

XYR 5000

Wireless Temperature Transmitters

WT530

34-XY-03-02 09/2006

PRODUCT SPECIFICATION AND MODEL SELECTION GUIDE

Function

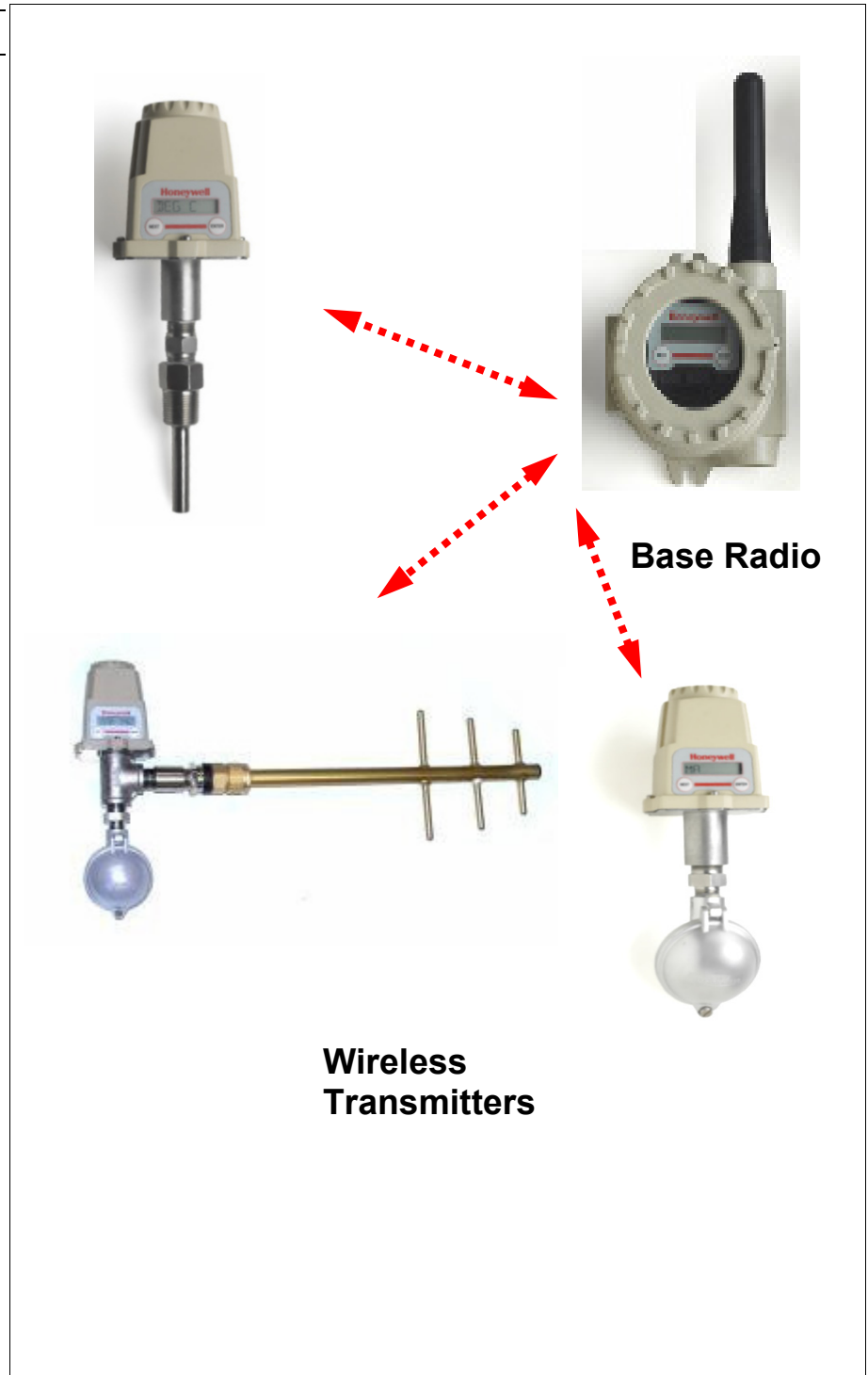
The WT530 Temperature Transmitter is part of the XYR 5000 family of wireless products. These transmitters are wireless temperature transmitters that can be used to monitor a variety of processes in hazardous and remote areas. Since there are no wires to run, the transmitter can be installed and operational 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 are available for

- Monitoring process variables
- Discrete monitoring at the base radio.

The transmitter combines an integrated temperature sensor, with a Radio Frequency (RF) transceiver t operating in the 900MHz ISM license-free band. Communication is 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	Omnidirectional	Yagi Directional
	Internal 3" omni-directional, ¼ wave, monopole.	<ul style="list-style-type: none"> • Length: 18". • Gain: 6 dBd. • Weight: 1.5 lbs. • Polarization: Vertical.
Signal Range	Up to 2000 feet (600 meters) from Base Radio with clear line of sight.*	Up to 5000 feet (1500 meters) from Base Radio with clear line of sight.*

*Actual range may vary depending on site topography.

SITE SURVEY TOOLS

RSSI	Received Signal Strength Indicator displays the RF signal strength in one of seven ranges.
Link Test	Link Test measures the wireless link performance of a transmitter running in normal operating mode. This function looks at wireless performance in both directions, from the transmitter to base radio and vice versa and assigns a rating to that performance or quality of signal.

FEATURES

Automatic Re-transmit	The field unit checks with the base radio to insure successful receipt of data. If data was not received, the transmitter retries on the next RF cycle. Ensures communication confidence in the harshest of industrial environments. At the maximum transmit rate this feature is inactive.
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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	95% 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 (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.

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 100. • 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 parameters configured from the Wireless Management Toolkit
Configuration Panel	<p>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.</p>

PERFORMANCE

Accuracy	<p>± 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.</p>
Linearization	<p>RTD and T/C linearization to ± 0.09°F (± 0.05 °C). Custom linearization with 22 point curve.</p>
Ambient Temperature Effect	<p>RTD - ± 0.002% of reading per °C T/C - ± 0.01% of reading per °C</p>
Long Term Stability	<p>Stability deviation per year is less than 0.025%.</p>

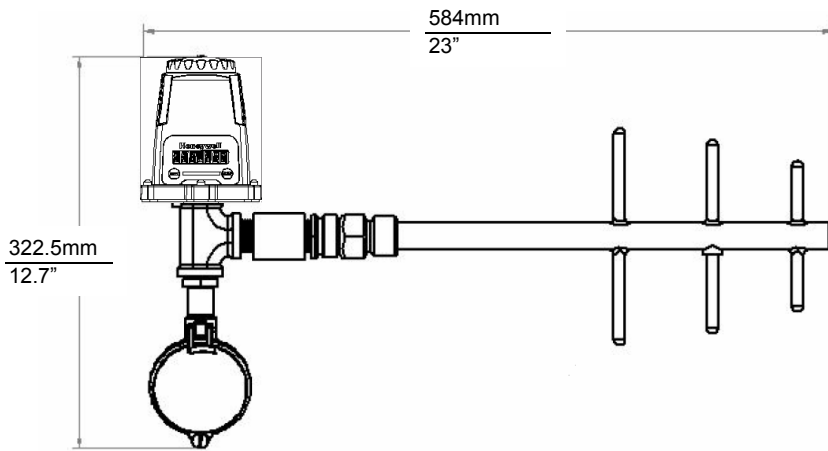
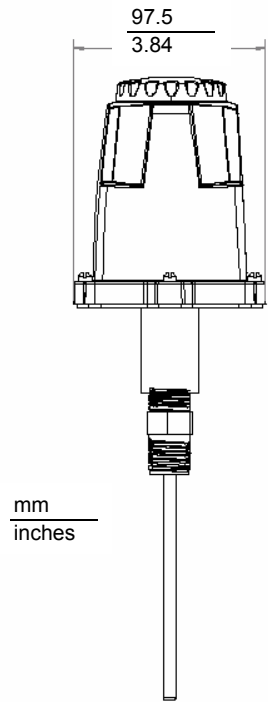
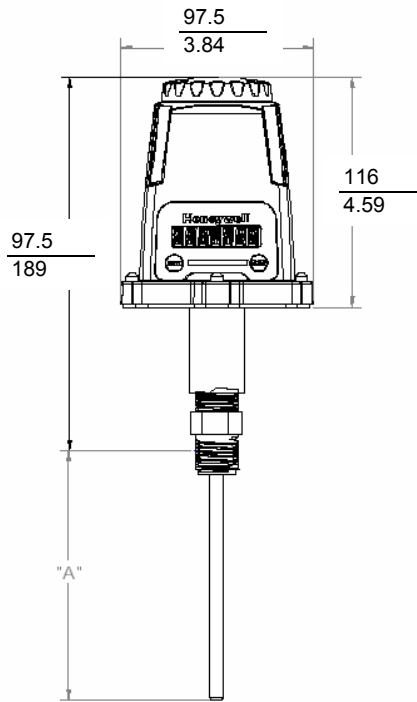
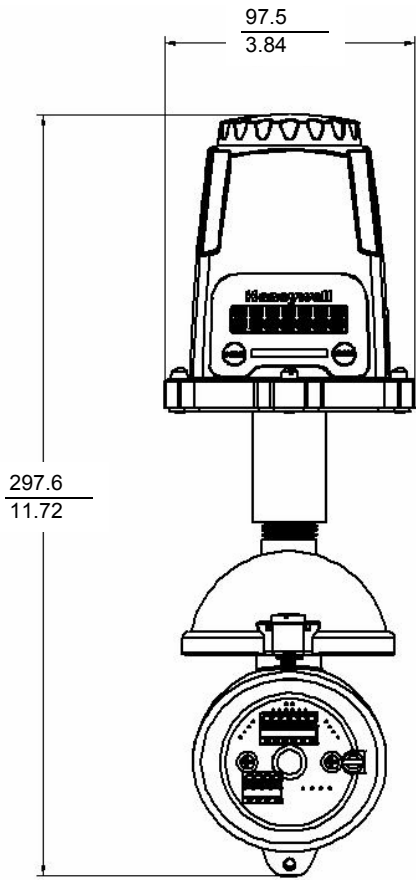
PHYSICAL SPECIFICATIONS

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.	
Net weight	With Omnidirectional antenna	With Yagi directional antenna
	1.0 kg (2 lbs)	1.8 kg (3.5 lbs.)
Electromagnetic Compatibility (CE Compliance)	Operates within Specifications in fields from 80 to 1,000 MHz with Field Strengths to 10 V/m. Meets EN 50082-1 General Immunity Standard and EN 55011 Compatibility Emissions Standard.	

APPROVALS

Environmental protection	NEMA 4, IP 65.
Combined FM/CSA	<p>FM – Explosion proof - Class I, Div. 1, Groups B,C,D, T5,T6, Enclosure 4X Dust-Ignition proof - Class II, III, Div. 1, Groups E,F,G, T5,T6, Enclosure 4</p> <p>CSA - Explosion proof - Class I, Div. 1, Groups B,C,D, T5, Enclosure 4X Dust-Ignition proof - Class II, III, Div. 1, Groups E,F,G, T5, Enclosure 4</p>
Combined CE/ATEX	<p>CE EMC Conformity, ETSI EN 300 489-1</p> <p>Intrinsically Safe, Zone 0/1: Ex II 1 G EEx ia IIC T4, T5, T6</p> <p>Non-Sparking, Zone 2: Ex II 3 G EEx nA, IIC T6</p>

DIMENSIONS



Model Selection Guide

Model Selection Guide
34-XY-16-02 Issue 10

Instructions

- Select the desired key number.

Key Number	I (Options)	II (Approvals)
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KEY NUMBER

Description	Selection	Availability
Wireless Temperature Transmitter - Split Architecture with Omni Directional Antenna Single input - 4-wire RTD required (4-wire RTD supplied by customer)	WT531R	↓
Wireless Temperature Transmitter - Split Architecture with Omni Directional Antenna Thermocouple(s) supplied by customer	WT531T	↓
Wireless Temperature Transmitter - Split Architecture with Yagi Antenna Single input - 4-wire RTD required (4-wire RTD supplied by customer)	WT534R	↓
Wireless Temperature Transmitter - Split Architecture with Yagi Antenna Thermocouple(s) supplied by customer	WT534T	↓

TABLE I - OPTIONS

No Discrete input/output switches	XX	•	b
Discrete Inputs (Note 1)	DA	•	

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

TABLE II - CERTIFICATION OPTIONS

Certificate	Approval Type	Location or Classification	AG	3G	
Combined FM & 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 4X	AG	•	b
	Nonincendive	Class I, Div 2, Groups A,B,C,D; Suitable for CL II, III, Div 2, Groups F,G, T4; CL I, Zone 2, AEx nA IIC T4; Enclosure Type 4X			
	Intrinsically Safe	CL I, II, III, Div 1, Gp A,B,C,D,E,F,G T3; 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, Groups F,G, T3; CL I, Zone 2, Ex n IIC T4; Enclosure Type 4X			
ATEX*	Multiple Marking** Int. Safe, Zone 0/1, or Non-Sparking, Zone 2	Ex II 1 G EEx ia IIC T4; Ta -40 to 65° Ex II 3 G EEx nL, IIC T4; Ta -40 to 85° Enclosure IP 65	3G	•	

* See ATEX installation requirements in the Operator's Manual.

** The user must determine the type of protection required for installation of the equipment. The user shall then check the box [?] adjacent to the type of protection used on the equipment certification label. Once a type of protection has been checked on the label, the equipment shall not then be reinstalled using any of the other certification type.

RESTRICTIONS

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

Instructions

- Select the desired key number. The arrow to the right marks the selection available.
 - Make six selections from Table I.
- Key Number I II (Approvals)
- -

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

TABLE I - PROBE

Probe Type	RTD Thermocouple	R _ _ _ _ T _ _ _ _	c d
Process connection	Spring Loaded Fitting Direct Insertion Weld	_ S _ _ _ _ _ D _ _ _ _	• •
Probe Lag Hardware	Nipple Nipple/Union/Nipple	_ _ N _ _ _ _ _ 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) (Insertion Length = Probe Length minus 1.5")	304 SS 316 SS No well	_ _ _ _ A _ _ _ _ B _ _ _ _ C	• • •

Example: WT532-RSNJPA

TABLE II - CERTIFICATION OPTIONS

Certificate	Approval Type	Location or Classification			
Combined FM & 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 4X	AG	•	b
	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			
	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			
ATEX*	Multiple Marking** Int. Safe, Zone 0/1, or Non-Sparking, Zone 2	Ex II 1 G EEx ia IIC T4; Ta -40 to 65° Ex II 3 G EEx nL, IIC T4; Ta -40 to 85° Enclosure IP 65	3G	•	

* See ATEX installation requirements in the Operator's Manual.

** The user must determine the type of protection required for installation of the equipment. The user shall then check the box [?] adjacent to the type of protection used on the equipment certification label. Once a type of protection has been checked on the label, the equipment shall not then be reinstalled using any of the other certification type.

RESTRICTIONS

Restriction Letter		Available Only With		Not Available With
	Table	Selection	Table	Selection
c	Ic & Id	P		
d			Ic & Id	P
b		Mutually exclusive - select one		

Sizing Table 1

Select option based on required probe length and enter option in Table Ic

Probe length		Option
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 Id

Probe type		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

