

# Linear and Rotary Position

Position sensors respond to the movement or location of a target, such as a molding press slide or a pulley shaft, by producing either a digital or an analogue output correlated to its location. Honeywell position sensors include digital and analogue Hall-effect position sensors, magnetoresistive digital sensors and potentiometric rotary and linear sensors. Sensors are directly compatible with other electronic circuits for application flexibility.

With the combined capabilities of three well-known brand names - Data Instruments, Clarostat, Electro and New England Instruments - Honeywell the group continuously strives to remain at the forefront of position sensing technology. In this catalogue we present our range of Linear and Rotary Position transducers and Torque Watch gauges, all suitable for use in industrial environments.



## **⚠ WARNING**

### **PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices, or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

# Honeywell

[www.honeywell.com/sensing](http://www.honeywell.com/sensing)

Selection Guide

Series	Features	Technology		Power Rating/ Supply Voltage	Water Resistant	Applications																Page number				
		Resistive	Hall Effect			Optical	Medical			Industrial OEMs							Transportation			Communi- cations						
							Hospital beds	Medical equipment	Laboratory equipment handling	Injection molding	Printing press	Drill press	Robotics	Animated characters	Packaging/processing	Material handling	Welding/Heating equip	Manual controls/joysticks	Level sensing	Powered access	Electrohydraulic control		Off-road vehicles	Personal mobility	Electric vehicles	Marine controls
Position Transducers	Linear	LFII	●		30 Vdc	●				●	●	●													99	
		DR	●		75 Vdc					●	●	●			●											101
		SLF	●		40 Vdc	●				●	●	●			●											102
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		HRS100		●	5 Vdc											●					●	●				110
Potentiometers	Precision	578	●		0.5 W												●		●						111	
		574	●		0.25 W												●	●							111	
	Commercial	575	●		0.5 W													●	●							112
		590	●		0.5 W													●	●				●			112
		585	●		0.05 W													●					●			115
	Industrial	380	●		2.0 W													●	●	●				●		113
		485	●		2.0 W													●	●	●				●	●	114
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Encoders	Mechanical	510	●		n/a												●	●							117	
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# Linear and Rotary Position Transducers

Honeywell Sensing and Control manufactures a variety of potentiometric position sensors. The sensors use a tried and true potentiometric technology originally developed for military applications and more recently applied to industrial markets. MystR® conductive plastic potentiometric sensors are long-life units designed for rugged industrial applications. The proprietary MystR® conductive plastic has an extensive temperature range, infinite resolution and provides absolute position measurement on power-up. Intermediate signal conditioning is not required for normal ratio-metric position sensing. Very small stroke units (5 mm [0.2 in]) and units required to withstand exposure to harsh chemicals or work immersed in many different oils are available. If there is heavy hose down or spray from oil or water, a water resistant or waterproof potentiometer such as the AQ series should be used.

Linear products have CE approval, Intrinsically Safe For Class I, II, III, Division 1, Groups A, B, C, D, E, F, G With Enty. Vmax: 30 Vdc, Imax: 100 mA, Ci: 0.0 micro F, Li: 0.0 mH, T4A @ 105 °C Ambient.

- Mechanical life:**
- Approvals:**
- Housing:**
- Element:**
- Shaft:**
- Wiper current:**
- Resolution:**

- 1 billion dither operations
- CE, NEMA 4 - water resistant
- Anodized aluminium
- MystR® conductive plastic film
- Stainless steel
- < 1 uA
- Infinite

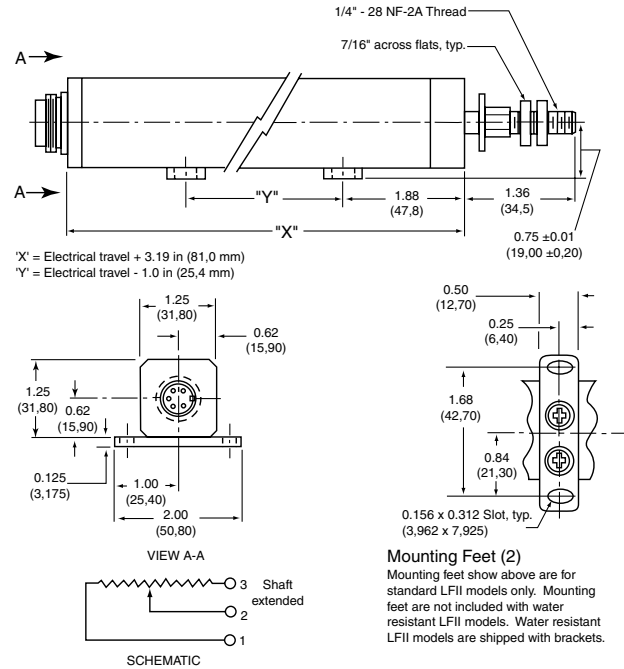
## LFII Series Longfellow II linear position transducer



The new Longfellow II incorporates design innovations to increase transducer life and provide greater resistance to vibration, while providing a smooth high-quality signal for demanding factory control applications. It has a solid stainless steel shaft, longer front-end bearings, a vibration-free damped element, a spring-loaded ball joint and a high precision precious metal wiper. Carrier guides are extruded the full length of the housing to ensure smooth operation even under severe side load conditions.

The newly designed internal components provide improvements based on worldwide testing and field experience.

<b>Operating temperature:</b>	-65 °C to 105 °C (-85 °F to 221 °F)
<b>Supply voltage (max.):</b>	30 Vdc
<b>Linearity:</b>	± 0.1 %
<b>Starting force (max.):</b>	
Standard	0.45 kg (1.0 lb)
Water resistant	2.27 kg (5.0 lb)
<b>Backlash (max.):</b>	0,025 mm (0.001 in)
<b>Total Resistance:</b>	5000 Ohm
<b>Shaft Ø:</b>	1/4 in
<b>Termination:</b>	Connector, Binder Series 681
<b>Housing length:</b>	= Electrical travel + 3.19 in (81,02 mm)
<b>Mechanical travel:</b>	= Electrical travel + 0.09 in (2,29 mm)



### OPTIONS

#### Standard

Mating connector, 3718401, sold separately

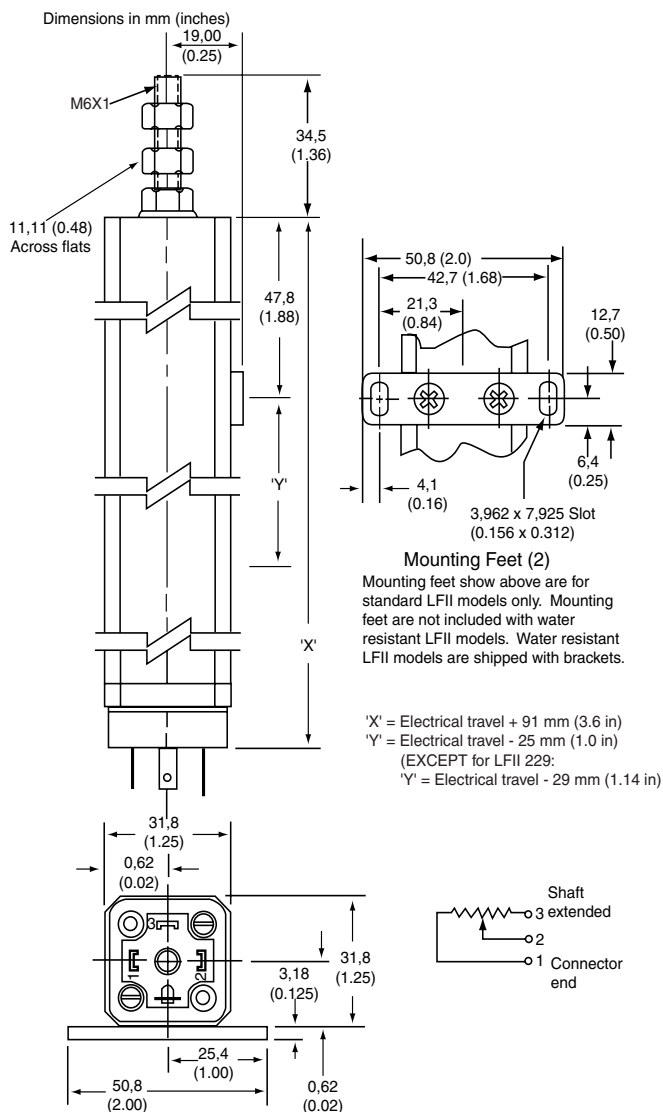
ELECTRICAL TRAVEL (IN (MM))	REFERENCE
6.0 (152,4)	LF2S06N5KB6A
9.0 (228,6)	LF2S09N5KB6A
12.0 (304,8)	LF2S12N5KB6A
14.0 (355,6)	LF2S14N5KB6A
18.0 (457,2)	LF2S18N5KB6A
24.0 (609,6)	LF2S24N5KB6A
30.0 (762,0)	LF2S30N5KB6A
36.0 (914,4)	LF2S36N5KB6A
48.0 (1219,2)	LF2S48N5KB6A

#### Water resistant

Mating connector, E02903021, sold separately

ELECTRICAL TRAVEL (IN (MM))	REFERENCE
6.0 (152,4)	LF2W06N5KB6A
9.0 (228,6)	LF2W09N5KB6A
12.0 (304,8)	LF2W12N5KB6A
14.0 (355,6)	LF2W14N5KB6A
18.0 (457,2)	LF2W18N5KB6A
24.0 (609,6)	LF2W24N5KB6A
30.0 (762,0)	LF2W30N5KB6A
36.0 (914,4)	LF2W36N5KB6A
48.0 (1219,2)	LF2W48N5KB6A

**LFII Metric Series**  
**Longfellow II linear position transducer**



<b>Operating temperature:</b>	-65 °C to 105 °C (-85 °F to 221 °F)
<b>Supply voltage (max.):</b>	30 Vdc
<b>Linearity:</b>	± 0.1 %
<b>Starting force (max.):</b>	
Standard	0,45 kg (1.0 lb)
Water resistant	2,27 kg (5.0 lb)
<b>Backlash (max.):</b>	0,025 mm (0.001 in)
<b>Total Resistance:</b>	5000 Ohm
<b>Shaft Ø:</b>	1/4 in
<b>Termination:</b>	Connector
	A = Binder Series 681
	G = DIN 43650
<b>Housing length:</b>	= Electrical travel + 91,0 mm (3.6 in)
<b>Mechanical travel:</b>	= Electrical travel + 2,2 mm (0.09 in)

**OPTIONS**

**Standard - Binder**

Mating connector, 3718401, sold separately

ELECTRICAL TRAVEL (MM (IN))	REFERENCE
152,4 (6.0)	LF2S0152M5KB8A
228,6 (9.0)	LF2S0229M5KB8A
304,8 (12.0)	LF2S0305M5KB8A
355,6 (14.0)	LF2S0355M5KB8A
457,2 (18.0)	LF2S0457M5KB8A
609,6 (24.0)	LF2S0610M5KB8A
762,0 (30.0)	LF2S0762M5KB8A
914,4 (36.0)	LF2S0914M5KB8A
1219,2 (48.0)	LF2S1219M5KB8A

**Standard - DIN 43650**

Mating connector included

ELECTRICAL TRAVEL (MM (IN))	REFERENCE
152,4 (6.0)	LF2S0152M5KB8G
228,6 (9.0)	LF2S0229M5KB8G
304,8 (12.0)	LF2S0305M5KB8G
355,6 (14.0)	LF2S0355M5KB8G
457,2 (18.0)	LF2S0457M5KB8G
609,6 (24.0)	LF2S0610M5KB8G
762,0 (30.0)	LF2S0762M5KB8G
914,4 (36.0)	LF2S0914M5KB8G
1219,2 (48.0)	LF2S1219M5KB8G

**Water resistant - Binder**

Mating connector, E02903021, sold separately

ELECTRICAL TRAVEL (MM (IN))	REFERENCE
152,4 (6.0)	LF2W0152M5KB8A
228,6 (9.0)	LF2W0229M5KB8A
304,8 (12.0)	LF2W0305M5KB8A
355,6 (14.0)	LF2W0355M5KB8A
457,2 (18.0)	LF2W0457M5KB8A
609,6 (24.0)	LF2W0610M5KB8A
762,0 (30.0)	LF2W0762M5KB8A
914,4 (36.0)	LF2W0914M5KB8A
1219,2 (48.0)	LF2W1219M5KB8A

**Water resistant - DIN 43650**

Mating connector included

ELECTRICAL TRAVEL (MM (IN))	REFERENCE
152,4 (6.0)	LF2W0152M5KB8G
228,6 (9.0)	LF2W0229M5KB8G
304,8 (12.0)	LF2W0305M5KB8G
355,6 (14.0)	LF2W0355M5KB8G
457,2 (18.0)	LF2W0457M5KB8G
609,6 (24.0)	LF2W0610M5KB8G
762,0 (30.0)	LF2W0762M5KB8G
914,4 (36.0)	LF2W0914M5KB8G
1219,2 (48.0)	LF2W1219M5KB8G



# DR Series

## Durastar rodless linear position transducer



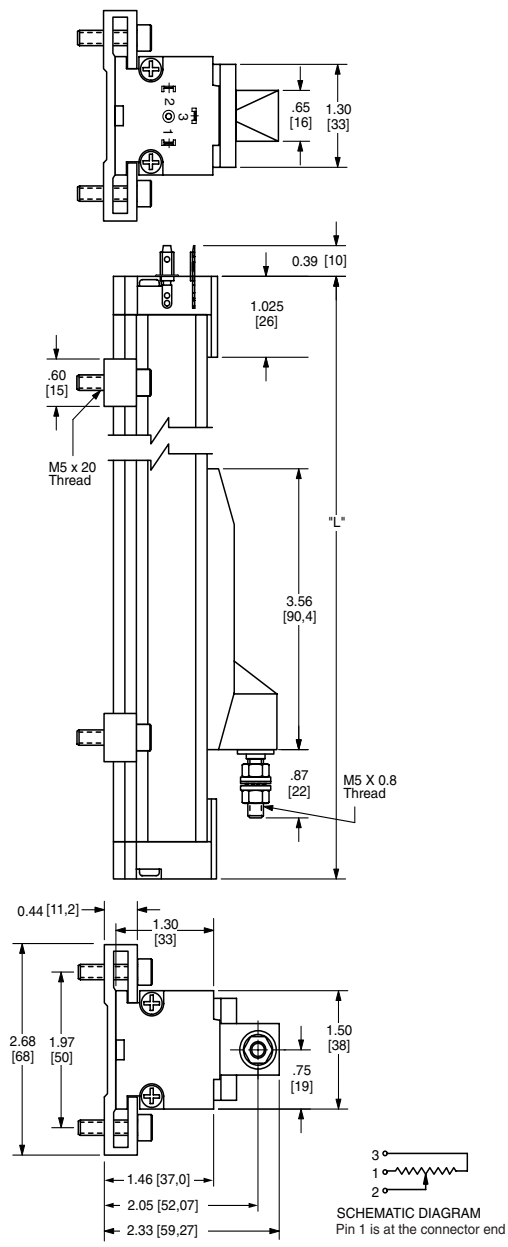
The DuraStar rodless linear position transducer is the longest lasting factory-rugged potentiometer. It allows large misalignment of shaft and housing, while providing whisper-quiet operation and smooth, clean signal output. MystR® provides the DuraStar excellent durability, especially in dither operation which is so often the determining factor in a potentiometer's life. It is an excellent replacement unit to reduce maintenance operations.

The rodless side-sealed DuraStar can also be used to replace a rodded potentiometer in contaminated applications to improve performance while providing long life.

- Operating temperature:** -65 °C to 105 °C (-85 °F to 221 °F)
- Supply voltage (max.):** 75 Vdc
- Linearity:** ± 0.1 %
- Starting force (max.):** 0,45 kg (1.0 lb)
- Backlash (max.):** 0,025 mm (0.001 in)
- Shaft:** M5x0.8 metric thread
- Termination:** Connector, DIN 43560
- Mechanical travel:** = Electrical travel + 5,0 mm (0.2 in)

Mating connector included

ELECTRICAL TRAVEL (MM (IN))	TOTAL RESISTANCE (OHM)	HOUSING LENGTH (MM (IN))	REFERENCE
101,6 (4.0)	2000	250,0 (9.84)	DR04N02KB7G
127,0 (5.0)	2000	280,0 (11.02)	DR05N02KB7G
152,4 (6.0)	5000	300,0 (11.81)	DR06N05KB7G
203,2 (8.0)	5000	352,0 (13.86)	DR08N05KB7G
228,6 (9.0)	5000	375,9 (14.80)	DR09N05KB7G
304,8 (12.0)	5000	452,1 (17.80)	DR12N05KB7G
355,6 (14.0)	5000	514,1 (20.24)	DR14N05KB7G
406,4 (16.0)	5000	553,9 (21.8)	DR16N05KB7G
457,2 (19.0)	5000	605,0 (23.8)	DR18N05KB7G
508,0 (20.0)	5000	656,0 (25.83)	DR20N05KB7G
609,6 (24.0)	10000	757,9 (29.84)	DR24N10KB7G
762,0 (30.0)	10000	910,0 (35.83)	DR30N10KB7G
914,4 (36.0)	10000	1062,5 (41.83)	DR36N10KB7G
1016,0 (40.0)	10000	1164,0 (45.83)	DR40N10KB7G
1270,0 (50.0)	10000	1418,0 (55.83)	DR50N10KB7G



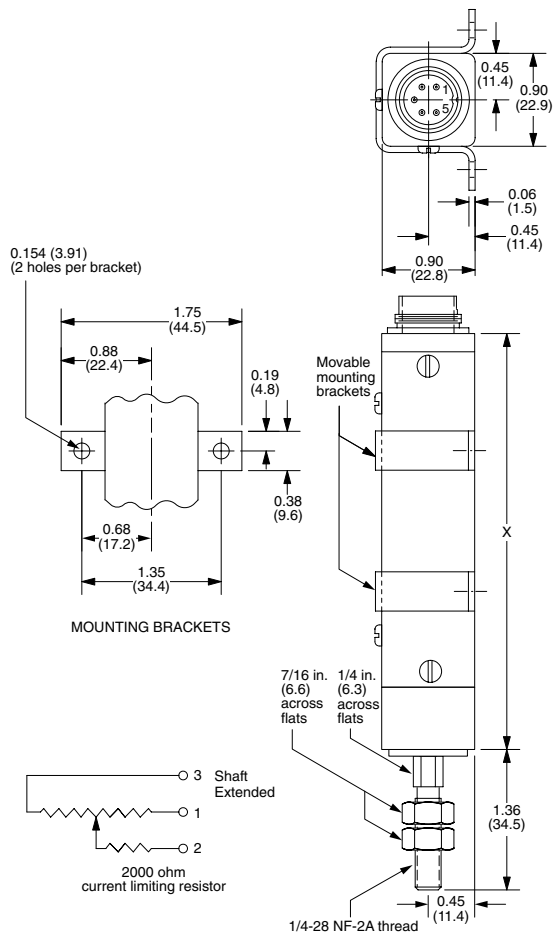
# SLF Series

## Short Longfellow linear position transducer



The Short Longfellow is frequently used for measuring linear position or displacement up to 6 inches (152.4 mm) on a wide variety of manufacturing and process equipment. The mechanical design of the unit's front bearing, anodized extruded aluminum housing, stainless steel shaft and precious metal wipers are suitable for a factory's harsh environment.

Based on the proprietary MystR<sup>®</sup> conductive plastic film, it provides a high resolution, absolute position measurement without external signal conditioners.



<b>Operating temperature:</b>	-65 °C to 105 °C (-85 °F to 221 °F)
<b>Supply voltage (max.):</b>	40 Vdc
<b>Starting force (max.):</b>	
Standard	0,45 kg (1.0 lb)
Water resistant	2,27 kg (5.0 lb)
<b>Backlash (max.):</b>	0,025 mm (0.001 in)
<b>Shaft Ø:</b>	1/4 in
<b>Termination:</b>	Connector, Binder Series 681
<b>Housing length:</b>	= Electrical travel + 3.05 in (77,5 mm)
<b>Mechanical travel:</b>	= Electrical travel + 0.2 in (5,1 mm)

	<b>Electrical Travel (in (mm))</b>	<b>Total Resistance (Ohm)</b>
SLF01 or SLW01	1.0 (25,4)	1500
SLF02 or SLW02	2.0 (50,8)	3000
SLF03 or SLW03	3.0 (76,2)	4500
SLF04 or SLW04	4.0 (101,6)	6000
SLF06 or SLW06	6.0 (152,4)	9000

### OPTIONS

#### Standard

Mating connector, 3718401, sold separately

#### ± 0.1 % Linearity

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
1.0 (25,4)	SLF01N1500B6A
2.0 (50,8)	SLF02N3000B6A
3.0 (76,2)	SLF03N4500B6A
4.0 (101,6)	SLF04N6000B6A
6.0 (152,4)	SLF06N9000B6A

#### ± 1.0 % Linearity

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
1.0 (25,4)	SLF01N1500F6A
2.0 (50,8)	SLF02N3000F6A
3.0 (76,2)	SLF03N4500F6A
4.0 (101,6)	SLF04N6000F6A
6.0 (152,4)	SLF06N9000F6A

#### Water resistant

Mating connector, E02903021, sold separately

#### ± 0.1 % Linearity

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
1.0 (25,4)	SLW01N1500B6A
2.0 (50,8)	SLW02N3000B6A
3.0 (76,2)	SLW03N4500B6A
4.0 (101,6)	SLW04N6000B6A
6.0 (152,4)	SLW06N9000B6A

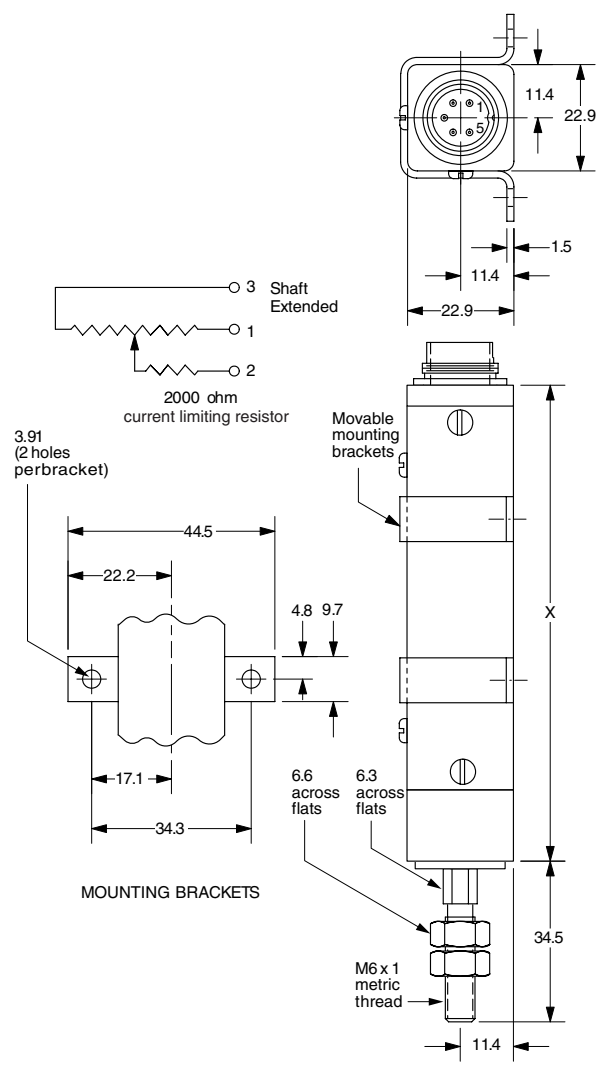
#### ± 1.0 % Linearity

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
1.0 (25,4)	SLW01N1500F6A
2.0 (50,8)	SLW02N3000F6A
3.0 (76,2)	SLW03N4500F6A
4.0 (101,6)	SLW04N6000F6A
6.0 (152,4)	SLW06N9000F6A

**SLF Metric Series**  
**Short Longfellow linear position transducer**



**Operating temperature:** -65 °C to 105 °C (-85 °F to 221 °F)  
**Supply voltage (max.):** 40 Vdc  
**Starting force (max.):**  
 Standard 0,45 kg (1.0 lb)  
 Water resistant 2,27 kg (5.0 lb)  
**Backlash (max.):** 0,025 mm (0.001 in)  
**Shaft Ø:** M6x1 metric thread  
**Termination:** Connector, Binder Series 681  
**Housing length:** = Electrical travel + 77,5 mm (3.05 in)  
**Mechanical travel:** = Electrical travel + 5,1 mm (0.2 in)



	<b>Electrical Travel (in (mm))</b>	<b>Total Resistance (Ohm)</b>
SLF025R4 or SLW025R4	25,4 (1.0)	1500
SLF050R8 or SLW050R8	50,8 (2.0)	3000
SLF076R2 or SLW076R2	76,2 (3.0)	4500
SLF101R6 or SLW101R6	101,6 (4.0)	6000
SLF152R4 or SLW152R4	152,4 (6.0)	9000

**OPTIONS**

**Standard**  
 Mating connector, 3718401, sold separately

**± 0.1 % Linearity**

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
25,4 (1.0)	SLF025R4M1500B8A
50,8 (2.0)	SLF050R8M3000B8A
76,2 (3.0)	SLF076R2M4500B8A
101,6 (4.0)	SLF101R6M6000B8A
152,4 (6.0)	SLF152R4M9000B8A

**± 1.0 % Linearity**

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
25,4 (1.0)	SLF025R4M1500F8A
50,8 (2.0)	SLF050R8M3000F8A
76,2 (3.0)	SLF076R2M4500F8A
101,6 (4.0)	SLF101R6M6000F8A
152,4 (6.0)	SLF152R4M9000F8A

**Water resistant**

Mating connector, E02903021, sold separately

**± 0.1 % Linearity**

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
25,4 (1.0)	SLW025R4M1500B8A
50,8 (2.0)	SLW050R8M3000B8A
76,2 (3.0)	SLW076R2M4500B8A
101,6 (4.0)	SLW101R6M6000B8A
152,4 (6.0)	SLW152R4M9000B8A

**± 1.0 % Linearity**

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
25,4 (1.0)	SLW025R4M1500F8A
50,8 (2.0)	SLW050R8M3000F8A
76,2 (3.0)	SLW076R2M4500F8A
101,6 (4.0)	SLW101R6M6000F8A
152,4 (6.0)	SLW152R4M9000F8A



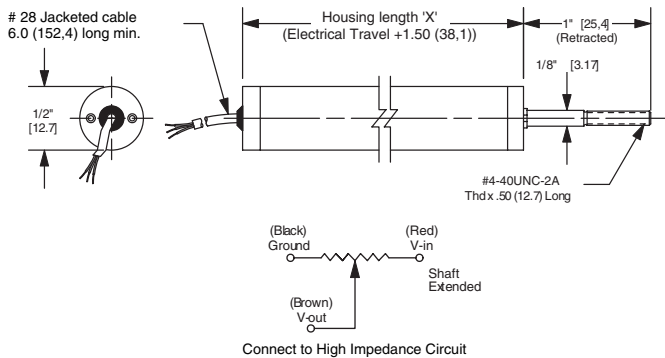
**LT Series**  
**Linear position transducer, 1/2 in diameter**



The LT Series are 1/2 inch diameter, linear position transducers rugged enough to withstand the hostile environment of the factory. The LT can be provided with shaft seals for spray or hose down environments.

**Operating temperature:** -40 °C to 80 °C (-40 °F to 176 °F)  
**Supply voltage (max.):** 30 Vdc  
**Starting force (max.):**  
 Standard 28,35 g (1.0 oz)  
 Water resistant 340,19 g (12.0 oz)  
**Backlash (max.):** 0,00508 mm (0.0002 in)  
**Shaft Ø:** 1/8 in  
**Termination:** Cable  
**Housing length:** = Electrical travel + 1.50 in (38,10 mm)  
**Mechanical travel:** = Electrical travel + 0.05 in (1,27 mm)

	<b>Electrical Travel (in (mm))</b>	<b>Total Resistance (Ohm)</b>
LTS01 or LTW01	1.0 (25,4)	1000
LTS02 or LTW02	2.0 (50,8)	2000
LTS03 or LTW03	3.0 (76,2)	3000
LTS04 or LTW04	4.0 (101,6)	4000
LTS05 or LTW05	5.0 (127,0)	5000
LTS06 or LTW06	6.0 (152,4)	6000
LTS07 or LTW07	7.0 (177,8)	7000
LTS08 or LTW08	8.0 (203,2)	8000
LTS09 or LTW09	9.0 (228,6)	9000
LTS10 or LTW10	10.0 (254,0)	10000



**OPTIONS**

**Standard**

**± 0.1 % Linearity**

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
1.0 (25,4)	LTS01N01KB5C
2.0 (50,8)	LTS02N02KB5C
3.0 (76,2)	LTS03N03KB5C
4.0 (101,6)	LTS04N04KB5C
5.0 (127,0)	LTS05N05KB5C
6.0 (152,4)	LTS06N06KB5C
7.0 (177,8)	LTS07N07KB5C
8.0 (203,2)	LTS08N08KB5C
9.0 (228,6)	LTS09N09KB5C
10.0 (254,0)	LTS10N10KB5C

**± 1.0 % Linearity**

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
1.0 (25,4)	LTS01N01KF5C
2.0 (50,8)	LTS02N02KF5C
3.0 (76,2)	LTS03N03KF5C
4.0 (101,6)	LTS04N04KF5C
5.0 (127,0)	LTS05N05KF5C
6.0 (152,4)	LTS06N06KF5C
7.0 (177,8)	LTS07N07KF5C
8.0 (203,2)	LTS08N08KF5C
9.0 (228,6)	LTS09N09KF5C
10.0 (254,0)	LTS10N10KF5C

**Water resistant**

**± 0.1 % Linearity**

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
1.0 (25,4)	LTW01N01KB5C
2.0 (50,8)	LTW02N02KB5C
3.0 (76,2)	LTW03N03KB5C
4.0 (101,6)	LTW04N04KB5C
5.0 (127,0)	LTW05N05KB5C
6.0 (152,4)	LTW06N06KB5C
7.0 (177,8)	LTW07N07KB5C
8.0 (203,2)	LTW08N08KB5C
9.0 (228,6)	LTW09N09KB5C
10.0 (254,0)	LTW10N10KB5C

**± 1.0 % Linearity**

<b>ELECTRICAL TRAVEL</b>	<b>REFERENCE</b>
1.0 (25,4)	LTW01N01KF5C
2.0 (50,8)	LTW02N02KF5C
3.0 (76,2)	LTW03N03KF5C
4.0 (101,6)	LTW04N04KF5C
5.0 (127,0)	LTW05N05KF5C
6.0 (152,4)	LTW06N06KF5C
7.0 (177,8)	LTW07N07KF5C
8.0 (203,2)	LTW08N08KF5C
9.0 (228,6)	LTW09N09KF5C
10.0 (254,0)	LTW10N10KF5C



# MLT Series

## Linear position transducer, 3/8 in Diameter

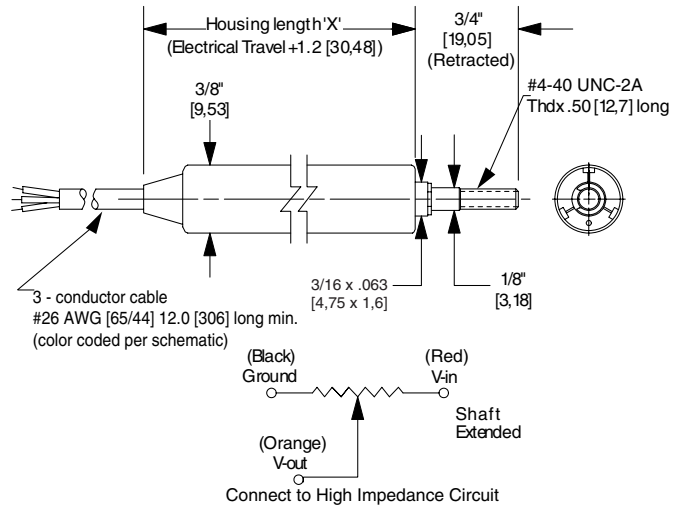


The MLT Series is 3/8 in diameter linear position transducer that is rugged enough to withstand hostile factory environments. Using a proprietary dual wiper, internal ball joint and the MystR® conductive plastic film the MLT provides a usable output at high vibration levels over long periods of time. MLT transducers use precious metal wipers to further enhance reliability.

The MLT's 3/8 inch diameter is among the smallest available and can used to replace LVDT's in many applications.

- Operating temperature:** -40 °C to 80 °C (-40 °F to 176 °F)
- Supply voltage (max.):** 30 Vdc
- Starting force (max.):** 28,35 g (1.0 oz)
- Backlash (max.):** 0,0127 mm (0.0005 in)
- Shaft Ø:** 1/8 in
- Termination:** Cable
- Housing length:** = Electrical travel + 1.20 in (30,48 mm)
- Mechanical travel:** = Electrical travel + 0.05 in (1,27 mm)

	Electrical Travel (in (mm))	Total Resistance (Ohm)
MLT0R5	0.5 (12,7)	750
MLT001	1.0 (25,4)	1500
MLT002	2.0 (50,8)	3000
MLT003	3.0 (76,2)	4500
MLT004	4.0 (101,6)	6000
MLT005	5.0 (127,0)	7500
MLT006	6.0 (152,4)	9000



### OPTIONS

#### ± 0.1 % Linearity

ELECTRICAL TRAVEL	REFERENCE
2.0 (50,8)	MLT002N3000B5C
3.0 (76,2)	MLT003N4500B5C
4.0 (101,6)	MLT004N6000B5C
5.0 (127,0)	MLT005N7500B5C
6.0 (152,4)	MLT006N9000B5C

#### ± 0.25 % Linearity

ELECTRICAL TRAVEL	REFERENCE
1.0 (25,4)	MLT001N1500D5C

#### ± 1.0 % Linearity

ELECTRICAL TRAVEL	REFERENCE
0.5 (12,7)	MLT0R5N0750F5C
1.0 (25,4)	MLT001N1500F5C
2.0 (50,8)	MLT002N3000F5C
3.0 (76,2)	MLT003N4500F5C
4.0 (101,6)	MLT004N6000F5C
5.0 (127,0)	MLT005N7500F5C
6.0 (152,4)	MLT006N9000F5C

**AQLT/AQMLT Series**  
**Shaftless, waterproof linear position transducer**



The AQLT and AQMLT are shaftless waterproof linear potentiometers designed to operate in wet/washdown and in-tank environments.

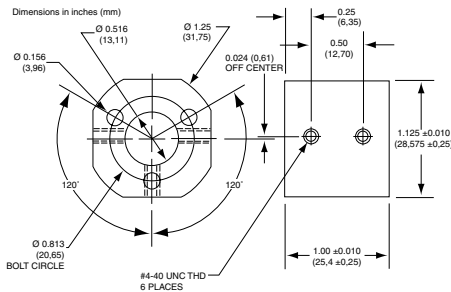
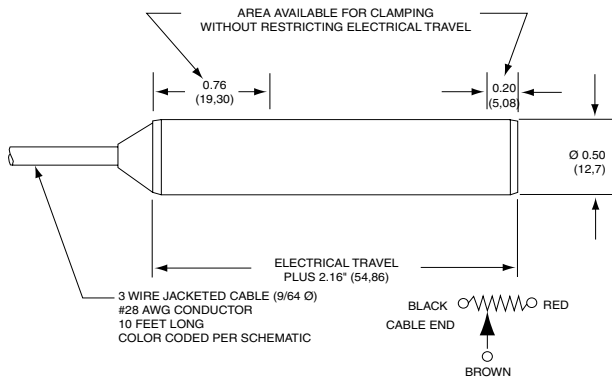
The AQ series features an external actuator magnetically coupled to a position feedback element. The magnetic actuator replaces the shaft, found in traditional linear transducers, and eliminates the need for additional stroke length mounting space.

Precious metal dual wipers, MystR® proprietary conductive plastic, and anodized aluminum housings provide long life and reliable operation in numerous applications.

<b>Operating temperature:</b>	-40 °C to 80 °C (-40 °F to 176 °F)
<b>Supply voltage (max.):</b>	30 Vdc
<b>Linearity:</b>	± 1.0 %
<b>Starting force (max.):</b>	AQMT 56,7 g (2.0 oz)
	AQMLT 28,35 g (1.0 oz)
<b>Sealing:</b>	IP68
<b>Termination:</b>	Cable

**AQLT Series**

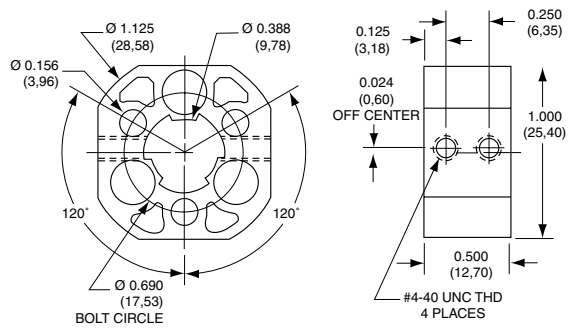
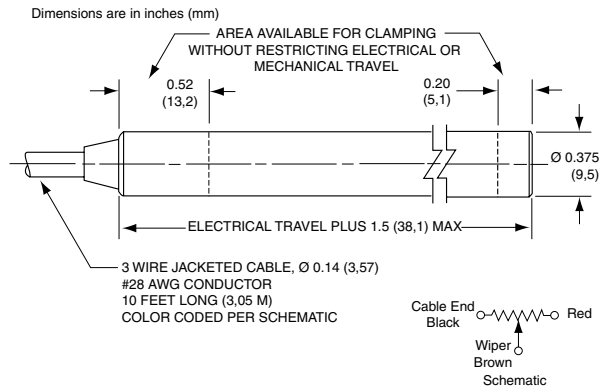
**Housing length:** = Electrical travel + 54,87 mm (2.16 in)  
**Mechanical travel:** = Electrical travel + 2,54 mm (0.1 in)



ELECTRICAL TRAVEL (MM (IN))	TOTAL RESISTANCE (OHM)	REFERENCE
152,4 (6.0)	6000	AQLT06N06KFC
304,8 (12.0)	12000	AQLT12N12KFC
457,2 (18.0)	18000	AQLT18N18KFC
609,6 (24.0)	24000	AQLT24N24KFC
762,0 (30.0)	30000	AQLT30N30KFC
965,2 (38.0)	38000	AQLT38N38KFC

**AQMLT Series**

**Housing length:** = Electrical travel + 38,1 mm (1.5 in)  
**Mechanical travel:** = Electrical travel + 2,54 mm (0.1 in)



ELECTRICAL TRAVEL (MM (IN))	TOTAL RESISTANCE (OHM)	REFERENCE
12,7 (0.5)	750	AQMLT05N0750FC
25,4 (1.0)	1500	AQMLT01N01500FC
76,2 (3.0)	3000	AQMLT03N04500FC
152,4 (6.0)	9000	AQMLT06N09000FC
228,6 (9.0)	13500	AQMLT09N13500FC
304,8 (12.0)	18000	AQMLT12N18000FC

# M22 Series Rotary position transducer



The M22 rotary potentiometer, available in servo and bushing mount, utilizes wear-resistant MystR<sup>®</sup> conductive plastic film combined with precious metal wipers to produce a quiet operating, low-noise, stable signal. Gold plated terminals eliminate soldering problems due to tarnish. The high-quality components are packaged in a cost-effective housing designed with an anodized aluminum face plate or nickel-plated brass bushing to handle assembly and operating loads. The integral internal terminations eliminate the need for internal wires which may break under vibration and thermal stress.

The M22 series rotary potentiometers are used in position-sensing applications which demand high reliability at low cost.

<b>Operating temperature:</b>		-40 °C to 85 °C (-40 °F to 185 °F)
<b>Supply voltage (max.):</b>		30 Vdc
<b>Starting force (max.):</b>	M22B	0.3 oz in (torque)
	M22S	1.0 oz in (torque)
<b>Total resistance:</b>		2000 Ohm
<b>Backlash (max.):</b>		0.1°
<b>Shaft Ø:</b>		3,175 mm (0.125 in)
<b>Termination:</b>		Gold plated solder terminals
<b>Housing size:</b>		22,0 mm (0.87 in)
<b>Bearing type:</b>		Sleeve
<b>Mechanical travel:</b>	M22B	330°
	M22S	Continuous rotation
<b>Electrical travel:</b>	M22B	320°
	M22S	340°

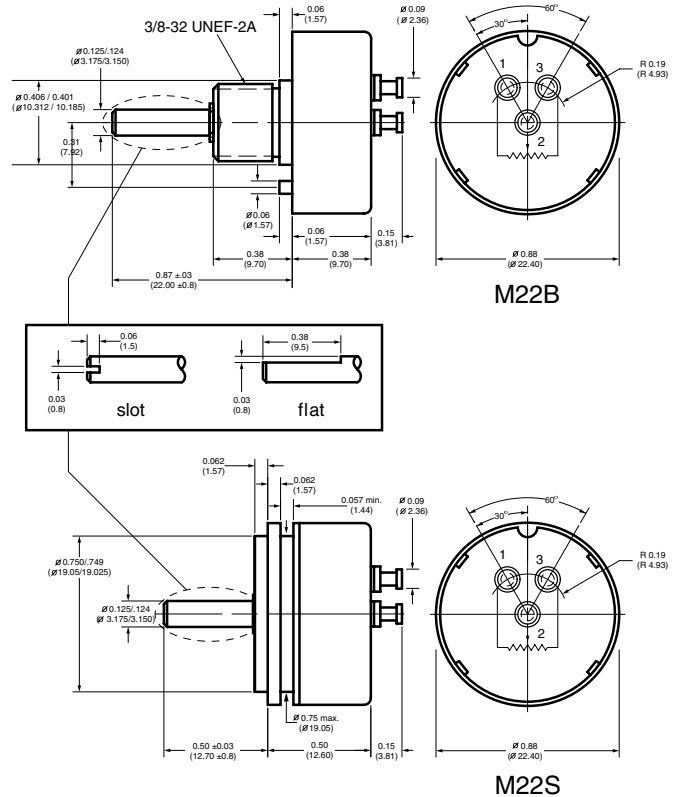
## OPTIONS

### Threaded bushing mount

LINEARITY	REFERENCE
± 0.5 %	M22B2KE1S
± 1.0 %	M22B2KF1S

### Servo mount

LINEARITY	REFERENCE
± 0.25 %	M22S2KD1S
± 0.5 %	M22S2KE1S
± 1.0 %	M22S2KF1S



**WPM Series**  
**Rotary position transducer, servo mount**



Available in servo mount styles, the WPM Series rotary transducer provides long life by utilizing the proprietary MystR<sup>®</sup> conductive plastic film, precious metal wipers and shielded ball bearings on the stainless steel shaft.

The MystR<sup>®</sup> film provides exceptionally long rotational and dither life without sacrificing microlinearity or resolution. The shielded ball bearings ensure long life even with side load conditions.

<b>Operating temperature:</b>	-55 °C to 125 °C (-67 °F to 257 °F)
<b>Supply voltage (max.):</b>	60 Vdc
<b>Total resistance:</b>	5000 Ohm
<b>Backlash (max.):</b>	0.01 %
<b>Shaft Ø:</b>	WPM5KA4* 3,175 mm (0.125 in) WPM5KB1* 6,35 mm (0.25 in)
<b>Termination:</b>	Gold plated solder terminals
<b>Bearing type:</b>	Ball bearings
<b>Mechanical travel:</b>	Continuous rotation
<b>Approvals:</b>	MIL-PRF-39023 qualified

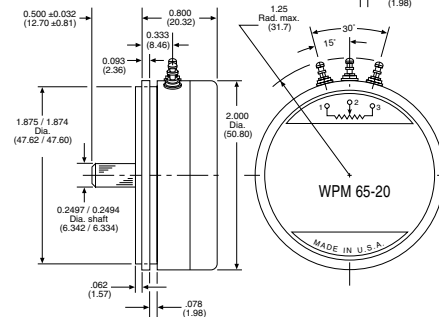
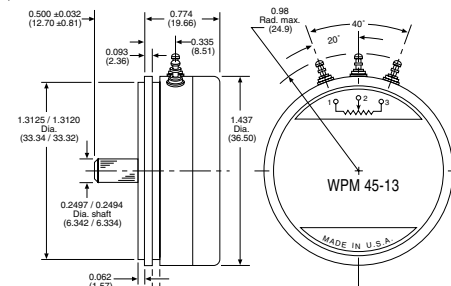
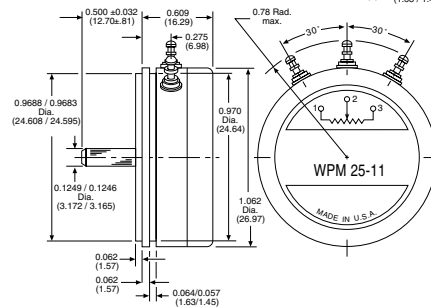
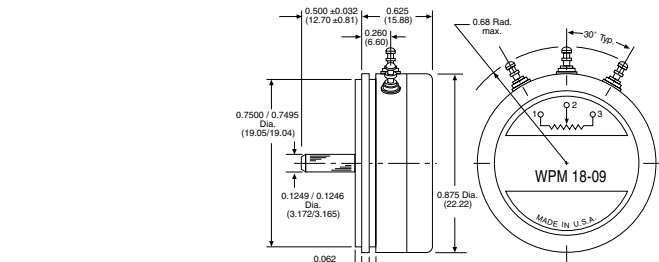
**OPTIONS**

**A4**

ELECTRICAL TRAVEL	STARTING FORCE (MAX.)	LINEARITY	REFERENCE
350°	0.8 oz in (torque)	± 0.075 %	WPM5KA4S4513
353°	1.0 oz in (torque)	± 0.075 %	WPM5KA4S6520

**B1**

ELECTRICAL TRAVEL	STARTING FORCE (MAX.)	LINEARITY	REFERENCE
340°	0.4 oz in (torque)	± 0.1 %	WPM5KB1S1809
345°	0.4 oz in (torque)	± 0.1 %	WPM5KB1S2511



# Torque Watch Gauges

The Torque Watch, an industry mainstay when an accurate indication of rotary force is necessary, is simple to use, requiring no special tools or setups. Available in three models they cover ranges from 0.003 to 200 inch-ounces. Attach the gauge to the device being measured, and simply rotate it, for a direct reading dial.

Protection against over-torque is provided by a stainless steel internal rotation stop. The low range 366 Series will prevent damage from over-torque up to three times the normal range, whilst the mid range 641 Series and the high range 940 Series will prevent damage up to twice the normal range.

Models are available in standard (ounce inch), metric (gram centimeter) and System International (Newton meter) measuring options.

## 366 Series Low range 0.003 - 0.60 oz in



The Series 366 Torque Watch accurately measures very low torque. Three miniature adapter chucks allow simple coupling to the device being measured.

### OPTIONS

#### Standard

OUNCE INCHES	REFERENCE
0.06 to 0.6	366-0
0.01 to 0.1	366-2
0.003 to 0.03	366-3

#### Metric

GRAM CENTIMETER	REFERENCE
6 to 42	366-0M
1 to 7.5	366-2M
0.2 to 2	366-3M

## 651 Series Mid range 0.05 - 40.0 oz in



The Series 651 Torque Watch provides accurate measurement of low static torque. A 1/4 inch keyed chuck provides a simple means of coupling to the device under measurement.

### OPTIONS

#### Standard

OUNCE INCHES	REFERENCE
0.05 to 1.2	651C-1
1 to 20	651C-2
2 to 40	651C-3
0.1 to 2.4	651X-2
0.25 to 5	651X-3
0.5 to 10	651X-4

#### Metric

GRAM CENTIMETER	REFERENCE
2.5 to 80	651C-1M
50 to 1.2 K	651C-2M
150 to 2.8 K	651C-3M
5 to 150	651X-2M
10 to 300	651X-3M
25 to 600	651X-4M

#### System International

NEWTON METER	REFERENCE
0.5 to 9	651C-1SI
10 to 140	651C-2SI
15 to 285	651C-3SI
1 to 18	651X-2SI
2 to 36	651X-3SI
5 to 70	651X-4SI

## 940 Series High range 15.0 - 200.0 oz in



The Series 940 Torque Watch accurately measures torque in values that range from 15.0 to 200 oz/in. A 3/8 inch keyed chuck and 3/8 inch square socket driver adapter provide a simple means of coupling to the device under measurement.

### OPTIONS

#### Standard

OUNCE INCHES	REFERENCE
30 to 200	940-1
15 to 100	940-2

#### Metric

GRAM CENTIMETER	REFERENCE
2.5 K to 14.3 K	940-1M
1 K to 7.1 K	940-2M

#### System International

NEWTON METER	REFERENCE
0.25 to 1.4	940-1SI
0.1 to 0.7	940-2SI

# Clarostat Rotary Position Transducers

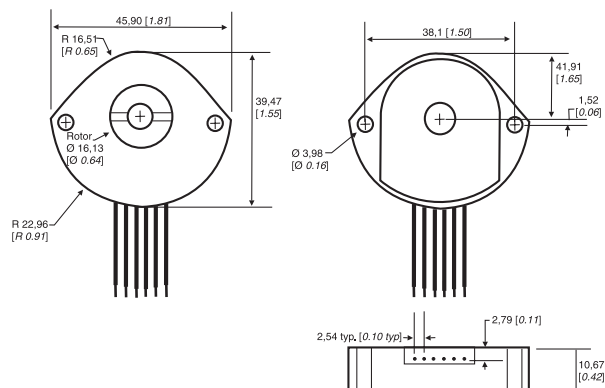
## TH100 Series



The TH-100 Series puts Honeywell's proven variable-resistor technology to work in angle-management applications such as control-lever sensing and equipment position feedback. High performance and low cost make it attractive for a wide range of applications. Special electrical and mechanical configurations, including dual tracks, D-shape rotor holes, etc. are available on special order.

The device provides for angle measurements, has 152,4 mm (6.0 in) wire leads, a 6,35 mm (0.25 in) slotted thru hole and is sealed.

<b>Power rating:</b>	0.5 W max.
<b>Element type:</b>	Conductive plastic
<b>Terminal type:</b>	three 20 AWG
<b>Shaft:</b>	6,35 mm (0.25 in) thru hole with .105 w x .090 d slot
<b>Body:</b>	38,1 mm (1.5 in) x 45,72 mm (1.8 in)
<b>Electrical taper:</b>	Linear
<b>Storage &amp; operating temperature:</b>	-40 °C to 120 °C (-40 °F to 248 °F)
<b>Working voltage (max):</b>	350 Vdc
<b>Linearity:</b>	± 5% standard; to ± 1% special
<b>Total resistance:</b>	10 K
<b>Total resistance tolerance:</b>	± 15%
<b>Rotational cycles:</b>	> 1 million



### OPTIONS

#### 180° Rotation

TAPER	CABLE CONNECTOR	REFERENCE
Linear	No	640CS103A06NAAY

#### 90° Rotation

TAPER	CABLE CONNECTOR	REFERENCE
Linear	No	640ES103A06NAAY

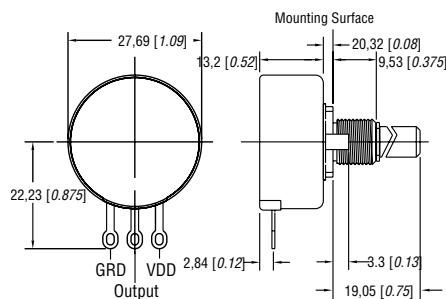
## HRS100 Series, Hall-effect



The HRS100 provides angular position information for a variety of sensing and control applications in the automotive, marine, truck, off-road, industrial implementation, aerospace, and rail industries. The use of magnetically coupled information in place of a mechanical wiper assembly provides a long life, cost-effective solution for harsh environments that include temperature, vibration, dither, moisture and dirt.

This position sensor incorporates Hall-effect to provide a sensing device that will last for more than 50 million operations. The device is packaged in a metal housing with a 9,5 mm (0.375 in) diameter bushing and a 6,35 mm (0.25 in) diameter slotted shaft and solder lug terminals.

<b>Terminal type:</b>	Straight solder lug
<b>Bushing:</b>	9,52 mm (.375 in) FMS, includes C-ring
<b>Shaft:</b>	Slotted 6,32 mm ± 0,03 (0.249 in ± 0.001)
<b>Body:</b>	27,79 mm (1.094 in) Ø
<b>Electrical taper:</b>	Linear
<b>Operating temperature:</b>	-40 °C to 85 °C (-40 °F to 185 °F)
<b>Supply voltage (max):</b>	5 Vdc
<b>Linearity:</b>	± 2%
<b>Rotational cycles:</b>	10 million
<b>Mechanical operating angle:</b>	90°



### OPTIONS

#### 90° Rotation

SHAFT	LUG	REFERENCE
Slotted	Straight Solder	HRS100SSAB090

# Clarostat Rotary Potentiometers and Position Transducers

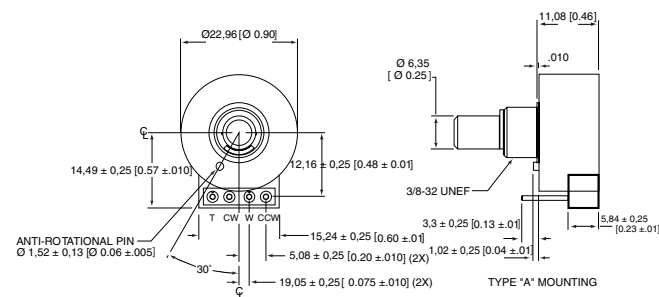
## 578 Series, Precision potentiometer



The 578 Series conductive plastic precision potentiometer puts Honeywell's proven variable resistor technology to work in a high performance, cost-effective device. With its compact size, rugged construction and advanced versatility, the 578 provides superior control for applications such as joy-stick controllers and position-sensing devices.

The model 578 features a 9,5 mm x 9,5 mm (0.375 in x 0.375 in) bushing, 6,35 mm x 19,05 mm (0.25 in x 0.75 in) slotted shaft, linear taper, and type A pc pins (please consult with the factory for custom OEM configurations).

<b>Power rating:</b>	0.5 W @ 70 °C (158 °F)
<b>Element type:</b>	Conductive plastic
<b>Terminal type:</b>	PC pin type A
<b>Bushing:</b>	9,52 mm (0.375 in) D x 9,52 mm (0.375 in) L
<b>Shaft:</b>	6,35 mm x 19,05 mm (0.25 in x 0.75 in) Slotted
<b>Body:</b>	22,86 mm (0.900 in) Ø
<b>Electrical taper:</b>	Linear
<b>Operating temperature:</b>	-40 °C to 100 °C (-40 °F to 212 °F)
<b>Working voltage:</b>	400 Vdc
<b>Linearity:</b>	1%
<b>Total resistance tolerance:</b>	± 10%
<b>Revolutions:</b>	5 million
<b>Mechanical rotation:</b>	320° ± 5°



### OPTIONS

#### 1 kOhm Resistance

SHAFT	RESISTANCE TAPER	REFERENCE
Slotted stainless steel	Linear	578X1G48S102SA

#### 5 kOhm Resistance

SHAFT	RESISTANCE TAPER	REFERENCE
Slotted stainless steel	Linear	578X1G48S502SA

#### 10 kOhm Resistance

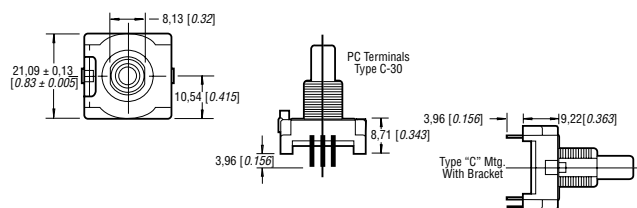
SHAFT	RESISTANCE TAPER	REFERENCE
Slotted stainless steel	Linear	578X1G48S103SA

## 574 Series, Commercial potentiometer



The 574 Series conductive plastic potentiometer offers low mounting profile, smooth feel, and robust construction with a thermoplastic housing, bushing, and shaft. Terminals are PC style with a bracket for vertical mounting. No hardware is included.

<b>Power rating:</b>	0.25 W @ 70 °C (158 °F)
<b>Element type:</b>	Conductive plastic
<b>Terminal type:</b>	PC terminals type C with C mounting bracket
<b>Bushing:</b>	M9 x 6,35 mm (0.25 in) L
<b>Shaft:</b>	6,35 (0.25 in) Ø x 19,05 (0.75 in) L
<b>Body:</b>	21,08 mm (0.830 in) square
<b>Electrical taper:</b>	Linear
<b>Operating temperature:</b>	-40 °C to 120 °C (-40 °F to 248 °F)
<b>Working voltage:</b>	350 Vac
<b>Linearity:</b>	± 5%
<b>Total resistance tolerance:</b>	± 20%
<b>Rotational cycles:</b>	50,000
<b>Mechanical rotation:</b>	300° ± 5°



### OPTIONS

#### Flatted Shaft

RESISTANCE	TAPER	REFERENCE
1 kOhm	Linear	574SX1M48F102SD
10 kOhm	Linear	574SX1M48F103SD
100 kOhm	Linear	574SX1M48F104SD
50 kOhm	Linear	574SX1M48F503SD

#### Slotted Shaft

RESISTANCE	TAPER	REFERENCE
1 kOhm	Linear	574SX1M48S102SD
10 kOhm	Linear	574SX1M48S103SD
100 kOhm	Linear	574SX1M48S104SD
50 kOhm	Linear	574SX1M48S503SD

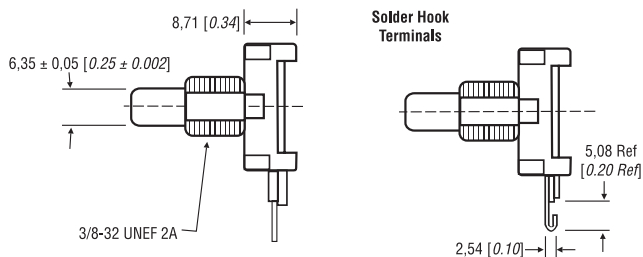
## Clarostat Rotary Potentiometers and Position Transducers (continued)

### 575 Series, Commercial potentiometer



The 575 Series conductive plastic potentiometer offers a smooth feel and robust construction, with a thermoplastic housing, bushing, and shaft. Terminals are solder-hook style for panel mounting. No hardware is included.

<b>Power rating:</b>	0.5 W @ 70 °C (158 °F)
<b>Element type:</b>	Conductive plastic
<b>Terminal type:</b>	Solder hook-200 grid
<b>Bushing:</b>	9,52 mm (.375 in) D x 6,35 mm (0.25 in) L
<b>Shaft:</b>	6,35 mm (0.25 in) Ø x 19,05 mm (0.75 in) L
<b>Body:</b>	21,08 mm (0.830 in) square
<b>Electrical taper:</b>	Linear
<b>Operating temperature:</b>	-40 °C to 120 °C (-40 °F to 248 °F)
<b>Working voltage:</b>	350 Vac
<b>Linearity:</b>	± 5%
<b>Total resistance tolerance:</b>	± 20%
<b>Rotational cycles:</b>	50,000
<b>Mechanical rotation:</b>	300° ± 5°



### OPTIONS

#### Flatted Shaft

RESISTANCE	TAPER	REFERENCE
1 kOhm	Linear	575SX1A48F102SS
10 kOhm	Linear	575SX1A48F103SS
50 kOhm	Linear	575SX1A48F503SS

#### Slotted Shaft

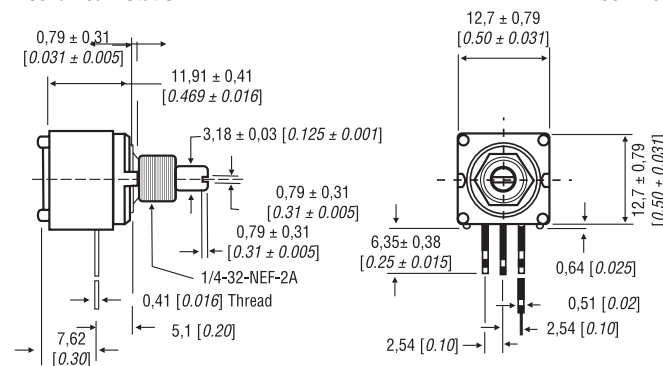
RESISTANCE	TAPER	REFERENCE
1 kOhm	Linear	575SX1A48S102SS
10 kOhm	Linear	574SX1A48S103SS
50 kOhm	Linear	574SX1A48S503SS

### 590 Series, Commercial potentiometer



The 590 Series conductive plastic modular potentiometer features low electrical noise, smooth feel, robust construction, and brass bushing and shaft. Terminals are PC style. Hardware included. Multiple sections (up to three) are available on special order.

<b>Power rating:</b>	0.5 W @ 70 °C (158 °F)
<b>Element type:</b>	Conductive plastic
<b>Terminal type:</b>	PC, 6,35 mm (0.25 in) long
<b>Bushing:</b>	6,35 mm (0.25 in) Ø x 6,35 mm (0.25 in) L
<b>Shaft:</b>	Slotted, 3,17 mm (0.125 in) Ø x 22,23 mm (0.875 in) L
<b>Body:</b>	12,7 mm (0.50 in) Ø
<b>Electrical taper:</b>	Linear
<b>Operating temperature:</b>	-40 °C to 120 °C (-40 °F to 248 °F)
<b>Linearity:</b>	± 5%
<b>Total resistance tolerance:</b>	± 10% (up to 500 kOhms) ± 20 % (1 MOhm and over)
<b>Rotational cycles:</b>	50,000
<b>Mechanical rotation:</b>	295° ± 5°



### OPTIONS

#### Slotted Shaft

RESISTANCE	TAPER	REFERENCE
100 Ohm	Linear	590SX1N56S101SP
500 Ohm	Linear	590SX1N56S501SP
1 kOhm	Linear	590SX1N56S102SP
5 kOhm	Linear	590SX1N56S502SP
10 kOhm	Linear	590SX1N56S103SP
100 kOhm	Linear	590SX1N56S104SP
500 kOhm	Linear	590SX1N56S504SP
1 MOhm	Linear	590SX1N56S105SP



### 380 Series, Industrial potentiometer

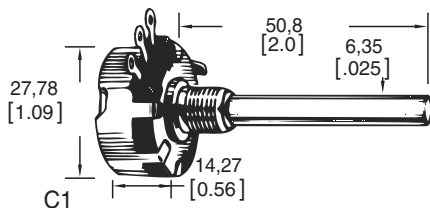


The 380 Series "Quiet One" is a 2-watt conductive plastic potentiometer offering superior dynamic noise and a long rotational life. It meets MIL-R-94 specifications where applicable.

<b>Approvals:</b>	MIL-R-94
<b>Power rating:</b>	2.0 W max.
<b>Element type:</b>	Conductive plastic
<b>Terminal type:</b>	Solder lug
<b>Shaft:</b>	Slotted
<b>Body:</b>	27,79 mm (1.094 in) Ø
<b>Electrical taper:</b>	Linear
<b>Operating temperature:</b>	-55 °C to 120 °C (-67 °F to 248 °F)
<b>Working voltage:</b>	500 Vdc
<b>Linearity:</b>	± 5%
<b>Total resistance tolerance:</b>	± 10% (up to 500 kOhms) ± 20 % (1 MOhm and over)
<b>Rotational cycles:</b>	100,000
<b>Mechanical rotation:</b>	312° ± 3°

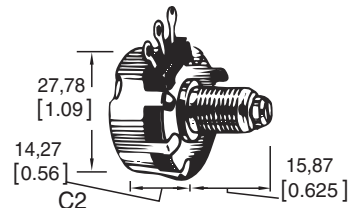
#### OPTIONS

**C1: 2.0 in (50,8 mm) Round Shaft;  
0.375 in (9,5 mm) L bushing**



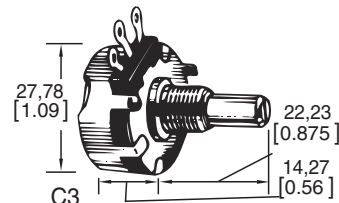
RESISTANCE	REFERENCE
100 Ohm	380C1100
250 Ohm	380C1250
500 Ohm	380C1500
1 kOhm	380C11000
1.5 kOhm	380C11500
2 kOhm	380C12000
2.5 kOhm	380C12500
5 kOhm	380C15000
10 kOhm	380C110K
15 kOhm	380C115K
20 kOhm	380C120K
25 kOhm	380C125K
50 kOhm	380C150K
100 kOhm	380C1100K
200 kOhm	380C1200K
250 kOhm	380C1250K
500 kOhm	380C1500K
1 MOhm	380C11MEG

**C2: 0.625 in (15,88 mm) screwdriver slotted shaft;  
0.5 in (12,7 mm) L locking bushing**



RESISTANCE	REFERENCE
250 Ohm	380C2250
1 kOhm	380C21000
5 kOhm	380C25000
10 kOhm	380C210K
25 kOhm	380C225K
50 kOhm	380C250K
100 kOhm	380C2100K
250 kOhm	380C2250K
1 MOhm	380C21MEG

**C3: 0.875 in (22,23 mm) shaft;  
0.375 in (9,5 mm) L bushing**



RESISTANCE	REFERENCE
100 Ohm	380C3100
250 Ohm	380C3250
500 Ohm	380C3500
1 kOhm	380C31000
2 kOhm	380C32000
2.5 kOhm	380C32500
5 kOhm	380C35000
10 kOhm	380C3310K
25 kOhm	380C325K
50 kOhm	380C350K
100 kOhm	380C3100K
150 kOhm	380C3150K
200 kOhm	380C3200K
250 kOhm	380C3250K
500 kOhm	380C3500K
1 MOhm	380C31MEG
5 MOhm	380C35MEG

## Clarostat Rotary Potentiometers and Position Transducers (continued)

### 485 Series, Industrial potentiometer

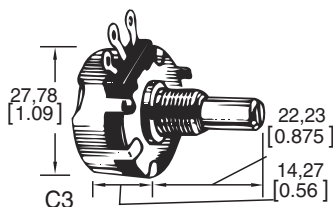


The 485 Series is the extended-life version of the 380 Series. It is a 2-watt conductive plastic potentiometer offering superior dynamic noise and extra long rotational life. It meets MIL-R-94 specifications where applicable.

<b>Approvals:</b>	MIL-R-94
<b>Power rating:</b>	2.0 W max.
<b>Element type:</b>	Conductive plastic
<b>Terminal type:</b>	Solder lug
<b>Shaft:</b>	Slotted
<b>Body:</b>	27,79 mm (1.094 in) Ø
<b>Electrical taper:</b>	Linear
<b>Operating temperature:</b>	-55 °C to 120 °C (-67 °F to 248 °F)
<b>Working voltage:</b>	500 Vdc
<b>Linearity:</b>	± 5%
<b>Total resistance tolerance:</b>	± 10% (up to 500 kOhms) ± 20% (1 MOhm and over)
<b>Rotational cycles:</b>	1,000,000
<b>Mechanical rotation:</b>	312° ± 3°

#### OPTIONS

**0.875 in (22,23 mm) shaft;**  
**0.375 in (9,5 mm) L bushing**



RESISTANCE	REFERENCE
1 kOhm	C0416392
5 kOhm	C0416393
10 kOhm	C0416394

#### Special version with 45° element

Construction incorporates an internal shaft seal for moisture resistance.

RESISTANCE	REFERENCE
5 kOhm	C0416395

### RV4 MIL Series potentiometer

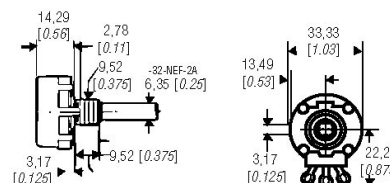


The RV4 is a dual-marked potentiometer with all the fine features of the 380 Series in a more economical package. It is built in strict accordance with MIL-R-94.

<b>Approvals:</b>	MIL-R-94
<b>Power rating:</b>	2.0 W max.
<b>Element type:</b>	Conductive plastic
<b>Terminal type:</b>	Solder lug
<b>Shaft:</b>	Slotted
<b>Body:</b>	27,79 mm (1.094 in) Ø
<b>Electrical taper:</b>	Linear
<b>Operating temperature:</b>	-55 °C to 120 °C (-67 °F to 248 °F)
<b>Working voltage:</b>	500 Vdc
<b>Linearity:</b>	± 5%
<b>Rotational cycles:</b>	25,000
<b>Mechanical rotation:</b>	312° ± 3°

#### OPTIONS

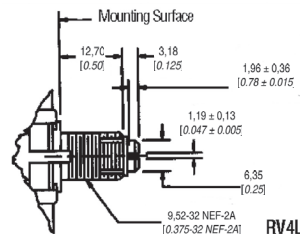
**Standard Bushing,**  
**0.875 in (22,23 mm)**  
**shaft length**



RV4N

RESISTANCE	TOLERANCE	REFERENCE
100 Ohm	± 10 %	RV4NAYS101A
250 Ohm	± 10 %	RV4NAYS251A
500 Ohm	± 10 %	RV4NAYS501A
1 kOhm	± 10 %	RV4NAYS102A
2.5 kOhm	± 10 %	RV4NAYS252A
5 kOhm	± 10 %	RV4NAYS502A
10 kOhm	± 10 %	RV4NAYS103A
25 kOhm	± 10 %	RV4NAYS253A
50 kOhm	± 10 %	RV4NAYS503A
100 kOhm	± 10 %	RV4NAYS104A
250 kOhm	± 10 %	RV4NAYS254A
500 kOhm	± 10 %	RV4NAYS504A
750 Kohm	± 10 %	RV4NAYS754A
1 MOhm	± 10 %	RV4NAYS105A
5 MOhm	± 20 %	RV4NAYS505B

#### Locking Bushing



RV4L

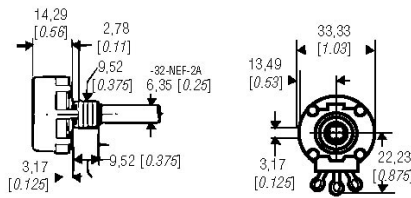
RESISTANCE	TOLERANCE	REFERENCE
100 Ohm	± 10 %	RV4LAYS101A
250 Ohm	± 10 %	RV4LAYS251A
500 Ohm	± 10 %	RV4LAYS501A
1 kOhm	± 10 %	RV4LAYS102A
2.5 kOhm	± 10 %	RV4LAYS252A
5 kOhm	± 10 %	RV4LAYS502A
10 kOhm	± 10 %	RV4LAYS103A
25 kOhm	± 10 %	RV4LAYS253A
50 kOhm	± 10 %	RV4LAYS503A
100 kOhm	± 10 %	RV4LAYS104A
250 kOhm	± 10 %	RV4LAYS254A
500 kOhm	± 10 %	RV4LAYS504A
750 kOhm	± 10 %	RV4LAYS754A
1 MOhm	± 10 %	RV4LAYS105A
5 MOhm	± 20 %	RV4LAYS505B

### 53 Series potentiometer



The 53 Series has all the fine features of the Series 380 in a more economical package. It is available with a 50,8 mm [2.0 in] long shaft.

<b>Power rating:</b>	2.0 W max.
<b>Element type:</b>	Conductive plastic
<b>Terminal type:</b>	Solder lug
<b>Shaft:</b>	Slotted, 50,8 mm (2.0 in) L
<b>Body:</b>	27,79 mm (1.094 in) Ø
<b>Electrical taper:</b>	Linear
<b>Operating temperature:</b>	-55 °C to 120 °C (-67 °F to 248 °F)
<b>Working voltage:</b>	500 Vdc
<b>Linearity:</b>	± 5%
<b>Rotational cycles:</b>	25,000
<b>Mechanical rotation:</b>	312° ± 3°



#### OPTIONS

##### Standard Bushing, 2.0 in (50,8 mm) shaft length

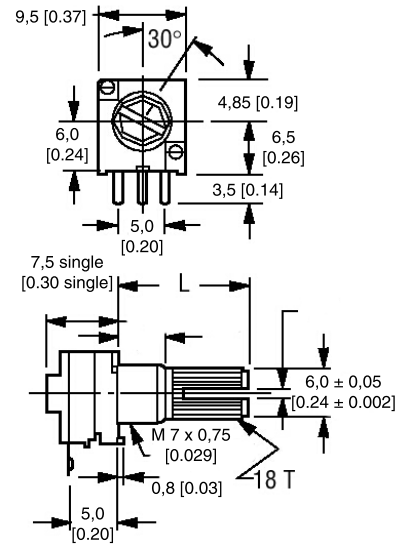
RESISTANCE	TOLERANCE	REFERENCE
100 Ohm	± 10 %	53C1100
250 Ohm	± 10 %	53C1250
500 Ohm	± 10 %	53C1500
1 kOhm	± 10 %	53C11K
2.5 kOhm	± 10 %	53C1250K
5 kOhm	± 10 %	53C15K
10 kOhm	± 10 %	53C110K
25 kOhm	± 10 %	53C125K
50 kOhm	± 10 %	53C150K
100 kOhm	± 10 %	53C1100K
150 kOhm	± 10 %	53C1150K
250 kOhm	± 10 %	53C1250K
500 kOhm	± 10 %	53C1500K
750 kOhm	± 10 %	53C1750K
1 MOhm	± 20 %	53C11MEG
2.5 MOhm	± 20 %	53C12.5MEG
5 MOhm	± 20 %	53C15MEG

### 585 Series, Commercial potentiometer



Our Series 585 offers a robust construction in a low-cost commercial package, using carbon composition elements and a metal shaft and bushing.

<b>Power rating:</b>	0.05 W max. @ 40 °C
<b>Element type:</b>	Carbon composition
<b>Terminal type:</b>	3 in-line
<b>Bushing:</b>	M 7 x 0.75 thread, 7 mm L
<b>Shaft:</b>	6,0 mm (0.24 in) Ø by 25,0 mm (0.98 in) L
<b>Flatted shaft:</b>	12,0 mm (0.47 in) long by 4,5 mm (0.18 in) D standard; round end available
<b>Body:</b>	9,5 mm (0.37 in) square
<b>Operating temperature:</b>	-55 °C to 120 °C (-67 °F to 248 °F)
<b>Resistance tolerance:</b>	± 20%
<b>Rotational cycles:</b>	10,000
<b>Mechanical rotation:</b>	300°



#### OPTIONS

##### Linear taper

RESISTANCE	SECTION	REFERENCE
1 kOhm	Single	585SX4Q25F102SP
5 kOhm	Single	585SX4Q25F502SP
10 kOhm	Single	585SX4Q25F103SP
1 kOhm	Double	585DX4Q25F102SP
5 kOhm	Double	585DX4Q25F502SP
10 kOhm	Double	585DX4Q25F103SP

##### Audio taper

RESISTANCE	SECTION	REFERENCE
1 kOhm	Single	585SX4Q25F102ZP
5 kOhm	Single	585SX4Q25F502ZP
10 kOhm	Single	585SX4Q25F103ZP

## Clarostat Rotary Potentiometers and Position Transducers (continued)

### RV6/392M MIL Series potentiometer



RV6/392M Series are economical potentiometers designed to meet wave soldering applications for mounting PC boards. They meet flow solderability and washability test requirements, and MIL-R-94 standard apply.

<b>Approvals:</b>	MIL-R-94
<b>Power rating:</b>	0.5 W max.
<b>Element type:</b>	Conductive plastic
<b>Terminal type:</b>	Solder hook
<b>Shaft:</b>	Slotted
<b>Body:</b>	12,7 mm (0.5 in) Ø
<b>Electrical taper:</b>	Linear
<b>Operating temperature:</b>	-40 °C to 120 °C (-40 °F to 248 °F)
<b>Working voltage:</b>	350 Vdc
<b>Linearity:</b>	± 5%
<b>Total resistance tolerance:</b>	± 10% (up to 500 kOhms) ± 20 % (1 MOhm and over)
<b>Rotational cycles:</b>	50,000
<b>Mechanical rotation:</b>	295° ± 5°

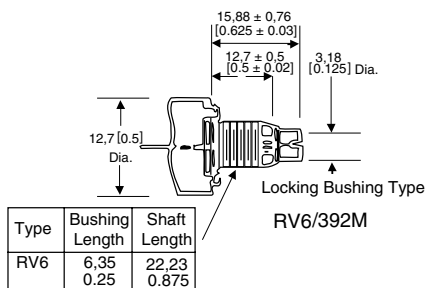
### OPTIONS

**Standard Bushing, 6,35 mm (0.25 in) L;  
0.875 in (22,23 mm) shaft length**

RESISTANCE	REFERENCE
100 Ohm	RV6NAYS101A
250 Ohm	RV6NAYS251A
500 Ohm	RV6NAYS501A
1 kOhm	RV6NAYS102A
2.5 kOhm	RV6NAYS252A
5 kOhm	RV6NAYS502A
10 kOhm	RV6NAYS103A
25 kOhm	RV6NAYS253A
50 kOhm	RV6NAYS503A
100 kOhm	RV6NAYS104A
250 kOhm	RV6NAYS254A
500 kOhm	RV6NAYS504A
1 MOhm	RV6NAYS105A

**Locking Bushing, 12,7 mm (0.50 in) L;  
0.625 in (15,88 mm) shaft length**

RESISTANCE	REFERENCE
100 Ohm	RV6LAYS101A
250 Ohm	RV6LAYS251A
500 Ohm	RV6LAYS501A
1 kOhm	RV6LAYS102A
2.5 kOhm	RV6LAYS252A
5 kOhm	RV6LAYS502A
10 kOhm	RV6LAYS103A
25 kOhm	RV6LAYS253A
50 kOhm	RV6LAYS503A
100 kOhm	RV6LAYS104A
250 kOhm	RV6LAYS254A
500 kOhm	RV6LAYS504A
1 MOhm	RV6LAYS105A



# Encoders

## 510 Series, Mechanical

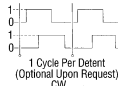
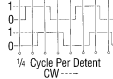


The 510 Series controls are manually operated, rotary, mechanical encoders that provide a two-bit gray code for relative reference applications and a four-bit gray code for absolute electrical reference applications. The "L" channel leads the "R" channel by 90° electrically in the CW position. It features continuous electrical travel and has a rotational life of more than 100,000 shaft revolutions with a positive detent feel.

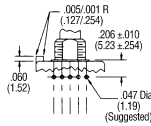
This series is small-sized, 21,08 mm<sup>2</sup> by 8,71 mm deep (0.83 in<sup>2</sup> x 0.343 in) long and commonly used in limited-space, panel-mounted applications where the need for costly, front-panel displays can be completely eliminated. Digital gray-code outputs eliminate the need for A/D converters.

**Bushing:** 9,52 mm (0.375 in) Ø x 6,35 mm (0.25 in) L  
**Shaft:** Flatted, 6,35 mm (0.25 in) Ø x 19,05 mm (0.75 in) L  
**Body:** 21,08 mm (0.830 in) square  
**Operating temperature:** -40 °C to 105 °C (-40 °F to 221 °F)  
**Rotational cycles:** 100,000

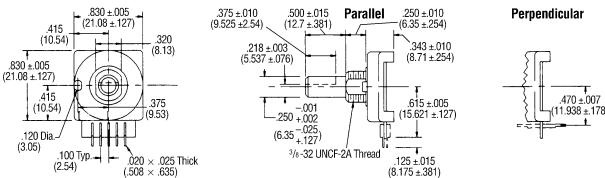
Output Table



Control Dimensions, Single Control



Footprint Viewed from Top of Control



### OPTIONS

#### Vertical Mount, PC Terminals/bent back

**GREY CODE OPTIONS**

- 2 bit/4 cycles
- 2 bit/6 cycles
- 2 bit/9 cycles
- 4 bit/16 cycles

**REFERENCE**

- 510E1A48F204PC
- 510E1A48F206PC
- 510E1A48F209PC
- 510E1A48F416PC

#### Horizontal Mount, PC Terminals/straight

**GREY CODE OPTIONS**

- 2 bit/4 cycles
- 2 bit/6 cycles
- 2 bit/9 cycles
- 4 bit/16 cycles

**REFERENCE**

- 510E1A48F204PB
- 510E1A48F206PB
- 510E1A48F209PB
- 510E1A48F416PB

### Brackets

**MOUNTING DIRECTION**

- Vertical
- Horizontal

**REFERENCE**

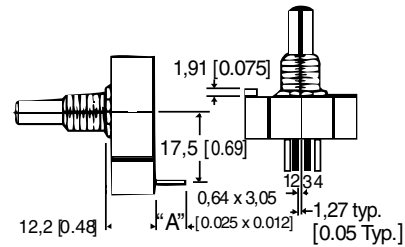
- 510VBKT
- 510HBKT

## 600 Series, Optical



The 600 Series controls are manually operated, rotary, optical encoders that output two square waves in quadrature at a rate of 128 pulse per channel per revolution as a standard with other resolutions down to 60 pulses available. The outputs are TTL compatible. PC terminals or cable leads are available.

**Pulses per revolution:** 128  
**Supply voltage:** 5.0 V  
**Body:** 34,93 mm (1.375 in) Ø  
**Shaft:** 6,35 mm [0.25 in] dia by 22,23 mm [0.875] long  
**Bushing:** 9,52 mm [0.375 in] dia by 9,52 mm [0.375 in] long  
**Operating temperature:** -40 °C to 65 °C (-40 °F to 149 °F)  
**Revolutions:** 10 million



### OPTIONS

#### Series 600

**TERMINATION**

- 177,8 mm (7.0 in) long cable
- PC terminals exiting side
- PC terminals exiting rear
- 177,8 mm (7.0 in) long cable with connector

**REFERENCE**

- 600EN-128-CBL
- 600EN-128-B66
- 600EN-128-C24
- 600EN-128-CN1

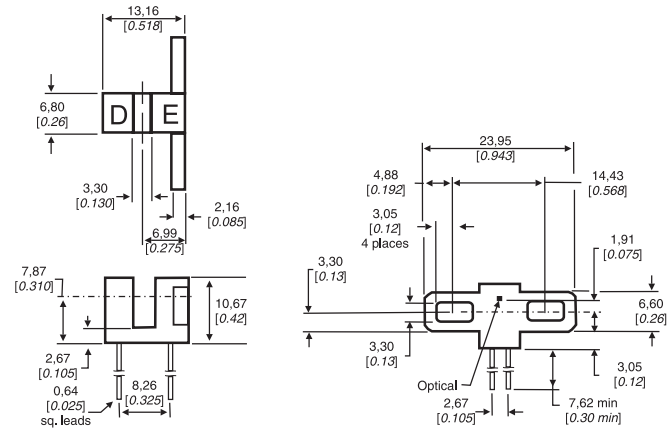
# Slotted Optical Switches

## S-180 Series



The S-180 Series consists of a gallium arsenide IRED and silicon phototransistor mounted in a rigid one-piece polycarbonate housing. All electrical options are available with either PCB mount or 457,0 mm (18.0 in) minimum length wire termination (26 AWG type UL 1429)

<b>Operating temperature:</b>	-40 °C to 85 °C (-40 °F to 185 °F)
<b>IRED continuous forward current:</b>	50 mA
<b>IRED peak forward current:</b>	3 A
<b>IRED reverse voltage:</b>	3 V
<b>IRED power dissipation:</b>	100 mW
<b>Sensor collector-emitter voltage:</b>	30 V
<b>Sensor emitter-collector voltage:</b>	5 V
<b>Sensor power dissipation:</b>	100 mW



### OPTIONS

#### PCB Mount

$V_{CE(EST)}$	$I_L$	REFERENCE
0.4 V max @ $I_F = 20$ mA, $I_C = 0.4$ mA	0.5 mA min @ $I_F = 20$ mA and $V_{CE} = 5$ V	S-180-A55
0.4 V max @ $I_F = 10$ mA, $I_C = 0.8$ mA	1.0 mA min @ $I_F = 10$ mA and $V_{CE} = 5$ V	S-180-B55
0.4 V max @ $I_F = 20$ mA, $I_C = 2.0$ mA	2.0 mA min @ $I_F = 20$ mA and $V_{CE} = 5$ V	S-180-C55

#### Wire Leads

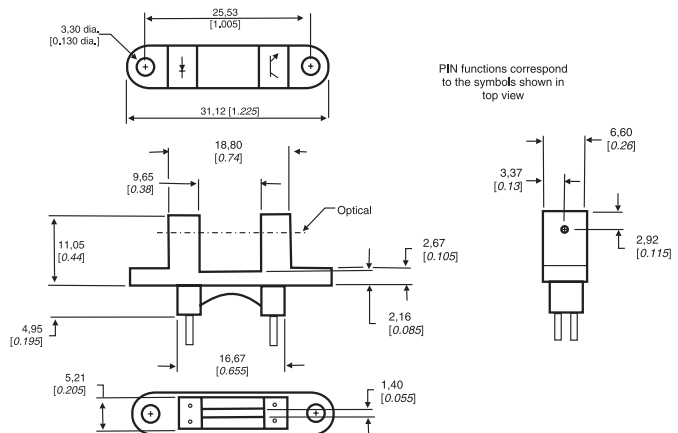
$V_{CE(EST)}$	$I_L$	REFERENCE
0.4 V max @ $I_F = 20$ mA, $I_C = 0.4$ mA	0.5 mA min @ $I_F = 20$ mA and $V_{CE} = 5$ V	S-180-A55W
0.4 V max @ $I_F = 10$ mA, $I_C = 0.8$ mA	1.0 mA min @ $I_F = 10$ mA and $V_{CE} = 5$ V	S-180-B55W
0.4 V max @ $I_F = 20$ mA, $I_C = 2.0$ mA	2.0 mA min @ $I_F = 20$ mA and $V_{CE} = 5$ V	S-180-C55W

## S-800W Series, Wide gap



The S-800W Series of wide gap slotted switches consists of a gallium arsenide IRED and silicon phototransistor in an injection-molded housing. The output current range options allow the design engineer the flexibility to choose from three current minimums to best solve application requirements.

<b>Operating temperature:</b>	-40 °C to 80 °C (-40 °F to 176 °F)
<b>IRED continuous forward current:</b>	50 mA
<b>IRED peak forward current:</b>	3 A
<b>IRED reverse voltage:</b>	3 V
<b>IRED power dissipation:</b>	100 mW
<b>Sensor collector-emitter voltage:</b>	30 V
<b>Sensor emitter-collector voltage:</b>	5 V
<b>Sensor power dissipation:</b>	100 mW



PIN functions correspond to the symbols shown in top view

### OPTIONS

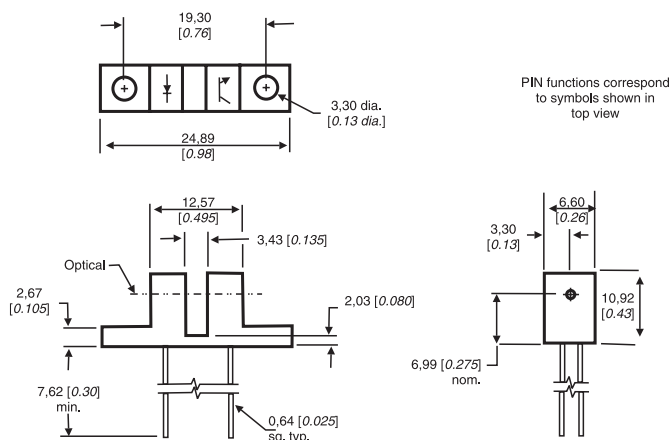
$I_L$	$V_{CE(EST)}$	REFERENCE
500 uA min @ $V_{CE} = 10$ V & $I_F = 20$ mA	0.4 V max @ $I_C = 250$ uA & $I_F = 20$ mA	S-800W
1.0 mA min @ $V_{CE} = 5$ V & $I_F = 10$ mA	0.4 V max @ $I_C = 500$ uA & $I_F = 20$ mA	S-801W
1.8 mA min @ $V_{CE} = 0.6$ V & $I_F = 20$ mA	0.4 V max @ $I_C = 1.8$ mA & $I_F = 20$ mA	S-802W

## S-860/870 Series



The S-860/870 family of optical switches offers the designer the most flexible semi-custom specification available in commercial optoelectronics. Electrical, optical and mechanical parameters may be specified allowing the use of this standard product in many applications that would otherwise have to be custom designed.

<b>Operating temperature:</b>	-25 °C to 85 °C (-13 °F to 185 °F)
<b>IREC continuous forward current:</b>	50 mA
<b>IREC peak forward current:</b>	3 A
<b>IREC reverse voltage:</b>	3 V
<b>IREC power dissipation:</b>	100 mW
<b>Sensor collector-emitter voltage:</b>	30 V
<b>Sensor emitter-collector voltage:</b>	5 V
<b>Sensor power dissipation:</b>	100 mW



PARAMETER	$I_L$	$V_{CE(sat)}$
A	0.5 mA @ $I_F = 20$ mA and $V_{CE} = 5$ V	0.4 V max @ $I_F = 20$ mA and $I_C = 0.4$ mA
B	1.0 mA @ $I_F = 10$ mA and $V_{CE} = 5$ V	0.4 V max @ $I_F = 10$ mA and $I_C = 0.8$ mA
C	2.0 mA @ $I_F = 20$ mA and $V_{CE} = 0.4$ V	0.4 V max @ $I_F = 20$ mA and $I_C = 2.0$ mA

## OPTIONS

**IR Transparent; 5,59 mm (0.220 in) Lead spacing; IRED aperture, 1,27 mm (0.05 in)**

ELECTRICAL PARAMETER	MOUNTING/SENSOR	REFERENCE
A	No Tabs/0,25 mm (0.01 in)	S-865-N51
B	No Tabs/0,25 mm (0.01 in)	S-866-N51
C	No Tabs/0,25 mm (0.01 in)	S-867-N51
A	No Tabs/1,27 mm (0.05 in)	S-865-N55
B	No Tabs/1,27 mm (0.05 in)	S-866-N55
C	No Tabs/1,27 mm (0.05 in)	S-867-N55
A	2 Tabs/0,25 mm (0.01 in)	S-865-T51
B	2 Tabs/0,25 mm (0.01 in)	S-866-T51
C	2 Tabs/0,25 mm (0.01 in)	S-867-T51
A	2 Tabs/1,27 mm (0.05 in)	S-865-T55
B	2 Tabs/1,27 mm (0.05 in)	S-866-T55
C	2 Tabs/1,27 mm (0.05 in)	S-867-T55

**IR Transparent; 8,13 mm (0.320 in) Lead spacing; IRED aperture, 1,27 mm (0.05 in)**

ELECTRICAL PARAMETER	MOUNTING/SENSOR	REFERENCE
A	No Tabs/0,25 mm (0.01 in)	S-860-N51
B	No Tabs/0,25 mm (0.01 in)	S-861-N51
C	No Tabs/0,25 mm (0.01 in)	S-862-N51
A	No Tabs/1,27 mm (0.05 in)	S-860-N55
B	No Tabs/1,27 mm (0.05 in)	S-861-N55
C	No Tabs/1,27 mm (0.05 in)	S-862-N55
A	2 Tabs/0,25 mm (0.01 in)	S-860-T51
B	2 Tabs/0,25 mm (0.01 in)	S-861-T51
C	2 Tabs/0,25 mm (0.01 in)	S-862-T51
A	2 Tabs/1,27 mm (0.05 in)	S-860-T55
B	2 Tabs/1,27 mm (0.05 in)	S-861-T55
C	2 Tabs/1,27 mm (0.05 in)	S-862-T55

**IR Opaque; 5,59 mm (0.220 in) Lead spacing; IRED aperture, 1,27 mm (0.05 in)**

ELECTRICAL PARAMETER	MOUNTING/SENSOR	REFERENCE
A	No Tabs/0,25 mm (0.01 in)	S-875-N51
B	No Tabs/0,25 mm (0.01 in)	S-876-N51
C	No Tabs/0,25 mm (0.01 in)	S-877-N51
A	No Tabs/1,27 mm (0.05 in)	S-875-N55
B	No Tabs/1,27 mm (0.05 in)	S-876-N55
C	No Tabs/1,27 mm (0.05 in)	S-877-N55
A	2 Tabs/0,25 mm (0.01 in)	S-875-T51
B	2 Tabs/0,25 mm (0.01 in)	S-876-T51
C	2 Tabs/0,25 mm (0.01 in)	S-877-T51
A	2 Tabs/1,27 mm (0.05 in)	S-875-T55
B	2 Tabs/1,27 mm (0.05 in)	S-876-T55
C	2 Tabs/1,27 mm (0.05 in)	S-877-T55

**IR Opaque; 8,13 mm (0.320 in) Lead spacing; IRED aperture, 1,27 mm (0.05 in)**

ELECTRICAL PARAMETER	MOUNTING/SENSOR	REFERENCE
A	No Tabs/0,25 mm (0.01 in)	S-870-N51
B	No Tabs/0,25 mm (0.01 in)	S-871-N51
C	No Tabs/0,25 mm (0.01 in)	S-872-N51
A	No Tabs/1,27 mm (0.05 in)	S-870-N55
B	No Tabs/1,27 mm (0.05 in)	S-871-N55
C	No Tabs/1,27 mm (0.05 in)	S-872-N55
A	2 Tabs/0,25 mm (0.01 in)	S-870-T51
B	2 Tabs/0,25 mm (0.01 in)	S-871-T51
C	2 Tabs/0,25 mm (0.01 in)	S-872-T51
A	2 Tabs/1,27 mm (0.05 in)	S-870-T55
B	2 Tabs/1,27 mm (0.05 in)	S-871-T55
C	2 Tabs/1,27 mm (0.05 in)	S-872-T55

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