

# Data Sheet – Series 161H and 162H Analog–Output Miniature Position Transducers with High Cable Tension

## Analog–Output Miniature Position Transducers

### Key Features

1. High Cable Tension for Enhanced Frequency Response
2. 42.5–Inch (1080–mm) Maximum Travel (Series 162)
3. Analog Signal Using Precision Conductive Plastic or Hybrid Potentiometers
4. AccuTrak™ Threaded Drum for Enhanced Repeatability
5. Bearing–Mounted Rotating Components
6. Optional Flexible Mounting Bases
7. DirectConnect™ Sensor–To–Drum Technology = Zero Backlash, No Torsion Springs or Clutches



### Potentiometer Specifications

	1–turn	3–turn	5–turn
Potentiometer Type	1–turn, precision, conductive plastic	3–turn, precision, hybrid	5–turn, precision, hybrid
Resistance: Value, Tolerance	5K ohms, ±20%	5K ohms, ±5%	5K ohms, ±5%
Travel: Electrical, Mechanical	340°, 360°	1080°, 1080° +10° –0°	1800°, 1800° +10° –0°
Mechanical Life	10 million shaft revolutions min	5 million shaft revolutions min	5 million shaft revolutions min
Output Signal	analog signal from 0 to supply voltage (voltage divider circuit)		
Power Rating	1.0 W at 158° F (70° C)	1.5 W at 158° F (70° C)	2.0 W at 158° F (70° C)
Supply Current	12 mA max		
Supply Voltage	35 VDC max (using voltage divider circuit)		
Independent Linearity Error	±1.0% max per VRCL–P–100A	±0.5% max per VRCL–P–100A	±0.35% max per VRCL–P–100A
Output Smoothness	< 0.1% max	0.5% max	0.35% max
Insulation Resistance	100 Mohms at 1000 VDC min	1000 Mohms at 500 VDC min	1000 Mohms at 500 VDC min
Dielectric Strength	1000 VDC min	1000 VDC min	1000 VDC min
Resolution	infinite signal	infinite signal	infinite signal
Operating Temperature	–40° to 257° F (–40° to 125° C)	–67° to 257° F (–55° to 125° C)	–67° to 257° F (–55° to 125° C)
Electrical Connection	3–terminal (1, 2, 3)	3–terminal (CW, CCW, S)	3–terminal (CW, CCW, S)
Shock	50 g for 11 ms	100 g for 6 ms	100 g for 6 ms
Vibration	10 to 2000 Hz at 15 g	10 to 2000 Hz at 15 g	10 to 2000 Hz at 15 g
Temperature Coefficient	±400 ppm/°C max	±0.007%/°C max	±0.007%/°C max

### Other Specifications

Case/Drum Materials	precision–machined anodized 2024 aluminum
Displacement Cable	0.027–inch (0.69–mm) dia., 7–by–7 stranded stainless steel, 90–lb (400–N) min breaking strength
Displacement Cable Hardware	1 each of 300196 loop sleeve, 300292 copper sleeve, 160032 copper sleeve, 300688 ball–end plug, 300495 pull ring, and 301003 nickel swivel; all items provided uncrimped
Electrical Connections	Three solder terminals. Electrical cable and connector options available.
Nominal Mass	Series 161H 7 oz                      198 g Series 162H 10 oz                    284 g
Environmental Protection	NEMA 4 / IP 56, DO–160D (ED–14D) Env. Cat. E1E1ABXHRFDFSAXXXXXXXXXXX (with optional sensor cover)

### Model Numbers and Ordering Codes

Model	Range		Nominal Displacement Cable Tension Range (Full Extraction to Full Retraction)			
	inches	mm	Opt A: –090 spring		Opt B: –100 spring	
			oz.	N	oz.	N
161–0361H	4.50	114	<b>65 to 95</b>	<b>18 to 26</b>	120 to 150	33 to 42
161–0461H	5.75	146	<b>65 to 95</b>	<b>18 to 26</b>	120 to 150	33 to 42
161–1143H	14.25	362	<b>55 to 150</b>	<b>15 to 42</b>	75 to 300	21 to 83
161–1283H	16.00	406	<b>55 to 85</b>	<b>15 to 24</b>	115 to 145	32 to 40
161–1443H	18.00	457	<b>45 to 130</b>	<b>13 to 39</b>	70 to 130	19 to 36
161–1915H	23.88	606	<b>25 to 170</b>	<b>7 to 47</b>	50 to 245	14 to 68
161–2145H	26.75	679	<b>40 to 90</b>	<b>11 to 25</b>	60 to 205	17 to 57
161–2405H	30.00	762	<b>30 to 95</b>	<b>8 to 26</b>	50 to 260	14 to 72
162–0521H	6.50	165	<b>55 to 85</b>	<b>15 to 24</b>	105 to 135	29 to 38
162–0651H	8.13	206	<b>75 to 120</b>	<b>21 to 33</b>	105 to 135	29 to 38
162–2735H	34.13	867	<b>65 to 95</b>	<b>18 to 26</b>	115 to 145	32 to 40
162–2945H	36.75	933	<b>65 to 95</b>	<b>18 to 26</b>	115 to 145	32 to 40
162–3205H	40.00	1016	<b>25 to 95</b>	<b>7 to 26</b>	35 to 175	10 to 49
162–3405H	42.50	1080	<b>10 to 105</b>	<b>3 to 29</b>	30 to 145	8 to 40

**Bolded** entries are standard cable tension.

Order Codes

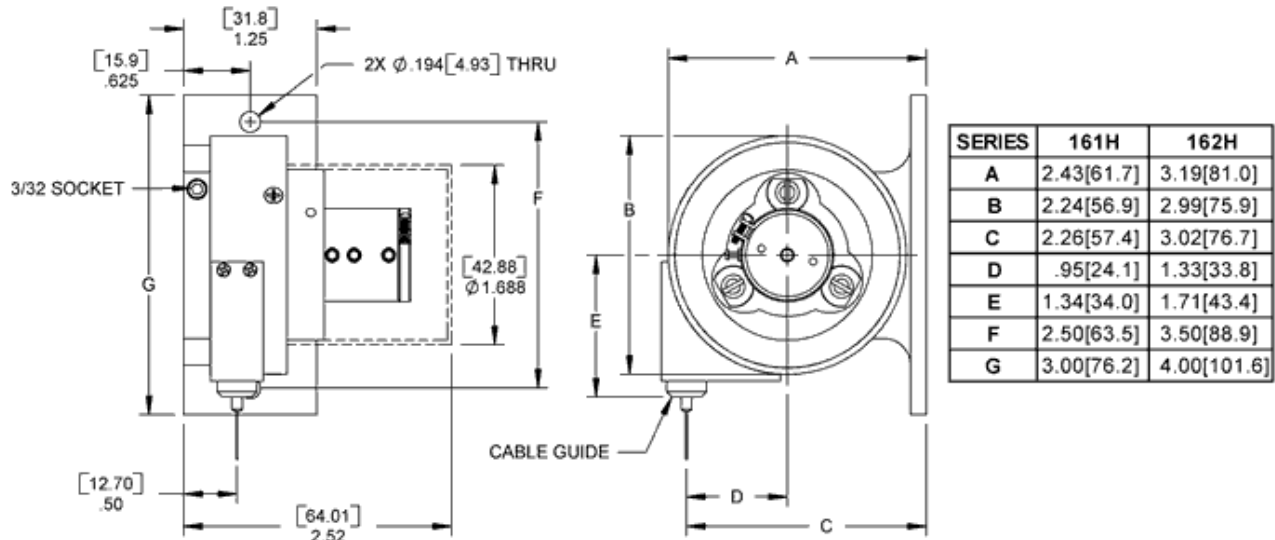
16 \_ \_ \_ \_ H-abc (example: 161–0361H–BSB (cable tension: –100, sensor cover, and base: big foot))

Series 161H	a	A	cable tension: –090
		B	cable tension: –100
	b	N	no sensor cover ( 61)
		S	sensor cover ( 61); pn 160060
	c	D	base: mounting disk ( 6 ); pn 160040–1
		S	base: standard ( 61); pn 160015–3
U		base: universal ( 61); pn 160030–3	
B		base: big foot ( 60/ 61); pn 160015–13	
Series 162H	a	A	cable tension: –090
		B	cable tension: –100
	b	N	no sensor cover ( 62)
		S	sensor cover ( 62); pn 160060
	c	D	base: mounting disk ( 6 ); pn 160040–1
		S	base: standard ( 62); pn 160015–5
U		base: universal ( 62); pn 160030–5	
B		base: big foot ( 62); pn 160015–15	

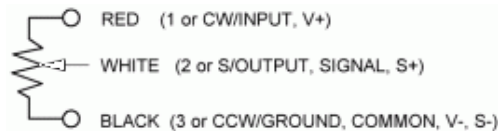
Displacement Cable Maximum Acceleration by Model Number

Model	Max Cable Acceleration (g)	
	Opt A: –090 spring	Opt B: –100 spring
161–0361H	100+	100+
161–0461H	100+	100+
161–1143H	337	100+
161–1283H	346	100+
161–1443H	215	100+
161–1915H	256	512
161–2145H	401	1354
161–2405H	100+	397
162–0521H	100+	100+
162–0651H	83	109
162–2735H	100+	100+
162–2945H	100+	100+
162–3205H	157	184
162–3405H	100+	100+

Drawing



Shown with big foot base (pn 160015–13).



For crimping of hardware to displacement cable, consider the [160001–01 installation kit](#).

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