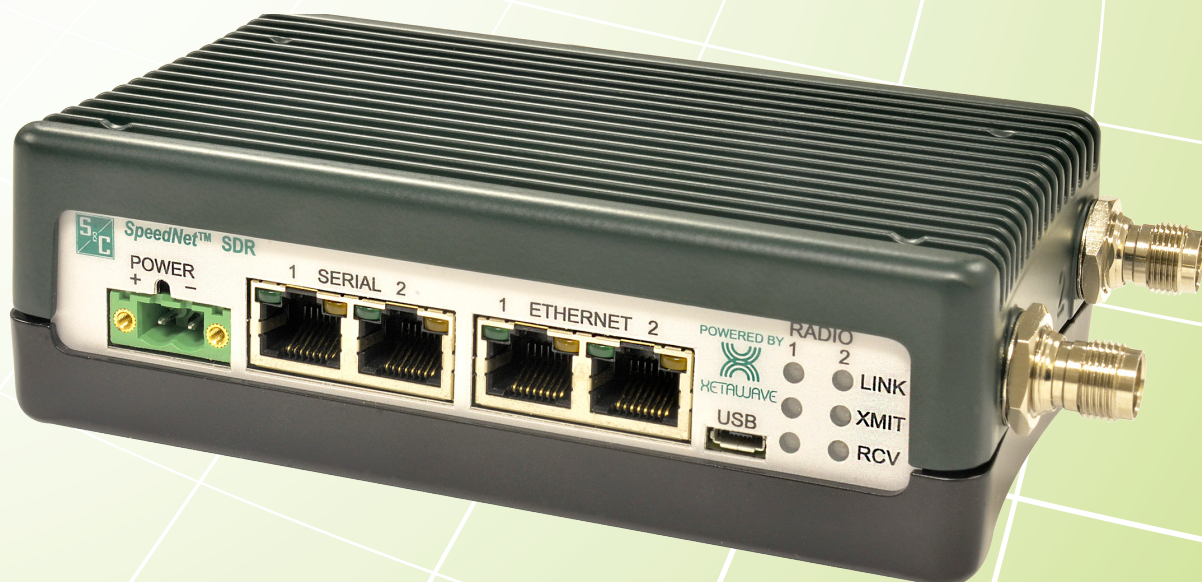




S&C SpeedNet™ SDR Software Defined Radio

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Ethernet radio equipped for high-volume data transmission enables automation in difficult-to-access areas.

Reliable Transmission

The S&C SpeedNet™ SDR Software Defined Radio, powered by XetaWave, is available in the 400-MHz and 900-MHz licensed bands. Both bands support a single-channel as well as a dual-channel radio. The 400-MHz Radio models include the single-channel SpeedNet SDR 4 Radio and the dual-channel SpeedNet SDR 4×4 Radio. The 900-MHz radio models include the single-channel SpeedNet SDR 9 Radio and the dual-channel SpeedNet SDR 9×9 Radio. These radios optimize parameters across three axes: power output, channel size, and link speed.

The adjustable link speed allows for variable data-transfer rates. The SpeedNet SDR Radio offers performance second to none in the commercial market today. The SpeedNet SDR Radio over-the-air data rate provides the bandwidth that can enable Ethernet connectivity within as small as a 12.5-kHz channel, which provides easier application-integration support, including emerging automation applications.

Communication systems designed for grid automation have to be resilient. The SpeedNet SDR Radio uses a mesh-routing protocol to eliminate single-point network failures. It also uses S&C expertise in high-speed, low-latency communication systems to meet the specific needs of the IntelliTeam® SG Automatic Restoration System and grid automation and control protocols.

By offering a flexible balance of data rates, propagation range, and interference mitigation, S&C's SpeedNet SDR Software Defined Radio provides a resilient mesh network for grid automation.

The SpeedNet SDR Radio is the only licensed 400-MHz and 900-MHz mesh radio that both supports automatic mesh routing and provides the best communication choice to support grid-automation needs.

Powerful Multi-Level Security

The SpeedNet SDR Radio is AES 256-bit encryption upgradeable, and it provides password authentication and VLAN-network segregation.

Environmental

- ▶ -40°F (-40°C) to +158°F (+70°C) operating temperature range
- ▶ 95% operating humidity @ 40°C noncondensing
- ▶ UL Class 1 Div 2 & cULus approved, ETSI certified

Unmatched Standard Features

400-MHz and 900-MHz Radios The 400-MHz SDR 4 and SDR 4×4 radios have a wide operating band: 406-430 MHz, 450-470 MHz FCC/IC, and 450-470 MHz ETSI. The 900-MHz SDR 9 and SDR 9×9 radios operate in the 928-960 MHz MAS band.

Second Radio Module *(optional)*

In the same enclosure, a second radio can double bandwidth or bridge to another network on the same or different band for enhanced repeater functionality in support of a frequency-reuse plan.

Ethernet Switch Two independent Ethernet ports come with full VLAN support and can be configured as access ports, trunks, or mixed.

Serial Bridge The radios can be seamlessly integrated for hybrid networks using both Ethernet and legacy serial devices.

Programmable Channel Size The radios can adapt to regulations around the globe and maximize data throughput accordingly.

Programmable Power Output

The 400-MHz radio supports 100 mW to 2 W (+20 dBm to +33 dBm) output power for ETSI and 100 mW to 8 W (+20 dBm to +39 dBm) output power for FCC/IC. The 900-MHz radio supports 100 mW to 3 W (+20 dBm to +35 dBm) output power.

Adjustable modulation This allows for variable data-transfer rates. Up to two channels are supported with the dual-channel SpeedNet SDR 4×4 and SpeedNet SDR 9×9 radios.

Mesh-routing protocol The radios support automatic mesh routing, which eliminates single-point network failures.

Transmitter	
Frequency Range	406–430 and 450–470 MHz
Output Power	100 mW to 2 W ETSI, 8 W FCC/IC, step size 10 mW
Range—Line of Sight	40+ miles
Modulation	MSK, QPSK, 8 PSK, 16 QAM, 32 QAM, 64 QAM (ETSI)
RF Data Rate ETSI	9.6 kbps to 52 kbps (12.5 kHz), <i>local regulations permitting</i>
RF Data Rate FCC/IC	9.6 kbps to 56.7 kbps (12.5 kHz), <i>local regulations permitting</i>
Occupied Bandwidth	12.5 kHz
Frequency Stability	1.0 ppm
Duty Cycle	Continuous (at -40°F/-40°C)
Output Impedance	50 Ohms

Receiver-FCC/IC			
Sensitivity (dBm)	Data Rate	12.5 kHz	25 kHz
	MSK	10 kbps -116 dBm	19 kbps, -115 dBm
	QPSK	23 kbps -104 dBm	29 kbps, -110 dBm
	8 PSK	34 kbps -100 dBm	44 kbps, -104 dBm
	16 QAM	45 kbps -96 dBm	59 kbps, -101 dBm
	32 QAM	57 kbps -93 dBm	76 kbps, -98 dBm

Receiver-ETSI			
Sensitivity (dBm)	Data Rate	12.5 kHz	25 kHz
	BPSK	9 kbps -114 dBm	16 kbps, -111 dBm
	MSK	10 kbps -118 dBm	19 kbps, -113 dBm
	QPSK	17 kbps -110 dBm	33 kbps, -109 dBm
	8 PSK	26 kbps -105 dBm	51 kbps, -104 dBm
	16 QAM	35 kbps -101 dBm	68 kbps, -100 dBm
	32 QAM	44 kbps -98 dBm	85 kbps, -97 dBm
	64 QAM	52 kbps -95 dBm	102 kbps, -91 dBm

Data Transmission	
Data Encryption	AES 256 Upgradeable
Data Interfaces	2× 10/100 Ethernet, 2× RS232/422/485 Serial
Data Connector	4× RJ45
Serial Interface Speed	Up to 921.6 kBaud

Power / Physical	
Operating Voltage	10–33 Vdc ± 10%
Transmit Current	1.2 A @ 12 V for 1 W RF
RF Connector	TNC
Dimensions (L × W × H)	6.625 in. (168 mm) × 3.45 in. (88 mm) × 1.835 in. (47 mm)
Weight	1.46 lbs. (663 grams) enclosed



Transmitter				
Frequency Range	928–960 MHz: MAS			
Output Power	100 mW to 3 W, step size 10 mW (restrictions apply)			
Range—Line of Sight	70+ miles			
Modulation	MSK, 2-FSK, 4-FSK, BPSK, QPSK, 8-PSK, 16-PSK, 16-QAM, 32-QAM			
RF Data Rate	9.6 kbps to 3.5 Mbps			
Occupied Bandwidth	6.25 kHz to 1.5 MHz			
Frequency Stability	1.0 ppm			
Duty Cycle	Continuous (at -40°F/-40°C)			
Output Impedance	50 Ohms			
Receiver				
Sensitivity (dBm)		12.5 kHz	25 kHz	50 kHz
	MSK	-114 @10 kbps	-111 @ 20 kbps	-107 @ 40 kbps
	4 GFSK	-106 @ 19.2 kbps	-103 @ 38.4 kbps	-100 @ 76.8 kbps
	QPSK	-108 @ 23 kbps	-105 @ 46 kbps	-102 @ 94 kbps
	8 PSK	-101 @ 34 kbps	-98 @ 68 kbps	-95 @ 136 kbps
	16 QAM	-97 @ 45 kbps	-94 @ 90 kbps	-91 @ 180 kbps
	32 QAM	-91 @ 57 kbps	-88 @ 114 kbps	-85 @ 228 kbps
Data Transmission				
Data Encryption	AES 256 Upgradeable			
Data Interfaces	2× 10/100 Ethernet, 2× RS232/422/485 Serial			
Data Connector	4× RJ45			
Serial Interface Speed	Up to 921.6 kBaud			
Power / Physical				
Operating Voltage	10–33 Vdc ± 10%			
Transmit Current	1.2 A @ 12 V for 3 W RF			
RF Connector	TNC			
Dimensions (L × W × H)	6.625 in. (168 mm) × 3.45 in. (88 mm)× 1.835 in. (47 mm)			
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