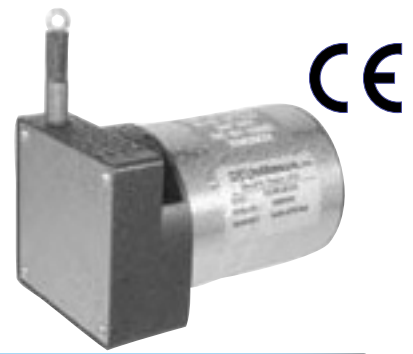


HX-VP SERIES

VELOCITY-POSITION OUTPUT

The UniMeasure HX-VP series combines a self-generating tachometer and a precision potentiometer to give an output of both velocity and analog position. Standard position output is ratiometric voltage. Optionally available position outputs include ratiometric voltage from a bridge circuit, 4 to 20 mA, 0 to 10 VDC, and ± 10 VDC. See HX-PB, HX-P420, HX-P510 and HX-P1010 data sheets for electrical specifications.



SPECIFICATIONS

General

Available Measurement Ranges..... See Supplemental Data¹, Table 12
 Connector..... MS3102A-14S-6P
 Mating Connector (included)..... MS3106E-14S-6S

Performance

Positional Linearity
 2", 3", 4" & 5" Ranges..... $\pm 0.25\%$ Full Scale
 10", 15", 20" & 25" Ranges..... $\pm 0.15\%$ Full Scale
 All other ranges..... $\pm 0.10\%$ Full Scale
 Repeatability..... $\pm 0.015\%$ Full Scale
 Positional Resolution..... Essentially Infinite

Electrical (Position)

Input Impedance ("A" Circuit)..... $1000\Omega \pm 10\%$
 Output Impedance ("A" Circuit)..... 0 to 1000Ω
 Excitation Voltage..... 25 Volts Max. AC or DC
 Nominal Output Voltage..... $\frac{990}{\text{Range in Inches}}$ mV/V/inch
 (Use total measurement range in calculation)
 $\frac{990}{\text{Range in mm}}$ mV/V/mm

Electrical (Velocity)

Output..... See Table 11
 Linearity..... $\pm 0.10\%$ F.S. within 25 Volt Output
 Ripple..... 3% Max.
 Output Impedance..... 350Ω

Environmental

Thermal Coeff't of potentiometer... ± 100 PPM/ $^{\circ}\text{C}$ max.
 Operating temperature..... -40°C to $+95^{\circ}\text{C}$
 Operating humidity..... 100%
 Vibration..... 15 G's 0.1 ms max.
 Shock..... 50 G's 0.1 ms max.
 Ingress Protection
 Exclusive of Wire Rope Area..... NEMA 4 (IP-65)
 Optional Ingress Protection..... NEMA 6 (IP-68)8

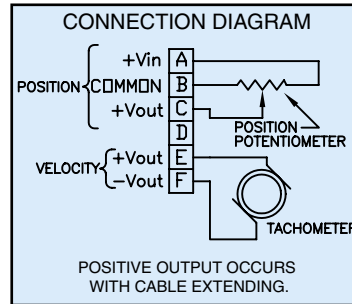


TABLE 11—VELOCITY OUTPUT

MEASUREMENT RANGE DESIGNATOR	VELOCITY OUTPUT	
	(mV per in/sec)	(mV per cm/sec)
2, 10	200	78
3, 15, 30	136	53
4, 20, 40	103	40
5, 25, 50	82	32
6, 60	69	27
80	52	20
100	180	71
ALL RANGES GREATER THAN 100*	180	71

FOOTNOTES TO SPECIFICATIONS

1. Supplemental Data section located at end of HX Series pages.

Electrical Output (Position)

A..... Voltage Divider Circuit
 B..... Bridge Circuit
 420..... 4 to 20 mA
 510..... 0 to 10 VDC
 1010.. ± 10 VDC

Range

Select measurement range from Supplemental Data, Table 12, Insert corresponding Measurement Range Designator

Wire Rope

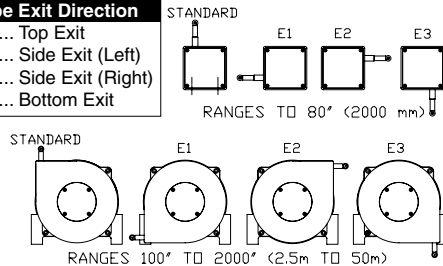
*..... Stainless Steel (See Supplemental Data, Table 12)
 NJC..... $\varnothing.018$ (0,45 mm) Nylon Jacketed Stainless Steel
 Ranges to 80" (2m) only.
 NJC037..... $\varnothing.037$ (0,94 mm) Nylon Jacketed Stainless Steel
 Ranges 100" (2.5m) to 500" (12.7m) only.

Wire Rope Tension

*..... Standard

Wire Rope Exit Direction

*..... Top Exit
 E1..... Side Exit (Left)
 E2..... Side Exit (Right)
 E3..... Bottom Exit



Model Number Configuration

HX-VP- - - - - -

Electrical Interface

*..... Mating Connector Included (See note 1 below)
 L3M..... 3 m (10') electrical cable (See note 2 below)
 L4M..... 4 m (13.5') electrical cable (See note 2 below)
 L5M..... 5 m (16.5') electrical cable (See note 2 below)
 L6M..... 6 m (20') electrical cable (See note 2 below)
 L7M..... 7 m (23') electrical cable (See note 2 below)
 1. Applies to NEMA 4 Housing option only. Does not apply to N6 or SS Housing options.
 2. Select one of options L3M through L7M when electrical cable is required with mating connector when Housing option NEMA 4 is also selected. Select one of options L3M through L7M when Housing option N6 or SS is selected. Connector is **not** available with Housing option N6 or SS.

Electrical Output Polarity

*..... Standard (increasing output as wire rope is extended)
 R..... Reversed (decreasing output as wire rope is extended)

Potentiometer Value

(Applies to VPA model only)
 *..... 1K ohm
 P2K..... 2K ohm
 P5K..... 5K ohm
 P10K..... 10K ohm
 (VP1010 optional inputs only)
 SI..... 4.9 to 30 VDC Single Input

Housing



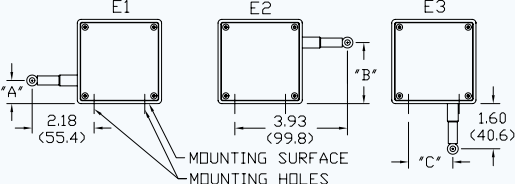
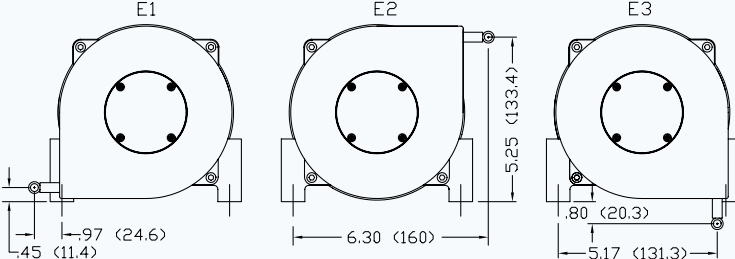
*..... NEMA 4 (IP-65) Aluminum
 N6..... NEMA 6 (IP-68) Aluminum
 SS..... NEMA 6 (IP-68) Corrosion Resistant Stainless Steel and Non-Metallic Construction

NOTE

- *—Asterisk items are standard configuration. No option designator is required.
- Shaded options available at additional cost.
- See Supplemental Data for options.

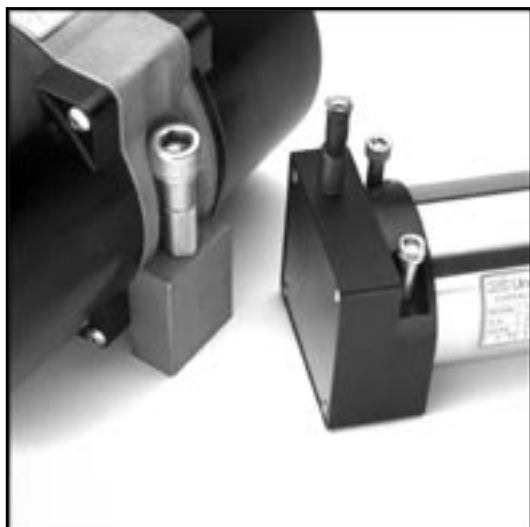
Example
HX-VP420-50-NJC-E1

ADDITIONAL OPTIONS

OPTION	OPTION DESIGNATOR	DESCRIPTION																												
Nylon jacketed wire rope (Ranges to 80" only)	NJC	Replaces standard stainless steel wire rope with Ø.018 nylon jacketed wire rope. This option increases wire rope life dramatically but may increase non-linearity by as much as ±.05% of full scale.																												
Nylon jacketed wire rope (Ranges 100" to 500" only)	NJC037	Replaces standard stainless steel wire rope with Ø.037 nylon jacketed wire rope.																												
Reversed output	R	Output is at a maximum when wire rope is fully retracted. Output decreases as wire rope is extended. Does not apply to velocity signal.																												
NEMA 6, IP-68 capability	N6	 Connector is replaced with a bulkhead fitting and a designated length of urethane jacketed, shielded, twisted pair cable. Retraction mechanism and electrical components are sealed to NEMA 6, IP-68 capability. No connector.																												
Corrosion Resistant Construction	SS	All external anodized aluminum parts of transducer are replaced with stainless steel and corrosion resistant plastic. Transducer is sealed to NEMA 6, IP-68 capability. Urethane jacketed, shielded, twisted pair cable exits unit. No connector. 																												
Non-standard potentiometer (Applies to HX-PA only)	PXK	Replace "X" in option designator with required potentiometer value in K ohms. Non-standard potentiometer linearity is as follows: Ranges 0 to 2" to 0 to 5" ±1.00% of full scale Ranges 0 to 10" to 0 to 25" ±0.50% of full scale Ranges 30" and above ±0.25% of full scale Note: This option is subject to potentiometer availability.																												
Alternate wire rope exit Measurement ranges to 80" (2.0 m)	E1, E2, E3	 <table border="1" data-bbox="654 1388 1166 1612"> <thead> <tr> <th>RANGE</th> <th>"A"</th> <th>"B"</th> <th>"C"</th> </tr> </thead> <tbody> <tr> <td>2", 10"</td> <td>1.12 (28.4)</td> <td>1.79 (45.5)</td> <td>1.21 (30.7)</td> </tr> <tr> <td>3", 15", 30"</td> <td>.96(24.4)</td> <td>1.95 (49.5)</td> <td>1.37 (34.8)</td> </tr> <tr> <td>4", 20", 40"</td> <td>.80 (20.3)</td> <td>2.11 (53.6)</td> <td>1.53 (38.9)</td> </tr> <tr> <td>5", 25", 50"</td> <td>.64 (16.3)</td> <td>2.27 (57.7)</td> <td>1.69 (42.9)</td> </tr> <tr> <td>6", 60"</td> <td>.49 (12.4)</td> <td>2.42 (61.5)</td> <td>1.84 (46.7)</td> </tr> <tr> <td>80"</td> <td>.25 (6.4)</td> <td>2.66 (67.6)</td> <td>2.08 (52.8)</td> </tr> </tbody> </table> <p style="text-align: right;">Dimensions in brackets are millimeters.</p>	RANGE	"A"	"B"	"C"	2", 10"	1.12 (28.4)	1.79 (45.5)	1.21 (30.7)	3", 15", 30"	.96(24.4)	1.95 (49.5)	1.37 (34.8)	4", 20", 40"	.80 (20.3)	2.11 (53.6)	1.53 (38.9)	5", 25", 50"	.64 (16.3)	2.27 (57.7)	1.69 (42.9)	6", 60"	.49 (12.4)	2.42 (61.5)	1.84 (46.7)	80"	.25 (6.4)	2.66 (67.6)	2.08 (52.8)
RANGE	"A"	"B"	"C"																											
2", 10"	1.12 (28.4)	1.79 (45.5)	1.21 (30.7)																											
3", 15", 30"	.96(24.4)	1.95 (49.5)	1.37 (34.8)																											
4", 20", 40"	.80 (20.3)	2.11 (53.6)	1.53 (38.9)																											
5", 25", 50"	.64 (16.3)	2.27 (57.7)	1.69 (42.9)																											
6", 60"	.49 (12.4)	2.42 (61.5)	1.84 (46.7)																											
80"	.25 (6.4)	2.66 (67.6)	2.08 (52.8)																											
Alternate wire rope exit Measurement ranges 100" (2.5 m) and greater.	E1, E2, E3	 <p style="text-align: center;">Dimensions in brackets are millimeters.</p>																												

Specifications subject to change without notice.

HX SERIES SUPPLEMENTAL DATA



Typical HX mounting bolts.

MECHANICAL SPECIFICATIONS

Mechanical Specifications

Available Measurement Ranges.....	See Table 12
Construction	
Ranges 80" (2 m) and under.....	Anodized Aluminum Mounting Base, Stainless Steel & Anodized Aluminum Housing
Ranges 100" (2.5 m) and greater	Stainless Steel Mounting Base High Impact, Corrosion Resistant Thermoplastic Housings
Wire Rope Tension	See Table 12
Wire Rope Diameter.....	See Table 12
Weight	See Table 12
Connector.....	MS3102A-14S-6P
Mating Connector (included).....	MS3106E-14S-6S
Optional NEMA 6 Capability.....	Bulkhead fitting with shielded, twisted pair cable
Life*	
Ranges 2" to 6"	5,000,000 full stroke cycles
Ranges 10" to 25"	500,000 full stroke cycles
Ranges 30" to 400"	250,000 full stroke cycles
Ranges 500" to 2000"	200x10 ⁶ lineal inches

* with 1K ohm potentiometer, wire rope misalignment 2° maximum at full stroke, relatively dust free environment, nylon jacketed wire rope on units with ranges 80" and less.

Use value from this column to indicate overall measurement range

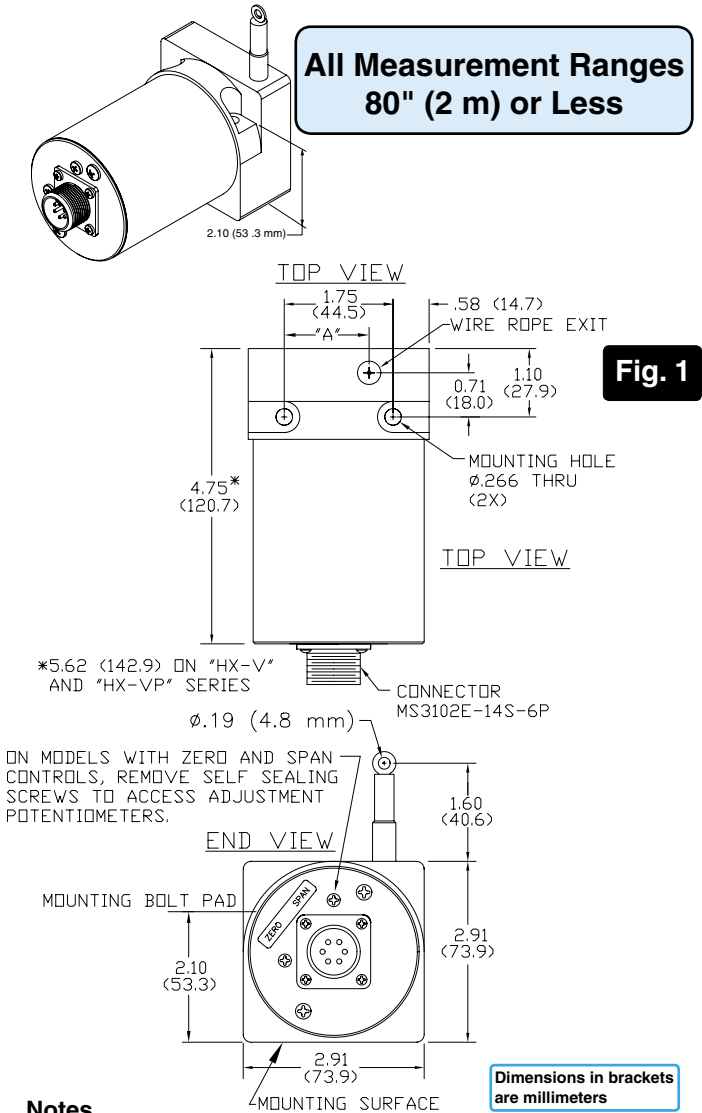
Check mark indicates available measurement range

TABLE 12

MEASUREMENT RANGE DESIGNATOR	STANDARD MEASUREMENT RANGES		APPLICABLE SERIES				WIRE ROPE TENSION (NOMINAL)		WIRE ROPE DIAMETER		TRANSDUCER WEIGHT		Product Photo
	(in)	(mm)	HX-PA HX-PB HX-P420 HX-P510 HX-P1010	HX-EP	HX-V HX-VP	(oz)	(N)	(in)	(mm)	(lb)	(Kg)		
	2	2	50	✓	-	✓	34	9.4	.016	0.4	2	0.9	
3	3	75	✓	-	✓	24	6.7	.016	0.4	2	0.9		
4	4	100	✓	-	✓	24	6.7	.016	0.4	2	0.9		
5	5	125	✓	-	✓	19	5.3	.016	0.4	2	0.9		
6	6	150	✓	-	✓	24	6.7	.016	0.4	2	0.9		
10	10	250	✓	✓	✓	34	9.4	.016	0.4	2	0.9		
15	15	390	✓	-	✓	24	6.7	.016	0.4	2	0.9		
20	20	500	✓	-	✓	24	6.7	.016	0.4	2	0.9		
25	25	640	✓	✓	✓	19	5.3	.016	0.4	2	0.9		
30	30	750	✓	-	✓	24	6.7	.016	0.4	2	0.9		
40	40	1000	✓	-	✓	24	6.7	.016	0.4	2	0.9		
50	50	1250	✓	✓	✓	19	5.3	.016	0.4	2	0.9		
60	60	1500	✓	✓	✓	24	6.7	.016	0.4	2	0.9		
80	80	2.0m	✓	✓	✓	21	5.8	.016	0.4	2	0.9		
100	100	2.5m	✓	✓	✓	36	10.0	.024	0.6	6.8	3.1		
120	120	3.0m	✓	✓	✓	36	10.0	.024	0.6	6.8	3.1		
150	150	3.8m	✓	✓	✓	36	10.0	.024	0.6	6.8	3.1		
200	200	5.0m	✓	✓	✓	36	10.0	.024	0.6	6.8	3.1		
250	250	6.3m	✓	✓	✓	36	10.0	.024	0.6	6.8	3.1		
300	300	7.5m	✓	✓	✓	36	10.0	.024	0.6	6.8	3.1		
350	350	8.8m	✓	✓	✓	36	10.0	.024	0.6	6.8	3.1		
400	400	10.0m	✓	✓	✓	36	10.0	.024	0.6	6.8	3.1		
500	500	12.5m	✓	✓	✓	36	10.0	.024	0.6	8.6	3.9		
600	600	15.2m	✓	✓	✓	36	10.0	.024	0.6	8.6	3.9		
800	800	20.3m	✓	✓	✓	36	10.0	.024	0.6	8.6	3.9		
1000	1000	25.4m	✓	✓	-	36	10.0	.024	0.6	12.0	5.4		
1200	1200	30.4m	✓	✓	-	36	10.0	.024	0.6	12.3	5.6		
1600	1600	40.6m	✓	✓	-	36	10.0	.024	0.6	14.1	6.4		
1800	1800	45.7m	✓	✓	-	36	10.0	.021	0.6	15.9	7.2		
2000	2000	50.8m	✓	✓	-	36	10.0	.021	0.5	16.3	7.4		

Specifications subject to change without notice.

DIMENSIONAL INFORMATION



Notes

1. Transducer mounts with Ø.25 or M6 socket head cap bolts.

Table 13

RANGE	"A"
2", 10"	1.21 (30.7)
3", 15", 30"	1.37 (34.8)
4", 20", 40"	1.53 (38.9)
5", 25", 50"	1.69 (42.9)
60"	1.84 (46.7)
80"	2.08 (52.8)

Table 14

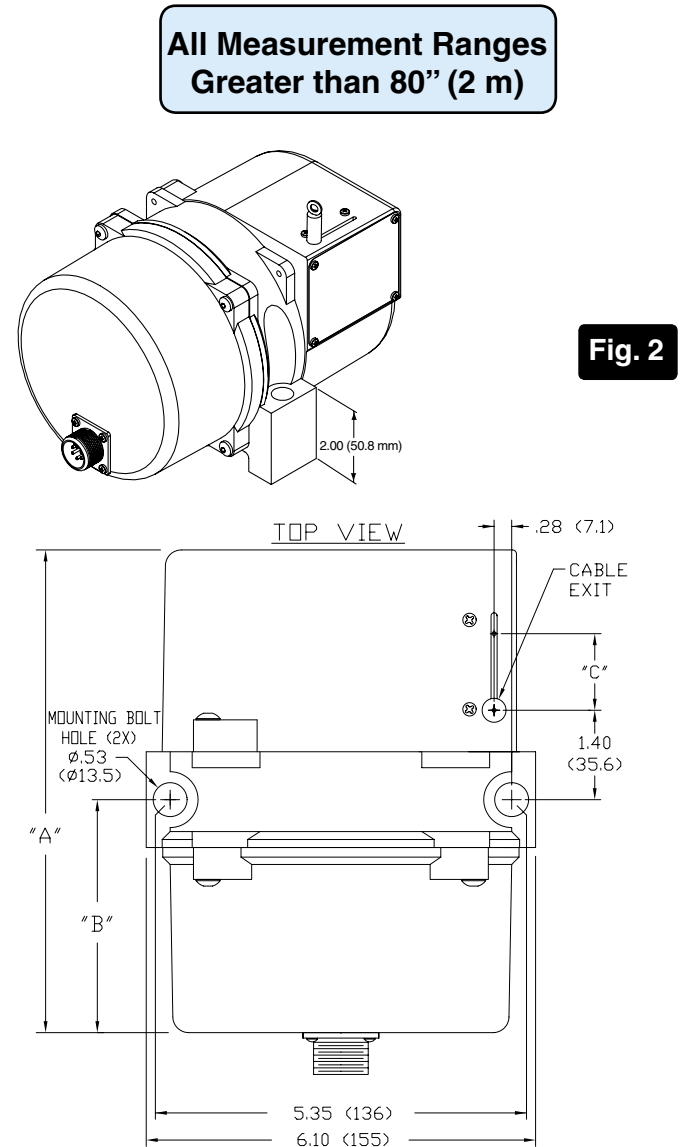
RANGE	DIM "A"	DIM "B"
Ranges to 800"	7.70 (196)	3.80 (97)
1000" to 2000"	11.0 (280)	5.60 (142)

Notes

1. Transducer mounts with Ø.50 or M12 socket head cap bolts.
2. Dimension "C" is the cable offset that occurs as the cable is extended from the transducer.

For "C" in inches, $C = .0016 \times E$ where E = extension in inches.

For "C" in millimeters, $C = .0016 \times E$ where E = extension in mm.



Dimensions in brackets are millimeters

Specifications subject to change without notice.