



DIGITAL EPIC D200

A NON-CONTACT POSITION TRANSMITTER
WITH HART® 7 PROTOCOL

WESTLOCK CONTROLS

MONITORING AND CONTROL CAPABILITY

Westlock Controls has a global reputation in providing innovative solutions for networking, monitoring and controlling process valves. Our focus on technology and supplying reliable products manufactured to the highest industry standards makes us a preferred choice with the world's leading process companies and a trusted partner developing even better solutions for the future.

With increasing pressure to improve productivity and reduce maintenance downtime, stringent requirements are evolving within the process industry for reliable monitoring and control systems. We use emerging technologies to set next-generation standards and enhance our products' process, maintenance and operational efficiencies. Westlock Controls products are used in all industrial area classifications from hazardous, including explosion proof and intrinsically safe, to non-hazardous for full weather protection or sanitary installations.

THE CUSTOMER ADVANTAGE

Westlock provides solutions to meet our Customers needs to automate their valve package. Solving the Customers "high-tech" requirements, resulted in Westlock products being widely adopted on all pneumatic on/off valve applications.



INDUSTRY TRENDS—USE OF TRANSMITTERS

SELECT THE BEST PRODUCT FOR YOUR DEMANDING APPLICATION

Transmitters are devices that measure precise values and gives the user more accurate information about the process. A transmitter offers continuous data. With a transmitter, there is a significant time benefit for installation and troubleshooting.

Switches have been used for years in process plants by sensing flow, level, pressure, temperature and position. A switch indicates a change of state at a point that is set by the individual setting the switches. Process switches can fail and often do fail. False indications of closed position, failure or no indication and mechanical wear, are few of the many reasons process industries should make the “switch” to transmitters.

A typical process plant can have anywhere between 100 to 1000 mechanical switches. While the relevance of electromechanical pressure and temperature switches still hold value in many plants today, the reality is that use of switches are losing their process efficiency, becoming less effective and can compromise safety. Even more alarming is the maintenance cost for Valves and Rotary equipment can take up at least 60-70% of a plants annual budget. 40-50% of which is spent is unnecessary, indicating an opportunity for savings.

LIMIT SWITCH CAN INCORRECTLY INDICATE CLOSED WHEN THE VALVE IS NOT FULLY IN THE SEAT, DUE TO THE FOLLOWING REASONS:

- Debris in valve
- Incorrect adjustment of switch
- Wear of automated valve package

USING SWITCHES MAY GIVE A FALSE SENSE OF CONFIDENCE THAT THE VALVE IS CLOSED WHEN IN FACT IT IS NOT.

This can be due to the inherent hysteresis of switches and sensors compounded by inaccurate or inconsistent setting.

In high pressure steam applications for example a valve being open by even 1° can have detrimental effects such as cavitation or erosion commonly known as wire draw.

APPLICATION RECOMMENDATION:

- Triple Offset Valve
- High Performance Butterfly Valve
- Critical process valves



“

TRANSMITTERS VS. SWITCHES

THERE IS THE SIGNIFICANT ADVANTAGE OF USING A TRANSMITTER VERSUS A SWITCH FOR VALVE POSITION MEASUREMENT

”

SWITCH: CHANGE OF STATE DATA

- User dependent calibration
- Hysteresis is fixed
- False indication of Closed Position
- Less plant availability
- Higher maintenance cost

TRANSMITTER: CONTINUOUS DATA

- Consistent calibration
- Define hysteresis for open/close
- Improved reliability
- Less nuisance alarms
- Increase process availability
- Lower operating costs

DIGITAL EPIC D200

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WESTLOCK TAKES POSITION MEASUREMENT TO THE NEXT LEVEL

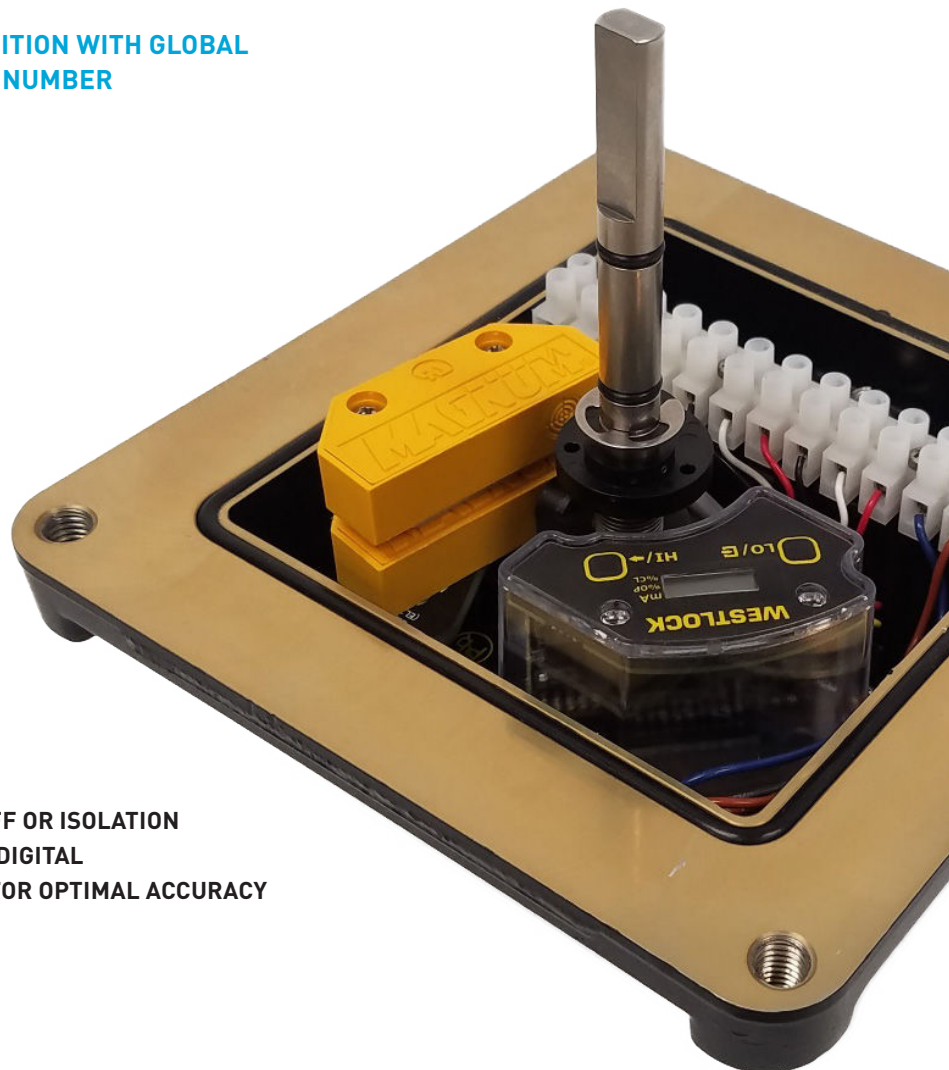
DIGITAL EPIC D200, A NON-CONTACT POSITION TRANSMITTER WITH HART® PROVIDES CONTINUOUS VALVE POSITION FEEDBACK WITH THE ABILITY TO INTEGRATE END OF TRAVEL SENSORS.

The Digital EPIC D200 combines the advantages of 4-20mA transmitter technology with proven switchbox reliability. Utilizing our proprietary non-contact sensor for continuous position measuring, the Digital EPIC D200 provides accurate, reliable feedback and control.

The Digital EPIC D200 position transmitter features a Local LCD & push-button along with HART® 7 protocol for seamless configuration, calibration and diagnostics.

Westlock's control and monitoring equipment can be fitted with a variety of switches and sensors to provide the optimum combination and ideal solution for each application.

AN EPIC PERFORMANCE IN EVERY CONDITION WITH GLOBAL APPROVALS ALL UNDER A SINGLE PART NUMBER



MONITOR ON/OFF OR ISOLATION
VALVES WITH A DIGITAL
TRANSMITTER FOR OPTIMAL ACCURACY

FEATURES & BENEFITS

EPIC TRANSMITTERS

- 

1

NON-CONTACT POSITION FEEDBACK DESIGN

Offers greater reliability and longer operational life, better plant availability and lower maintenance up to 70%*

UP TO 70% LESS MAINTENANCE COST
- 

2

EASE OF COMMISSIONING

With a simple button calibration and local digital display and lower installation costs up to 80%

UP TO 80% LESS INSTALLATION TIME
- 

3

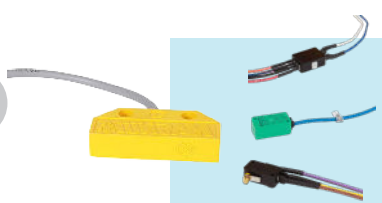
VERSATILE, GLOBALLY CERTIFIED**

For use in hazardous areas, the D200 transmitter is with available in a range of enclosure material options for global use**

IEC IECEx
C ETL US
Intertek
- 

4

EASE OF CONFIGURATION

Meets NAMUR NE 43 standard, calibration and diagnostics utilizing the latest communication technology, HART® 7 protocol with DD/FDT® DTM
- 

5

FLEXIBLE SWITCH OPTIONS

Flexibility to host a variety of switches and sensors to provide additional end-of-travel indication***

*vs. Use of gears and potentiometer

**ATEX/IEC/NEC/CEC: Explosion-proof/Flameproof, Intrinsically Safe & Non-Incendive

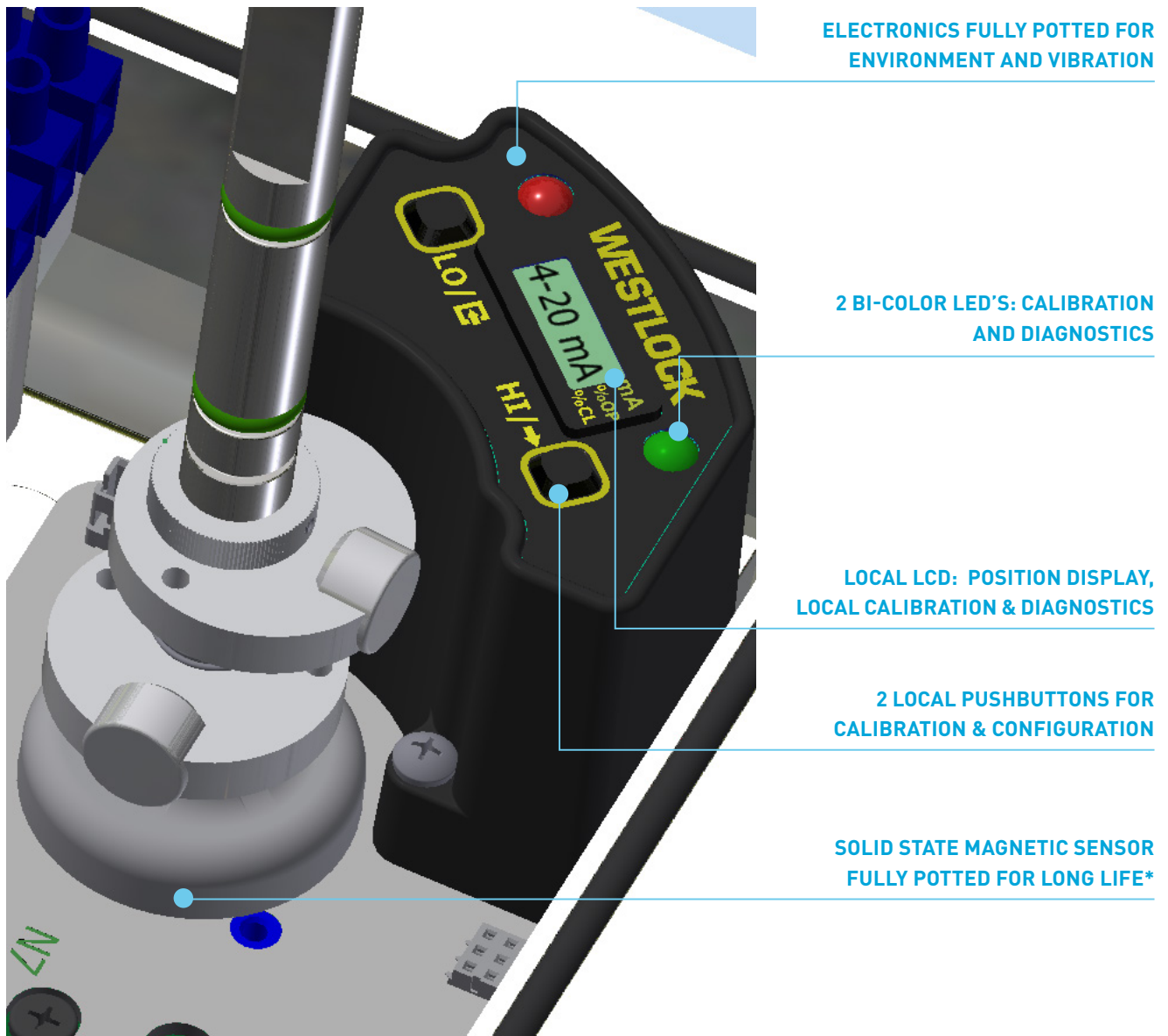
***See ordering guide for available switch options

STANDARD FEATURES:

- Improved linearity
- Reduced hysteresis (Position Accuracy)
- Improved repeatability
- Installation cost reduced by 80%
- Wider range of temperature & hazardous applications (vs. competition)
- Switch feedback options
- Increased Diagnostics

DESIGN FEATURES

ACCURATE, RELIABLE FEEDBACK AND CONTROL



*Analog potentiometer optional

APPLICATIONS

FOR USE IN HAZARDOUS AREAS

GENERAL APPLICATION

The Digital EPIC D200 digital feedback transmitter is suitable for applications requiring precision measurement and tight shutoff confirmation. It is best suited for triple offset valves, high performance butterfly valves and other torque-seated valves.

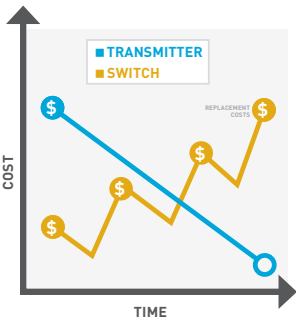
● Critical for Application ● Well suited

APPLICATIONS	TOV	●
	HPBV	●
	Other Valves	●

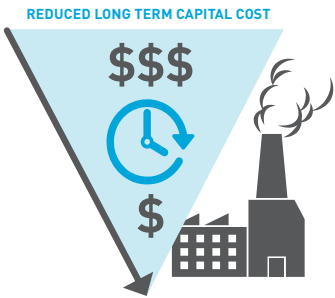


“ **TRANSMITTERS CAN BE APPLIED ANYWHERE LIMIT SWITCHES ARE CURRENTLY USED** MORE COST EFFECTIVE IF GREEN FIELD OR CONTROL SYSTEM UPGRADE ”

COST SAVINGS OVER TIME



UP TO
80% LESS
INSTALLATION
TIME



UP TO
70% LESS
MAINTENANCE
COST

TECHNICAL INFORMATION

AVAILABLE WITH BEACON, END OF TRAVEL SENSORS & A STANDARD NAMUR MOUNT

STAINLESS STEEL	 D251/D250	 D291/D290	 D271/D270
ALUMINUM	 D241/D240	 D281/D280	 D261/D260
RESIN	 D230		
	INTRINSICALLY SAFE/NON- INCENDIVE CL. I, DIV. 1 CL. I, DIV. 2	EXPLOSIONPROOF/ FLAMEPROOF ATEX/IECEX II 2 GD EX DB IIB+H2	EXPLOSIONPROOF/ FLAMEPROOF CL. I, DIV. 1 GRPS ABCD ATEX/IECEX II 2 GD EX DB IIC

- 4-20mA analog signal
- Hart 7 Digital Communication
- LCD 3.5 Digit display with diagnostics
- mA, percent open, percent closed
- Bi-Color LED's
- Visual position monitor
- Control monitor with solenoid
- Non-Contact TMR Feedback Sensor standard
- Through Shaft Potentiometer feedback optional
- Mounting orientation insensitive
- Push Button Calibration (CW, CCW)
- Rotation up to 30-210° or 30-330° TMR
- DD and DTM
- Remote Configuration via HART
- Global Intrinsically Safe Certification
- End of travel switches (optional)

APPROVALS

Model		Materials	Agency Approvals	
No Solenoid	Falcon V Solenoid		North America	ATEX/IECEX
	D230	Engineered Resin		
D241	D240	Low Copper Content Aluminum	CL. I, Div. 2, Grps ABCD; Nonincendive CL. II & III Div. 2, Grps EFG; Type 4, 4X	EX ia IIC T4 Ga Ta = -40°C to +80°C IP66/IP67 EX nA T4 Gc Ta = -40°C to +80°C IP66/IP67
D251	D250	316 Stainless Steel		
D261	D260	Low Copper Content Aluminum	CL. I, Grps ABCD; CL. II, Grps EFG, Type 4/4X; CL. I Div. 2, Grps ABCD/T4, Ta=60°C	II 2 GD Ex db IIC T*, Ex tb IIIC T*, IP66/67
D271	D270	316 Stainless Steel		
D281	D280	Low Copper Content Aluminum	CL. I, Div. 1 Grps CD T6 Ta=60°C; CL. II Div. 1, Grps EFG T6 Ta=60°C Type 4/4X; CL. I Div. 2, Grps ABCD T4, Ta=60°C	II 2 GD Ex db IIB+H2 T*, Ex tbIIIC T*, IP 66/67
D291	D290	316 Stainless Steel		



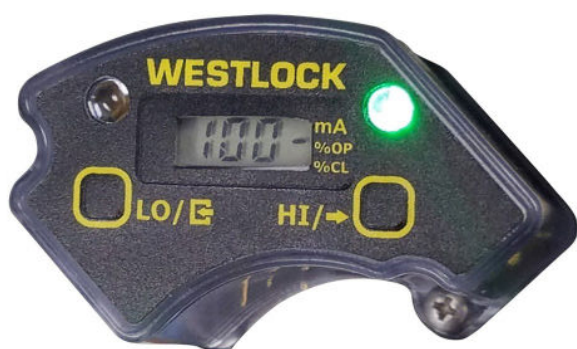
FLEXIBILITY IN FUNCTION

HART TRANSMITTER WITH SWITCH OPTIONS

SETUP, OPTIONS AND RATINGS

Setup, calibration and operation:

HART® DD or FDT® DTM can be used to configure, calibrate and perform advance diagnostics functions on the device.



Graphic LCD

Operational temperature range:	-40°C to +80°C
LCD operating temperature:	-20°C to +70°C (-4°F to +158°F)
Keypad for local configuration:	2-key ruggedized push-button membrane

Environmental

Storage	-60°C to +80°C (-76°F to +176°F)
Relative Humidity:	0 to 95% non-condensed
Vibration:	2g, 10 HZ to 1000 Hz
Shock:	18g, 3 axis, 100 bumps each axis
References:	IEC61514-2, IEC 60068-2-29/27, IEC 61298-3, IEC 60068-2-1/2

Communication

HART® Version	7
PV:	Actual position in % FS
SV:	Temperature
Polarity insensitive, two wire 4-20 mA, Namur NE43	
Normal operation:	adjustable 3.8 mA ≤ I ≤ 20.5 mA
Fixed calibration current:	12 mA
Loop current test function:	4 mA, 12 mA, 20 mA or custom
Minimum operating voltage:	9 VDC - 30 VDC
Maximum operating voltage:	35 VDC

SWITCHES AND SENSORS

Westlock's control and monitoring equipment can be fitted with a variety of switches and sensors to provide the optimum combination and ideal solution for each application. See ordering guide for available switch options.

AVAILABLE SWITCH OPTIONS

Magnum XT-90 Hermetically sealed proximity switch

Hermetically-sealed proximity switches with either pure tungsten or rhodium contacts for use with low power I/O's to provide longer contact life.



P+F NJ2-V3-N inductive proximity sensor Intrinsically safe

A solid state inductive proximity sensor which is available in NAMUR output. It is ideal for use in devices within potentially explosive atmosphere



SPDT Mechanical Switch V3

A V3 SPDT (single pole double throw) mechanical switch (Form C) with gold plate contacts.



DPDT Mechanical Switch

A Form CC DPDT (double pole double throw) mechanical switch with silver-plated contacts.



Note: DPDT mechanical switches are available in the explosionproof/ flameproof models. See ordering guide for complete set of options available.

ORDERING GUIDE

DIGITAL EPIC D200

Base Model					
D241	Intrinsically Safe/Non-Incendive - Aluminium encl., (2) conduits, 12 pt. terminal strip				
D251	Intrinsically Safe/Non-Incendive - 316 stainless steel encl., (2) conduits, 12 pt. terminal strip				
D261	Explosionproof / Flameproof - Screw-on cover, aluminium encl., (2) conduits, 10 pt. terminal strip				
D271	Explosionproof / Flameproof - Screw-on cover, 316 stainless steel encl., (2) conduits, 10 pt. terminal strip				
D281	Explosionproof / Flameproof - Bolted cover, aluminium encl., (2) conduits, 12 pt. terminal strip (exceptions noted in switch options)				
D291	Explosionproof / Flameproof - Bolted cover, 316 stainless steel encl., (2) conduits, 12 pt. terminal strip (exceptions noted in switch options)				
Continuous Rotary Position Sensing Option with Shaft Option					
NP	Potentiometer with NAMUR Output Shaft				
NT	Non-Contact Sensor with NAMUR Output Shaft				
SP	Potentiometer with Standard Output Shaft				
ST	Non-Contact Sensor with Standard Output Shaft				
End-of-Travel Feedback Switch Option					
0000	No end-of-travel switch confirmation required				
2M04	(2) DPDT mechanical switches, (3) conduits (D261/D271) or (4) conduits (D281/D291), 16 pt. terminal strip - D261/D271/D281/D291 only				
2M06	(2) SPDT Magnum XT-90 proximity switches* - D261/D271/D281/D291 only				
2M08	(2) P&F NJ2-V3-N inductive proximity sensors				
2M09	(2) SPDT mechanical switches with gold contacts (requires suitable barrier for Div. 2 installation)				
2M12	(2) SPDT Magnum XT-90 proximity switches with rhodium contacts*				
4M06	(4) SPDT Magnum XT-90 proximity switches*, (4) conduits, high cover, 16 pt. terminal strip - D281/D291 only				
4M08	(4) NJ2-V3-N inductive proximity sensors, (4) conduits, high cover, 16 pt. terminal strip - D281/D291 only				
4M09	(4) SPDT mechanical switches, (4) conduits, high cover, 16 pt. terminal strip (requires suitable barrier for Div. 2 installation) -D281/D291 only				
4M12	(4) SPDT Magnum XT-90 proximity switches*, (4) conduits, high cover, 16 pt. terminal strip - D281/D291 only				
Westlock Signature Beacon					
BY	Black Open/Yellow Closed				
RG	Green Open/Red Closed				
FE	Black Open/Yellow Closed French/English				
LP	Low-Profile Black Open/Yellow Closed				
B1	3-Way 90° B1 Flow Path				
B3	3-Way 90° B3 Flow Path				
B5	3-Way 90° B5 Flow Path				
B7	3-Way 90° B7 Flow Path				
B9	3-Way 90° B9 Flow Path				
FC	Flat Cover (no beacon)				
Approval Options					
NS	NEC/ATEX/IEC Intrinsically Safe (IS) and NEC Nonincendive (NI)- D231, D241, D251 only				
EX	NEC/ATEX/IEC Explosionproof/Flameproof and NEC Nonincendive (NI)- D261, D271, D281, D291 only				
Conduit Options					
2	M20 (Quantity based on switch options)				
3	3/4" NPT (Quantity based on switch options)				
D281	NP	4M02	RG	EX	2 = Model Number D281NP4M02RGEX2

*Magnum Proximity Switch Application Note:

For 24 VDC **service below 1 Watt**, M12 (Rhodium Magnum) is recommended

For 24 VDC **service above 1 Watt**, M06 (Tungsten Magnum) is recommended

ORDERING GUIDE

DIGITAL EPIC D200 WITH SOLENOID OPTION

Base Model									
D230	Intrinsically Safe/Non-Incendive - Resin encl., (2) conduits, clear cover, 12 pt. terminal strip, Falcon interface								
D240	Intrinsically Safe/Non-Incendive - Aluminum encl., (2) conduits, 12 pt. terminal strip, Falcon interface								
D250	Intrinsically Safe/Non-Incendive - 316 stainless steel encl., (2) conduits, 12 pt. terminal strip, Falcon interface								
D260	Explosionproof /Flameproof - Screw-on cover, aluminium encl., (2) conduits and (1) male fitting, 14 pt. terminal strip								
D270	Explosionproof / Flameproof - Screw-on cover, 316 stainless steel encl., (2) conduits and (1) male fitting, 14 pt. terminal strip								
D280	Explosionproof / Flameproof - Bolted cover, aluminium encl., (3) conduits**** and (1) male fitting, 16 pt. terminal strip (exceptions noted in switch options)								
D290	Explosionproof / Flameproof - Bolted cover, 316 stainless steel encl., (3) conduits**** and (1) male fitting, 16 pt. terminal strip (exceptions noted in switch options)								
Continuous Rotary Position Sensing Option with Shaft Option									
NP	Potentiometer with NAMUR Output Shaft								
NT	Non-Contact Sensor with NAMUR Output Shaft								
SP	Potentiometer with Standard Output Shaft								
ST	Magnetoresistive Non-Contact Sensor with Standard Output Shaft								
End-of-Travel Feedback Switch Option									
2M04	(2) DPDT mechanical switches - D280/D290 only								
2M06	(2) SPDT Magnum XT-90 proximity switches* - D260/D270/D280/D290 only								
2M08	(2) P&F NJ2-V3-N inductive proximity sensors								
2M09	(2) SPDT mechanical switches with gold contacts (require suitable barrier for Div. 2 installation)								
2M12	(2) SPDT Magnum XT-90 proximity switches, rhodium contacts								
4M06	(4) SPDT Magnum XT-90 proximity switches, high cover - D280/D290 only								
4M08	(4) NJ2-V3-N inductive proximity sensors, high cover - D280/D290 only								
4M09	(4) SPDT mechanical switches with gold contacts, high cover - D280/D290 only								
4M12	(4) SPDT Magnum XT-90 proximity switches, rhodium contacts, high cover - D280/D290 only								
Westlock Signature Beacon									
BY	Black Open/Yellow Closed								
RG	Green Open/Red Closed								
FE	Black Open/Yellow Closed French/English								
LP	Low-Profile Black Open/Yellow Closed								
B1	3-Way 90° B1 Flow Path								
B3	3-Way 90° B3 Flow Path								
B5	3-Way 90° B5 Flow Path								
B7	3-Way 90° B7 Flow Path								
B9	3-Way 90° B9 Flow Path								
FC	Flat Cover (no beacon)								
Coil Voltage/Type									
I	24 VDC Dual-certified IS/NI (optional for D230, D240, D250 only); entity Vmax=35V, Imax=300mA, Pmax=2.98W, Li=0mH, Ci=0µF								
P	24 VDC Dual-certified IS/NI (standard for D230, D240, D250 only); entity Vmax=28V, Imax=115mA, Pmax=1.6W, Li=0mH, Ci=0µF								
T	24 VDC Explosionproof, 1.8W, Potted Hub (D260, D270, D280, D290 only)								
Z	120 VAC Explosionproof, 1.8W, Potted Hub (D260, D270, D280, D290 only)								
Falcon Valve Body									
2V3	1.4Cv, 3-Way, Brass				2V7	1.4Cv, 4-Way, Brass			
3V3	1.4Cv, 3-Way, Aluminium				3V7	1.4Cv, 4-Way, Aluminium			
5V3	1.4Cv, 3-Way, 316 SS				5V7	1.4Cv, 4-Way, 316 SS			
3V4	4.3Cv, 3-Way, Aluminium***,**				3V8	4.3Cv, 4-Way, Aluminium **			
540	3.5Cv, 3-Way, 316SS**				580	3.5Cv, 4-Way, 316SS**			
2VY	1.4Cv, Dual Coil, Brass**				3VY	1.4Cv, Dual Coil, Aluminium**			
5VY	1.4Cv, Dual Coil, 316 SS**				3VZ	4.3Cv, Dual Coil, Aluminium**			
3B3	1.4Cv, 3-Way, Alum., ¼ BSP				3B7	1.4Cv, 4-Way, Alum., ¼ BSP			
5B3	1.4Cv, 3-Way, 316 SS, ¼ BSP				5B7	1.4Cv, 4-Way, 316 SS, ¼ BSP			
3B4	4.3Cv, 3-Way, Alum., ½ BSP***,**				3B8	4.3Cv, 4-Way, Alum., ½ BSP**			
Valve Option									
0	None								
X	Low Temp. Seals (-40°C service)- comes with low-temp. coil								
M	Momentary Override								
L	Locking Override								
E	External Pilot - required for inlet pressure below 45 psi								
Approval Option									
NS	NEC/ATEX/IEC Intrinsically Safe/NEC Nonincendive- ratings as noted above; D230, D240, D250 only								
EX	NEC/ATEX/IEC Explosionprof/Flameproof- ratings as noted above; D260, D270, D280, D290 only								
Conduit Options									
2	M20 (Quantity based on options)								
3	3/4" NPT (Quantity based on options)****								
3	= Model Number D250NT2M12BYI5V30NS3								

D250	NT	2M12	BY	I	5V3	0	NS	3	
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*Magnum Proximity Switch Application Note:

For 24 V DC **service below 1 Watt**, M12 (Rhodium Magnum) is recommended

For 24 V DC **service above 1 Watt**, M06 (Tungsten Magnum) is recommended

Ordering notes:

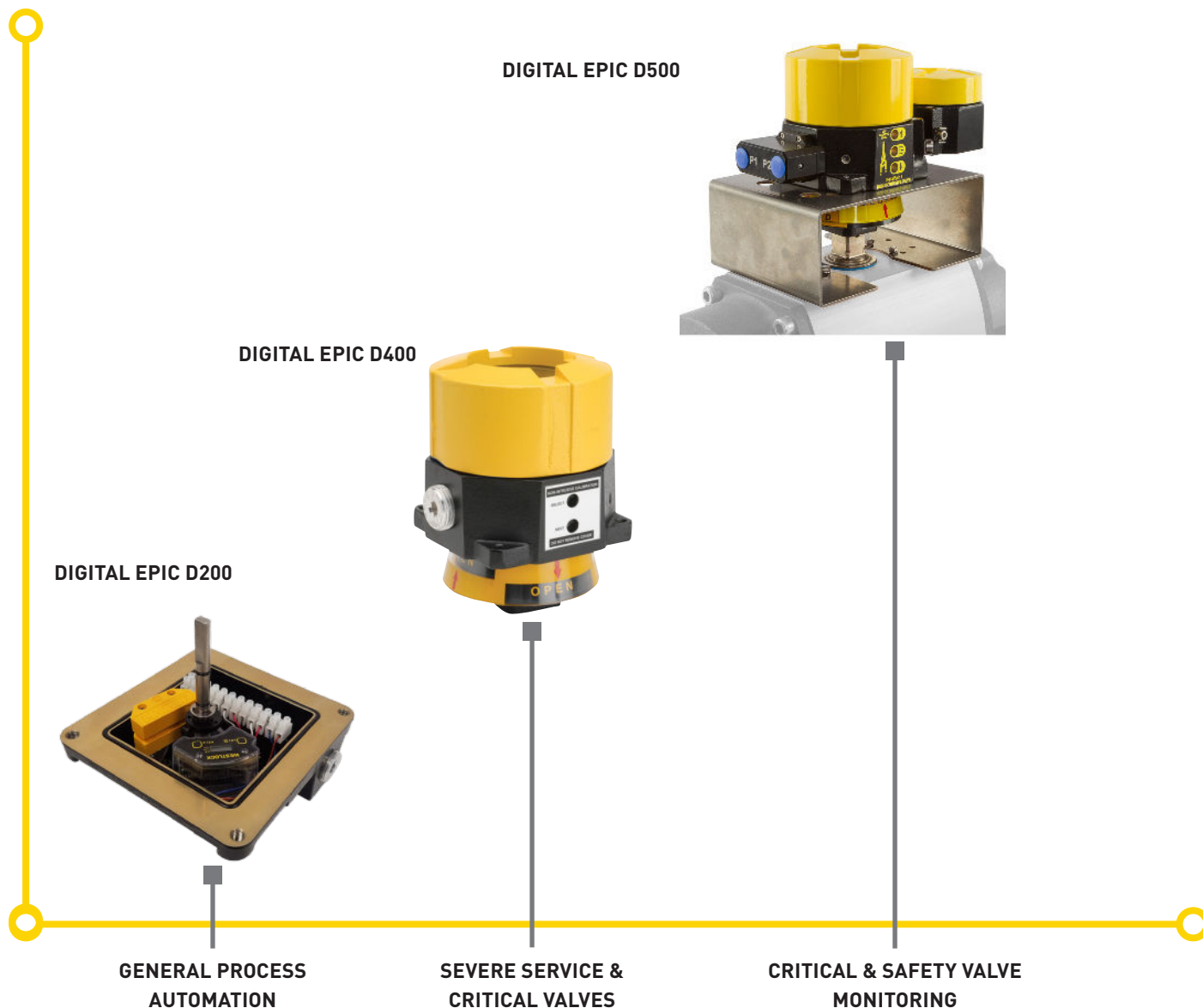
** these valve bodies are only available for series D230, D240 and D250; consult Sales for availability of options M, L, E on 540 & 580 Falcon Valve Bodies.

*** 3V4 and 3B4 valve bodies are 3V8 and 3B8 valve bodies respectively, with ports 2 & 3 plugged at the factory for 3-way functionality.

**** 3 open conduits are (2) ¾ NPT and (1) ½ NPT for D280/D290

DIGITAL EPIC FAMILY

WESTLOCK CONTROLS OFFERS A COMPLETE LINE OF POSITION TRANSMITTERS
FOR EVERY AREA CLASSIFICATION AND APPLICATION



CRANE[®]

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