

## HEAVY DUTY

### LVDT Position Sensors

### MACRO SQ 1250

#### Overview

The Macro Sensors SQ 1250 Series of heavy duty LVDTs were developed specifically to measure position or motion in mill-type hostile environments. These rugged and reliable contactless sensors, available in measuring ranges from  $\pm 0.50$  inches to  $\pm 10.00$  inches, have their electrical assembly totally encapsulated within a heavy duty aluminum housing, with their electrical connections made to screw-terminal style barrier strips. This complete encapsulation of SQ 1250 Series LVDTs allows them to withstand the high shock and vibration levels typically encountered in mill environments and permits them to meet the IEC IP-64 sealing standard against the intrusion of splashed water and other liquids.

SQ 1250 Series LVDTs are electrically and magnetically double shielded to maximize noise immunity and minimize their susceptibility to external AC magnetic fields developed by electric motors, transformers, etc. Because core shaft misalignment occurs often in mill applications, all SQ 1250 Series sensors incorporate Teflon™ bore liners to reduce friction and wear between the LVDT's core and its bore under such conditions, especially when measuring oscillatory motions.

SQ 1250 Series position sensors offer the high resolution, excellent repeatability, and low hysteresis associated with LVDT technology, as well as the highest sensitivity consistent with good linearity. The maximum linearity error for an SQ 1250 LVDT is  $\pm 0.25\%$  of full range output, using a statistically best-fit straight line derived by the least squares method.

SQ 1250 Series LVDTs feature constant sum-of-the-secondary's output, so they can be used equally well with conventional differential input LVDT signal conditioners, such as those illustrated in Macro Sensors' series 9000 technical bulletins, or with ratiometric LVDT signal conditioners found in some industrial control systems.

Typical applications of SQ 1250 Series LVDTs are measuring roller gap position for hydraulic servo systems used to control primary metals rolling mills, sizing lumber to maximize yield in sawmills, maintaining proper calendar roll position in paper mills, controlling steam valve opening in electric power plants, and measuring raker boom height in wastewater treatment plants.

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SQ 1250 | LVDT Position Sensors

### Benefits

- ♦ Rugged, heavy duty construction
- ♦ Ranges of  $\pm 0.50$  inches to  $\pm 10.00$  inches
- ♦ Non-linearity less than  $\pm 0.25\%$  of FRO
- ♦  $300^{\circ}$  F ( $150^{\circ}$  C) operating temperature
- ♦ Assembly sealed to IEC IP-64

### Applications

- ♦ Steel and aluminum mills
- ♦ Electric Power Plants
- ♦ Forges and Foundries
- ♦ Pulp and Paper Mills
- ♦ Lumber and Saw Mills
- ♦ Wastewater Treatment Plants

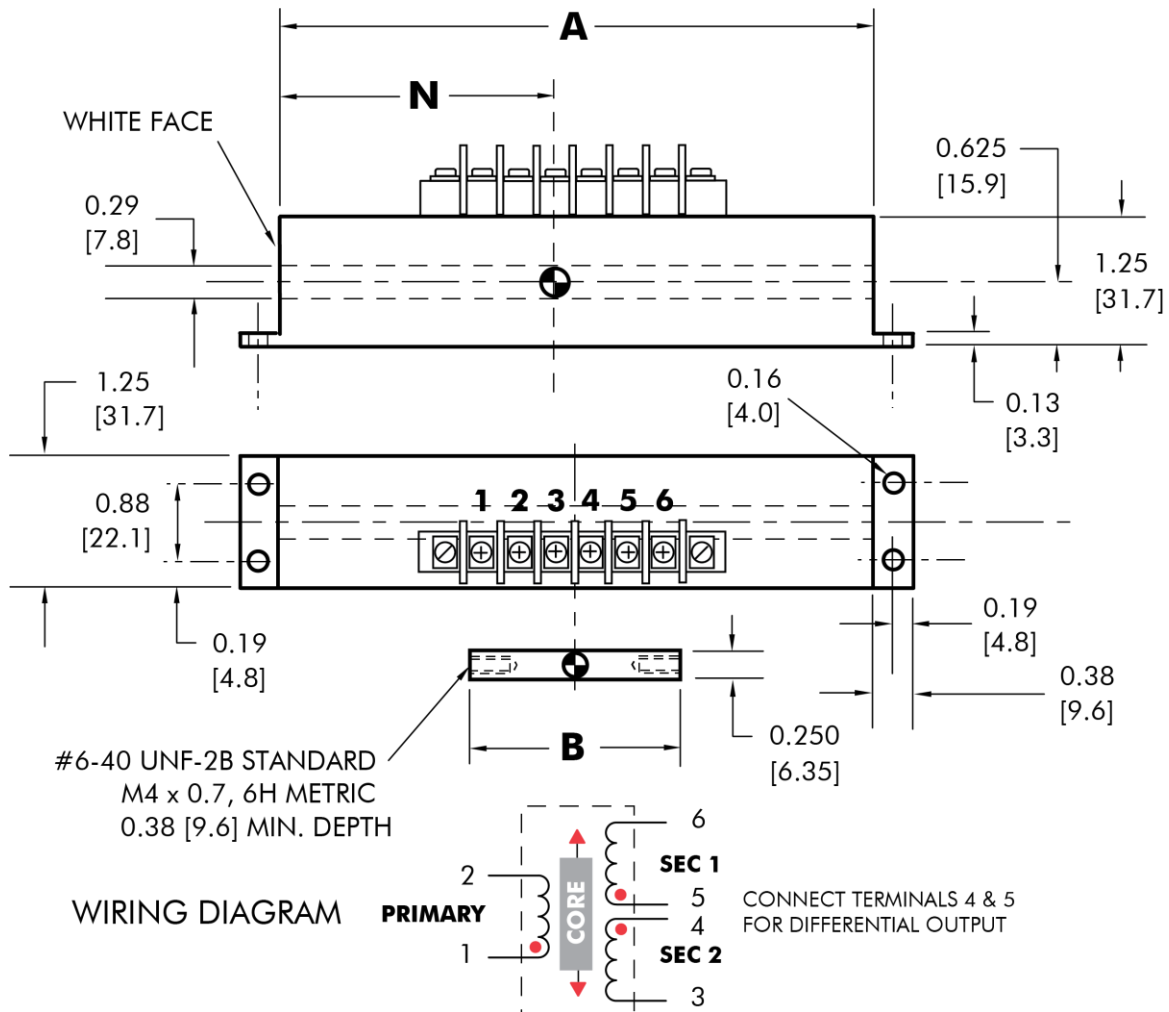
### General Specifications

<b>Input Voltage</b>	3.0 Vrms (nominal)
<b>Input Frequency</b>	2.5 - 3.0 kHz
<b>Linearity Error</b>	$< \pm 0.25\%$ of FRO
<b>Repeatability Error</b>	$< 0.01\%$ of FSO
<b>Hysteresis Error</b>	$< 0.01\%$ of FSO
<b>Operating Temperature</b>	$-65^{\circ}\text{F}$ to $+300^{\circ}\text{F}$ ( $-55^{\circ}\text{C}$ to $+150^{\circ}\text{C}$ )
<b>Thermal Coefficient of Scale Factor</b>	$-0.01\%/^{\circ}\text{F}$ (nominal) ( $-0.02\%/^{\circ}\text{C}$ nominal)
<b>Vibration Tolerance</b>	20 g to 2 kHz
<b>Shock Survival</b>	1000 g, 11 ms

### Ordering Information

- ♦ For standard SQ 1250, order by model number with range.
- ♦ For metric threaded core option, add -006 after model number with range.
- ♦ For accessories and compatible signal conditioners, please contact factory

## Dimensions



## Specifications

Model ►	SQ 1250 -500	SQ 1250 -1000	SQ 1250 -2000	SQ 1250 -3000	SQ 1250 -4000	SQ 1250 -5000	SQ 1250 -6000	SQ 1250 -7500	SQ 1250 -10000
Parameter ▼									
Nominal Range (inches)	±0.5	±1.0	±2.0	±3.0	±4.0	±5.0	±6.0	±7.5	±10.0
Nominal Range (mm)	±12.5	±25	±50	±75	±100	±125	±150	±190	±250
Sensitivity (mV/V/.001 in)	0.73	0.39	0.24	0.27	0.18	0.14	0.12	0.12	0.08
Sensitivity (mV/V/mm)	28.7	15.4	9.4	10.6	7.1	5.5	4.7	4.7	3.1
Primary Impedance (Ω)	1420	1350	990	215	430	1170	730	1380	1070
Dimension "A" (inches)	5.74	6.88	10.25	13.09	15.92	18.16	18.16	23.37	31.14
Dimension "A" (mm)	145.8	174.8	260.4	332.5	404.4	461.3	461.3	593.6	790.0
Dimension "B" (inches)	3.45	4.00	5.30	5.60	6.20	7.00	6.20	7.00	9.50
Dimension "B" (mm)	87.6	101.6	134.6	142.2	157.5	177.8	157.5	177.8	241.3
Dimension "N" (inches)	2.59	3.32	5.07	6.45	7.65	8.94	8.94	11.55	15.38
Dimension "N" (mm)	65.8	84.3	128.8	163.8	194.3	227.1	227.1	293.4	390.7
Weight - Body (ounces)	11.8	14.4	20.0	26.6	31.4	34.6	34.6	42.4	53.9
Weight - Body (g)	335	408	567	741	890	981	981	1202	1528
Weight - Core (ounces)	0.72	0.83	1.20	1.23	1.30	1.40	1.30	1.40	2.20
Weight - Core (g)	20.4	23.5	34.0	34.9	36.9	39.7	36.9	39.7	62.4