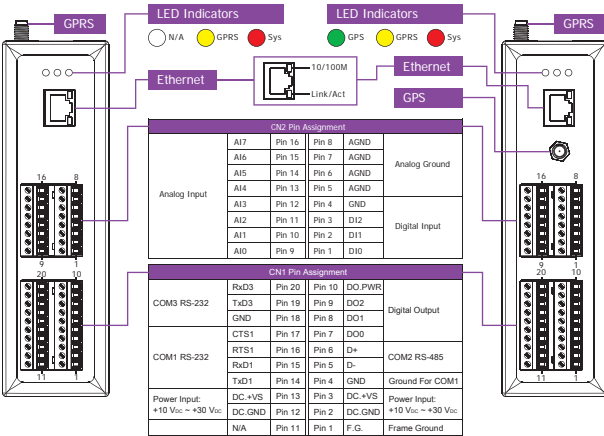
Models	G-4500-SIM340	G-4500D-SIM340	G-4500P-SIM340	G-4500PD-SIM340
CPU				
CPU	80 MHz internal microprocessor			
SRAM/Flash	512K/512K, real time clock, watchdog timer			
NVRAM	31 bytes, battery backup, data valid up to 10 years			
EEPROM	16 KB, data retention> 40 years, 1,000,000 erase/write cycles			
Communication Interface				
COM1	5-wire RS-232			
COM2	RS-485			
COM3	3-wire RS-232			
Ethernet	10/100 Base-TX Ethernet controller			
GPRS Interface				
Frequency Band	Quad-Band	850/900/1800/1900 MHz		
	GPRS Multi-slot	Class 10/8		
GPRS Connectivity	GPRS class 10; GPRS station class B			
DATA GPRS	Downlink Transfer	Max. 85.6 kbps		
	Uplink Transfer	Max. 42.8 kbps		
SMS	MT, MO, CB, Text and PDU mode			
GPS Interface				
General	-	32 channels with All-In-View tracking Built-in high gain amplifier and bandpass filter Extra high sensitivity: -159 dBm		
Acquisition Time	-	Cold/Warm Time: 42/35 sec. in air and stationary		
Reacquisition Time	-	0.1 second		
LCD Interface				
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 operations	-	Expected life is more than 100,000 hours under normal operations
	-	-	-	-
LED Indicators				
System	Red			
GPRS	Yellow			
GPS	Green			
Power	Yes			
Protection	Power reverse polarity protection			
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot			
Power Requirement	15 W; Unregulated +10 V _{DC} ~ +30 V _{DC}			
Power Consumption	Idle: 75 mA @ 24 V _{DC} ; Data Link: 150 ~ 400 mA (peak) @ 24 V _{DC}			
Mechanical				
Casing	Metal			
Dimensions (W x L x H)	42 mm x 118 mm x 154 mm			
Installation	DIN-Rail			
Environment				
Operating Temperature	-25 °C ~ +50 °C			
Storage Temperature	-40 °C ~ +80 °C			
Humidity	5 ~ 90% RH, non-condensing			

Appearance

G-4500(D)-SIM340

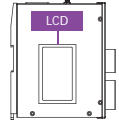
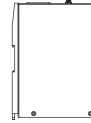
G-4500P(D)-SIM340

G-4500(D)/4500P(D)-SIM340



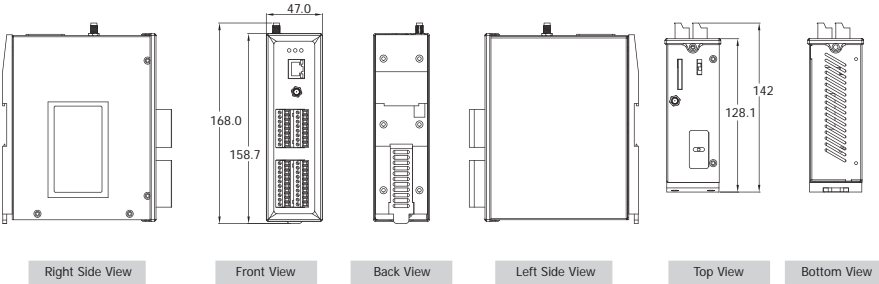
G-4500/
4500P-
SIM340

G-4500D/
4500PD-
SIM340



Dimensions (Unit: mm)

G-4500PD-SIM340



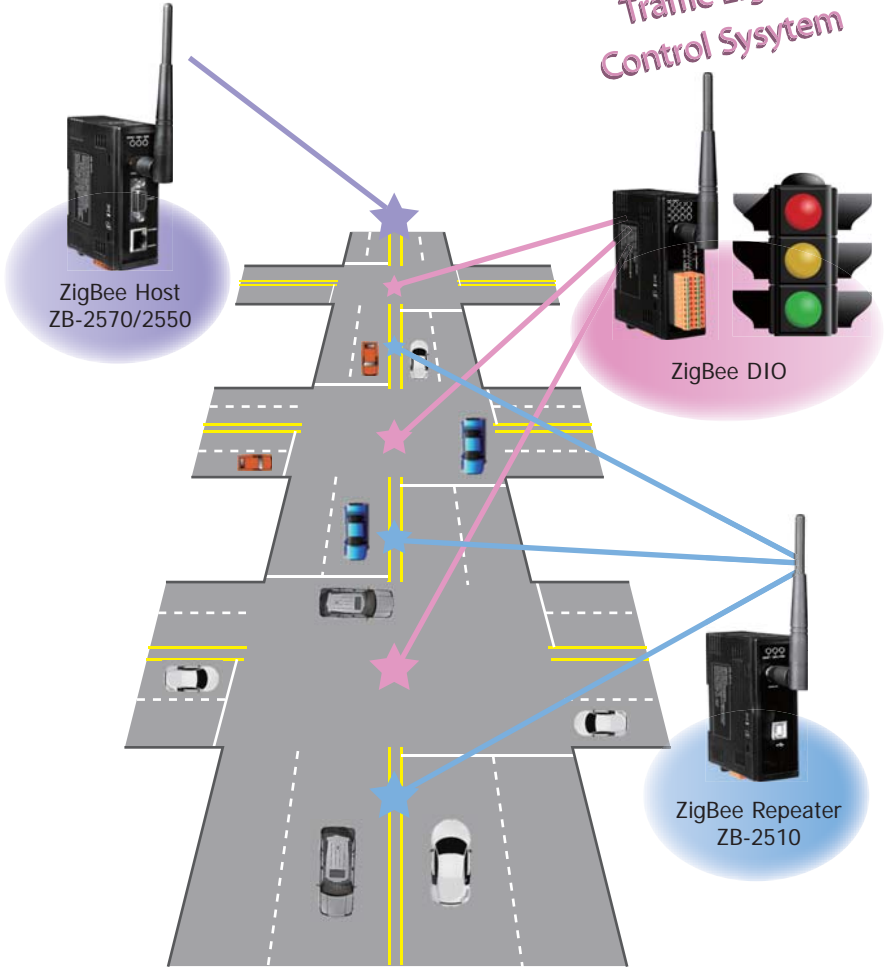
Ordering Information

G-4500-SIM340 CR	M2M Mini-Programmable Automation Controller (RoHS)
G-4500D-SIM340 CR	M2M Mini-Programmable Automation Controller with LCD Display (RoHS)
G-4500P-SIM340 CR	M2M Mini-Programmable Automation Controller with GPS Function (RoHS)
G-4500PD-SIM340 CR	M2M Mini-Programmable Automation Controller with LCD Display and GPS Function (RoHS)

Accessories

ANT-421-01	3m external GPRS/GSM antenna
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5.3. ZigBee Wireless Products



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, home automation, and domotics, etc.

● ZigBee Module Specifications

RF Channels	16
Receive Sensitivity	-102 dBm
Transmit Power	12 dBm
Network Topology Support	Star, Mesh and cluster tree
Certification	TUV (ZCP)
Antenna	2.4 GHz, 3 dBi Omni-directional antenna

● Selection Guide



Ethernet/Serial to ZigBee Converters

Model Name	Interface			Transmission Range Up to 700 m (LOS)	Support High Gain Antenna	Page
	RS-232	RS-485	Ethernet			
ZB-2550	Yes	Yes	-	-	-	5-3-3
ZB-2551	Yes	Yes	-	-	-	5-3-3
ZB-2570	Yes	Yes	Yes	-	-	5-3-5
ZB-2571	Yes	Yes	Yes	-	-	5-3-5
ZB-2550P	Yes	Yes	-	Yes	Yes	5-3-3
ZB-2551P	Yes	Yes	-	Yes	Yes	5-3-3
ZB-2570P	Yes	Yes	Yes	Yes	Yes	5-3-5
ZB-2571P	Yes	Yes	Yes	Yes	Yes	5-3-5



ZigBee Repeater

Model Name	USB Configuration Interface	Repeater Function	Transmission Range Up to 700 m (LOS)	Support High Gain Antenna	Page
ZB-2510	Yes	Yes	-	-	5-3-7
ZB-2510P	Yes	Yes	Yes	Yes	5-3-7



Introduction

The ZB-2550 and the ZB-2551 are small-sized wireless ZigBee converters based on the IEEE 802.15.4 standard. They allow RS-485/RS-232 interfaces to be converted to a ZigBee wireless network.

Only one ZB-2550 (Host) is allowed in a ZigBee network and is used to initialize and manage the data transmission routes. The ZB-2551 (Slave) ZigBee router is responsible for transmitting/receiving data from its child/parent router or the host. ICP DAS ZigBee products are designed for low data rates. The main benefit of ICP DAS ZigBee products is that they can be used to define a general-purpose, self-organizing mesh network, which can be highly advantageous for industrial control.

The typical transmission range of the ICP DAS ZigBee ZB-2550/ZB-2551 converter is 100 m, and the ZB-2550P/ZB-2551P is 700 m.

Specifications

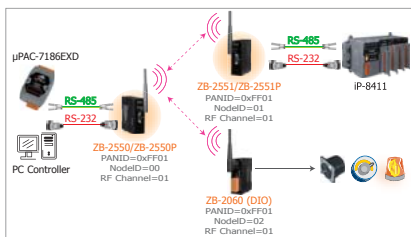
Models	ZB-2550	ZB-2550P	ZB-2551	ZB-2551P
Wireless				
RF Channels	16			
Receive Sensitivity	-102 dBm			
Transmit Power	12 dBm	18 ~ 24 dBm, adjustable	12 dBm	18 ~ 24 dBm, adjustable
Network Topology Support	Star, Mesh and Cluster tree			
Certification	TUV (ZCP)			
Antenna	2.4 GHz-3 dBi Omni-Directional antenna	2.4 GHz-5 dBi Omni-Directional antenna	2.4 GHz-3 dBi Omni-Directional antenna	2.4 GHz-5 dBi Omni-Directional antenna
Transmission Range	100 m	700 m	100 m	700 m
General				
CPU	8-bit microcontroller			
EEPROM	16 KB (8 blocks, each block has 256 bytes); Data retention > 40 years; 1,000,000 erase/write cycles			
Module Type	Host		Slave	
Communication Interface				
COM 0	RS-232 (Tx,D, Rx,D and GND); D-Sub 9 Female Non-isolated RS-485 (D+, D-, internal Self-Tuner ASIC); Non-isolated		RS-232 (Tx,D, Rx,D and GND); D-Sub 9 Male Non-isolated	
COM 0 Settings				
Baud Rate	1200 ~ 115200 bps			
Data Bit	8			
Parity Check	Even, Odd, None			
Stop Bit	1			
LED Indicators				
ZigBee Net State	Green			
ZigBee Rx/D	Yellow			
Power	Red			
Power				
Protection	Power reverse polarity protection			
EMC Protection	ESD, Surge, EFT			
Required Supply Voltage	+10 V _{DC} ~ +30 V _{DC}			
Power Consumption	0.5 W	2.0 W (max.)	0.5 W	2.0 W (max.)
Connection	5-Pin 5.08 mm Removable Terminal Block			
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			
Environment				
Operating Temperature	-25 °C ~ +75 °C			
Storage Temperature	-40 °C ~ +80 °C			
Relative Humidity	5 ~ 95% RH, non-condensing			

Features

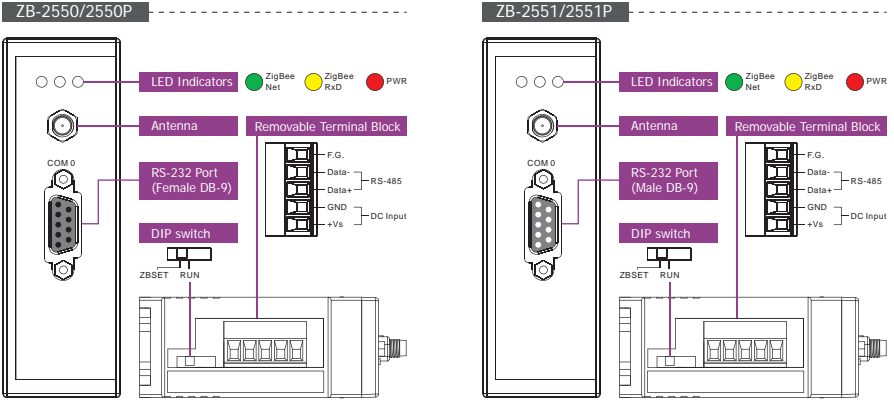
- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4 G IEEE802.15.4/ZigBee Specifications
- Wireless Transmission Range up to 100 m (ZB-2550/ZB-2551)
- Wireless Transmission Range up to 700 m (ZB-2550P/ZB-2551P)
- GUI Configuration Software (Windows Version)
- DIN-Rail Mountable



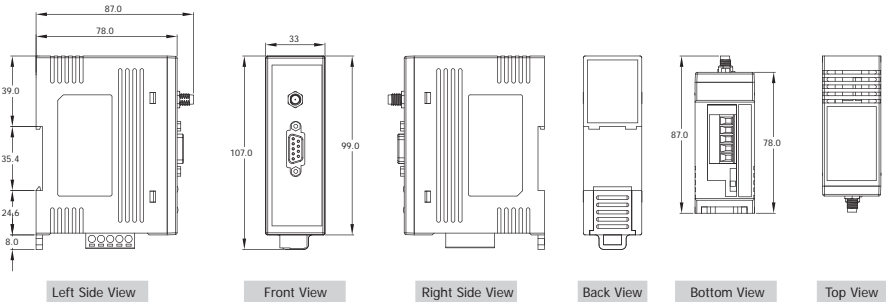
Applications



Appearance



Dimensions (Unit: mm)



Ordering Information

ZB-2550 CR	RS-485/RS-232 to ZigBee Converter (Host) (RoHS)
ZB-2550/S CR	RS-485/RS-232 to ZigBee Converter (Host) (RoHS) + GPSU06U-6 (Power Supply)
ZB-2551 CR	RS-485/RS-232 to ZigBee Converter (Slave) (RoHS)
ZB-2551/S CR	RS-485/RS-232 to ZigBee Converter (Slave) (RoHS) + GPSU06U-6 (Power Supply)
ZB-2550P CR	RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)
ZB-2550P/S CR	RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS) + GPSU06U-6 (Power Supply)
ZB-2551P CR	RS-485/RS-232 to High Power Amplifier ZigBee Converter (Slave) (RoHS)
ZB-2551P/S CR	RS-485/RS-232 to High Power Amplifier ZigBee Converter (Slave) (RoHS) + GPSU06U-6 (Power Supply)

Accessories

Power Supply
ZigBee DIO
ZigBee Repeater
ZigBee Converter



Features

- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4 G IEEE802.15.4/ZigBee Specifications
- Wireless Transmission Range up to 100 m (ZB-2570/ZB-2571)
- Wireless Transmission Range up to 700 m (ZB-2570P/ZB-2571P)
- GUI Configuration Software (Windows Version)
- DIN-Rail Mountable



Introduction

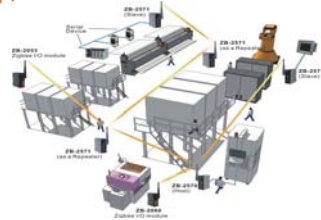
ZigBee Network

The ZB-2570/ZB-2570P is a host ZigBee converter, and the ZB-2571/ZB-2571P is a slave ZigBee converter. Each feature an Ethernet/RS-485/RS-232 interface. Devices that have an Ethernet/RS-485/RS-232 interface are also able to be connected using the ZB-2570/ZB-2570P/ZB-2571/ZB-2571P. By distributing host and slave ZigBee converters in the field, users can easily build a wireless network that can be used for both monitoring and control.

What are the benefits of using ZigBee?

ZigBee is a specification based on the IEEE 802.15.4 standard for wireless personal area networks (WPANs). It is targeted at applications that require secure networking as well as high flexibility for network expansion anytime new nodes are to be added. It is also widely used in the industrial control field, in hospitals, labs and in building automation. Three topologies are defined in the IEEE 802.15.4 standard: Star, Cluster Tree and Mesh. The typical transmission range for the 2570/2571 is 100 m, and the 2570P/2571P is 700 m.

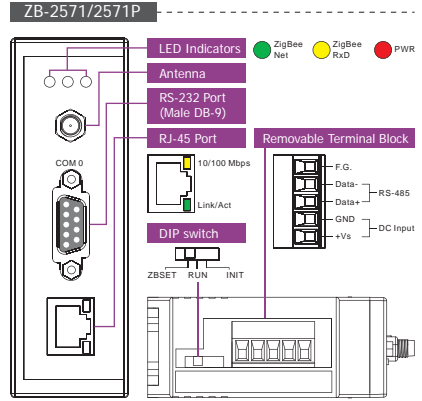
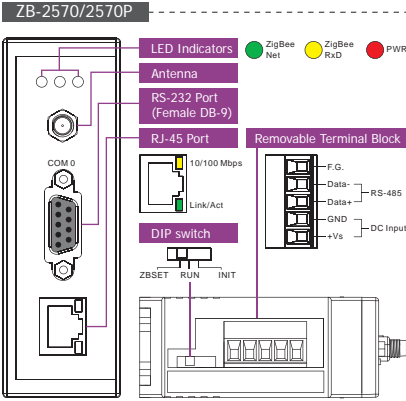
Applications



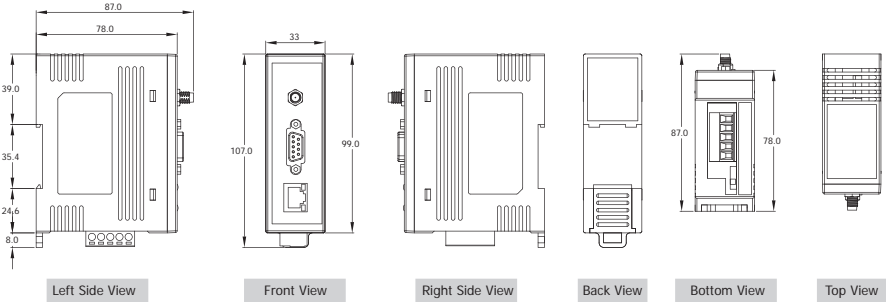
Specifications

Models	ZB-2570	ZB-2570P	ZB-2571	ZB-2571P
Wireless				
RF Channels	16			
Receive Sensitivity	-102 dBm			
Transmit Power	12 dBm		18 ~ 24 dBm, adjustable	
Network Topology Support	Star, Mesh and Cluster tree		12 dBm	
Certification	TUV (ZCP)			
Antenna	2.4 GHz-3 dBi	2.4 GHz-5 dBi	2.4 GHz-3 dBi	2.4 GHz-5 dBi
Transmission Range	100 m	700 m	100 m	700 m
General				
CPU	80186, 80 MHz or compatible			
SRAM	512 KB			
Flash Memory	512 KB; Erase unit is one sector (64 KB); 100,000 erase/write cycles			
EEPROM	16 KB (8 blocks, each block contains 256 bytes); Data retention > 40 years; 1,000,000 erase/write cycles			
Module Type	Host		Slave	
Communication Interface				
COM 0	RS-232 (Tx/D, Rx/D and GND); D-Sub 9 Female Non-isolated		RS-232 (Tx/D, Rx/D and GND); D-Sub 9 Male Non-isolated	
Ethernet	RS-485 (D+, D-, internal Self-Turner ASIC); Non-isolated 10/100 Base-TX (Auto-negotiating, auto MDI/MDI-X, LED indicators)			
COM 0 Settings				
Baud Rate	1200~115200 bps			
Data Bit	7, 8			
Parity	Even, Odd, None			
Stop Bit	1			
LED Indicators				
ZigBee Net State	Green			
ZigBee Rx/D	Yellow			
Power	Red			
Power				
Protection	Power reverse polarity protection			
EMS Protection	ESD, Surge, EFT			
Required Supply Voltage	+10 V _{DC} ~ +30 V _{DC}			
Power Consumption	2.5 W	4 W (max.)	2.5 W	4 W (max.)
Connection	5-Pin 5.08 mm Removable Terminal Block			
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			
Environment				
Operating Temperature	-25 °C ~ +75 °C			
Storage Temperature	-40 °C ~ +80 °C			
Relative Humidity	5 ~ 95% RH, non-condensing			

Appearance



Dimensions (Unit: mm)



Ordering Information

ZB-2570 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Host) (RoHS)
ZB-2570/S CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Host) (RoHS) + GPSU06U-6 (Power Supply)
ZB-2571 CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Slave) (RoHS)
ZB-2571/S CR	Ethernet/RS-485/RS-232 to ZigBee Converter (Slave) (RoHS) + GPSU06U-6 (Power Supply)
ZB-2570P CR	Ethernet/RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS)
ZB-2570P/S CR	Ethernet/RS-485/RS-232 to High Power Amplifier ZigBee Converter (Host) (RoHS) + GPSU06U-6 (Power Supply)
ZB-2571P CR	Ethernet/RS-485/RS-232 to High Power Amplifier ZigBee Converter (Slave) (RoHS)
ZB-2571P/S CR	Ethernet/RS-485/RS-232 to High Power Amplifier ZigBee Converter (Slave) (RoHS) + GPSU06U-6 (Power Supply)

Accessories

Power Supply
ZigBee DIO
ZigBee Repeater
ZigBee Converter



Features

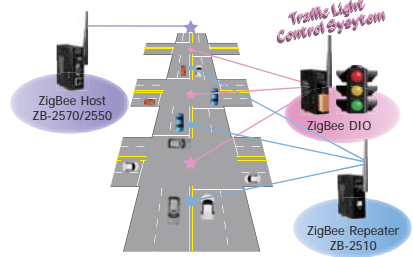
- ISM 2.4 GHz Operating Frequency
- Fully Compliant with 2.4 G IEEE802.15.4/ZigBee Specifications
- Wireless Transmission Range up to 100 m (ZB-2510)
- Wireless Transmission Range up to 700 m (ZB-2510P)
- USB Setting Interface
- GUI Configuration Software (Windows Version)
- DIN-Rail Mountable



Introduction

The ZB-2510 and ZB-2510P are two ZigBee-based repeater modules included in the ICP DAS product line. The main difference between these two products is the transmission range. The ZB-2510 supports an extended transmission range of up to 100 meters, whereas the ZB-2510P can transmit to a maximum of 700 meters. Both modules are able to operate in broadcast and user-defined route modes. When the repeater is set to broadcast mode, the transmission route is constructed by the ZigBee Host. The repeater will forward any data that it receives using broadcast mode. The advantage of this mode is that the repeater can be deployed in a "haphazard" manner without any concern about positioning. However, the main flaw of this mode is that if there are too many broadcast data packets in a ZigBee network, it will cause the network to crash. In contrast, when the repeater is set to user-defined route mode, it will only forward data using the user-configured route. The benefit of this mode is that the data loading of the ZigBee network will be reduced, but the user must plan the data transmission route for the entire ZigBee network before setting up the application. If a mistake is made on even one repeater point, the entire ZigBee network will be invalid.

Applications

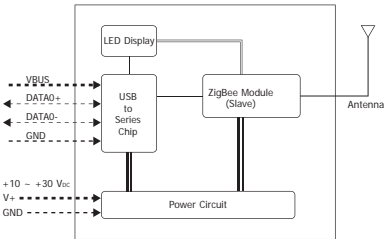


Specifications

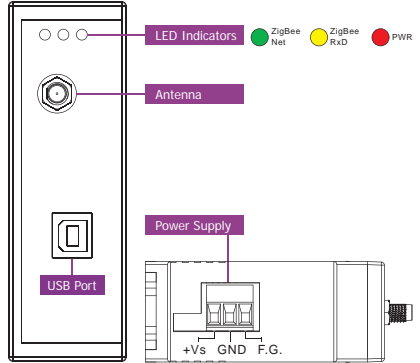
Models	ZB-2510	ZB-2510P
Wireless		
RF Channels	16	
Receive Sensitivity	-102 dBm	
Transmit Power	12 dBm	18 ~ 24 dBm, adjustable
Network Topology Support	Star, Mesh and Cluster tree	
Certification	TUV (ZCP)	
Antenna	2.4 GHz-3 dBi Omni-Directional antenna	2.4 GHz-5 dBi Omni-Directional antenna
Transmission Range	100 m	700 m
Setting Interface		
USB	Type B	
Include Cable	CA-USB18 (1.8 M Cable) x 1; USB Type A connector (Type A to Type B cable provided)	
Compatibility	USB 1.1 and 2.0 standard	
Driver Supported	Windows 98/ME/2000/XP/Linux/Vista	
COM 0 Settings		
Data Bit	8	
Parity	Even, Odd, None	
Stop Bit	1	
LED Indicators		
ZigBee Net State	Green	
ZigBee Rx/D	Yellow	
Power	Red	
Power		
Protection	Power reverse polarity protection	
EMS Protection	ESD, Surge, EFT	
Required Supply Voltage	+10 V _{DC} ~ +30 V _{DC}	
Power Consumption	1.5 W	3 W
Connection	3-Pin 5.08 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	
Environment		
Operating Temperature	-25 °C ~ +75 °C	
Storage Temperature	-40 °C ~ +80 °C	
Relative Humidity	5 ~ 95% RH, non-condensing	

Internal I/O Structure

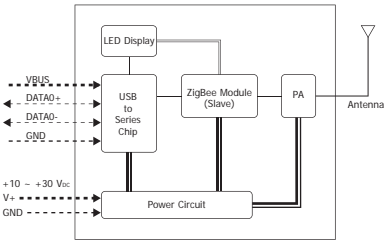
ZB-2510



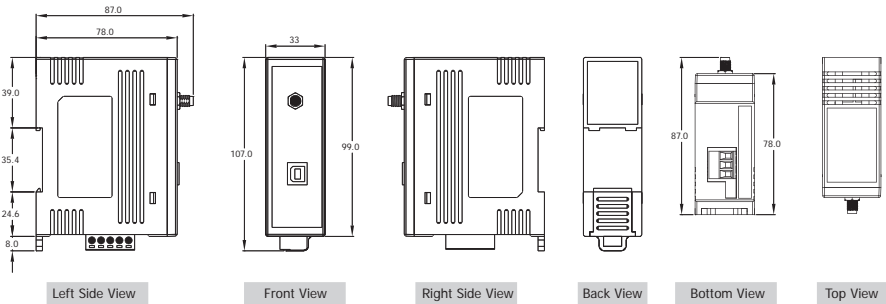
Appearance



ZB-2510P



Dimensions (Unit: mm)



Ordering Information

ZB-2510 CR	ZigBee Repeater (RoHS)
ZB-2510P CR	High Power Amplifier ZigBee Repeater (RoHS)

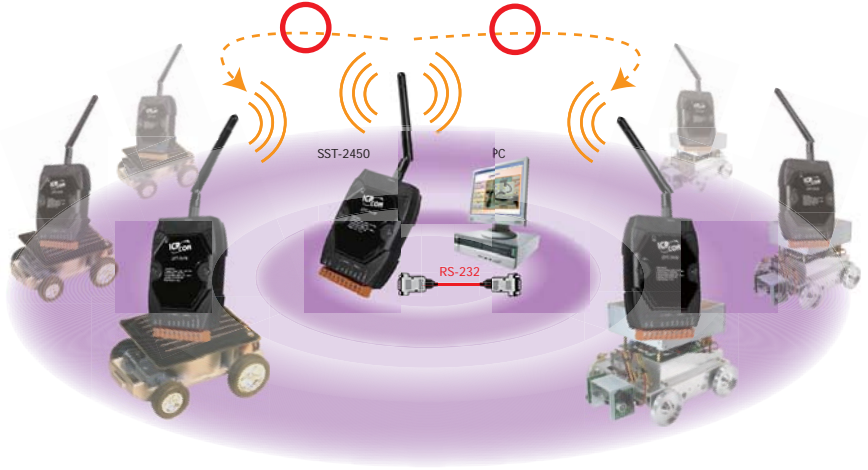
Accessories

Power Supply
ZigBee Repeater
ZigBee Converter

5.4. External Antennas

1. Omni-directional Antenna to Omni-directional Antenna

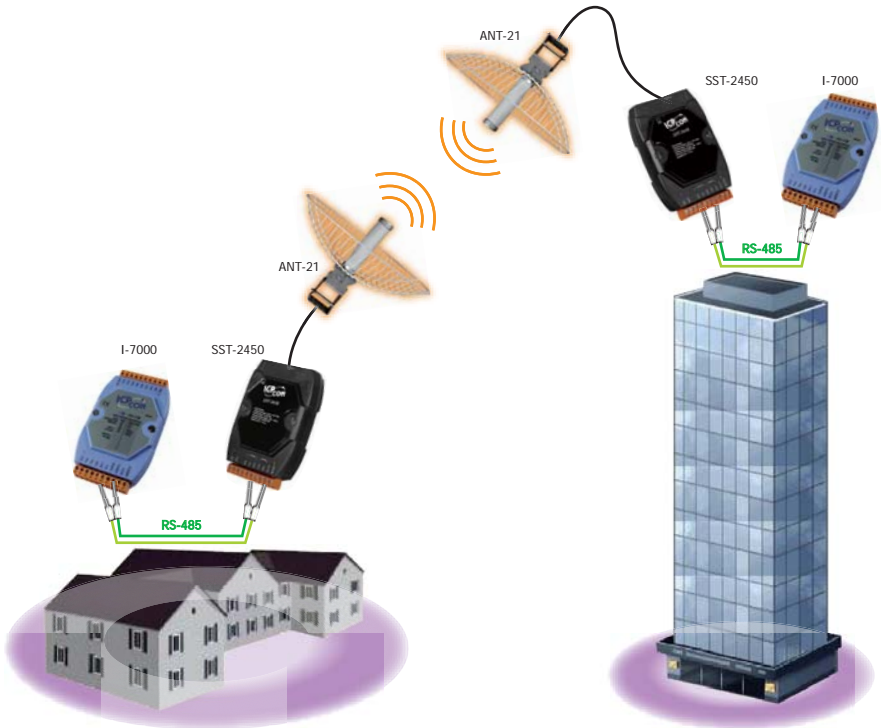
Note: As the antennas rely on line-of-sight for connection, they should be placed at the same height.



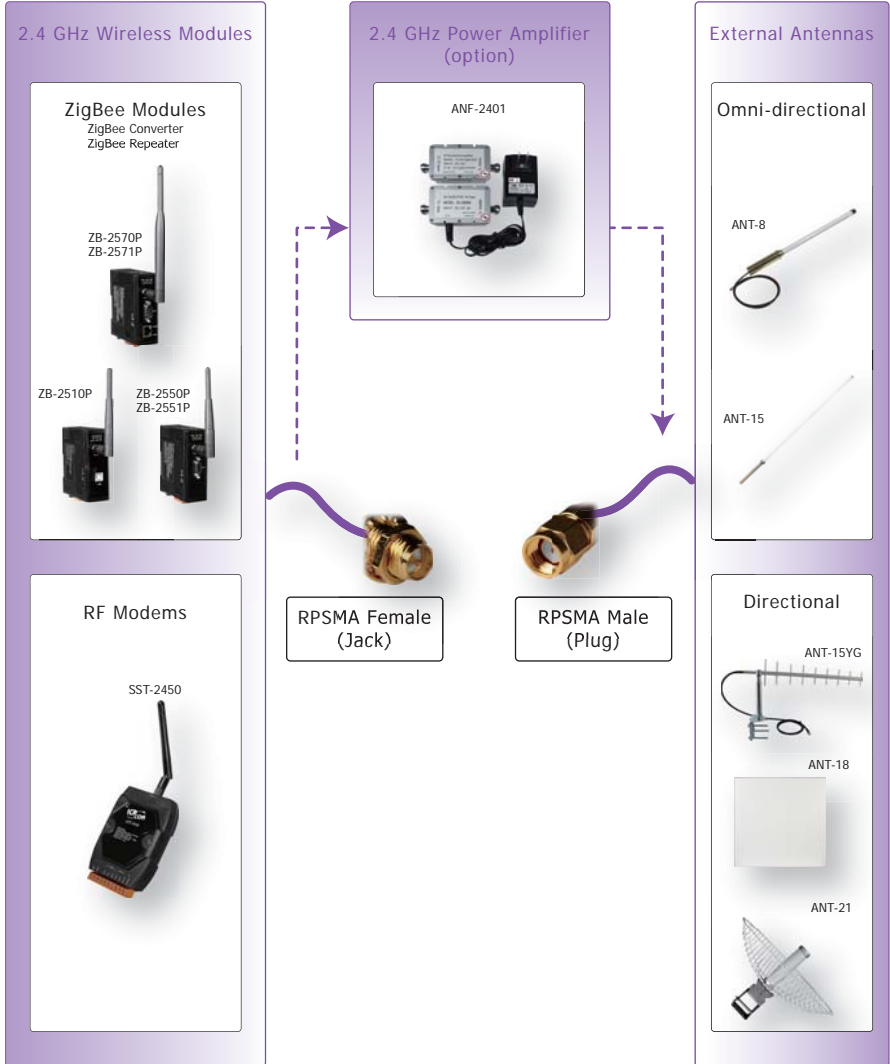
2. Omni-directional Antenna to Directional Antenna



3. Directional Antenna to Directional Antenna



4. Connector Type for 2.4 GHz Antenna



2.4 GHz Omni-directional Antennas

Model Name	Ordering Information	Connector	Radiation	Band	Gain (dBi)	Note	Page
ANT-8	1 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Omni-Directional	2.4 ~ 2.5 GHz	8	Dipole	5-4-4
ANT-15	5 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Omni-Directional	2.4 ~ 2.5 GHz	15	Dipole	5-4-4



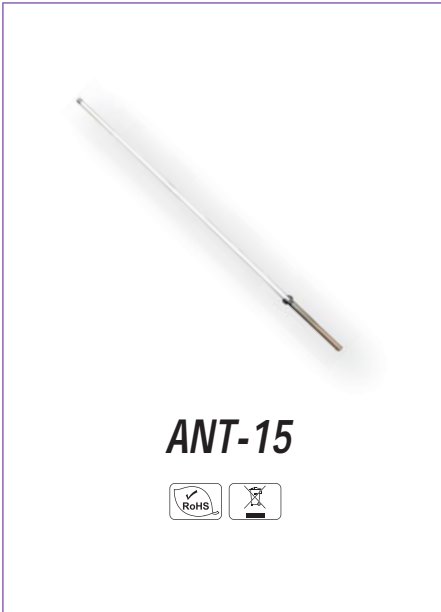
Specifications

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 Handling	15 W (max.)
Impedance	50 Ω +/-5 Ω
Cable	-
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-20 °C ~ +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.



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 Handling	20 W (max.)
Impedance	50 Ω +/-5 Ω
Cable	RG-58, 100 cm
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-20 °C ~ +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.

2.4 GHz Directional Antennas

Model Name	Ordering Information	Connector	Radiation	Band	Gain (dBi)	Note	Page
ANT-15YG	5 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Directional	2.4 ~ 2.5 GHz	15	Yagi	5-4-5
ANT-18	9 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Directional	2.4 ~ 2.5 GHz	18	Panel	5-4-6
ANT-21	15 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Directional	2.4 ~ 2.5 GHz	21	Grid	5-4-6



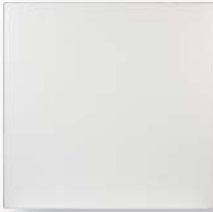
Specifications

Antenna Type	
Operating Environment	Outdoor
Radiation	Directional Sector
Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Gain	15 dBi
VSWR	2:1 (max.)
Polarization	Linear
HPBW/Horizontal	25°
HPBW/Vertical	18°
Power Handling	10 W (max.)
Impedance	50 Ω
Cable	RG-58, 100 cm
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-40 °C ~ +85 °C
Radome Material	Aluminum
Weight	425 g
Dimensions (L x W x H)	325 mm x 70 mm x 15 mm

Ordering Information

ANT-15YG	5 km, 2.4 GHz External Antenna (Directional) Gain: 15 dBi
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Important Note: Distance data is for reference only. Actual results may be different depending on the environment.



ANT-18



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, vertical
HPBW/Horizontal	15°
HPBW/Vertical	15°
Power Handling	50 W (cw)
Impedance	50 Ω
Cable	RG-58, 100 cm
Connector	N Type Female
Environmental and Mechanical Characteristics	
Operating Temperature	-40 °C ~ +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.



ANT-21



Specifications

Antenna Type	
Operating Environment	Outdoor
Radiation	Directional Sector
Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Gain	21 dBi
VSWR	1.5:1 (max.)
Polarization	Linear
HPBW/Horizontal	8°
HPBW/Vertical	5°
Power Handling	20 W (max.)
Impedance	50 Ω +/- 5 Ω
Cable	RG-58, 100 cm
Connector	N Type Female (Jack)
Environmental and Mechanical Characteristics	
Operating Temperature	-20 °C ~ +60 °C
Radome Material	ABS
Weight	2770 g
Dimensions (L x W)	610 mm x 248 mm

Ordering Information

ANT-21	15 km, 2.4 GHz External Antenna (Directional) Gain: 21 dBi
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Important Note: Distance data is for reference only. Actual results may be different depending on the environment.

Power Amplifiers

Model Name	Ordering Information	Connector	Radiation	Band	Gain (dBi)	Note	Page
ANF-2401	1 W, 2.4 GHz Power Amplifier	N Type Male (Plug)	-	2.4 ~ 2.5 GHz	up to 10 dBm	-	5-4-7
ANF-2402	600 mW, 2.4 GHz Power Amplifier	RP SMA Male (Plug)	-	2.4 ~ 2.5 GHz	up to 18 dBm	-	5-4-7



Specifications

Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Power Consumption	1.2 A @ 12 V _{DC}
Transmitter Amplifier	
Transmit Gain	up to 12 dBm
Transmit Input Power	200 mW (max.)
Receiver Amplifier	
Receive Gain	up to 10 dBm
Environmental and Mechanical Characteristics	
Operating Temperature	-20 °C ~ +70 °C
Weight	Amplifier
	DC Injector
Dimensions (L x W x H)	Amplifier
	DC Injector

Ordering Information

ANF-2401	1 W Amplifier
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Specifications

Electrical Specifications	
Frequency Range	2400 ~ 2500 MHz
Lightning Protection	Direct DC ground at antenna
Power Input	+10 V _{DC} ~ +30 V _{DC}
Power Consumption	0.6 W
Transmitter Amplifier	
Transmit Gain	up to 18 dBm
Transmit Current Consumption	300 mA (max.)
Receiver Amplifier	
Receive Gain	-15 dBm typical
Receive Current Consumption	15 mA (max.)
Environmental and Mechanical Characteristics	
Operating Temperature	-40 °C ~ +70 °C
Weight	200 g
Dimensions (L x H x D)	92 mm x 76 mm x 30 mm

Ordering Information

ANF-2402	600 mW, 2.4 GHz Power Amplifier
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