

XYR 5000

WT530

Wireless Temperature Transmitters

34-XY-01-02 12/2004

PRODUCT SPECIFICATION AND MODEL SELECTION GUIDE

Function

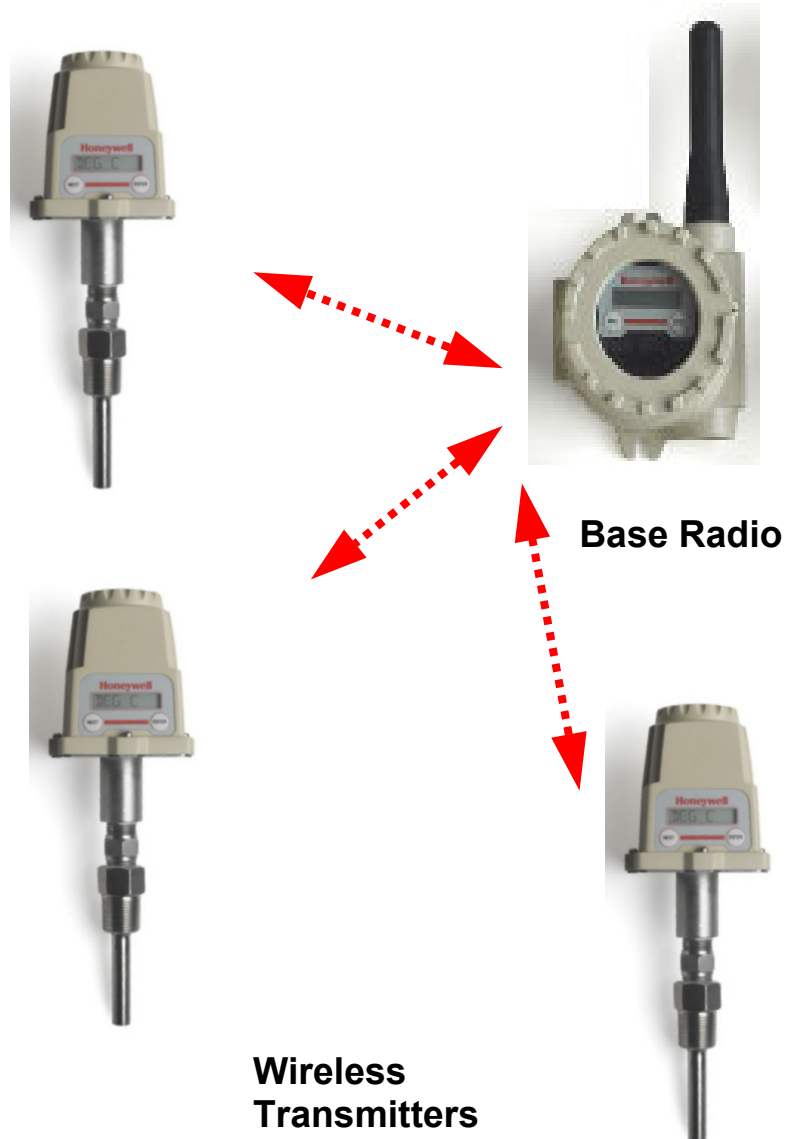
The WT530 Temperature Transmitter is part of the XYR 5000 family of wireless products. These transmitters are wireless temperature transmitters that can be used to monitor a variety of processes in hazardous and remote areas. Since there are no wires to run, the transmitter can be installed and operational in minutes, quickly providing information about the variable being monitored. The Smart Response Manager allows the transmitter to adapt to changing process conditions, allowing greater visibility to process variation. Smart Response Manager allows the user to set thresholds which, when exceeded, cause the transmitter to increase sampling and data transmission rates. Optional discrete inputs and outputs switches are available for

- Monitoring process variables
- Activating local devices (lights, alarms, etc.)
- Discrete monitoring at the base radio

The transmitter combines an integrated temperature sensor, with a Radio Frequency (RF) transceiver that communicates in a digital protocol, using Frequency Hopping Spread Spectrum (FHSS). FHSS ensures data integrity by continually switching the carrier wave over a wide range of frequencies. Power is supplied by a C size 3.6 V lithium battery, with an expected lifetime of up to five years.

Enjoy the benefits of wireless technology today:

- Improve Product Quality
- Ensure High Uptime
- Reduce Maintenance and Operational Costs
- Meet Regulatory Requirements
- Enhance Flexibility



PROBE OPTIONS

Probe Type	RANGE DEG. F	RANGE DEG. C
Pt100 RTD (DIN .00385)	-328 to +900	-200 to +482
Type B T/C	+212 to +3,272	+100 to +1,800
Type C T/C	+32 to +4,208	0 to +2,320
Type E T/C	-58 to +1,832	-50 to +1,000
Type J T/C	-292 to +1,382	-180 to +750
Type K T/C	-292 to +2,282	-180 to +1,250
Type L T/C	-328 to +1,652	-200 to +900
Type N T/C	+32 to +2,192	0 to +1,200
Type R T/C	+32 to +2,912	0 to +1,600
Type S T/C	+32 to +2,822	0 to +1,550
Type T T/C	-238 to +752	-150 to +400
Type U T/C	-148 to +1,112	-100 to +600

WIRELESS GENERAL SPECIFICATIONS

Wireless Communication	902 MHz – 928 MHz Frequency Hopping Spread Spectrum (FHSS) FCC certified ISM license-free band. Every data block transmitted is verified (CRC check) and acknowledged by the Base Radio.
RF Transmit Power	31 mW, 17.8 mW typical.
Data Rate	Configurable: 4.8 Kbps, 19.2 Kbps, or 76.8 Kbps.
Antenna	Internal 3" omni-directional, ¼ wave, monopole.
Signal Range	Up to 2000 feet (600 meters) from Base Radio with clear line of sight.*

*Actual range may vary depending on site topography.

SELF DIAGNOSTICS

Self-checking software and hardware that identifies and reports out of spec conditions, and field unit low battery voltage.

OPERATING/STORAGE CONDITIONS

Humidity	99% RH (non-condensing).
Temperature	Ambient Sensor: -40 to +230● F (-40 to +110● C) Ambient Electronics: -40 to +185● F (-40 to +85● C) Process fluid: -40 to +250● F (-40 to +121● C) Display (Full visibility): -4 to +158● F (-20 to +70● C) Display (Reduced visibility): -40 to +185● F (-40 to +85● C) Storage: -58 to +185● F (-50 to +85● C).

DISCRETE INPUTS/OUTPUTS (TWO EACH, OPTIONAL)

Discrete Input Switch (Dry Contact Only, no Voltage or Current Allowed)

Maximum Impedance at Input	1 K ohm.
Isolation	110 K ohms between Output (-) and Input (-).
Wiring	Plug – Wire Size 28 to 16 gauge maximum.
Warning	No external voltage or current shall be applied to input terminals.

Discrete Output Switch

Type	Avalanche MOSFET, Common (-) Connection.
Isolation	110 K ohms between Output (-) and Input (-).
Operating Voltage	6 – 30 Vdc.
On Resistance	9 m-ohms typical, 15 m-ohms maximum.
Maximum Load Current	1 amp dc per point.
Wiring	Plug – Wire Size 28 to 16 gauge maximum.
Approval	Discrete Output Switches negate hazardous area approvals.

DEVICE CONFIGURATION

Parameter Configuration	<ul style="list-style-type: none">• RF Channel Setup: 1 to 16.• Baud Rate: 4.8 Kbps, 19.2 Kbps, 76.8 Kbps.• RF ID: 1 to 50.• Password.• Tag Name (up to 21 characters).• Normal Transmit Rate: (1–5 sec, 10 sec, 15 sec, 20 sec, 40 sec, 1 min).• Normal Sampling Rate: (1–10 sec, 15 sec, 20 sec, 30 sec, 1 min).• Abnormal Transmit Rate: (1–5 sec, 10 sec, 15 sec, 20 sec, 40 sec, 1 min).• Abnormal Sampling Rate: (1–10 sec, 15 sec, 20 sec, 30 sec).• Temperature Normal Upper Value: Disabled/Enabled. Enabled to change Sampling and Transmit rates during abnormal process conditions.• Temperature Normal Lower Value: Disabled/Enabled. Enabled to change Sampling and Transmit rates during abnormal process conditions.• Engineering Units: Deg C, Deg F, Kelvin, Rankin.• Probe Type. (WT531R will accept one RTD probe; WT531T will accept one or two T/C probes).• Offset: User defined offset will be transmitted instead of actual value.• Trim: Applies a user-defined one- or two-point correction curve to the actual value.• Discrete Input/Output parameters are configured from the Wireless Management Toolkit
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Configuration Panel	Integrated LCD display with membrane switch buttons for local configuration. LCD display is 7-digit (alternating) high contrast, anti-reflective monochrome. Display cycles between temperature level and RF status.
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PERFORMANCE

Accuracy	± 0.1% of full scale reading at operating conditions. For cold junction compensation (T/C only), add 1.8 • F (± 1 • C) at reference conditions.
Linearization	RTD and T/C linearization to ± 0.09• F (± 0.05 • C). Custom linearization with 22 point curve.
Ambient Temperature Effect	RTD - ± 0.002% of reading per • C T/C - ± 0.01% of reading per • C
Long Term Stability	Stability deviation per year is less than 0.025%.

PHYSICAL SPECIFICATIONS

Thermowell Material	304 SS, 316 SS.
Electronic Housing	GE Lexan. V0 Rating and UV Stable.
Process connections	½" - NPTM for probe only. ¾" - NPTM for well.
Vibration and Shock	Certified per IEC EN00068 2-6 (Vibration) and 2-27 (Shock)
Random Vibration	Certified to withstand 6 g's, 15 minutes per axis from 9 – 500 Hz.

PHYSICAL SPECIFICATIONS (CONT.)

Net weight	1 kg (2 lbs) (no probe and well).
Electromagnetic Compatibility (CE Compliance)	Operates within Specifications in fields from 80 to 1,000 MHz with Field Strengths to 30 V/m. Meets EN 50082-1 General Immunity Standard and EN 55011 Compatibility Emissions Standard.

APPROVALS

Environmental protection	NEMA 4X (Split architecture is NEMA 4).
Electrical classification	CSA and FM Rated Intrinsically Safe for Class I, Div. 1, Groups A,B,C,D; Class II, Div. 1, Groups E,F,G; Class III, Div. 1.

Model Selection Guide

XYR 5000 Wireless Temperature Transmitter

Model Selection Guide
34-XY-16U-02 Issue 3

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Instructions

- Select the desired key number.

Key Number	I (Options)	II (Approvals)
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KEY NUMBER	Selection Availability
Description	
Wireless Temp. Transmitter - Split Architecture (RTD supplied by customer) Single input - 4-wire RTD required	WT531R ▼
Wireless Temp. Transmitter - Split Architecture (T/C supplied by customer) Dual input	WT531T

TABLE I - OPTIONS

No Discrete input/output switches	XX	•	
Discrete input switches (Note 1)	DA	•	
Discrete output switches	DB	c	b
Discrete input/output switches	DC	c	

Note 1 - no voltage or current allowed; dry contact only

TABLE II - CERTIFICATION OPTIONS

Certificate	Approval Type	Location or Classification	Code	
NONE	NONE	Ordinary Non-Hazardous Location	9X	•
Combined FM	Intrinsically Safe	CL I, II, III, Div 1, Gp A,B,C,D,E,F,G T4; CL I, Zone 0, AEx ia IIC T4; Enclosure Type 4	A2	•
	Nonincendive	Class I, Div 2, Groups A,B,C,D; Suitable for CL II, III, Div 2, Gp F,G, T4; CL I, Zone 2, AEx nA IIC T4; Enclosure Type 4		
CSA	Intrinsically Safe	CL I, II, III, Div 1, Gp A,B,C,D,E,F,G T4; CL I, Zone 0, Ex ia IIC T4; Enclosure Type 4		
	Nonincendive	Class I, Div 2, Groups A,B,C,D; Suitable for CL II, III, Div 2, Gp F,G, T4; CL I, Zone 2, Ex n IIC T4; Enclosure Type 4		b

RESTRICTIONS

Restriction Letter	Available Only With	Not Available With
c	Table	Table
b	II a	9X
■	mutually exclusive - select one	

- Make six selections from Table I.
- Key Number I II (Approvals)
- _____ - _____ - _____

KEY NUMBER	Selection	Availability
Description		
Wireless Temperature Transmitter - Integrated Complete	WT532	▼

TABLE I - PROBE

Probe Type	RTD	R _____	a
	Thermocouple	T _____	b
Process connection	Spring Loaded Fitting	- S _____	•
	Direct Insertion Weld	- D _____	•
Probe Lag Hardware	Nipple	__ N _____	•
	Nipple/Union/Nipple	__ U _____	•
Length (Select From Sizing Table I)	Enter Length (y) From Sizing Table 1	___ y ___	•
Probe Type (Select From Probe Table 2)	Enter Probe Type (z) from Probe Table 2	___ z _	•
Thermowell (3/4" NPT)	304 SS	___ A	•
(Insertion Length = Probe Length minus 1.5")	316 SS	___ B	•
	No well	___ C	•

Example: WT532-RSNJPA List price = \$1227

TABLE II - CERTIFICATION OPTIONS

Certificate	Approval Type	Location or Classification	Code
NONE	NONE	Ordinary Non-Hazardous Location	9X •
Combined FM	Intrinsically Safe	CL I, II, III, Div 1, Gp A,B,C,D,E,F,G T4; CL I, Zone 0, AEx ia IIC T4; Enclosure Type 4X	A2 •
	Nonincendive	Class I, Div 2, Groups A,B,C,D; Suitable for CL II, III, Div 2, Gp F,G, T4; CL I, Zone 2, AEx nA IIC T4; Enclosure Type 4X	
CSA	Intrinsically Safe	CL I, II, III, Div 1, Gp A,B,C,D,E,F,G T4; CL I, Zone 0, Ex ia IIC T4; Enclosure Type 4X	•
	Nonincendive	Class I, Div 2, Groups A,B,C,D; Suitable for CL II, III, Div 2, Gp F,G, T4; CL I, Zone 2, Ex n IIC T4; Enclosure Type 4X	

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Field Measurement Price Book

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Model Selection Guide

XYR 5000 Wireless

RESTRICTIONS

Restriction Letter	Available Only With	Not Available With
c d b	Table Selection	Table Selection
■ ■ ■	I e P	
		I e P
	mutually exclusive - select one	

Sizing Table 1

Select option based on required probe length and enter option in Table 1c

Probe length	y =	Option	Twell List Price	
			304 SS	316 SS
2.5	y =	A		
3.0	y =	B		
3.5	y =	C		
4.0	y =	E		
4.5	y =	F		
5.0	y =	G		
5.5	y =	H		
6.0	y =	J		
6.5	y =	K		
7.0	y =	L		
7.5	y =	M		
8.0	y =	N		
8.5	y =	P		
9.0	y =	R		
9.5	y =	S		
10.0	y =	T		
10.5	y =	U		
11.0	y =	V		
11.5	y =	W		
12.0	y =	Y		

Probe Table 2

Select option based on required probe type and enter option in Table 1d

Probe type	z =	Option
RTD	z =	P
T/C		
B	z =	B
C	z =	C
E	z =	E
J	z =	J
K	z =	K
L	z =	L
N	z =	N
R	z =	R
S	z =	S
T	z =	T
U	z =	U

Instructions

Select the desired key number.

Key Number I (Approvals)
 -

KEY NUMBER

Selection

Description (3/4" NPTF T connection for probe only)		
Wireless Temp. Transmitter - Split Architecture (RTD supplied by customer) Single input - 4-wire RTD required	WT531R	▼
Wireless Temp. Transmitter - Split Architecture (T/C supplied by customer) Dual input	WT531T	

TABLE I - CERTIFICATION OPTIONS

Code

Certificate	Approval Type	Location or Classification		
NONE	NONE	Ordinary Non-Hazardous Location	9X	•
Combined FM	Intrinsically Safe	CL I, II, III, Div 1, Gp A,B,C,D,E,F,G T4; CL I, Zone 0, AEx ia IIC T4; Enclosure Type 4	A2	•
	Nonincendive	Class I, Div 2, Groups A,B,C,D; Suitable for CL II, III, Div 2, Gp F,G, T4; CL I, Zone 2, AEx nA IIC T4; Enclosure Type 4		
CSA	Intrinsically Safe	CL I, II, III, Div 1, Gp A,B,C,D,E,F,G T4; CL I, Zone 0, AEx ia IIC T4; Enclosure Type 4		
	Nonincendive	Class I, Div 2, Groups A,B,C,D; Suitable for CL II, III, Div 2, Gp F,G, T4; CL I, Zone 2, Ex n IIC T4; Enclosure Type 4		

RESTRICTIONS

Restriction Letter	Available Only With	Not Available With
	Table Selection	Table Selection
b		
•	mutually exclusive - select one	



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