DSSS RF Products

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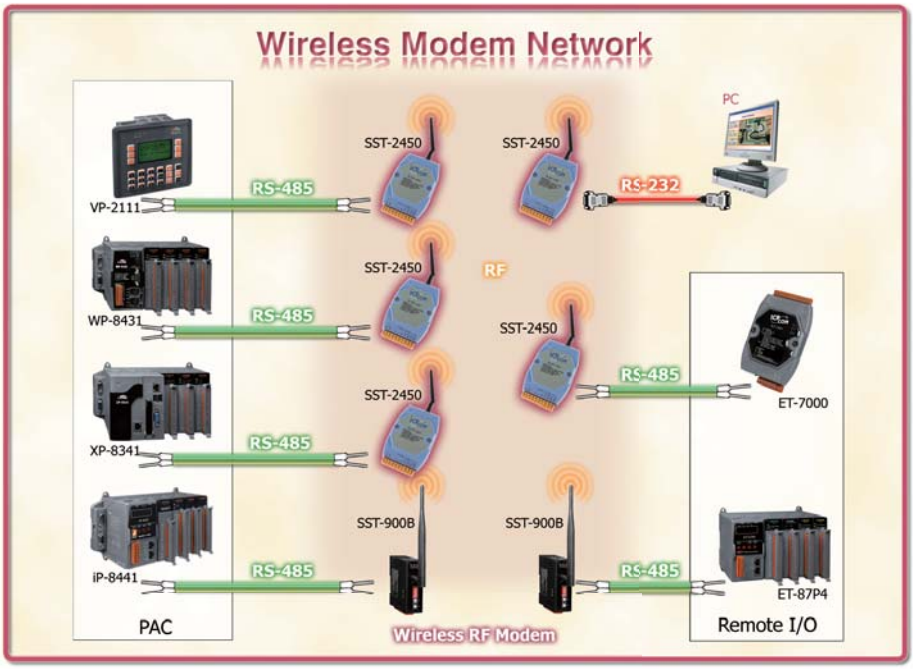
3.1. Overview



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	Page
SST-900B	900 MHz (902-928 MHz)	RS-232/RS-485	Typical 700 m, Max. 1 Km	3-2-1
SST-2450	2.4 GHz (2410.496 MHz ~ 2471.936 MHz	RS-232/RS-485	300 m (Typical)	3-3-1

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	8-2-1
ANT-15	5 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Omni-Directional	2.4 ~ 2.5 GHz	15	Dipole	8-2-2

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	8-3-1
ANT-18	9 km, 2.4 GHz External Antenna	RP SMA Male (Plug)	Directional	2.4 ~ 2.5 GHz	18	Panel	8-3-2

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 1000 meters (LOS)
- UI Configuration via external switch

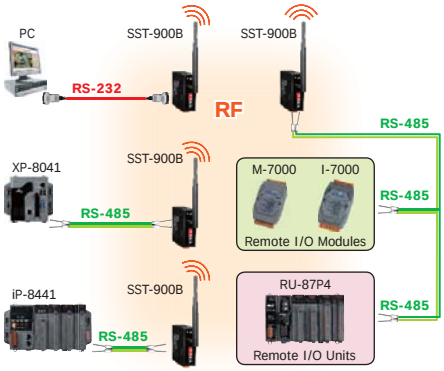
Introduction

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.

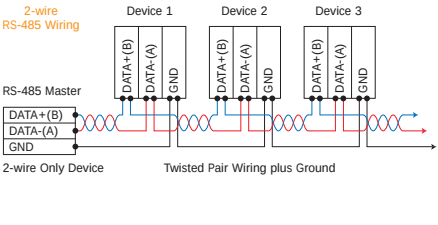
Specifications

Models		SST-900B
Wireless		
Operating Frequency Range		915 MHz (902 MHz ~ 928 MHz)
Channel Spacing		1.5 MHz
Transmit Power		3 dBm
Number of Channel		16
Transmission Range		Typical 700 m, Max. 1 Km
Data Bit Error Rate		@ -100 dBm
Antenna		
Type		3 dBi Omni-directional, bendable
Connector		Reverse Polarity SMA (RP-SMA) Plug (Male)
Serial Link		
Interface	RS-232	TxD, RxD, 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 VDC ~ +30 VDC
Mechanical		
Dimensions (W x H x D)		84 mm x 107 mm x 33 mm
Environment		
Operating Temperature		-25 °C ~ +70 °C
Storage Temperature		-40 °C ~ +80 °C
Humidity		0% ~ 90% RH, Non-condensing

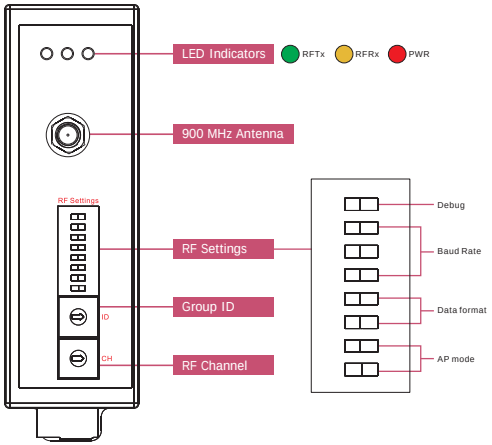
Applications

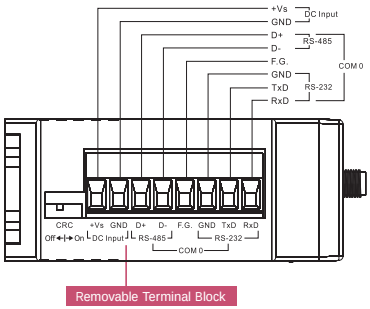


Wiring

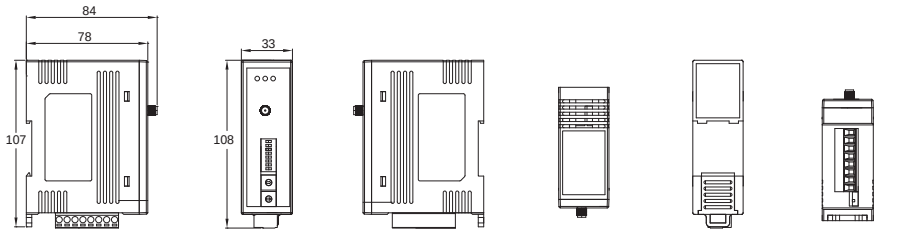


Pin Assignments





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
- Supports Full-duplex and Half-duplex communication
- Spread Spectrum Technology

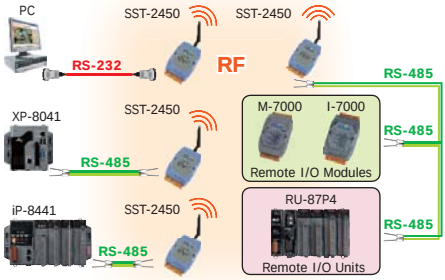
Introduction

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.

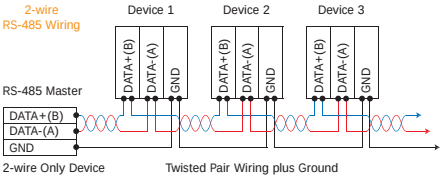
Specifications

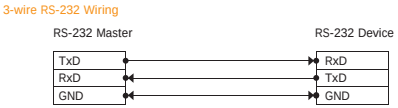
Models		SST-2450
Wireless		
Operating Frequency Range		2.4 GHz (2410.496 MHz ~ 2471.936 MHz)
Channel Spacing		4.096 MHz
Output Power		0.05 W
Transmit Power		17 dBm +/-2 dBm
Modulation		MSKG
Radio Technique		Direct Sequence Spread Spectrum
Duplex Mode		TDD (for Full-duplex)
Number of Channel		16
Number 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 °C ~ +50 °C
Storage Temperature		-20 °C ~ +70 °C
Humidity		0% ~ 90% RH, Non-condensing

Applications

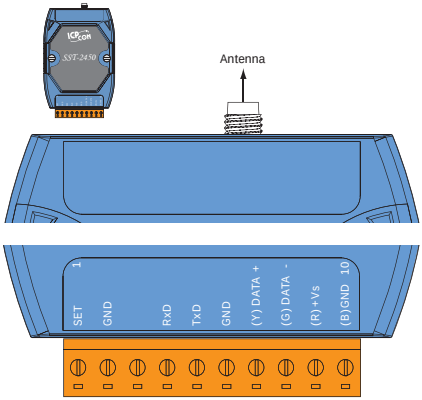


Wiring

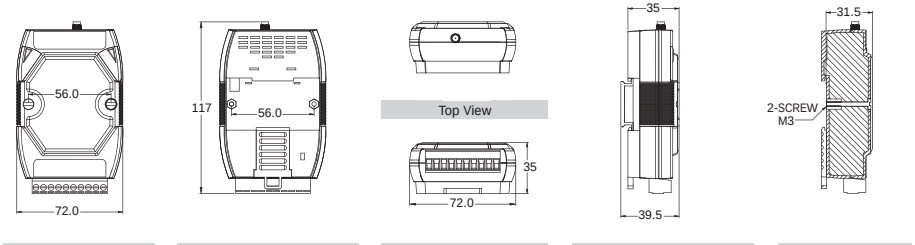




Pin Assignments



Dimensions (Units: mm)

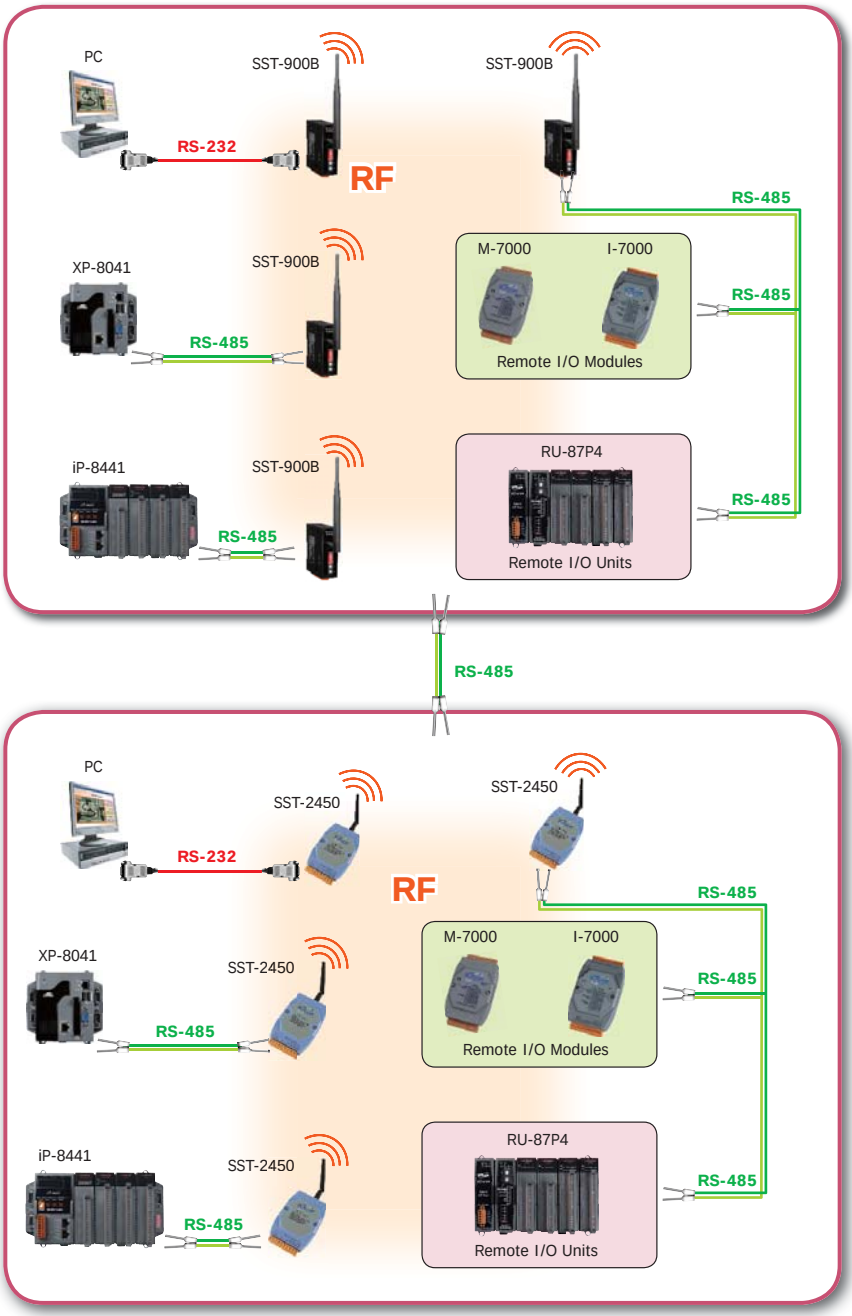


Front View | Rear View | Bottom View | Din-Rail Mounting Bracket | Side View

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