Honeywell

XYR 5000 WD520

Wireless Differential Pressure Transmitters

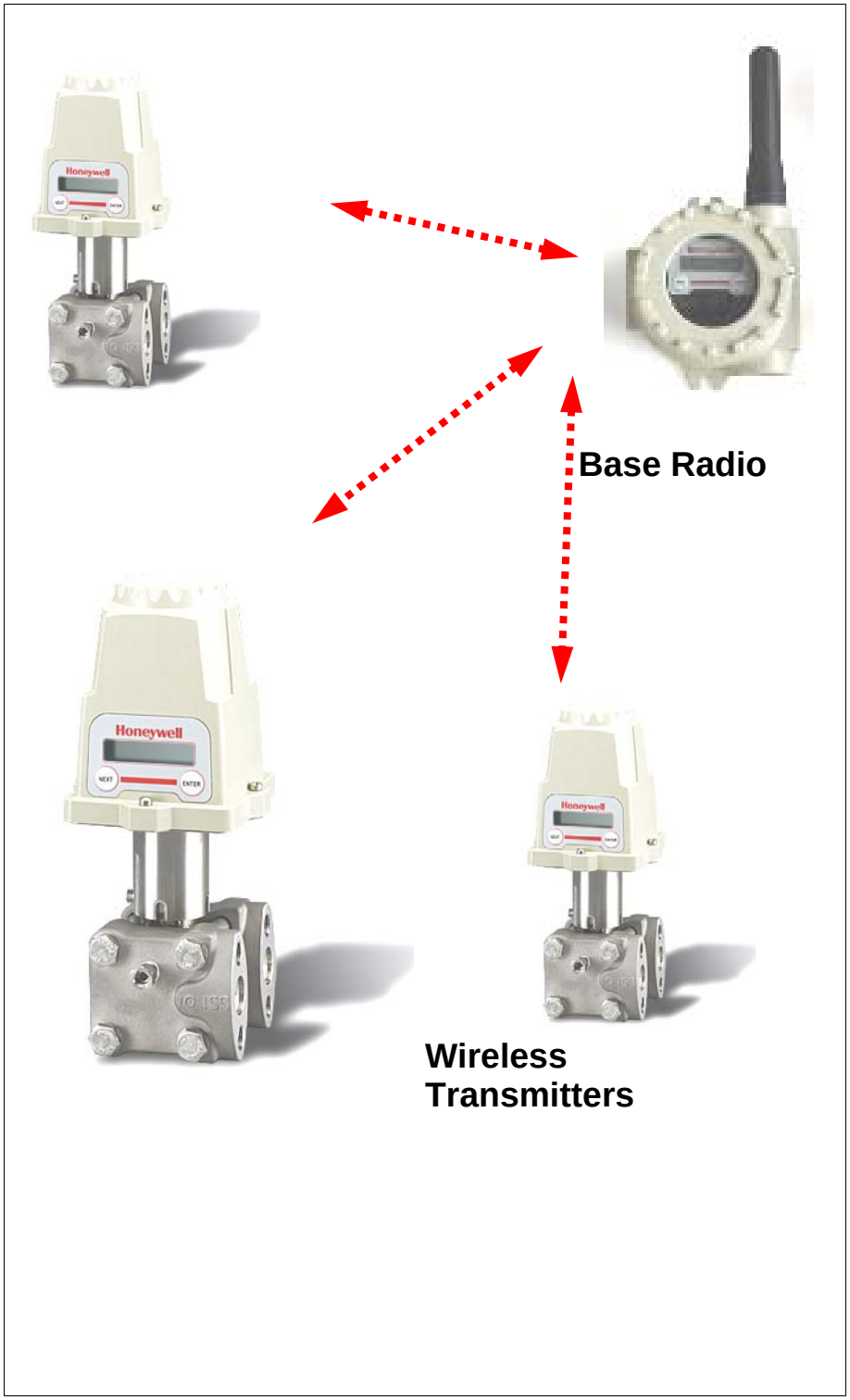
34-XY-03-07 09/2006 **PRODUCT SPECIFICATION AND MODEL SELECTION GUIDE**

Function

The WD520 is part of the XYR 5000 family of wireless products. These transmitters cover a wide differential pressure range, and can be used to monitor a variety of processes and assets in hazardous and remote areas. The WD520 can be set to operate in four modes: differential pressure, orifice flow, open channel flow, and level. 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 adjust sampling and data transmission rates. The transmitter combines a differential pressure sensor with a Radio Frequency (RF) transceiver 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



MODELS

Differential Pressure

Model #	Range Limits	Maximum Working Pressure PSIG/(BAR)	Diaphragm/Body Material (wetted parts)	Sensor Fill Fluid
WD520	-100 to 100 " H2O @ 68°F (-2540 to 2540 mmH2O)	2000/(137)	316L SS/316 SS	DC200
WD521	-300 to 300 " H2O @ 68°F (-7620 to 7620 mmH2O)	2000/(137)	316L SS/316 SS	DC200
WD522	-25 to 25 PSID (-1723 to 1723 mbar)	2000/(137)	316L SS/316 SS	DC200
WD523	-25 to 100 PSID (-1.7 to 6.89 bar)	2000/(137)	316L SS/316 SS	DC200
WD524	-25 to 300 PSID (-1.7 to 20.68 bar)	2000/(137)	316L SS/316 SS	DC200

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		0 TO 95% RH, non condensing.
Temperature	Ambient Electronics:	-40 to +185°F (-40 to +85°C)
	Process fluid:	-40 to +220°F (-40 to +104°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).

DEVICE CONFIGURATION

Parameter Configuration	• 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). • Operation Modes: Differential Pressure, Orifice Flow, Open Channel Flow, Level. • Differential Pressure Normal Upper Value: Disabled/Enabled. Enabled to change Sampling and Transmit rates during abnormal process conditions. • Differential Pressure Normal Lower Value: Disabled/Enabled. Enabled to change Sampling and Transmit rates during abnormal process conditions. • Engineering Units: See Appendix • Pressure Zero. • 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.
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 pressure level and RF status.

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.
Battery Life Saver	To save conserve battery power, all field units will attempt to synchronize with the network using the following technique: **Time** — **Field Unit Synchronization Attempts and Attempt Delay** 0 – 1 minute — Continuous Synchronization attempts 1 – 10 minutes — One attempt with a 10 second delay between attempts 10 – 30 minutes — One attempt with a 30 second delay between attempts 30 – 60 minutes — One attempt with a 1-minute delay between attempts 1 – 12 hours — Three-attempt burst with a 5-minute delay between attempts 12 – 24 hours — Three-attempt burst with a 10-minute delay between attempts 24 – 36 hours — Three-attempt burst with a 30-minute delay between attempts 36 – 48 hours — Three-attempt burst with a 1-hour delay between attempts 48 + hours — Three-attempt burst with a 2-hour delay between attempts

PERFORMANCE

Accuracy (linearity, hysteresis, and repeatability)	±0.2% Full Scale.
Temperature Effect	±0.1% of URL.
Stability	Less than ±0.25% of sensor URL per year @ 21°C (70°F).
Resolution	24-bit A/D converter.

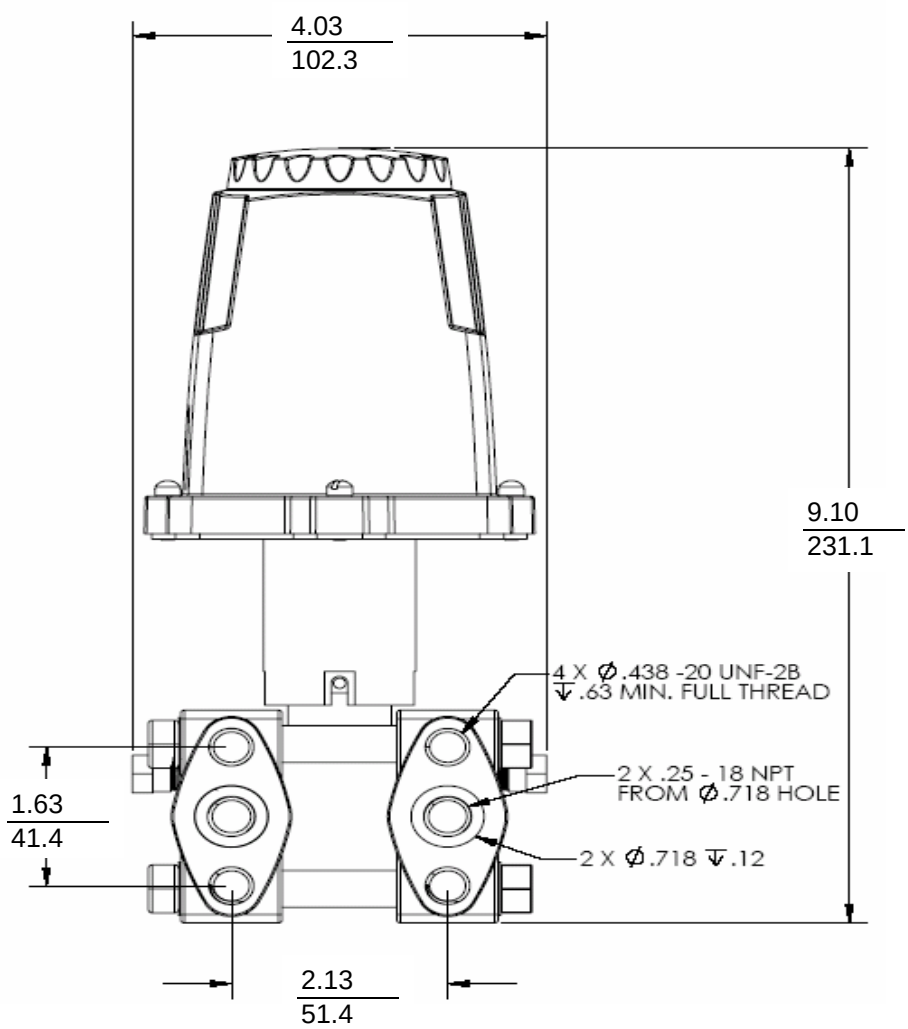
PHYSICAL SPECIFICATIONS

Process connections	1/4" - NPTF. (Optional ½" NPTF SS adaptor).
Electronic Housing	GE Lexan. V0 Rating and UV Stable.
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	2.8 kg (6.2 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 4X, IP 65
Combined FM/CSA	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 4X 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 4X
CE/ATEX	CE EMC Conformity, ETSI EN 300 489-1 Intrinsically Safe, Zone 0/1: Ex II 1 G EEx ia IIC T4, T5, T6 Non-Sparking, Zone 2: Ex II 3 G EEx nA, IIC T6

DIMENSIONS


4.03
102.3
9.10
231.1
4 X Ø .438 -20 UNF-2B
↧.63 MIN. FULL THREAD
2 X .25 - 18 NPT
FROM Ø.718 HOLE
2 X Ø.718 ↧.12
1.63
41.4
2.13
51.4

Model Selection Guide
34-XY-16-10 Issue 4

Instructions

- Select the desired key number.

Key Number		I		II		III
_ _ _ _ _	-	_ _ _	-	_ _	-	_ _

KEY NUMBER

Description	Span	Selection	Availability
Differential Pressure Transmitter	+/- 100" H2O (250 mbar)	WD520	↓
Differential Pressure Transmitter	+/- 300" H2O (750 mbar)	WD521	↓
Differential Pressure Transmitter	+/- 25 psi (172 kPa)	WD522	↓
Differential Pressure Transmitter	-25/+100 psi (-172 to 688 kPa)	WD523	↓
Differential Pressure Transmitter	-25/+300 psi (-172 kPa to 2064 kPa)	WD524	↓

TABLE I - CONSTRUCTION

Housing	Integral with sensor	A _ _	•
Wetted Materials	316 SS	_ A _	•
Fill fluid	DC200	_ _ A	•

TABLE II - OPTIONS

No Options	XX	•
316 SS ADAPTER FLANGE - 1/2" NPT with 316 SS Bolts	S2	•
304 SS MOUNTING BRACKET	SB	•

TABLE III - 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, 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		

Appendix (Engineering Units)

All listed units are available in the LCD display.

DIFFERENTIAL PRESSURE	
Units	*Display*
Atmospheres	ATMS
BAR	BAR
Ft H2O At 68F	FT H2O
GM Per Sq Cm	GM/SQCM
In Hg At 0C	IN HG
In H2O At 68F	IN H2O
In H2O At 4C	INH2O4C
KG Per Sq Cm	KG/SQCM
KiloPascals	KPASCAL
MegaPascals	MPASCAL
MilliBAR	MBAR
MMHg At 0C	MM HG
MMH2O At 68F	MM H20
MMH2O At 4C	MMH2O4C
Pascals	PASCALS
Percent (%)	PER FS
PSI	PSI
Special	SPECIAL

LEVEL	
Units	*Display*
Barrels	BBL
Bushels	BUSHELS
CM	CM
Cu Feet	CU FEET
Cu Inch	CU INCH
Cu Meters	CU M
Cu Yard	CU YARD
Feet	FEET
Gallons	GALLONS
Gram	GRAM
Hecto Liter	HLITER
Imp Gallons	IMPGAL
Inches	INCHES
Kilograms	KGRAMS
Liquid Barrels	BBL LIQ
Liters	LITERS
LongTon	LNG TON
Meters	METERS
Metric Ton	M TON
Millimeters	MM
Normal Cu Meter	N CU M
Normal Liter	N LITER
Ounce	OUNCE
Percent Height	PER FS
Percent Mass	PER FS
Percent Volume	PER FS
Pounds	POUNDS
Short Ton	SHT TON
Standard Cu Ft	SCFEET

OPEN CHANNEL FLOW	
Units	*Display*
Barrel Per Day	BBL/D
Barrel Per Hr	BBL/ H
Barrel Per Min	BBL/ M
Barrel Per Sec	BBL/S
Cu Feet Per Day	CUFT/D
Cu Feet Per Hr	CUFT/HR
Cu Feet Per Min	CUFT/M
Cu Feet Per Sec	CUFT/S
Cu Meter Per Day	CU M/D
Cu Meter Per Hr	CU M/H
Cu Meter Per Min	CU M/M
Cu Meter Per Sec	CU M/S
Gal Per Day	GAL/D
Gal Per Hr	GAL/H
Gal Per Min	GAL/M
Gal Per Sec	GAL/S
Gram Per Hr	GM/H
Gram Per Min	GM/M
Gram Per Sec	GM/S
Imp Gal Per Day	IMPG/D
Imp Gal Per Hr	IMPG/H
Imp Gal Per Min	IMPG/M
Imp Gal Per Sec	IMPG/S
KG Per Day	KG/D
KG Per Hr	KG/H
KG Per Min	KG/M
KG Per Sec	KG/S
Liter Per Hr	L/H
Liter Per Min	L/M
Liter Per Sec	L/S
Long Ton Per Day	LTON/D
Long Ton Per Hr	LTON/H
Met Ton Per Day	MTON/D
Met Ton Per Hr	MTON/H
Million Gal Per Day	MGAL/D
Million Liter Per Day	MILL/D
Norm Cu Meter Per Hr	NCUM/H
Norm Liter Per Hr	NL/H
Percent Mass Flow	PER FS
Percent Vol Flow	PER FS
Pounds Per Day	LB/D
Pounds Per Hr	LB/H
Pounds Per Min	LB/M
Pounds Per Sec	LB/S
Sh Ton Per Day	STON/D
Sh Ton Per Hr	STON/H
Sh Ton Per Min	STON/M
Std Cu Ft Per Min	SCUF/M

ORIFICE FLOW (Flow Units)	
Units	*Display*
Barrel Per Day	BBL/D
Barrel Per Hr	BBL/ H
Barrel Per Min	BBL/ M
Barrel Per Sec	BBL/S
Cu Feet Per Day	CUFT/D
Cu Feet Per Hr	CUFT/HR
Cu Feet Per Min	CUFT/M
Cu Feet Per Sec	CUFT/S
Cu Meter Per Day	CU M/D
Cu Meter Per Hr	CU M/H
Cu Meter Per Min	CU M/M
Cu Meter Per Sec	CU M/S
Gal Per Day	GAL/D
Gal Per Hr	GAL/H
Gal Per Min	GAL/M
Gal Per Sec	GAL/S
Imp Gal Per Day	IMPG/D
Imp Gal Per Hr	IMPG/H
Imp Gal Per Min	IMPG/M
Imp Gal Per Sec	IMPG/S
Liter Per Hr	L/H
Liter Per Min	L/M
Liter Per Sec	L/S
Million Gal Per Day	MGAL/D
Million Liter Per Day	MILL/D
Norm Cu Meter Per Hr	NCUM/H
Norm Liter Per Hr	NL/H
Percent Vol Flow	PER FS
Barrel Per Day	

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