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## D400 DIGITAL POSITIONER

The D400 is a microprocessor based, "intelligent" instrument that can be mounted to rotary or linear pneumatic actuators for accurate positioner control. This unit, while sophisticated in its accuracy and performance, is simple to mount, calibrate, and with good filtered air and proper maintenance, can provide very accurate and trouble-free service for many years. Available with HART, FOUNDATION Fieldbus, or Prof bus communication, the D400 range of applications and communications meets the latest industry standards. The "efficiencies" of the D400 are not only in its microprocessor based technology and accuracy, but also in the pneumatic air handling where air consumption is kept to a very minimum.



### Features and Benefits:

- Microprocessor based valve positioner
- User friendly, menu driven programming with LCD Display-multilingual
- Local push button configuration - no handheld device or PC necessary
- Low air consumption and proven dependable mechanical design
- Modular design - available with position feedback, micro switches and "Fail Freeze" options - rotary or linear mounting
- Aluminum Housing - Nema 4X IP 65 Enclosure - Standard - Electrostatically dipped varnish with stove-hardened epoxy resin.
- Unique adaptive control feature offers the ability to update valve/actuator package for maximum control without upsetting the process.
- ATEX-FM-CSA-IEC-Ex approvals available

### Ordering Codes:

When requesting a quote the items that can change pricing are: Positioner version, Action, Communication, Options-please have that information available for quick and accurate quotation.

Digital Positioner		Action		Connections		Spindle		Communications		Options	
Base Model	D400	Single	S	NPT	N	Namur	D1	No Communication	No	Gauge Block w/ Gauges	GB
Intrinsically Safe - non incendive	D400 IS	Double	D	Metric	G	1/2" Square	D2	Hart	H	Micro Switches *	S2
						3/8" Square	D3	Foundation Fieldbus	FB	4/20 - Transmitter *	4/20
Explosion Proof	D400 EX					Round-Linear	D4	Prof bus	PA	Filter Regulator - Coalescing	FRC
						Double "D"	D5			Filter Coalescing	FC
						Linear Standard	Dx			Fail Freeze	FF
										ATEX	A
										ATEX/Gost	G
										PROX - NO	
										PROX - NC	

**Example: D400-S-N-D1-H-4/20**

\*4/20 transmitter and switches are not available on FB and PA Bus units.

### D400 Approvals:

The D400 digital positioner has approvals for the below agencies. The details and exact listings associated with these approvals are quite extensive. We have a supplemental document, entitled D400 Approval details. We can e-mail or fax you a copy.

All D400 unit's enclosure are Nema 4X IP 65, electrostatically dipped varnish with stove-hardened epoxy resin.

<b>D400 IS</b>	Intrinsically safe	<b>D400 ES</b>	Explosion Proof
FM	J.I 30005029 (3610, 3611)	FM	HLC 8/02 3010829
CSA	Certificate 1052414	Intrinsically safe	4X, T5 max 82°C
Non-incendive	Enclosure 4X, max 65°C	Non-incendive	4X, T4 max 85°C
ATEX/ GOST Russia		Dust Ignition proof	4X, T5 max 82°C
GOST Ukraine	II 2G EEx ib IIC T6	CSA	Certificate 1393820
ATEX	II 2G EEx ib IIC T6	ATEX/ GOST Russia	
	II 2G EEx ia IIC T6	GOST Ukraine	II 2G EEx d II C T4/T5/T6
	II 3G EEx n A II T6	ATEX	II 2G EEx ib IIC T6
	II 2 D IP 6X T 46°C	IECEX	EXIB IIC T6
IECEX	Ex ib IIC T6		

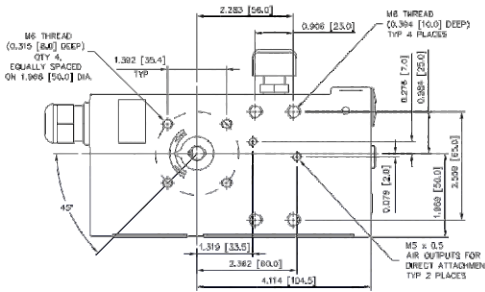
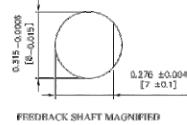
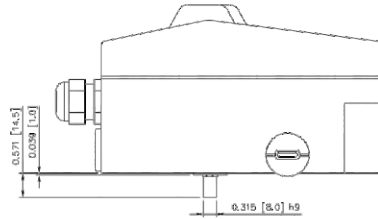
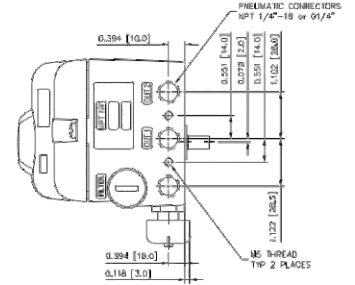
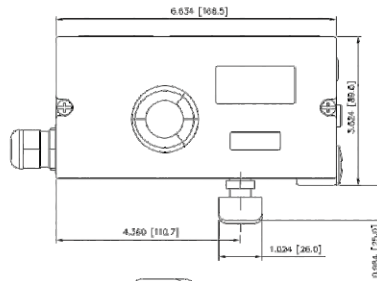
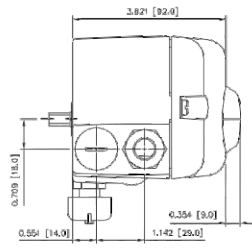


Rotation:	25 - 120 degrees	Stroke:	0.4 to 4" (longer strokes - POA)
Max Air Supply:	90 psi	Connections:	1/4" NPT Air 1/2" NPT Cable
Air Delivery:	6.0 SCFM @ 90 psi	Air Consumption:	≤ 0.015 SCFM
Ambient Temperature:	-40 to 185°F		
Characteristic Curves:	Linear, equal%, 1:25, 1:50, 25:1, 50:1 or user configurable with 20 reference points		
Characteristic Deviation:	≤ 0.5%		
Deadband:	0.1%, adjustable to 10%		
Resolution (A/D conversion):	16,000 steps		
Sample Rate:	20 msec		
Seismic Vibration:	meets requirements to DIN IEC 68-3-3 Class III for strong and strongest earthquakes		
Mechanical Vibration:	≤ 1% up to 10 g and 10...80 Hz		
Mounting Orientation:	≤ 0.5% at 90° change		
EMI:	complies with EMC directive 89/336/EEC as of May 1989 (increased EMI shielding to EN 50082-2 PR as of 11/93)		

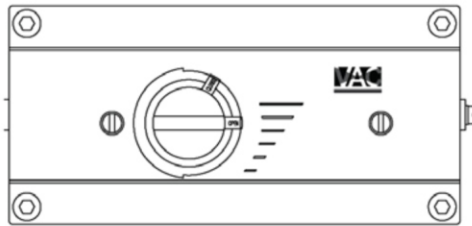


**Air supply must be free of oil, water and dust to DIN/ISO 8573-1 pollution and oil contents according to Class 3 dew point 10 K below operating temperatures.**

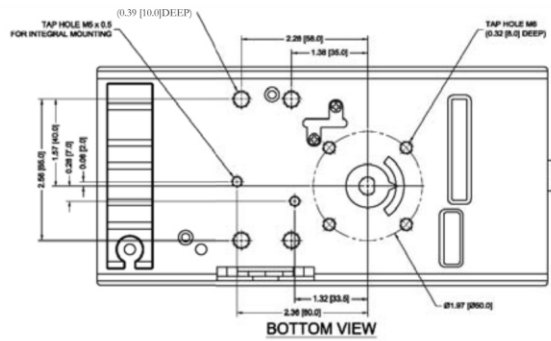
# D400 Dimensional Drawings:



**D400, D400 IS**



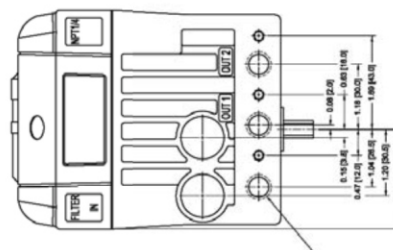
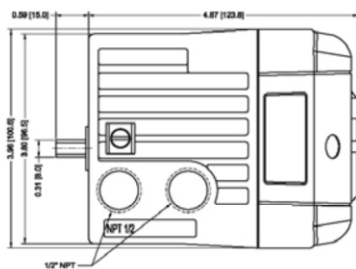
**TOP VIEW**



**BOTTOM VIEW**



**SHAFT DETAIL  
SCALE 4:1**



**D400 EX**



# V200 SERIES POSITIONERS

## Innovative Positioners

### IN A SINGLE COMPACT AND RUGGED HOUSING

The V200 incorporates the flexibility of converting from a pneumatic unit to several versions of an electropneumatic unit, and the ability to add position feedback, in a matter of minutes, all in **one compact and rugged housing**. Maximum flexibility and versatility!!

With a rugged Nema 4X, IP 66 die cast aluminum housing, versatile polyester coating, optional Tuftram or Nickel coatings, low -58F or high +325F temp options, and standard features like external zero and span adjustment, this unit expands the VAC offering to cover this **“all in one”** market for positioners. Add to this the excellent performance yet simple design, and the combination equals a real value.

A product that offers it “all” and in **one compact, simple, housing!!**

## V200 Benefits

- Compact Design
- Quality Components = rugged and accurate performance
- External zero and span (complete calibration) adjustment without removing cover
- Easily maintain all key components
- Clear, visible indicator with arrow indicator standard - optional beacon
- Field changeable to any I/P option

## Technical Specifications:

Positioners:	V200P	V200E & -IS	V200-EX	V200-FF
Input Signal	3-15 PSI	4-20 mA	4-20 mA	4-20 mA
Supply Pressure	20-145 PSI	20-145 PSI	20-145 PSI	20-100 PSI
Linearity Pressure	<0.7% f.s.	<1.0% f.s.	<0.8% f.s.	<1.2% f.s.
Hysteresis	<0.4% f.s.	<0.6% f.s.	<0.5% f.s.	<0.9% f.s.
Repeatability	<0.3% f.s.	<0.5% f.s.	<0.4% f.s.	<0.8% f.s.
Weight	3.2 lbs	3.8 lbs	5.3 lbs	5.4 lbs
Temperature Range	-40 to 185°F	-40 to 185°F	-40 to 185°F	-20 to 158°F
Low Temp	-40 to 85°C	-40 to 85°C	-40 to 85°C	-20 to 70°C
Extra High Temp (EHT)	-58 to 185°F	-50 to 85°C		
	-40 to 325°F	-40 to 162°C		

Spool/Pilot Valves	Standard/Low Beed	V200-EX	Supper High Gain/High Flow
<b>Air Delivery</b>			
@87 PSI (600 kPa)	28.3 scfm	31.5 scfm	50 scfm
<b>Bleed Rate</b>			
@87 PSI (600 kPa)	<0.2 scfm	0.83 scfm	1.3 scfm
Pressure Gain	240:1	1100:1	1100:1

Air connections 1/4" NPT  
 Gauges 1/8" NPT  
 Cable Entry 1/2" NPT  
 Ingress & Corrosion Protection NEMA 4X & IP66  
 Standard Coating Polyester

**Feedback (not rated for EX or IS)** Enclosure Nema 4X/IP 66  
**General Purpose:**  
 Plug-in components directly into V200 series positioner housing  
 Can combine switches and 4/20 feedback  
 Conduit connections 1/2" NPT  
 Operating temp -40 to 185 °F (-40 to +85 °C)

**Mechanical Switches:**

2-Type: SPDT, V3

Max Load:

Resistive	(Inductive)	Voltage
15 A	(3) A	125/250 VAC
0.25 A	(0.1) A	220 VDC
0.5 A	(0.2) A	110 VDC
8 A	(7) A	24 VDC

**Reed Switches**

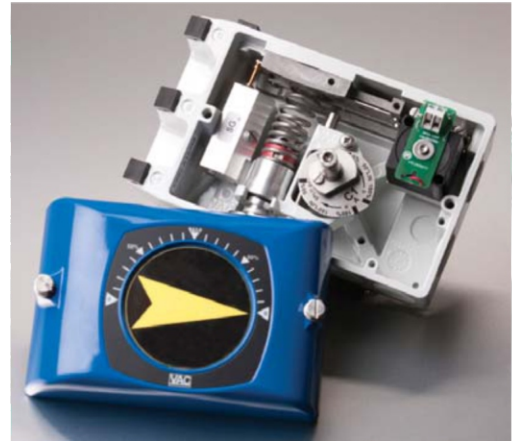
2-Type: SPDT-CO, Form C  
 Contact rating: max 3W  
 Voltage: Switching Breakdown max 100 VDC  
 Current: min 200 VDC  
 Switching max 0.20 A  
 Carry max 1.3 A  
 Contact resistance: 0.2 ohms  
 Contact capacitance: 0.3 pF

**4/20 mA Position Feedback:**

Voltage supply: 7-30 VDC  
 Output: 4-20 mA, 2 wire  
 Loop Impedance: max 850 ohms @ 24 VDC  
 Linearity error: < 1.2%  
 Hysteresis: <0.2%  
 Temp. Sensitivity: <0.1% 10 °F (5.5 °C)

**4/20 mA Position Feedback:**

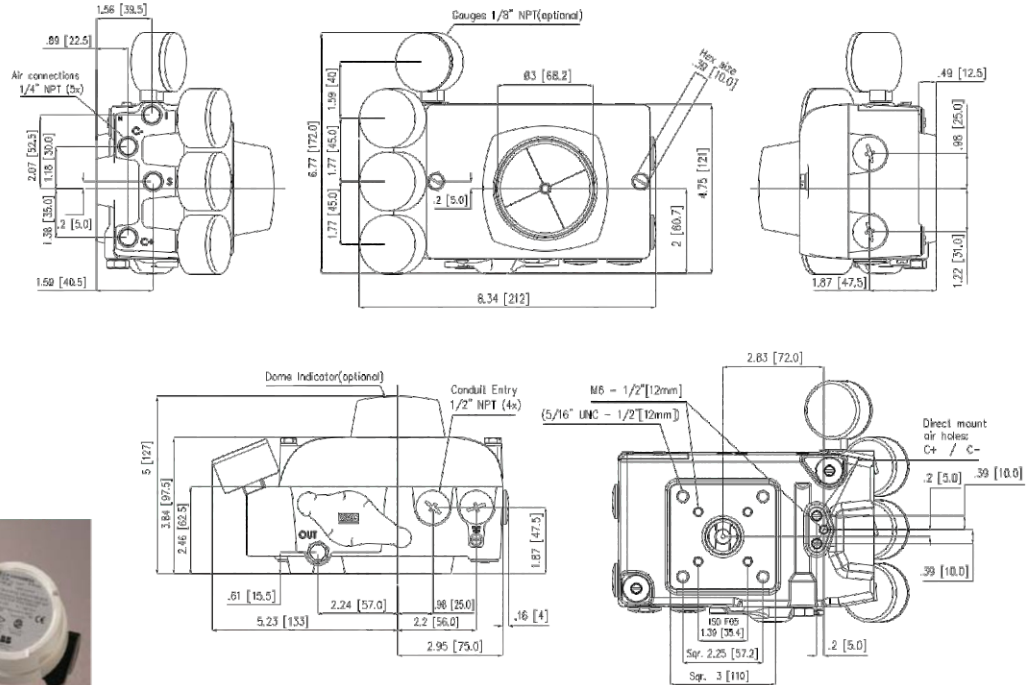
Potentiometer-Namur Sensors - Third party stackable EX mounting kits



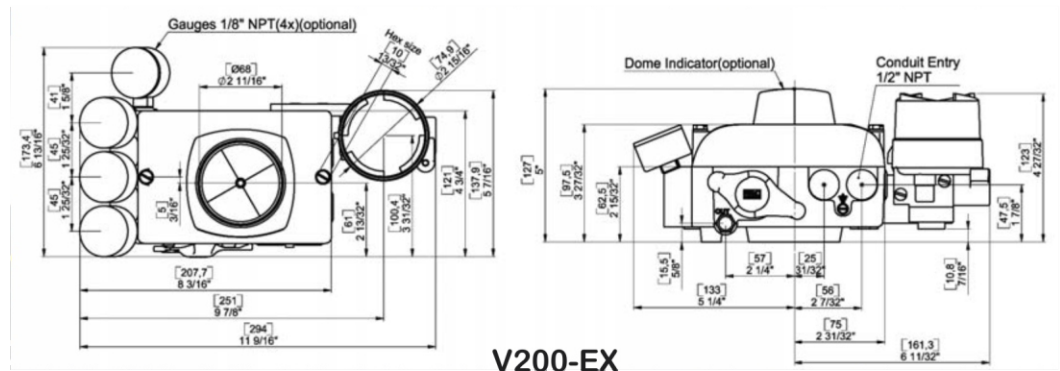
Base Model		Spindle	Front Cover	Indicator		Cam		Option	
Pneumatic	V200 P	NAMUR (standard) Contact Flo-Tite for additional options	D1	90° rotation	90	Arrow	A	90° (standard) Contact Flo-Tite for additional options	Contact Flo-Tite for additional options
Electropneumatic	V200 E		60° rotation	60	Standard Beacon/Raised (Black/Yellow)	B			
Explosion Proof	V200 EX		45° rotation	45	Optional Beacon/Raised (Red/Green)	BRG			
Intrinsically Safe	V200 IS		30° rotation	30					
Fail Freeze	V200 FF		Blank scale	00					

Example: V200E-D1-90-B-C1, Electropneumatic with NAMUR spindle, 90 degree cover, raised indicator, 90 degree cam

## V200 Dimensional Drawings:



V200P, E, -IS, TUF, NIC, EHT, LT



V200-EX

### Approvals - Positioners only

Ratings for hazardous locations:

#### V200-EX

ATEX-explosion protection  
1487X, intrinsically safe EEx ia IIC T4/T5/T6  
E121X, flameproof EEx d IIC T4/T5/T6

#### FM and CSA

Explosion Proof CL I, II Div 1 Grp B-G



#### Intrinsically Safe

FM  
CSA

CL I-II-III Div 1 Grp A-G  
CL II Div 1&2 Grp E-G  
CL III

#### Non Incendive

FM

CL I Div 2 Grp A-C

#### Temperature Class

Short circuit  
Current-max  
T6 50 mA  
T5 60 mA  
T4 60 mA

Ambient Temp  
max  
140 °F (60 °C)  
158 °F (70 °C)  
185 °F (85 °C)

V200-IS (Intrinsically Safe)  
ATEX  
EEx ia IIC T4/T6

FM  
CL I Div 1 Grp A B C D  
CSA  
Ex ia CL 1 Grp A B C D  
Ex ia CL 1 Div 2 Grp A B C D