



Introducing TranSphere* TS Wireless I/O

TranSphere TS Wireless I/O is an integrated, scalable family of wireless communication products for analog and discrete I/O signals. TranSphere TS Wireless I/O allows users to interface I/O signals using standard serial and IP/Ethernet protocols or regenerate I/O signals between PLCs, RTUs and control/monitoring devices. Standard serial or IP/Ethernet payload communications for separate devices is also supported.

TranSphere TS Wireless I/O Family Overview:

TranSphere TS Wireless I/O provides a simple cost effective, out-of-the-box communications solution. The TranSphere TS Wireless I/O Base module integrates on-board I/O with a 900 MHz or a 2.4 GHz radio. Optional TranSphere TS Wireless I/O Expansion modules attach to the Base module to accommodate a user's specific I/O count.

GE Fanuc also embeds additional wireless connectivity called WeXP using the 802.15.4 standard. WeXP allows Expansion modules to be located up to 2500 feet from the Base module. Together, the TranSphere TS Wireless I/O Base and Expansion modules present deployment alternatives that are uniquely scalable to a user's I/O count, distance and location requirements. The TranSphere TS Wireless I/O Base Module supports three general function types.

I/O Signal Extension – TranSphere TS Wireless I/O reads, transmits and regenerates I/O signals between multiple devices.

I/O Protocol Addressability – TranSphere TS Wireless I/O operates as a protocol node supporting the direct addressability of connected I/O from a growing library of protocols such as MODBUS, MODBUS TCP‡, DNP.3‡ or DF1‡.

Serial and IP/Ethernet Payload Communication – TranSphere Wireless I/O also supports payload communication for an attached RTU, PLC or other peripheral device. Transparent serial or IP/Ethernet payload communication operates simultaneously with I/O signal extension or I/O protocol addressability.

‡ Check for availability dates

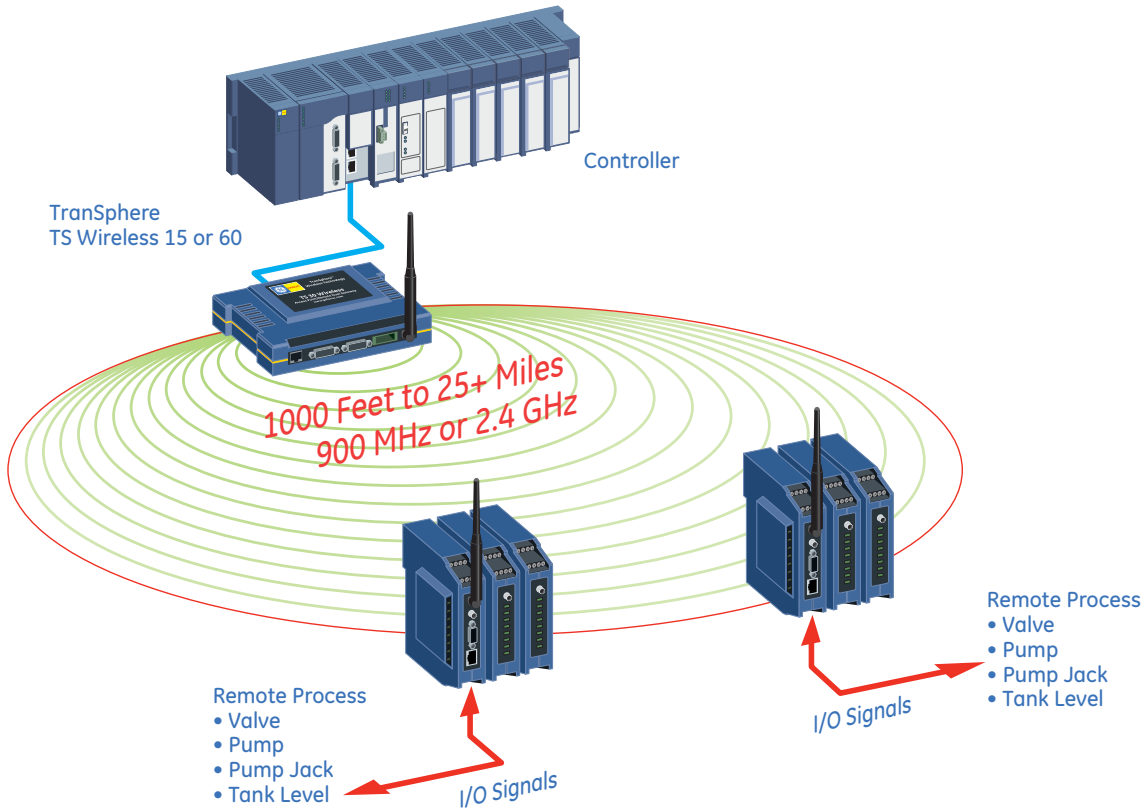


Why use a GE Fanuc TranSphere TS Wireless I/O Network Solution?

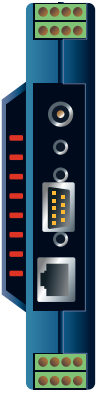
- Cost effectively extend serial or network communication to smaller clusters of analog and discrete I/O signals.
- Reduce wiring and termination costs between devices, machines and controllers.
- Reduce integration, configuration and support costs found with “multi-box” solutions.
- Scale and leverage costs to align with your unique distance and I/O requirements.

Typical Applications for Wireless Solutions

- Tank Farms
- Security Access Control
- Refineries
- Material Handling
- Remote Data Gathering
- Any application that has remote I/O

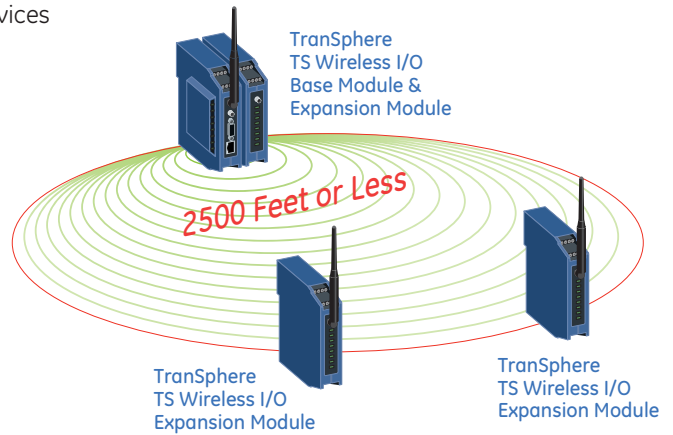


Product Features



TS Wireless I/O Base

- 900 MHz or 2.4 GHz‡
- Serial and/or IP/Ethernet connectivity
- Built-in I/O: 1AI, 1AO, 2DI, 2DO
- Transmit and regenerate I/O signals between devices
- Directly address I/O using protocols such as MODBUS, MODBUS TCP‡, DNP.3, or DF1‡ from a growing protocol library
- Concurrent IP/Ethernet or transparent serial payload communication for a separate RTU, PLC, or other peripheral device
- Optional short-range wireless communication to distributed TransSphere TS Wireless I/O Expansion modules via 802.15.4

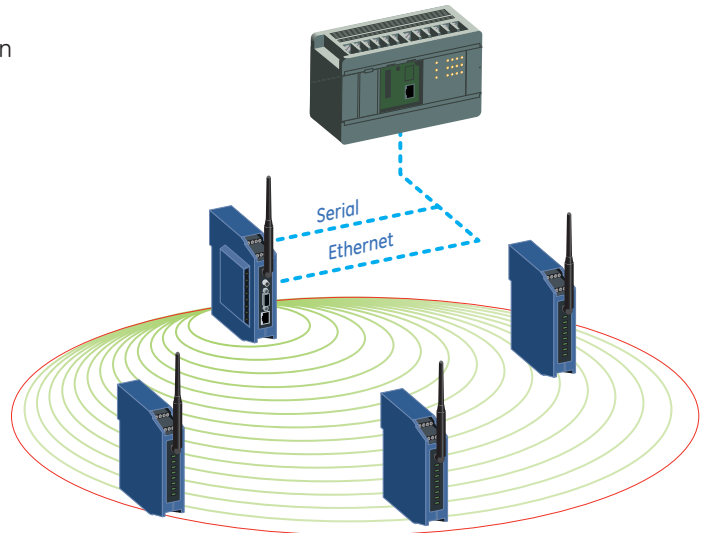


TS Wireless I/O Expansion

- Connects to Base Unit, used to increase I/O capacity
- Stackable up to 10 direct connect and virtually unlimited over wireless
- Optional wireless short range communication
- Can connect directly to the Base module or wirelessly via 802.15.4
- Can be wirelessly distributed up to 2500 feet from the base module

Communication Protocols Supported

- MODBUS Serial
- MODBUS TCP
- DNP.3 Serial/Ethernet
- DF1‡



‡Check for availability dates



TransSphere TS Wireless I/O Technical Data

General

Power	6-30 VDC
Current Draw	
Transmit	less than 450 mA (@13.8V)
Receive	less than 180 mA (@13.8V)
Temperature	-40° to +70°C

TransSphere Base module

I/O Capacity	1 AI, 1 AO, 2 DI, 2 DO
Analog In Type	Configurable as 4-20mA, 0-5 VDC, 0-10 VDC
Analog Out Type	4-20mA
Supports IP/Ethernet and serial communication	
Compatible with TransSphere wireless 15 and 60 AP's and networks	
Supports I/O Signal Extender functions between Base modules or over WeXP to wireless expansion modules	
One IP/Ethernet RJ45 connector for separate device	
One serial RJ45 connector for separate device	

Expansion module models

TransSphere WXM202 capacity	1 AI, 1 AO, 2 DI, 2 DO
Analog In Type	Configurable as 4-20mA, 0-5 VDC, 0-10 VDC
Analog Out Type	4-20mA
TransSphere WDI006 capacity	6 DI
TransSphere WQ006 capacity	6 DO
TransSphere WXM204 capacity	2 AI, 4 DI
Analog In Type	Configurable as 4-20mA, 0-5 VDC, 0-10 VDC
TransSphere WXM404 capacity	2 AI, 2 AO, 2 DI, 2 DO
Analog In Type	0-5 VDC
Analog Out Type	0-5 VDC
TransSphere WXM206 capacity	2 AI, 1 DI, 3 DO
Analog In Type	4-20mA

Analog Input

Optionally power 4-20 mA loop.	
Accuracy	
Current	± 12.2µA
Voltage	± 6.1 mV
A/D Resolution	22 bit
Isolation	1400 V input to power - Inputs on XM6 are not isolated

Digital Inputs

Type	5-36 VDC with pulse counting
Isolation	3000 V to chassis ground

Analog Outputs - Current

Isolation	1400 V output to power
D/A Resolution	16 bits

Digital Outputs

Maximum	36 VDC
Output Type	FET Relay
Load Current	2A continuous per output
Isolation	3700 V to chassis ground

900 MHz Model Radio specifications

Data Rate	106 Kbps over-the-air
Frequency Band	902-928 MHz ISM band
Spreading Mode	Frequency Hopping Spread Spectrum
Range†	
Typical Fixed Range	25 miles
Maximum Fixed Range	60 miles
System Gain	136 dB
Carrier Power	0.1 to 1 watt (20 to 30 dBm)
Receiver Sensitivity	-106 dBm (1 x 10 ⁻⁶ BER) typical

2.4 GHz Model Radio specifications†

Data Rate	106 Kbps over-the-air
Frequency Band	2.4016-2.4778 GHz ISM band
Spreading Mode	Frequency Hopping Spread Spectrum
Frequency Channels	Selectable 80 to 128 in increments of 16
Range†	
Typical Fixed Range	6 miles
Maximum Fixed Range	15 miles
System Gain	131 dB
Carrier Power	0.1 to 0.5 watts (20 to 27 dBm)
Receiver Sensitivity	-104 dBm (1 x 10 ⁻⁶ BER) typical

802.15.4 radio specifications

Frequency Band	2.4 GHz to 2.4835 GHz
Modulation	OQPSK
Range	2500 Ft.. typical (longer ranges with LOS)
Carrier Power	60 mW (18 dBm)
System Gain	27 dBm
Receiver Sensitivity	-100 dBm (1% packet error rate)

Mechanical

Case	High impact plastic
DIN Rail Mounting	
Dimensions	14.6 H x 4.14 W x 11.4 D cm. (5.75 H x 1.63 W x 4.5 D in.)
Weight	226 g (.5 lb.)

Agency Approvals

FCC Part 15.247	
IC - Industry Canada - RSS210	
CSA Class 1 Div. 2 Groups A, B, C and D for hazardous locations (ANSI/UL equivalent)††	

† Typical fixed range calculation assumes a 6 dBd gain Omni on a 100 ft. tower at the AP, a 10 dBd gain Yagi on a 25 ft. mast at the remote with output power decreased to yield maximum allowable EIRP (36 dBm), a 10 dB fade margin, and a mix of agricultural and commercial terrain with line of sight.

†† The transceiver is not acceptable as a stand-alone unit for use in the hazardous locations described above. It must either be mounted within another piece of equipment, which is certified for hazardous locations, or installed within guidelines, or conditions of approval, as set forth by the approving agencies.

‡ Check for availability dates

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Additional Resources

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

www.gefanuc.com

