



Analog absolute positioning

Utilizing a precision potentiometer, the UniMeasure PA series position transducer provides basic absolute positioning with an analog output. With a steady state input voltage and with the potentiometer connected as a voltage divider, the ratiometric output voltage is directly proportional to wire rope extension. The unit will function with any input voltage up to 25 volts maximum. To obtain best output linearity, the input voltage should be well regulated.

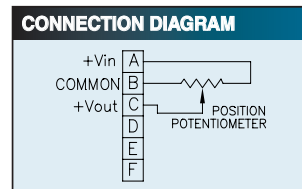
SPECIFICATIONS

GENERAL

- Linearity
 - 2", 3", 4" & 5" Ranges±0.25% Full Scale
 - 10", 15", 20" & 25" Ranges±0.15% Full Scale
 - All other ranges.....±0.10% Full Scale
- Repeatability^[1]±0.015% Full Scale
- Resolution Essentially Infinite
- Construction..... Aluminum Cover & Baseplate
- Sensing Device..... Precision Potentiometer
- ConnectorMS3102A-14S-6P
- Wire RopeØ.016 Stainless Steel
- Wire Rope Tension.....See Supplemental Data^[2], Table 7
- Wire Rope Inbound Acceleration ...See Supplemental Data^[2], Table 7
- Weight
 - Up to 50" 1.0 lb. (0.45 Kg)
 - 60" & 80" 1.4 lb. (0.63 Kg)
- Dimensional Information See Supplemental Data^[2], Fig. 1 & 2
- Options and Accessories See Supplemental Data^[2]

ENVIRONMENTAL

- Thermal Coefficient of Sensing Element ±100 PPM/°C max.
- Operating temperature..... -40°C to +95°C
- Operating humidity..... 95% R.H. max. non-condensing
- Vibration..... 15 G's 0.1 ms max.
- Shock 50 G's 0.1 ms max.
- Ingress Protection NEMA 1, IP-40



ELECTRICAL

- Input Impedance 1000Ω ±10%
- Output Impedance 0-1000Ω
- Excitation Voltage..... 30 Volts Max. AC or DC
- Output Voltage Change Over
- Full Range of Transducer..... 92% to 98% of Excitation Voltage

FOOTNOTES TO SPECIFICATIONS

1. Moving to the same position from the same direction.
2. Supplemental Data section locate at end of Standard Series pages.

MODEL NUMBER CONFIGURATION



BASIC CONFIGURATION (FOR ALL RANGES)

PA-50-S10-N1S-10C

0 RANGE

2	..... 2" (50 mm)
3	..... 3" (75 mm)
4	..... 4" (100 mm)
5	..... 5" (125 mm)
10	..... 10" (250 mm)
15	..... 15" (390 mm)
20	..... 20" (500 mm)
25	..... 25" (640 mm)
30	..... 30" (750 mm)
40	..... 40" (1000 mm)
50	..... 50" (1250 mm)
60	..... 60" (1500 mm)
80	..... 80" (2000 mm)

1 WIRE ROPE

S	.....Ø.016 (0,4 mm) Stainless Steel
N	.....Ø.018 (0,45 mm) Nylon Jacketed Stainless Steel

2 WIRE ROPE TENSION

1	.....Standard (50 G Units to 50")
2	.....Reduced (See Table 7 for Value)
3	.....Increased (100G on Units With Ranges From 2" to 50")

3 WIRE ROPE EXIT DIRECTION
Use Number designators shown

4 DUST WIPER OPTION

N	.....No dust wiper
D	.....Dust Wiper Included

5 POTENTIOMETER VALUE

1	.....1K ohm
2	.....2K ohm
3	.....5K ohm
4	.....10K ohm

See Supplemental Data for Linearity Option

6 ELECTRICAL OUTPUT POLARITY

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

7 CONNECTOR LOCATION
Use Number designators shown

9 ELECTRICAL INTERFACE

C	..... Mating Connector Included
K	..... Mating Connector Omitted*
T	..... Terminal Strip

*Electrical cable with mating connector may be ordered separately as part number 10028-xM where 'x' is the length required in meters.

Analog absolute positioning

The **UniMeasure PB Series** transducer includes a sensing potentiometer in a bridge circuit with adjustable zero and span controls. The completely passive circuit gives a maximum output voltage at maximum span setting of approximately 18% of the input voltage. The span adjustment allows for easy interface to a bridge amplifier. With zero position adjustable to anywhere within the total range of the transducer, voltage output is positive when extending the cable from the selected zero position and is negative when retracting from zero.



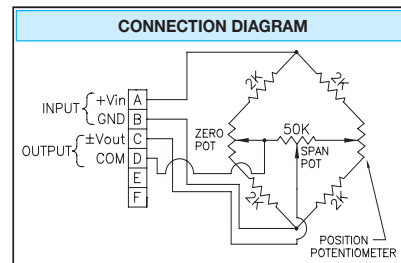
SPECIFICATIONS

GENERAL

- Linearity
- 2", 3", 4" & 5" Ranges ±0.25% Full Scale
- 10", 15", 20" & 25" Ranges ±0.15% Full Scale
- All other ranges..... ±0.10% Full Scale
- Repeatability^[1] ±0.015% Full Scale
- Resolution..... Essentially Infinite
- Construction..... Aluminum Cover & Baseplate
- Sensing Device..... Precision Potentiometer
- Connector..... MS3102A-14S-6P
- Wire Rope..... Ø.016 Stainless Steel
- Wire Rope Tension..... See Supplemental Data^[2], Table 7
- Wire Rope Inbound Acceleration.... See Supplemental Data^[2], Table 7
- Weight
- Up to 50" 1.0 lb. (0.45 Kg)
- 60" & 80" 1.4 lb. (0.63 Kg)
- Dimensional Information..... See Supplemental Data^[2], Fig. 1 & 2
- Options and Accessories See Supplemental Data^[2]

ENVIRONMENTAL

- Thermal Coefficient of Sensing Element ±100 PPM/°C max.
- Operating temperature -40°C to +95°C
- Operating humidity 95% R.H. max. non-condensing
- Vibration 15 G's 0.1 ms max.
- Shock 50 G's 0.1 ms max.
- Ingress Protection IP-40 (NEMA 1)



ELECTRICAL

- Input Impedance 1.25KΩ
- Output Impedance..... 1.25KΩ at max span setting
14.4KΩ @ 51% max. span setting
- Excitation Voltage..... 30 Volts Max. AC or DC
- Output Voltage..... User adjustable to a maximum of 18% of Input Voltage

FOOTNOTES TO SPECIFICATIONS

1. Moving to the same position from the same direction.
2. Supplemental Data section locate at end of Standard Series pages.

MODEL NUMBER CONFIGURATION



BASIC CONFIGURATION (FOR ALL RANGES)

PB-50-S10-N0S-10C

0 RANGE

2	.....2" (50 mm)
3	.....3" (75 mm)
4	.....4" (100 mm)
5	.....5" (125 mm)
10	.....10" (250 mm)
15	.....15" (390 mm)
20	.....20" (500 mm)
25	.....25" (640 mm)
30	.....30" (750 mm)
40	.....40" (1000 mm)
50	.....50" (1250 mm)
60	.....60" (1500 mm)
80	.....80" (2000 mm)

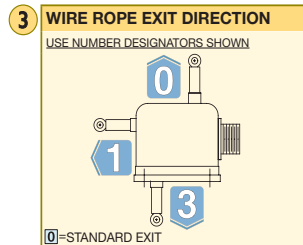
1 WIRE ROPE

S	.....Ø.016 (0,4 mm) Stainless Steel
N	.....Ø.018 (0,45 mm) Nylon Jacketed Stainless Steel

2 WIRE ROPE TENSION

1	.....Standard (50 G Units to 50")
2	.....Reduced (See Table 7 for Value)
3	.....Increased (100G Ranges to 50")

**Not Available Ranges 2" to 5"*



4 DUST WIPER OPTION

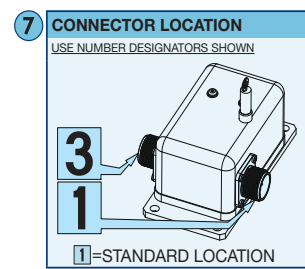
NNo dust wiper
DDust Wiper Included

5

0Required Designator
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6 ELECTRICAL OUTPUT POLARITY

SStandard (increasing output as wire rope is extended)
RReversed (decreasing output as wire rope is extended)



8

0Required Designator
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9 ELECTRICAL INTERFACE

C Mating Connector Included
K Mating Connector Omitted*
T	..... Terminal Strip

*Electrical cable with mating connector may be ordered separately as part number **10028-xM** where 'x' is the length required in meters.



Two wire 4-20 mA Transmitter

The **UniMeasure P420** position transducer provides a 4 to 20 mA output signal using a potentiometric sensor. Since the transmitter is loop powered, an assembled system consists of a power supply, current monitor, and transmitter all connected in series. The P420 is particularly insensitive to electrically noisy environments. Zero and span adjustments allow setting the 4 mA position within the first 30% of total travel and setting the 20 mA position within 80% to 100% of total travel. The devices may be powered by a supply voltage in the range of 9 to 35 VDC and with a total loop resistance per the graph below.



SPECIFICATIONS

GENERAL

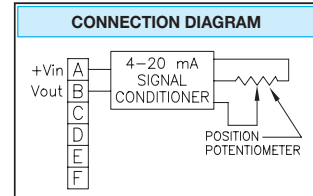
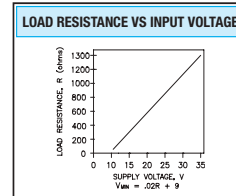
- Linearity
- 2", 3", 4" & 5" Ranges±0.30% Full Scale
- 10", 15", 20" & 25" Ranges±0.20% Full Scale
- All other ranges.....±0.15% Full Scale
- Repeatability⁽¹⁾±0.015% Full Scale
- Resolution..... Essentially Infinite
- Construction..... Aluminum Cover & Baseplate
- Sensing Device..... Precision Potentiometer
- Connector..... MS3102A-14S-6P
- Wire Rope..... Ø.016 Stainless Steel
- Wire Rope Tension..... See Supplemental Data⁽³⁾, Table 7
- Wire Rope Inbound Acceleration..... See Supplemental Data⁽³⁾, Table 7
- Weight
- Up to 50" 1.0 lb. (0.45 Kg)
- 60" & 80" 1.4 lb. (0.63 Kg)
- Dimensional Information..... See Supplemental Data⁽³⁾, Fig. 1 & 2
- Options and Accessories See Supplemental Data⁽³⁾

ENVIRONMENTAL

- Thermal Coefficient of Sensing Element.. ±100 PPM/°C max.
- Operating temperature -40°C to +95°C
- Operating humidity 95% R.H. max. non-condensing
- Vibration 15 G's 0.1 ms max.
- Shock 50 G's 0.1 ms max.
- Ingress Protection IP-40 (NEMA 1)

ELECTRICAL

- Output 4 to 20 mA
- Load Resistance (Total Loop)..... See Graph Below
- Excitation Voltage..... 9 to 35 VDC⁽²⁾
- Min. Supply Voltage (.02 x Load Res.) + 9 VDC
- Insulation resistance..... 100 Megohms min. at 100 VDC
- Adjustment Range
- Zero 0 to 30% of Range
- Span 80% to 100% of Range
- Protection..... Reversed Polarity



FOOTNOTES TO SPECIFICATIONS

1. Moving to the same position from the same direction.
2. Voltage required at transducer.
3. Supplemental Data section located at end of Standard Series pages.

MODEL NUMBER CONFIGURATION

P420- 0 1 2 3 4 5 6 7 8 9

BASIC CONFIGURATION (FOR ALL RANGES)

P420-50-S10-N0S-10C

0 RANGE

2.....	2" (50 mm)
3.....	3" (75 mm)
4.....	4" (100 mm)
5.....	5" (125 mm)
10.....	10" (250 mm)
15.....	15" (390 mm)
20.....	20" (500 mm)
25.....	25" (640 mm)
30.....	30" (750 mm)
40.....	40" (1000 mm)
50.....	50" (1250 mm)
60.....	60" (1500 mm)
80.....	80" (2000 mm)

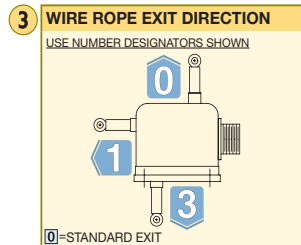
1 WIRE ROPE

S.....	Ø.016 (0.4 mm) Stainless Steel
N.....	Ø.018 (0.45 mm) Nylon Jacketed Stainless Steel

2 WIRE ROPE TENSION

1.....	Standard (50 G Units to 50")
2.....	Reduced (See Table 7 for Value)
3.....	Increased (100G Ranges to 50")

**Not Available Ranges 2" to 5"*



4 DUST WIPER OPTION

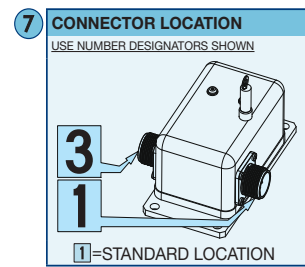
N.....	No dust wiper
D.....	Dust Wiper Included

5

0.....	Required Designator
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6 ELECTRICAL OUTPUT POLARITY

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



8

0.....	Required Designator
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9 ELECTRICAL INTERFACE

C.....	Mating Connector Included
K.....	Mating Connector Omitted*
T.....	Terminal Strip

*Electrical cable with mating connector may be ordered separately as part number **10028-xM** where 'x' is the length required in meters.

The UniMeasure P510 Series transducer offers a voltage output with wide adjustability to give a 0 to 5, 0 to 10, ±5 or ±10 VDC output. The device may be powered with an unregulated voltage in the range of 4.9 to 30 VDC. Zero and span adjustment potentiometers are readily accessible. With the zero position set anywhere within the first 30% of total travel, the span may be adjusted to give a full 0 to 5 or 0 to 10 VDC output with the span set anywhere within the last 20% of travel. Alternatively, the zero position may be set anywhere between 10% and 90% of full travel to give an output of ±5 or ±10 VDC with the span set between 50% to 100% of the longest travel from the zero position.



SPECIFICATIONS

GENERAL

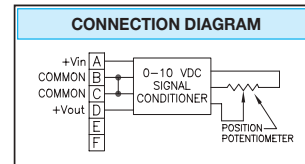
Linearity
 2", 3", 4" & 5" Ranges ±0.30% Full Scale
 10", 15", 20" & 25" Ranges ±0.20% Full Scale
 All other ranges ±0.15% Full Scale
 Repeatability⁽¹⁾ ±0.015% Full Scale
 Resolution Essentially Infinite
 Construction Aluminum Cover & Baseplate
 Sensing Device Precision Potentiometer
 Connector MS3102A-14S-6P
 Wire Rope Ø.016 Stainless Steel
 Wire Rope Tension See Supplemental Data⁽²⁾, Table 7
 Wire Rope Inbound Acceleration See Supplemental Data⁽²⁾, Table 7
 Weight
 Up to 50" 1.0 lb. (0.45 Kg)
 60" & 80" 1.4 lb. (0.63 Kg)
 Dimensional Information See Supplemental Data⁽³⁾, Fig. 1 & 2
 Options and Accessories See Supplemental Data⁽³⁾

ENVIRONMENTAL

Thermal Coefficient of Sensing Element .. ±100 PPM/°C max.
 Operating temperature -40°C to +95°C
 Operating humidity 95% R.H. max. non-condensing
 Vibration 15 G's 0.1 ms max.
 Shock 50 G's 0.1 ms max.
 Ingress Protection IP-40 (NEMA 1)

ELECTRICAL

Output 0 to 5 or 10 VDC, ±5 or ±10 VDC
 Excitation Voltage 4.9 to 30 VDC
 Excitation Current 25 mA max.
 Output Impedance 10Ω max.
 Output Load 5KΩ min.
ADJUSTMENT RANGE—0 TO 5 OR 0 TO 10 VDC
 Zero 0 to 30% of Range
 Span 80% to 100% of Range
ADJUSTMENT RANGE—±5 OR ±10 VDC
 Zero 10% to 90% of Range
 Span 50% to 100% of Longest Possible
 Travel from Zero Position
 Protection Reversed Polarity
 Temperature Stability 0.02%/°C of Span



FOOTNOTES TO SPECIFICATIONS

1. Moving to the same position from the same direction.
2. Span may be adjusted from 5 VDC to 10 VDC within percentage of range shown.
3. Supplemental Data section located at end of Standard Series pages.

MODEL NUMBER CONFIGURATION

P510- 0 1 2 3 4 5 6 7 8 9

BASIC CONFIGURATION (FOR ALL RANGES)

P510-50-S10-N0S-10C

0 RANGE

2	.....2" (50 mm)
3	.....3" (75 mm)
4	.....4" (100 mm)
5	.....5" (125 mm)
10	.....10" (250 mm)
15	.....15" (390 mm)
20	.....20" (500 mm)
25	.....25" (640 mm)
30	.....30" (750 mm)
40	.....40" (1000 mm)
50	.....50" (1250 mm)
60	.....60" (1500 mm)
80	.....80" (2000 mm)

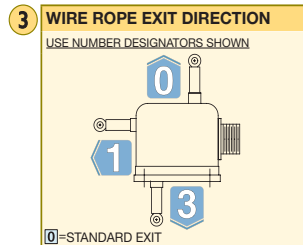
1 WIRE ROPE

S	.....Ø.016 (0.4 mm) Stainless Steel
N	.....Ø.018 (0.45 mm) Nylon Jacketed Stainless Steel

2 WIRE ROPE TENSION

1	.....Standard (50 G Units to 50")
2	.....Reduced (See Table 7 for Value)
3	.....Increased (100G Ranges to 50")

**Not Available Ranges 2" to 5"*



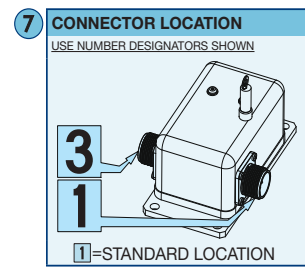
4 DUST WIPER OPTION

N	.....No dust wiper
D	.....Dust Wiper Included

5 0.....Required Designator

6 ELECTRICAL OUTPUT POLARITY

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



8 0.....Required Designator

9 ELECTRICAL INTERFACE

C	..... Mating Connector Included
K	..... Mating Connector Omitted*
T	..... Terminal Strip

*Electrical cable with mating connector may be ordered separately as part number **10028-xM** where 'x' is the length required in meters.

Self-generating tachometer

The **V Series** linear velocity transducer incorporates a self-generating tachometer which eliminates the need for any external power supply. Extra long brush life, excellent stability and a wide operating temperature range make the V series transducer highly reliable for long term service.



SPECIFICATIONS

GENERAL

- Construction..... Aluminum Cover & Baseplate
- Sensing Device..... Tacho-generator
- Connector..... MS3102A-14S-6P
- Wire Rope..... Ø.016 Stainless Steel
- Wire Rope Tension See Table 5
- Wire Rope Inbound Acceleration ... See Table 5
- Weight
 - Up to 50" 1.2 lb. (0.54 Kg)
 - 60" & 80" 1.54 lb. (0.70 Kg)
- Dimensional Information..... See Supplemental Data², Fig. 1 & 2
- Options and Accessories See Supplemental Data²

TABLE 5

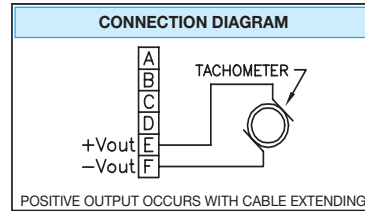
RANGE (inches)	VELOCITY OUTPUT		WIRE ROPE TENSION		WIRE ROPE ACCEL ^[1] (G's)	WEIGHT	
	(mV/in/sec)	(mV/cm/sec)	(oz)	(N)		(lb)	(Kg)
2, 10	200	78	34	9.5	33	1.20	0.54
3, 15, 30	136	53	24	6.7	30	1.20	0.54
4, 20, 40	102	40	24	6.7	36	1.20	0.54
5, 25, 50	82	32	34	9.5	33	1.20	0.54
60	69	27	24	6.7	27	1.54	0.70
80	52	20	19	5.3	16	1.54	0.70

ELECTRICAL

- Output See Table 5
- Linearity ±0.10% F.S. with 10 VDC Max Output
- Ripple 3% Max.
- Input None Required; Self Generating
- Output Impedance 350Ω
- Thermal Effects 0.01% Max. per Degree C through Range -20°C to 75°C

ENVIRONMENTAL

- Operating temperature -40°C to +95°C
- Storage Temperature -55°C to +100°C
- Operating humidity 90% R.H. max. Non-condensing
- Vibration 10G's to 2KHz
- Shock 50 G's 0.1 ms Max.
- Ingress Protection IP-40 (NEMA 1)



FOOTNOTES TO SPECIFICATIONS

1. Maximum cable retraction acceleration.
2. Supplemental Data section located at end of Standard Series pages.

MODEL NUMBER CONFIGURATION



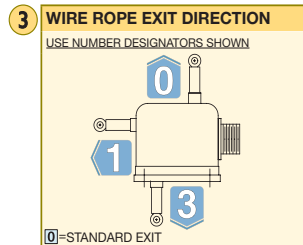
BASIC CONFIGURATION (FOR ALL RANGES)

V-50-S10-N0S-10C

- 0 RANGE**
- 2.....2" (50 mm)
 - 3.....3" (75 mm)
 - 4.....4" (100 mm)
 - 5.....5" (125 mm)
 - 10.....10" (250 mm)
 - 15.....15" (390 mm)
 - 20.....20" (500 mm)
 - 25.....25" (640 mm)
 - 30.....30" (750 mm)
 - 40.....40" (1000 mm)
 - 50.....50" (1250 mm)
 - 60.....60" (1500 mm)
 - 80.....80" (2000 mm)

- 1 WIRE ROPE**
- SØ.016 (0,4 mm) Stainless Steel
 - NØ.018 (0,45 mm) Nylon Jacketed Stainless Steel

- 2 WIRE ROPE TENSION**
- 1.....Standard (50 G Units to 50")
 - 2.....Reduced (See Table 7 for Value)
 - 3.....Increased (100G Ranges to 50")
- *Not Available Ranges 2" to 5"*



- 4 DUST WIPER OPTION**
- N.....No dust wiper
 - D.....Dust Wiper Included
- 5 0.....Required Designator**
- 6 S.....Required Designator**

7 CONNECTOR LOCATION

USE NUMBER DESIGNATORS SHOWN

1=STANDARD LOCATION

8 0.....Required Designator

9 ELECTRICAL INTERFACE

- C..... Mating Connector Included
- K..... Mating Connector Omitted*
- T Terminal Strip

**Electrical cable with mating connector may be ordered separately as part number 10028-xM where 'x' is the length required in meters.*

Simultaneous velocity and position measurement

The **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 a voltage divider circuit. Outputs optionally available are the bridge circuit, 4-20 mA, 0-10 VDC, and ± 10 VDC. See *PB, P420 and P510 series data sheets for specifications.*



SPECIFICATIONS

FOR VPB, VP420 AND VP510 SERIES SPECIFICATIONS, SEE PB, P420, AND P510 SERIES PAGES.

GENERAL

- Positional Linearity (*VPA Only*)
 - 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
- Repeatability¹..... $\pm 0.015\%$ Full Scale
- Positional Resolution.....Essentially Infinite
- Construction.....Aluminum Cover & Baseplate
- Sensing Devices.....Tacho-Generator (velocity)
Precision Potentiometer (position)
- Connector.....MS3102A-14S-6P
- Wire Rope..... $\varnothing 0.016$ Stainless Steel
- Wire Rope TensionSee Table 6
- Wire Rope Inbound AccelerationSee Table 6
- Weight
 - Up to 50"1.96 lb. (0.54 Kg)
 - 60" & 80"2.20 lb. (1.00 Kg)
- Dimensional Information.....See Supplemental Data¹, Fig. 3
- Options and AccessoriesSee Supplemental Data¹

ELECTRICAL (POSITION)

- Input Impedance ("A" Circuit)..... $1000\Omega \pm 10\%$
- Excitation Voltage (Ve)..... 25 Volts Max. AC or DC
- Output Voltage Change Over
- Full Range of Transducer 92% to 98% of Excitation Voltage

ELECTRICAL (VELOCITY)

- Output See Table 6
- Linearity..... $\pm 0.10\%$ F.S. with 10 VDC Max Output
- Ripple 3% Max.
- Output Impedance 350Ω

TABLE 6

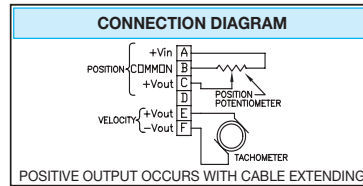
RANGE (inches)	VELOCITY OUTPUT		WIRE ROPE TENSION		WIRE ROPE ACCEL		WEIGHT	
	(mV/in/sec)	(mV/cm/sec)	(oz)	(N)	(G's)	(lb)	(Kg)	
2, 10	200	78	34	9.5	33	1.20	0.54	
3, 15, 30	136	53	24	6.7	30	1.20	0.54	
4, 20, 40	102	40	24	6.7	36	1.20	0.54	
5, 25, 50	82	32	34	9.5	33	1.20	0.54	
60	69	27	24	6.7	27	1.54	0.70	
80	52	20	19	5.3	16	1.54	0.70	

ENVIRONMENTAL

- Thermal Coefficient of potentiometer..... ± 100 PPM/ $^{\circ}$ C max.
- Operating temperature -40° C to $+95^{\circ}$ C
- Operating humidity95% R.H. max. non-condensing
- Vibration15 G's 0.1 ms max.
- Shock50 G's 0.1 ms max.
- Ingress ProtectionIP-40 (NEMA 1)

FOOTNOTES TO SPECIFICATIONS

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



MODEL NUMBER CONFIGURATION

VP E 0 1 2 3 4 5 6 7 8 9

BASIC CONFIGURATION (FOR ALL RANGES)

VPA-50-S10-N1S-10C

- E ELECTRICAL OUTPUT**
POSITION ELECTRICAL OUTPUT
A..... Voltage Divider Circuit
B..... Bridge Circuit
420..... 4 to 20 mA
510..... 0 to 10 VDC
- 0 RANGE**
2..... 2" (50 mm)
3..... 3" (75 mm)
4..... 4" (100 mm)
5..... 5" (125 mm)
10..... 10" (250 mm)
15..... 15" (390 mm)
20..... 20" (500 mm)
25..... 25" (640 mm)
30..... 30" (750 mm)
40..... 40" (1000 mm)
50..... 50" (1250 mm)
60..... 60" (1500 mm)
80..... 80" (2000 mm)

- 1 WIRE ROPE**
S..... $\varnothing 0.016$ (0,4 mm) Stainless Steel
N..... $\varnothing 0.018$ (0,45 mm) Nylon Jacketed Stainless Steel
- 2 WIRE ROPE TENSION**
1..... Standard (50 G Units to 50")
2..... Reduced (See Table 7 for Value)
3..... Increased (100G Ranges to 50")
**Not Available Ranges 2" to 5"*
- 3 WIRE ROPE EXIT DIRECTION**
USE NUMBER DESIGNATORS SHOWN

0=STANDARD EXIT

- 4 DUST WIPER OPTION**
N.....No dust wiper
D.....Dust Wiper Included
- 5 POTENTIOMETER VALUE**
VPB
VP420
VP510
0.....Required Designator
VPA
1.....1K Ω
3.....5K Ω *
4.....10K Ω *
**Not Available Ranges 2" to 5"*
SEE SUPPLEMENTAL DATA FOR LINEARITY OPTION
- 6 ELECTRICAL OUTPUT POLARITY**
S.....Standard (increasing output as wire rope is extended)
R.....Reversed (decreasing output as wire rope is extended)

- 7 CONNECTOR LOCATION**
USE NUMBER DESIGNATORS SHOWN

1=STANDARD LOCATION
NOTE: Locations 2 and 5 are available on VPA Model only.
- 8 0.....Required Designator**
- 9 ELECTRICAL INTERFACE**
C..... Mating Connector Included
K..... Mating Connector Omitted*
T..... Terminal Strip
*Electrical cable with mating connector may be ordered separately as part number 10028-xM where 'x' is the length required in meters.



Two channel digital output

Utilizing an incremental encoder as the sensor, the **UniMeasure EP Series** position transducer provides a quadrature square wave output. The resolution values shown in Table 4 indicate resolution for times 1 counting mode where a count is registered for one up transition on channel A. With interface electronics capable of times 2 or times 4 counting mode, a true resolution increase of 2 or 4 may be obtained. The actual resolution of an EP transducer differs slightly from unit to unit because of tolerances associated with the wire rope diameter and the capstan upon which the wire rope winds. In applications where the output count is interpreted as a percentage of total travel, resolution differences from unit to unit are not critical. In applications where the digital output is to be interfaced to a digital display to give an output in engineering units, the calibration constant supplied with the transducer may be used to calculate a suitable scale multiplier to produce the correct engineering units. Alternative outputs shown in the "Optional Electrical Outputs" Table 8 are available to facilitate interfacing to a variety of different types of equipment.

SPECIFICATIONS

GENERAL

- Linearity..... ±0.03% Full Scale
- Resolution^[1]..... See Table 4
- Repeatability^[2]..... ±0.015% Full Scale
- Construction Aluminum Cover & Baseplate
- Sensing Device Digital Encoder
- Connector MS3102A-14S-6P
- Wire Rope Ø.016 Stainless Steel
- Wire Rope Tension See Table 4
- Wire Rope Inbound Acceleration See Table 4
- Reduced Wire Rope Tension..... See Supplemental Data, Table 7
- Weight
 - Up to 50"..... 1.0 lb. (0.45 Kg)
 - 60" & 80"..... 1.4 lb. (0.63 Kg)
- Dimensional Information See Supplemental Data^[4], Fig. 1 & 2
- Options and Accessories..... See Supplemental Data^[4]

ENVIRONMENTAL

- Operating temperature..... -20°C to +80°C
- Storage temperature -40°C to +100°C
- Shock..... 50 G's for 11 ms duration
- Vibration..... 20 Hz to 2000 Hz @ 5G's
- Humidity..... 98% R.H. max.(non-condensing)
- Ingress Protection IP-40 (NEMA 1)

ELECTRICAL

- Input Voltage +5 VDC ±5% or 5-28 VDC
- Input Current..... 125 mA maximum
- Output Two channel TTL square wave

TABLE 4

MODEL	RANGE		RESOLUTION ^[1]			WIRE ROPE	
	(in)	(mm)	counts/inch	counts/mm	TOLERANCE	TENSION	ACCEL (G's) ^[3]
EP-10	10	250	500.0	19.69	±0.30%	34 oz	43
EP-25	25	640	250.0	9.84	±0.20%	34 oz	37
EP-50	50	1250	250.0	9.84	±0.20%	34 oz	37
EP-60	60	1.5 m	205.8	8.10	±0.20%	24 oz	18
EP-80	80	2.0 m	155.2	6.11	±0.20%	19 oz	7

NOTE: For reduced wire rope tension & acceleration see TABLE 7 on Page 29.

OUTPUT STAGE

STANDARD OUTPUT WAVEFORM

Quadrature 90°±20°
Symmetry 180°±10°

CONNECTION DIAGRAM

A	+VIn
B	COMMON
C	CHANNEL A
D	CHANNEL B
E	
F	

FOOTNOTES TO SPECIFICATIONS

1. The resolution shown is a calculated number based upon the capstan diameter, cable diameter and line count of the encoding device. The tolerance on the resolution accounts for resolution differences from unit to unit due to manufacturing tolerances on the capstan and cable. In practice, the output count in a given unit of travel is an integer.
2. Moving to the same position from the same direction.
3. Maximum cable retraction acceleration.
4. Supplemental Data section located at end of Standard Series pages.

MODEL NUMBER CONFIGURATION



BASIC CONFIGURATION (FOR ALL RANGES)

EP-50-S10-N10-10C

0 RANGE

- 10..... 10" (254 mm)
- 25..... 25" (635 mm)
- 50..... 50" (1270 mm)
- 60..... 60" (1524 mm)
- 80..... 80" (2032 mm)

1 WIRE ROPE

- S Ø.016 (0,4 mm) Stainless Steel
- N Ø.018 (0,45 mm) Nylon Jacketed Stainless Steel

2 WIRE ROPE TENSION

- 1.....Standard (50 G Units to 50")
- 2.....Reduced (See Table 7 for Value)

3 WIRE ROPE EXIT DIRECTION
USE NUMBER DESIGNATORS SHOWN

0=STANDARD EXIT

4 DUST WIPER OPTION

- N..... No dust wiper
- D..... Dust Wiper Included

5 ELECTRICAL OUTPUT

- 10.....5 VDC TTL Compatible, Two Channel
- 30.....5 VDC Push-Pull Differential Line Drive
- 50.....8 to 28 VDC Current Sinking Two Channel
- 70.....8 to 28 VDC Push-Pull Differential Line Drive

For Description See TABLE 8 on next page

7 CONNECTOR LOCATION
USE NUMBER DESIGNATORS SHOWN

1=STANDARD LOCATION

NOTE: Locations 2 and 5 are only available with ELECTRICAL OUTPUT option "10".

8 0..... Required Designator

9 ELECTRICAL INTERFACE

- C..... Mating Connector Included
- K..... Mating Connector Omitted*
- T..... Terminal Strip

*Electrical cable with mating connector may be ordered separately as part number 10028-xM where 'x' is the length required in meters.

ADDITIONAL OPTIONS

TABLE 7

STANDARD SERIES — WIRE ROPE TENSION AND ACCELERATION													
RANGE	PA, PB, P420, P510 SERIES					EP SERIES				V & VP SERIES			
	STANDARD WIRE ROPE TENSION	STANDARD WIRE ROPE ACCEL	REDUCED WIRE ROPE TENSION	REDUCED WIRE ROPE ACCEL		STANDARD WIRE ROPE TENSION	STANDARD WIRE ROPE ACCEL	REDUCED WIRE ROPE TENSION	REDUCED WIRE ROPE ACCEL	STANDARD WIRE ROPE TENSION	STANDARD WIRE ROPE ACCEL	REDUCED WIRE ROPE TENSION	REDUCED WIRE ROPE ACCEL
(in) (mm)	(oz) (N)	(G's)	(oz) (N)	(G's)		(oz) (N)	(G's)	(oz) (N)	(G's)	(oz) (N)	(G's)	(oz) (N)	(G's)
2 50	34 9.5	>50	16 4.4	28	-	-	-	-	-	34 9.5	33	16 4.4	14
3 75	24 6.7	>50	14 3.9	16	-	-	-	-	-	24 6.7	30	14 3.9	15
4 100	24 6.7	>50	11 3.1	12	-	-	-	-	-	24 6.7	36	11 3.1	15
5 125	34 9.5	>50	8 2.2	7	-	-	-	-	-	34 9.5	33	8 2.2	6
10 250	34 9.5	>50	16 4.4	28	34 9.5	43	16 4.4	19	19	34 9.5	33	16 4.4	14
15 390	24 6.7	>50	14 3.9	16	-	-	-	-	-	24 6.7	30	14 3.9	15
20 500	24 6.7	>50	11 3.1	12	-	-	-	-	-	24 6.7	36	11 3.1	14
25 640	34 9.5	>50	8 2.2	7	34 9.5	37	8 2.2	7	7	34 9.5	33	8 2.2	6
30 750	24 6.7	>50	14 3.9	16	-	-	-	-	-	24 6.7	30	14 3.9	15
40 1000	24 6.7	>50	11 3.1	12	-	-	-	-	-	24 6.7	36	11 3.1	12
50 1250	34 9.5	>50	8 2.2	7	34 9.5	37	8 2.2	7	7	34 9.5	33	8 2.2	5
60 1500	24 6.7	27	7 1.8	2	24 6.7	18	7 1.8	5	5	24 6.7	27	7 1.8	6
80 2000	19 5.3	16	5 1.4	2	19 5.3	7	5 1.4	2	2	19 5.3	16	5 1.4	3

TABLE 8

EP, HX-EP SERIES OPTIONAL ELECTRICAL OUTPUTS

OPTION	OUTPUT DESCRIPTION	OUTPUT STAGE	WAVEFORM	CONNECTOR WIRING												
10	5 VDC Current Sinking 5 VDC TTL compatible output. Input Voltage: 5 VDC.			<table border="1"> <tr><td>A</td><td>+Vin</td></tr> <tr><td>B</td><td>COMMON</td></tr> <tr><td>C</td><td>CHANNEL A</td></tr> <tr><td>D</td><td>CHANNEL B</td></tr> <tr><td>E</td><td></td></tr> <tr><td>F</td><td></td></tr> </table>	A	+Vin	B	COMMON	C	CHANNEL A	D	CHANNEL B	E		F	
A	+Vin															
B	COMMON															
C	CHANNEL A															
D	CHANNEL B															
E																
F																
50	8 to 28 VDC Current Sinking Current sinking output with 10KΩ internal pullup resistors. Input Voltage: 8 to 28 VDC.			<table border="1"> <tr><td>A</td><td>+Vin</td></tr> <tr><td>B</td><td>COMMON</td></tr> <tr><td>C</td><td>CHANNEL A</td></tr> <tr><td>D</td><td>CHANNEL B</td></tr> <tr><td>E</td><td></td></tr> <tr><td>F</td><td></td></tr> </table>	A	+Vin	B	COMMON	C	CHANNEL A	D	CHANNEL B	E		F	
A	+Vin															
B	COMMON															
C	CHANNEL A															
D	CHANNEL B															
E																
F																
30	5 VDC Push-Pull Differential Line Drive Push-Pull, current sourcing and current sinking output. Output is compliant with requirements of TIA/EIA-422-B. Input Voltage: 5 VDC input.			<table border="1"> <tr><td>A</td><td>+Vin</td></tr> <tr><td>B</td><td>COMMON</td></tr> <tr><td>C</td><td>CHANNEL A</td></tr> <tr><td>D</td><td>CHANNEL A̅</td></tr> <tr><td>E</td><td>CHANNEL B</td></tr> <tr><td>F</td><td>CHANNEL B̅</td></tr> </table>	A	+Vin	B	COMMON	C	CHANNEL A	D	CHANNEL A̅	E	CHANNEL B	F	CHANNEL B̅
A	+Vin															
B	COMMON															
C	CHANNEL A															
D	CHANNEL A̅															
E	CHANNEL B															
F	CHANNEL B̅															
70	8 to 28 VDC Push-Pull Differential Line Drive Push-Pull, current sourcing and current sinking output. Input Voltage: 8 to 28 VDC.			<table border="1"> <tr><td>A</td><td>+Vin</td></tr> <tr><td>B</td><td>COMMON</td></tr> <tr><td>C</td><td>CHANNEL A</td></tr> <tr><td>D</td><td>CHANNEL A̅</td></tr> <tr><td>E</td><td>CHANNEL B</td></tr> <tr><td>F</td><td>CHANNEL B̅</td></tr> </table>	A	+Vin	B	COMMON	C	CHANNEL A	D	CHANNEL A̅	E	CHANNEL B	F	CHANNEL B̅
A	+Vin															
B	COMMON															
C	CHANNEL A															
D	CHANNEL A̅															
E	CHANNEL B															
F	CHANNEL B̅															

LIFE

Ranges 2" to 5" 5,000,000 full stroke cycles
 Ranges 10" to 25" 500,000 full stroke cycles
 Ranges 30" to 80" 250,000 full stroke cycles

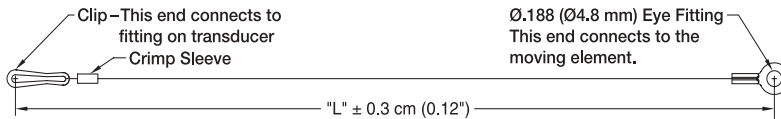
*With 1K ohm potentiometer, wire rope misalignment 2° maximum at full stroke, relatively dust free environment, and with nylon jacketed wire rope

OPTION DESCRIPTIONS

OPTION	OPTION DESIGNATOR	DESCRIPTION						
Nylon jacketed wire rope	N	Replaces standard stainless steel wire rope with Ø.018 nylon jacketed wire rope. Increases wire rope life dramatically but may increase non-linearity by as much as ±0.05% of full scale.						
Reduced Wire Rope Tension	2	Reduces the overall tension in the wire rope and increases wire rope life. Dynamic response of the transducer is reduced due to the reduced inbound acceleration capability.						
Increased Wire Rope Tension	3	Increases tension in the wire rope which increases the dynamic response of the transducer. On selected units with range of 50" (1250 mm) or less, inbound acceleration capability is 100G's. Wire rope life may be adversely affected by the high tension option.						
Dust wiper	D	Lubricated wiper strips dust and debris from wire rope as it retracts into case. Adds 0.36" (9 mm) height to wire rope exit location.						
Non-standard potentiometer (applies to PA series only)	3,4	Non-standard potentiometer linearity is as follows: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>RANGE</th> <th>LINEARITY</th> </tr> </thead> <tbody> <tr> <td>10" to 25"</td> <td>±0.50% of full scale</td> </tr> <tr> <td>30" and above</td> <td>±0.25% of full scale</td> </tr> </tbody> </table> Note: This option is subject to potentiometer availability.	RANGE	LINEARITY	10" to 25"	±0.50% of full scale	30" and above	±0.25% of full scale
RANGE	LINEARITY							
10" to 25"	±0.50% of full scale							
30" and above	±0.25% of full scale							
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 or encoder signal.						
Terminal strip	T	Replaces connector with a terminal strip.						

10067 – AUXILIARY WIRE ROPE EXTENSION KIT

The auxiliary wire rope extension may be used to facilitate mounting the transducer remotely from the measurement point. The clip on the extension attaches to the eye fitting on the transducer. The eye fitting on the opposite end, which is identical to the fitting on the transducer, mounts to the moving element. The extension kit is also available with the clip end unterminated for situations where it is more convenient to size the wire rope length during installation. Clip and crimp fitting are included with the unterminated version.



10067- -CM- -

- 1 DIMENSION "L"**
Specify Dimension "L" in centimeters to the nearest whole centimeter
NOTES: 1. 1 cm = 0.394", 1 inch = 2.54 cm
 2. Shortest length "L" is 5 cm (approximately 2")
- 2 UNTERMINATED CLIP END**
 Leave Blank.... Completed kit (No designator required)
 U Unterminated Clip End (clip and crimp sleeve included in kit)

REPLACEMENT WIRE ROPE KITS

The replacement Wire Rope Kit includes a new wire rope with all end terminations, wire rope guide, felt dust wiper where applicable and installation instructions. To order, replace 'xx' in the part number with the applicable measurement range in inches.

- 10107-xx Replacement Wire Rope Kit**—Standard Ø.016" Stainless Steel Wire Rope.
- 10108-xx Replacement Wire Rope Kit**—Ø.018" Nylon Jacketed Stainless Steel Wire Rope.
- 10127-xx Replacement Wire Rope Kit**—Standard Ø.016" Stainless Steel Wire Rope with Dust Wiper.
- 10128-xx Replacement Wire Rope Kit**—Ø.018" Nylon Jacketed Stainless Steel Wire Rope with Dust Wiper.

DIMENSIONAL INFORMATION

RANGES TO 50" (1250 MM)

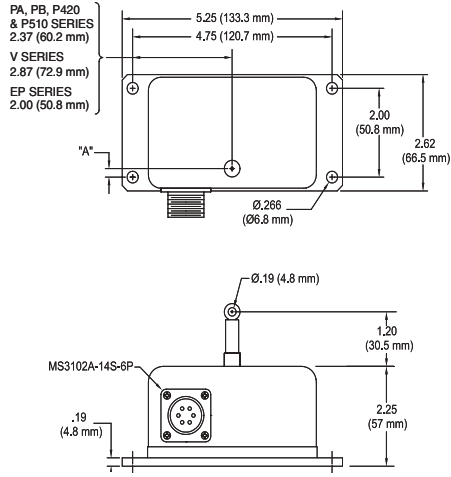


FIG. 1

PA, PB, P420, P510, V Series		
RANGE	DIM "A"	DIM "A"
	(inch)	(mm)
2", 10"	0.66	(16.8)
3", 15", 30"	0.51	(12.9)
4", 20", 40"	0.35	(8.8)
5", 25", 50"	0.19	(4.8)
60"	See Fig. 2	
80"	See Fig. 2	

EP Series		
RANGE	DIM "A"	DIM "A"
	(inch)	(mm)
EP-10	0.68	(17.4)
EP-25, EP-50	0.21	(5.3)
EP-60	See Fig. 2	
EP-80	See Fig. 2	
EPM-250	0.68	(17.4)
EPM-1250	0.21	(5.3)

Dimensions in brackets are millimeters

RANGES 60" (1.5 M) AND 80" (2 M)

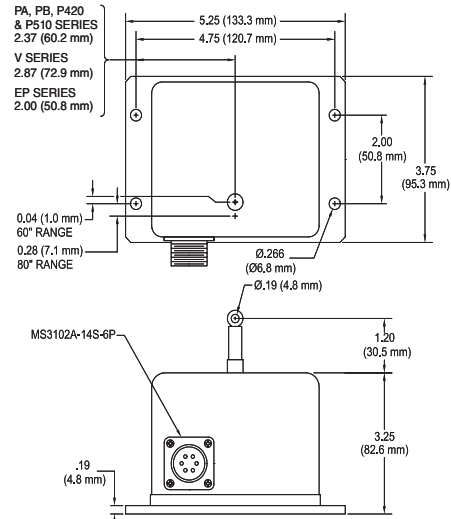


FIG. 2

Dimensions in brackets are millimeters

VP SERIES (VELOCITY/POSITION) — ALL MEASUREMENT RANGES

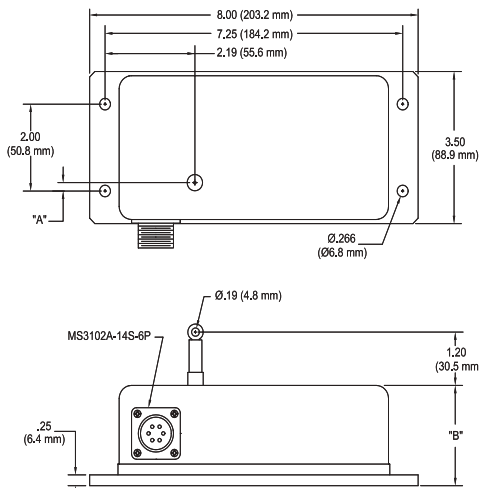


FIG. 3

VP SERIES				
RANGE	DIM "A"		DIM "B"	
	(inch)	(mm)	(inch)	(mm)
2", 10"	0.66	16.8	2.25	57.0
3", 15", 30"	0.51	12.9	2.25	57.0
4", 20", 40"	0.35	8.8	2.25	57.0
5", 25", 50"	0.19	4.8	2.25	57.0
60"	0.04	1.0	3.25	82.6
80"	-0.28	-7.1	3.25	82.6

Dimensions in brackets are millimeters