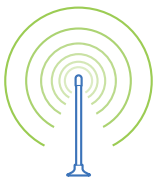


# GE Fanuc Intelligent Platforms



## Introducing TranSphere\* Wireless

TranSphere Wireless is an integrated, scalable family of industrial, wireless communication products that include extended range wireless IP/Ethernet and serial communication solutions. TranSphere Wireless products allow you to bring business information over Ethernet or a serial gateway and onto an IP network. This includes mission-critical, revenue-generating data from fixed assets such as oil and gas wells, compressor stations, pipelines, fluid storage tanks and utility meters. It can also be used in vehicles to provide mobile network access.

### Wireless Delivers:

**Cost Efficiency.** Reduce wiring and termination costs between your devices, machines and controllers. You'll also realize savings in integration and configuration time, and support costs with multi-box solutions.

**Freedom.** Wireless solutions enable you to meet the unique distance and I/O requirements of your applications.

**Flexibility.** Wireless supports multiple users connected to multiple applications via multiple protocols on the same unit or the same network— simultaneously!

**Security.** Provides wireless operation with multiple layers of protection. This includes a 900 MHz physical layer, 128 bit data encryption, two-way authentication and dynamic key rotation.

### Why use TranSphere Wireless Networking Solutions?

- **Longest range** industrial product in its class. Providing lowest cost of ownership.
- **Reliable** - Designed and built for low failure rates and reduced maintenance costs.
- **Resilient** - The P21/P22 protected Access Point (a chassis housing two radios in a standby configuration) increases the availability of mission-critical point-to-multipoint networks. P21 Remote stations can also be used to form protected point-to-point links.
- **Future proof** - TranSphere adheres to open standards, allowing it to interface with a wide range of external devices enabling both new and old technologies to communicate.
- **Comprehensive Network Management** - Compatible with TranSphere Configuration Software and any standard off-the-shelf SNMP management system.



# TransSphere Wireless Technical Data



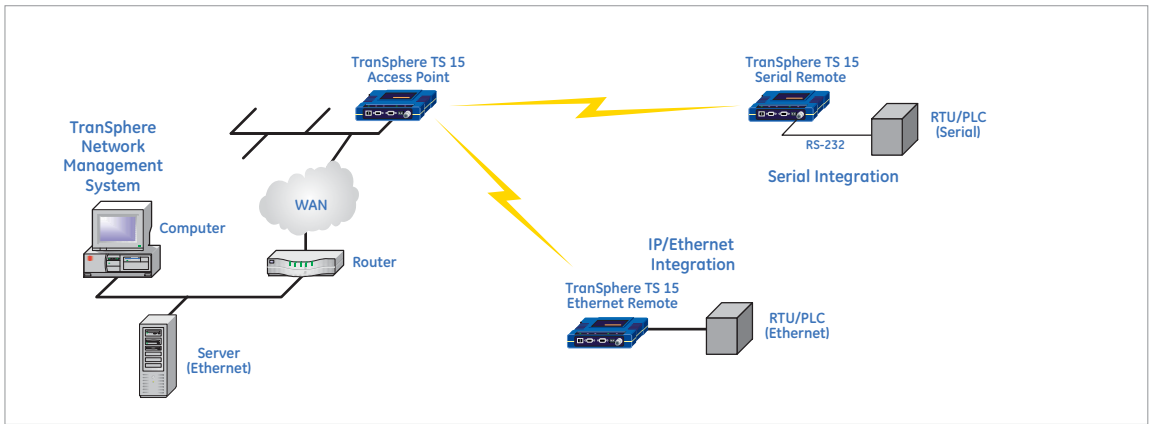
	TS 15 Wireless	TS 60 Wireless
<b>General</b>		
Data Rate over the air	106 Kbps	106 Kbps
Frequency Band	2.4016 to 2.4778 GHz ISM band	902 to 928 MHz ISM band
Spreading Mode	Frequency Hopping Spread Spectrum Radio	Frequency Hopping Spread Spectrum Radio
<b>Range</b>		
Typical Fixed Range	6 miles	25 miles
Maximum Fixed Range	15 miles	60 miles
Typical Mobil Range (parked)	2.5 miles	10 miles
Typical Mobil Range (moving)	1 mile	5 miles
<b>Available Configurations</b>		
Access Point	Ethernet and Serial	Ethernet and Serial
Remote	Ethernet and Serial	Ethernet and Serial
TransSphere Wireless I/O		
NIU Compatible	Yes	Yes
<b>Radio</b>		
System Gain	131 dB	136 dB
Transmitter Power Output	0.1 to 0.5 watt (20 to 27 dBm)	1 watt (30 dBm)
Carrier Power (ETSI)	0.01 to 0.1 watt (10 to 20 dBm)	0.01 to 0.1 watt (10 to 20 dBm)
Output Impedance	50 ohms	50 ohms
Occupied Bandwidth	200 kHz	200 kHz
Transmit Modulation	2 level CPFSK (Continuous Phase FSK)	CPFSK (Continuous Phase FSK)
Receiver Sensitivity	-104 dBm (1 x 10 <sup>-8</sup> BER) typical	-106 dBm (1 x 10 <sup>-8</sup> BER) typical
Receiver Error Detection		
Receiver Interference Avoidance		
<b>Physical Interface</b>		
Ethernet Port Type	10BaseT, RJ-45	10BaseT, RJ-45
Serial Port Type	RS-232/V.24, RJ-45, DCE	RS-232/V.24, RJ-45, DCE
Serial Port Speed	1.2K to 115.2K bps	1.2K to 115.2K bps
Antenna	TNC connector (female)	TNC connector (female)
LEDs	Ethernet, COM 1, COM 2, Power, Link	Ethernet, COM 1, COM 2, Power, Link
<b>Protocols</b>		
Wireless	CSMA/CA (Collision Avoidance)	CSMA/CA (Collision Avoidance)
Ethernet	IEEE 802.3 (single device at remote) TCP/IP (DHCP, ICMP, UDP, TCP, ARP)	IEEE 802.3 (single device at remote) TCP/IP (DHCP, ICMP, UDP, TCP, ARP)
Serial	Transparent Encapsulation over IP (Tunneling) for serial async multidrop protocols including SNP, Modbus, DNP 3, DF1, BSAP	Transparent Encapsulation over IP (Tunneling) for serial async multidrop protocols including SNP, Modbus, DNP 3, DF1, BSAP
Optional Protocols	DNP 3, routing and conversion to/from serial and IP interfaces	DNP 3, routing and conversion to/from serial and IP interfaces
<b>Management</b>		
	HTTP (Embedded web Server), TELENT, Local Console	HTTP (Embedded web Server), TELENT, Local Console
	SNMPv1/2/3, MIB II, Enterprise MIB	SNMPv1/2/3, MIB II, Enterprise MIB
	SYSLOG	SYSLOG
	TransSphere Configuration Software	TransSphere Configuration Software
<b>Cyber Security Suite</b>		
Level 3		
Encryption	RC4-128 with automatic key rotation	RC4-128 with automatic key rotation
Authentication	Device: Restricted access list User: User/Password	Device: Restricted access list User: User/Password
<b>Traffic Segregation Management</b>		
<b>Mechanical</b>		
Case	Die Cast Aluminum	Die Cast Aluminum
Mounting Options	Flat surface mount brackets or DIN rail	Flat surface mount brackets or DIN rail
Dimensions	Access Point: 3.15 H x 17.2 W x 11.2 D CM Remote: 2.5 H x 12.7 W x 8.9 D CM	Access Point: 3.15 H x 17.2 W x 11.2 D CM Remote: 2.5 H x 12.7 W x 8.9 D CM
<b>Power Requirements</b>		
Input Power	6 to 30 VDC	6 to 30 VDC
<b>Current Requirements</b>		
Access Point	Transmit: 253.3 mA @ 30 VDC; 488.5 mA @ 13.8 VDC; 1.09 A @ 6 VDC Receive: 119.7 mA @ 30 VDC; 230.1 mA @ 13.8 VDC; 533 mA @ 6 VDC	Transmit: 270 mA @ 30 VDC; 525 mA @ 13.8 VDC; 1.175 A @ 6 VDC Receive: 115 mA @ 30 VDC; 220 mA @ 13.8 VDC; 530 mA @ 6 VDC
Remote	Transmit: 223.3 mA @ 30 VDC; 433.8 mA @ 13.8 VDC; 941.7 A @ 6 VDC Receive: 69.7 mA @ 30 VDC; 130.1 mA @ 13.8 VDC; 283.3 mA @ 6 VDC Sleep: 8 mA @ 30 VDC; 15 mA @ 13.8 VDC; 130 mA @ 6 VDC Shutdown: 0.78 mA @ 30 VDC; 0.55 mA @ 12 VDC; 0.37 mA @ 6 VDC	Transmit: 240 mA @ 30 VDC; 470 mA @ 13.8 VDC; 1.03 A @ 6 VDC Receive: 65 mA @ 30 VDC; 120 mA @ 13.8 VDC; 260 mA @ 6 VDC Sleep: 8 mA @ 30 VDC; 15 mA @ 13.8 VDC; 130 mA @ 6 VDC Shutdown: 0.78 mA @ 30 VDC; 0.55 mA @ 12 VDC; 0.37 mA @ 6 VDC
<b>Agency Approvals</b>		
	FCC Part 15.247 Approved IC Approved ETSI Approved CE Mark	FCC Part 15.247 Approved IC Approved
	CSA Class 1 Div 2 Groups A, B, C, and D for hazardous locations (ANSI/UL equivalent)	CSA Class 1 Div 2 Groups A, B, C, and D for hazardous locations (ANSI/UL equivalent)
<b>Environmental</b>		
Temperature	Range: -40°C to +70°C	Range: -40°C to +70°C
Humidity	95% at 40°C, non-condensing	95% at 40°C, non-condensing

# TransSphere Wireless Technical Data

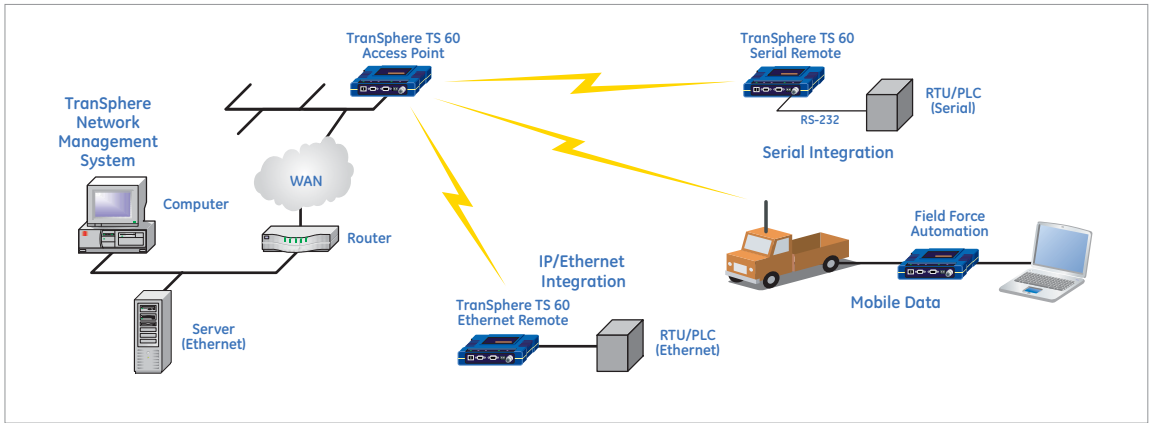


TS 30 Wireless	TS S15 Wireless	TS S30 Wireless
1 Mbps/512 Kbps user configurable 902 to 928 MHz ISM band DTS/FHS	106 Kbps 2.4016 to 2.4778 GHz ISM band Frequency Hopping Spread Spectrum Radio	106 Kbps 902 to 928 MHz ISM band Frequency Hopping Spread Spectrum Radio
12 miles @ 512 Kbps      8 miles @ 1 Mbps 30 miles @ 512 Kbps    15 miles @ 1 Mbps 3 miles @ 512 Kbps 1 mile @ 512 Kbps	6 miles 15 miles 2.5 miles 1 mile	25 miles 60 miles 10 miles 5 miles
Ethernet and Serial Ethernet or Serial	Serial Only Serial Only	Serial Only Serial Only
No	No	No
139 dB @ 512 Kbps; 124 dB @ 1 Mbps 100 mW to 1 W (20 to 30 dBm)	0.1 to 0.5 watt (20 to 27 dBm)  0.01 to 0.1 watt (10 to 20 dBm)	1 watt (30 dBm) at 6 VDC to 30 VDC, user selectable down to 100mw (+20db)
50 ohms 600 kHz CPFSK (Continuous Phase FSK) -97 dBm @ 512Kbps (1 x 10 <sup>-6</sup> BER) typical -92 dBm @ 1Mbps (1 x 10 <sup>-6</sup> BER) typical	50 ohms 200 kHz CPFSK -105 dBm (1 x 10 <sup>-6</sup> BER) typical	50 ohms 200 kHz CPFSK -108 dBm (1 x 10 <sup>-6</sup> BER) typical
	CRC16; Resend on Error - 64,000 hop patterns selected automatically via network address - FEC, CRC/ARQ and /or Multiple Packet Transmits - Excellent Strong Signal (interference) Characteristics - Band Segmentation for Friendly Coexistence with other services such as LMS	CRC16; Resend on Error - 64,000 hop patterns selected automatically via network address - FEC, CRC/ARQ and /or Multiple Packet Transmits - Excellent Strong Signal (interference) Characteristics - Band Segmentation for Friendly Coexistence with other services such as LMS
10BaseT, RJ-45 RS-232/V.24, RJ-45, DCE 1.2K to 115.2K bps TNC connector (female) Ethernet, COM 1, COM 2, Power, Link	RS-232/485 DB-9, RJ 11 1.2K to 115.2K bps TNC connector (female) SYNC, TXD, RXD, Power	RS-232/485 DB-9, RJ 11 1.2K to 115.2K bps TNC connector (female) SYNC, TXD, RXD, Power
CSMA/CA (Collision Avoidance) IEEE 802.3, Ethernet II, IEEE 802.1Q (trunk, access, and native), STP IGMP TCP/IP (DHCP, ICMP, UDP, TCP, ARP, Multicast, SNMP, TFTP) PPP, Encapsulation over IP (Tunneling) for serial async multidrop protocols including SNP, Modbus, DNP 3, DF1, BSAP Ethernet/IP and Modbus TCP HTTP, HTTPS, SSH, TELNET, local console SNMPv1/2/3, MIB II, Enterprise MIB SYSLOG TransSphere Configuration Software Level 4 AES-128 with automatic key rotation, (optional) 802.1x, RADIUS, EAP/TLS, PKI, PAP, CHAP	Not Available  Transparent Encapsulation over IP (Tunneling) for serial async multidrop protocols including SNP, Modbus	Not Available  Transparent Encapsulation over IP (Tunneling) for serial async multidrop protocols including SNP, Modbus
802.1Q VLAN SSL, SSH, HTTPS	Diagnostics Centralized network control elimination site visits Create store-and-forward configurations TransSphere InSite software	Diagnostics Centralized network control elimination site visits Create store-and-forward configurations TransSphere InSite software
Die Cast Aluminum Flat surface mount brackets or DIN rail Access Point: 3.15 H x 17.2 W x 11.2 D CM Remote: 3.15 H x 17.2 W x 11.2 D CM	Die Cast Aluminum Flat surface mount brackets or DIN rail Access Point: 8.9 H x 12.7 W x 2.5 D CM Remote: 8.9 H x 12.7 W x 2.5 D CM	Die Cast Aluminum Flat surface mount brackets or DIN rail Access Point: 8.9 H x 12.7 W x 2.5 D CM Remote: 8.9 H x 12.7 W x 2.5 D CM
10.5 to 30 VDC	6 to 30 VDC	6 to 30 VDC
Transmit: 290 mA @ 24 VDC; 510 mA @ 13.8 VDC	Transmit: 236 mA @ 30 VDC; 510 mA @ 13.8 VDC; 1.18 A @ 6 VDC	Transmit: 236 mA @ 30 VDC; 510 mA @ 13.8 VDC; 1.18 A @ 6 VDC
Receive: 120 mA @ 24 VDC; 210 mA @ 13.8 VDC	Receive: 51 mA @ 30 VDC; 100 mA @ 13.8 VDC; 155 mA @ 6 VDC	Receive: 51 mA @ 30 VDC; 100 mA @ 13.8 VDC; 155 mA @ 6 VDC
Transmit: 290 mA @ 24 VDC; 510 mA @ 13.8 VDC Receive: 120 mA @ 24 VDC; 210 mA @ 13.8 VDC	Transmit: 236 mA @ 30 VDC; 510 mA @ 13.8 VDC; 1.18 A @ 6 VDC Receive: 51 mA @ 30 VDC; 100 mA @ 13.8 VDC; 155 mA @ 6 VDC	Transmit: 236 mA @ 30 VDC; 510 mA @ 13.8 VDC; 1.18 A @ 6 VDC Receive: 51 mA @ 30 VDC; 100 mA @ 13.8 VDC; 155 mA @ 6 VDC
FCC Part 15.247 Approved IC Approved	FCC Part 15 Approved IC Approved	FCC Part 15.247 Approved IC Approved ETSI Approved CE Mark
UL/CSA Class 1 Div. 2	UL/CSA Class 1 Div. 2 (UL 508, UL 1604)	CSA Class 1 Div 2 Groups A, B, C, and D for hazardous locations (ANSI/UL equivalent)
Range: -30°C to +60°C 95% at 40°C, non-condensing	Range: -40°C to +70°C 95% at 40°C, non-condensing	Range: -40°C to +70°C 95% at 40°C, non-condensing

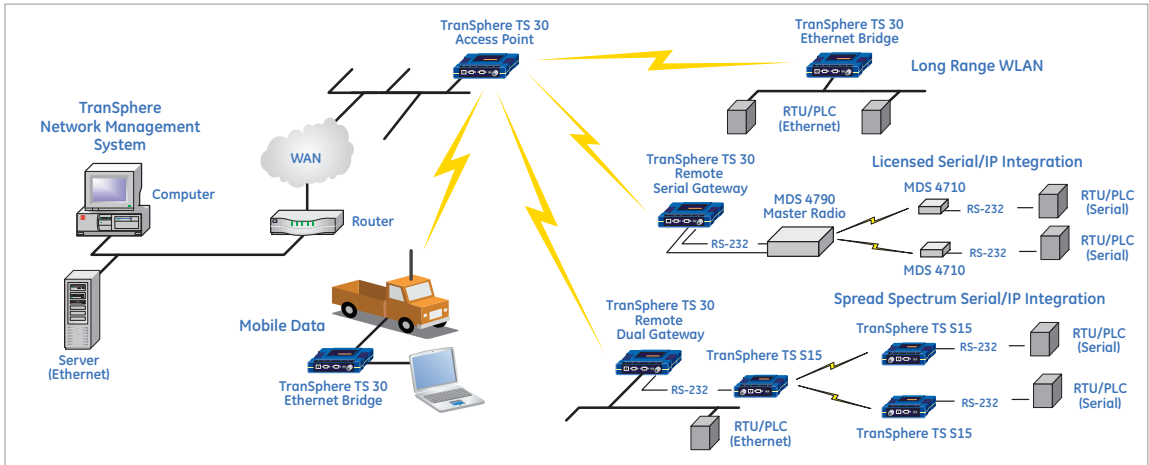
# TranSphere TS Wireless Typical Architectures



TranSphere Wireless TS S15 and TS S30



TranSphere Wireless TS 60 and TS 15



TranSphere Wireless TS 30

## GE Fanuc Intelligent Platforms Information Centers

Americas:  
1 800 GE FANUC or 434 978 5100

Asia Pacific:  
86 21 3222 4555

Europe, Middle East and Africa:  
800 1 GE FANUC or 800 1 4332682  
or 1 780 401 7717

Europe, Middle East and Africa (CNC):  
352 727979 1

## Additional Resources

For more information, please visit the GE Fanuc web site at:

[www.gefanuc.com](http://www.gefanuc.com)

