Active sensors

Proud to be part of *the* team

LVDT position sensors

Brake calliper LVDT sensors

- High temperature operation
- Very compact designs
- Multiple mounting options
- Long operational life
- Raychem signal cabling
- Optional in-line electronics

Formula One and Endurance racing can experience high brake disc wear and race engineers need to monitor this wear by mounting a miniature linear position sensor in the brake calliper. This application is probably the harshest environment for a motorsport sensor as the operating temperatures can exceed 400°C (750°F). Active Sensors design and manufacture miniature LVDT sensors with a continuous operating temperature of 200°C (400°F) and can survive excursions up to 400°C (750°F). There are a number of calliper designs from manufactureres such as AP Racing, Brembo, Akebono and others that are designed for LVDT sensor installation. If the LVDT sensor specification you require is not shown on this data sheet, please contact our sales office for additional advice.

Active Sensors manufacture ‘motorsport ready’ contactless LVDT sensors for brake calliper movement monitoring. For bespoke applications we offer a complete design, manufacture and rapid delivery service to satisfy the fast paced engineering developments normally associated with international motorsport.

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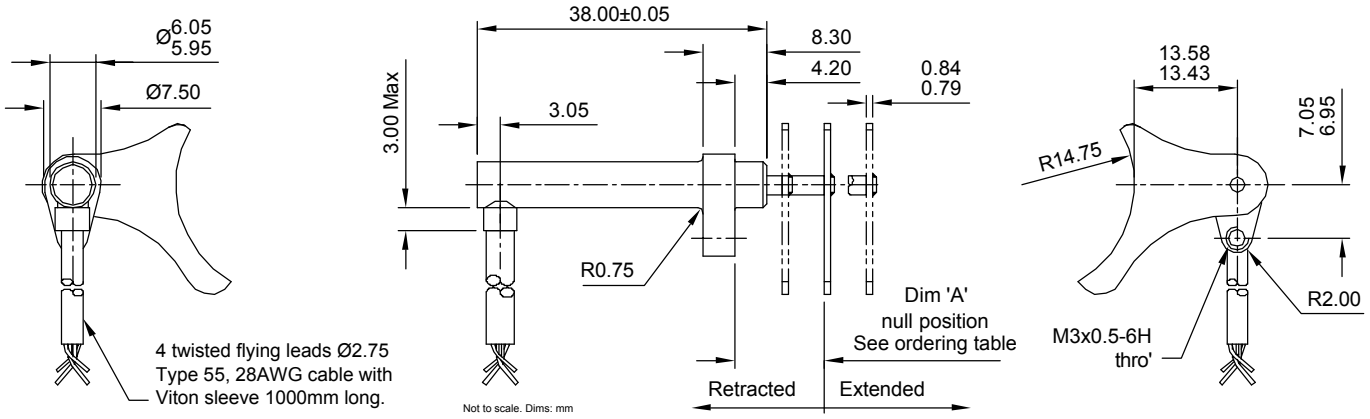
Model dimensions and mounting

D41295-017 - 6.0mm body Ø, 17mm electrical stroke

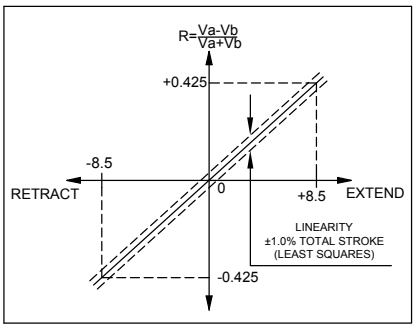


Product ordering code	
D41295-017-MK1 (Dim 'A' Null point 15.1mm)	**D41295-017-MK2** (Dim 'A' Null point 16.4mm)
Spare shaft-**SA41295-1300-MK1**	Spare shaft-**SA41295-1300-MK2**

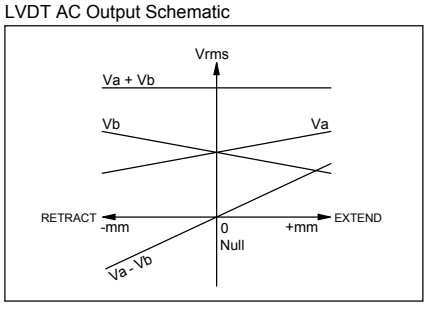
Electrical & mechanical information

Input conditions @ 20°C (VIn.)	2.0V RMS ±5% @ 12.0 KHz ±5% sine wave	
Electrical Stroke	17 (±8.50)	mm
Mechanical Stroke (max.)	19 (±9.50)	mm
Ratiometric Sensitivity (±2%) $\frac{Va-Vb}{Va+Vb}$	0.050	/mm
Summed output Voltage (±10%)	0.850	V/Vin
Output Voltage Range (nominal)	0.489 - 1.211	V rms
Non-linearity (note 1,3)	<±1.0	% FS
Thermal Drift (note 2)	<±0.007	%FS/°C
Input Impedance	>150	Ohms
Secondary coil load	>50	KOhms
Null position	See ordering table	
Body length	38.0	mm
Insulation resistance (coils-case)@500Vdc	>100	Mohms
Operating Temperature	-55 - +200	°C
Weight (approx.)	26.2 including 1m of cable	grams
Environmental Conditions	IP67	
4 core type 55 28AWG twisted cable with viton sleeving	1000±10%	mm
Materials	Case - 400 series Stainless Steel Shaft/yoke - Stainless Steel 303/316 Core - Nickel Iron Alloy	

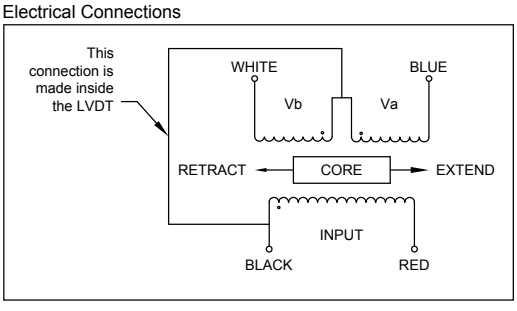
Output Schematic



LVDT AC Output Schematic



Electrical Connections



Notes:
1. Non-linearity error and sensitivity is calculated from least squares best fit method.
2. Thermal drift is defined as: Maximum ratiometric change from reading at ambient (+20°C) to ratiometric reading over operating temperature range.
3. (FS) Full Scale, is calculated by (Ratiometric sensitivity per mm x ±stroke).

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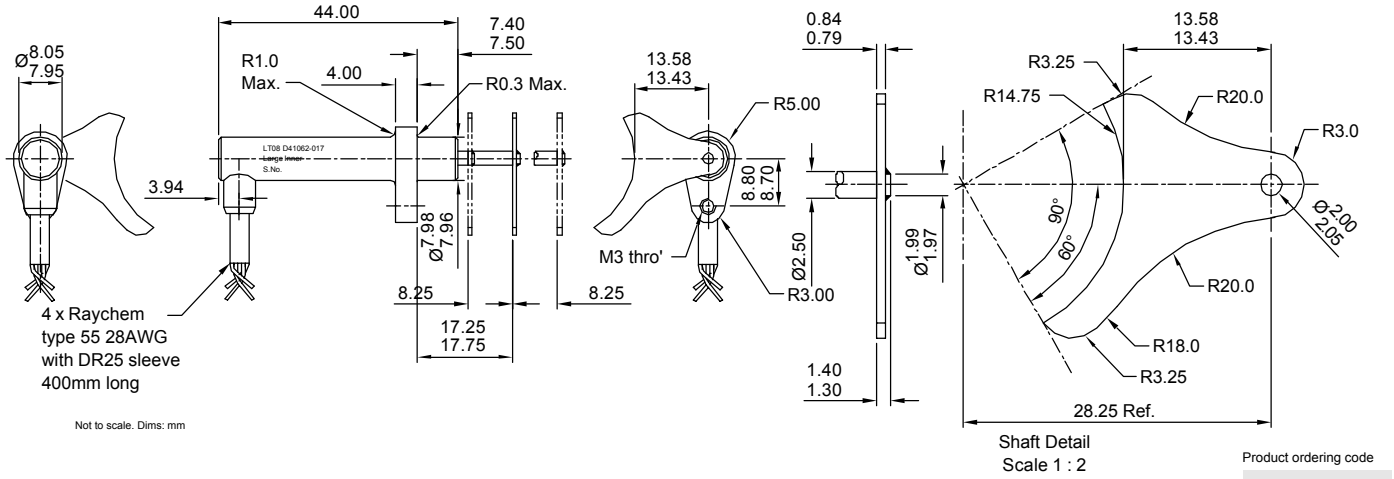
D41062-017 - 8.0mm body Ø, 16.5mm electrical stroke



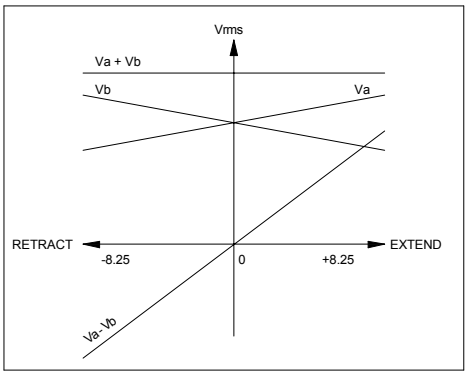
Product ordering code

D41062-017

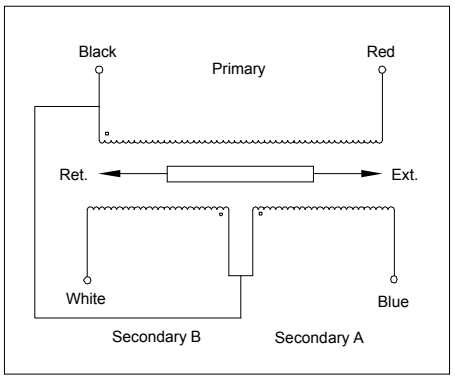
Electrical & mechanical information

Specification 3.0V RMS ±5% @ 5.0 KHz ±5%		
Electrical measurement range	±8.25	mm
Mechanical measurement range	±9.25	mm
Non-linearity	<±1.0	%
Ratiometric sensitivity ±3%	0.0441	/mm
Input impedance	>150	Ohms
Operating temperature	-55° - +200°	°C
Summed output voltage	0.7 v/v	±20%
Environmental	Sealed construction	
Sensor ident	Large Inner	
Materials	Housing - 400 Series stainless steel Armature - nickel iron alloy	

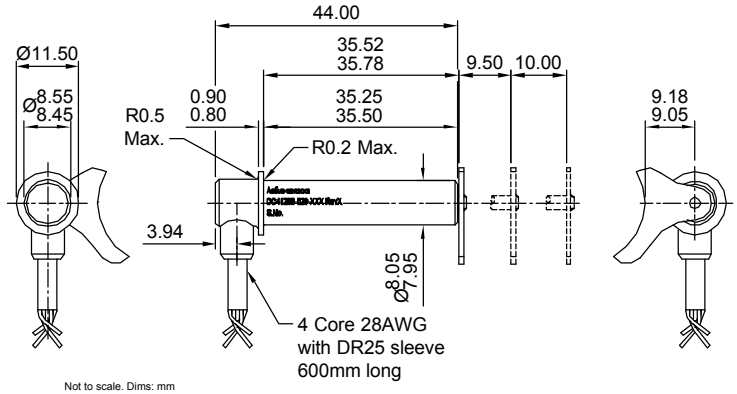
LVDT AC Output Schematic

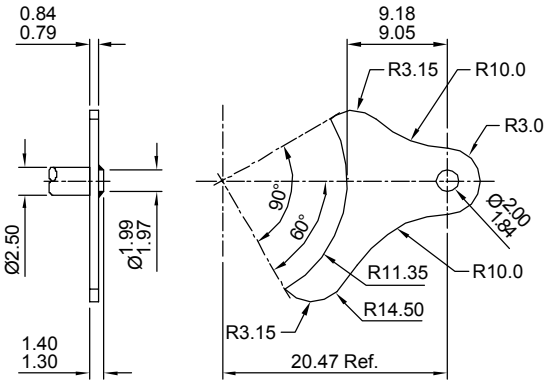


Electrical Connections



D41209-020 - 8.0mm body Ø, 20mm electrical stroke





Shaft Detail
Scale 2 : 1

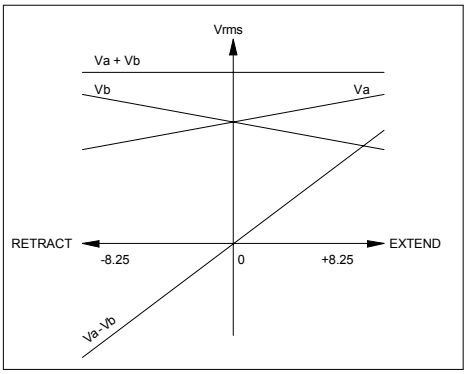
Product ordering code

D41209-020

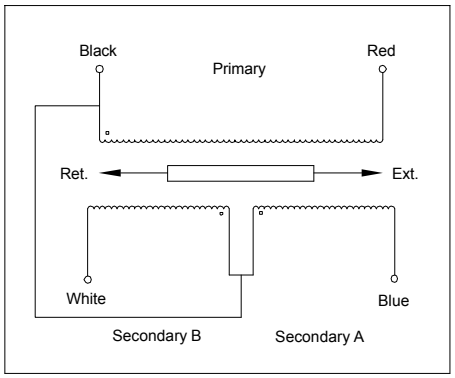
Electrical & mechanical information

Specification 3.0V RMS ±5% @ 5.0 KHz ±5%		
Electrical measurement range	-9.5/+10.0	mm
Mechanical measurement range	-9.5/+10.5	mm
Non-linearity	<±1.0	%
Ratiometric sensitivity ±3%	0.0441	/mm
Input impedance	>150	Ohms
Operating temperature	-55° - +200°	°C
Summed output voltage	0.7	v/v
Environmental	Sealed construction	
Materials	Housing - 400 Series stainless steel Armature - nickel iron alloy	

LVDT AC Output Schematic



Electrical Connections



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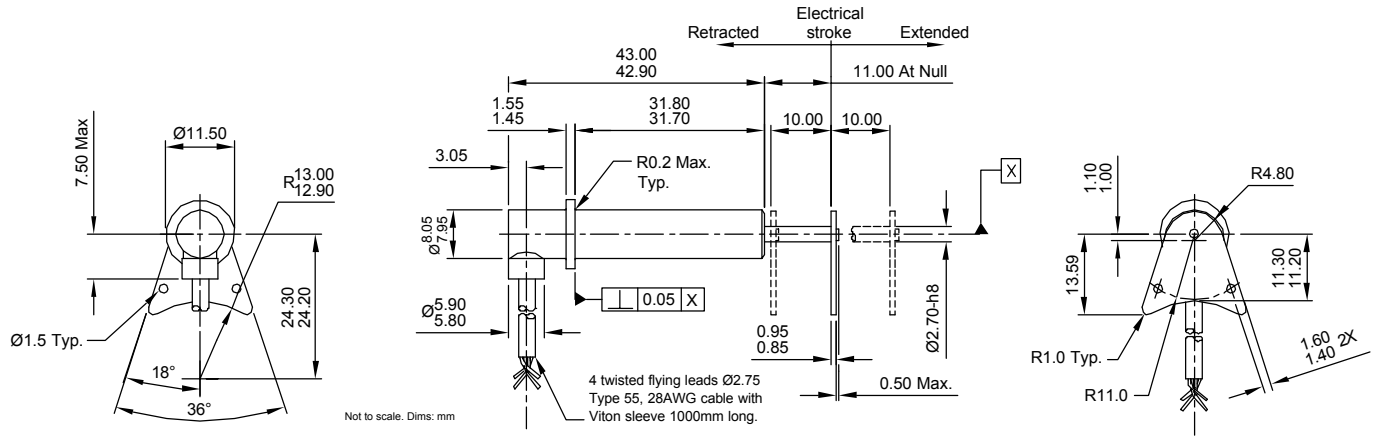
D41308-020 - 8.0mm body Ø, 20mm electrical stroke



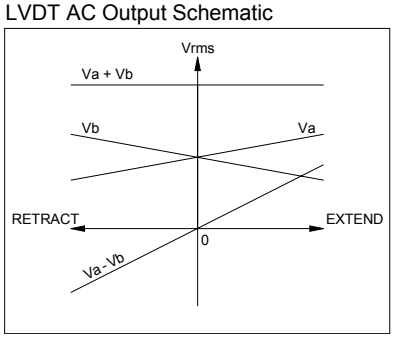
Product ordering code

D41308-020

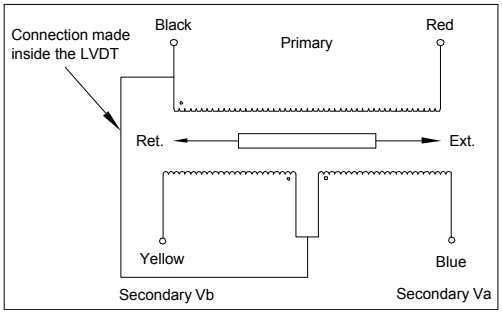
Electrical & mechanical information

Input conditions @ 20°C (VIn.)	2.0V RMS ±5% @ 12.0 KHz ±5% sine wave	
Electrical Stroke	20 (±10.00)	mm
Mechanical Stroke (max.)	22 (±11.00)	mm
Ratiometric Sensitivity (±2%) $\frac{Va-Vb}{Va+Vb}$	0.0385	/mm
Summed output Voltage (±10%)	0.845	V/Vin
Output Voltage Range (nominal)	0.516 - 1.175	V rms
Non-linearity (note 1,3)	<±1.0	% FS
Thermal Drift (note 2)	<±0.015	%FS/°C
Input Impedance	>220	Ohms
Secondary coil load	>50	KOhms
Insulation resistance (coils-case)@500Vdc	>100	Mohms
Operating Temperature	-55 - +200	°C
Weight (approx.)	36.0 including 1m of cable	grams
Environmental Conditions	IP67	
Materials	Case - 416 series Stainless Steel Shaft/yoke - Stainless Steel 316 Armature - Nickel Iron Alloy	

LVDT AC Output Schematic



Electrical Connections



Notes:
1. Non-linearity error and sensitivity is calculated from least squares best fit method.
2. Thermal drift is defined as: Maximum ratiometric change from reading at ambient (+20°C) to ratiometric reading over operating temperature range.
3. (FS) Full Scale, is calculated by (Ratiometric sensitivity per mm x ±stroke).

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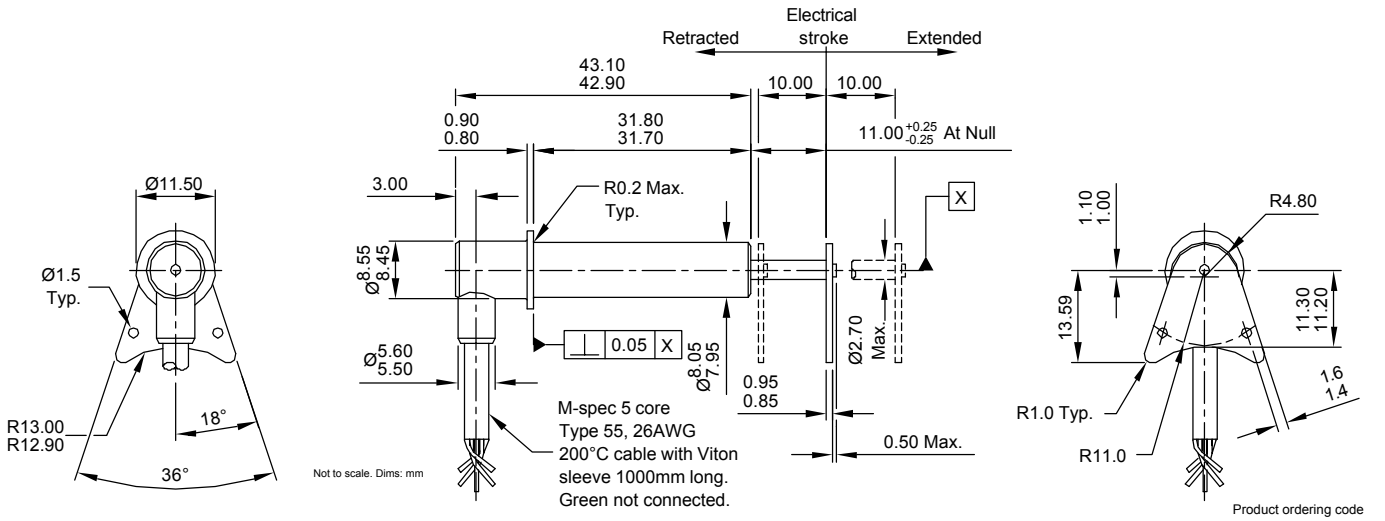
D41235-020 - 8.0mm body Ø, 20mm electrical stroke



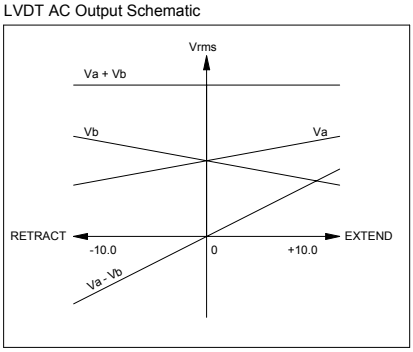
Product ordering code

D41235-020

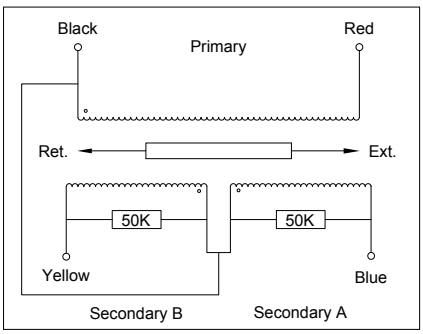
Electrical & mechanical information

Specification 2.0V RMS ±5% @ 12.0 KHz ±5%		
Electrical measurement range	±10.00	mm
Mechanical measurement range	±11.00	mm
Non-linearity (least squares best fit)	<±1.0	%
Ratiometric sensitivity ±2%	0.039	/mm
Input impedance	>220	Ohms
Operating temperature	-55° - +200°	C
Summed output voltage ±10%	0.845	v/v
Load/Secondary Coil	>50K	Ohms
Environmental	Sealed construction	
Materials	Case - 416 series Stainless Steel Shaft - Stainless Steel 303 Armature - Nickel Iron Alloy	

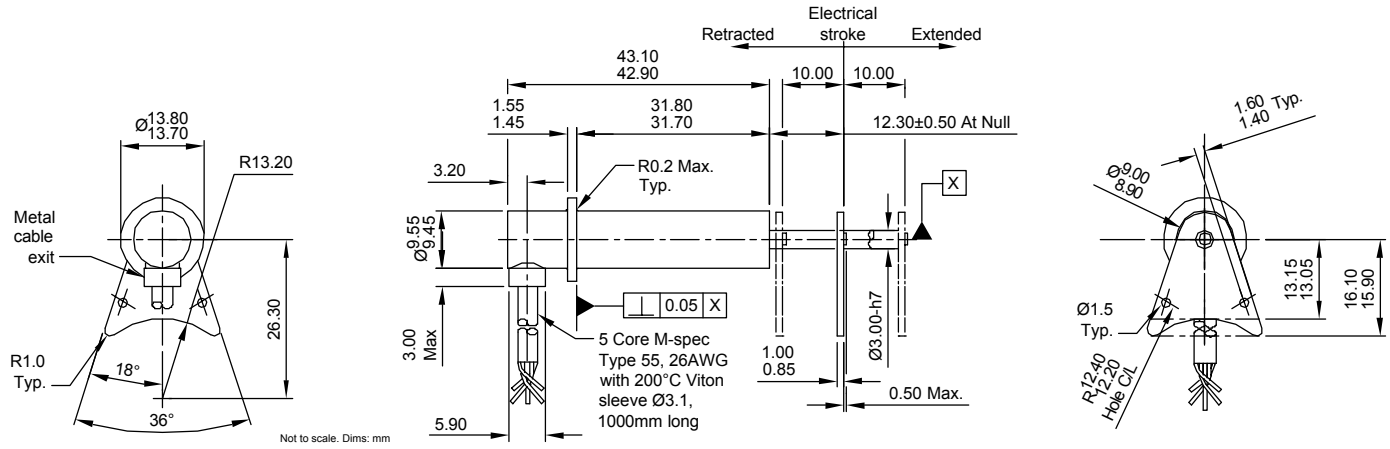
LVDT AC Output Schematic



Electrical Connections



D41056-020 - 9.5mm body Ø, 20mm electrical stroke



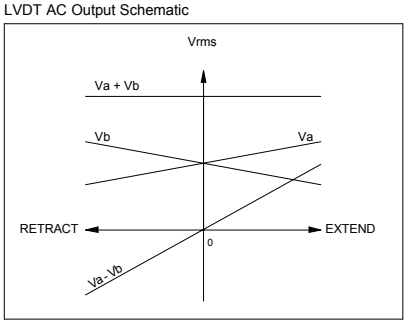
Product ordering code

D41056-020

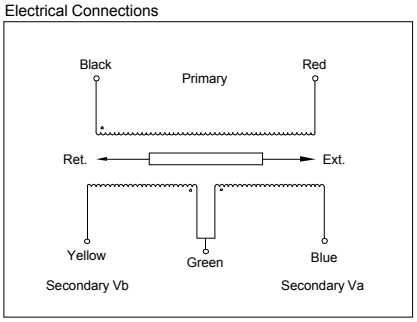
Electrical & mechanical information

Specification 3.0V RMS ±5% @ 5.0 KHz ±5%		
Electrical measurement range	±10.0	mm
Mechanical measurement range	±11.0 (Min.)	mm
Non-linearity (note 1,3)	<±1.0	%
Ratiometric sensitivity (note 3)	0.0440 (±2%)	/mm
Summed output voltage	0.700 (±10%)	V/Vin
Output voltage range (nominal)	0.588 - 1.512	V rms
Input impedance	>150	Ohms
Thermal Drift (note 2)	<±0.01	%FS/°C
Insulation resistance @500Vdc (pim-sec, coils-case)	>100	Mohms
Weight (approx.)	31	grams
Operating temperature	-55 to +200	°C
Environmental	IP66	
Materials	Case - 416 series Stainless Steel Shaft - Stainless Steel 313 Armature - Nickel Iron Alloy	

LVDT AC Output Schematic



Electrical Connections



Notes:
1. Non-linearity error and sensitivity is calculated from least squares best fit method.
2. Maximum error from reading at ambient (+20°C) to reading at +200°C.
3. Ratiometric sensitivity is calculated using (Va-Vb)/(Va+Vb).

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