



Industrial LVDT Displacement Transducer | Position Sensor | AML/IE

Robust, Long Life and Highly Configurable, for Harsh Environments

- **Lead Time:** 8 weeks
- **Buy online:** <https://appmeas.co.uk/tag/aml-ie/>



AT A GLANCE

- Stroke Ranges: $\pm 0.5\text{mm}$ to $\pm 500\text{mm}$
- AC mV/V or DC Voltage / Current Output
- Environmental Protection: IP65
- Core + Extension, Spring-Loaded & Rod-End Bearing Versions
- Optional IP68 Submersible &
- High-Temperature Versions 200°C and 150°C

- **Ideally Suited for Harsh Industrial Environments**
- **Fully Submersible & High-Temperature 200°C & 150°C Versions Available**
- **Wide Range of Mechanical Configurations to Suit Your Specific Application**
- **Fast and Simple Installation** – With our wide variety of packaging formats.
- **Long Operating Life** – No physical contact between the core and the coils.
- **Let us do the Hard Work for You** – We can provide you with a wide range of supporting instrumentation.

DESCRIPTION

Applied Measurements AML/IE series of industrial LVDT displacement transducers are available with measuring ranges from $\pm 0.5\text{mm}$ (0-1mm) up to $\pm 500\text{mm}$ (0-1000mm).

Constructed from stainless steel, the AML/IE LVDTs are sealed to IP65 as standard with the option of IP68 (submersible), making them ideally suited for a multitude of harsh and demanding applications where environmental conditions are humid, wet, dusty or dirty.



The basic AML/IE industrial LVDT displacement transducers have an AC mV/V output as standard, with a range of DC voltage signal output options also offered including 0-5Vdc, 0-10Vdc and ± 2.5 Vdc, as well as a 3-wire 4-20mA current output.

Applied Measurements AML/IE industrial LVDT offers a choice of mechanical configurations including captive guided core & extension rod, which is standard, plus spring-loaded core & extension rod with ball-end or guided core & extension with spherical rod-end bearings.

Please see our full range of LVDT displacement transducers and position sensors (<https://appmeas.co.uk/products/lvdt-displacement-sensors/>). We can also offer a comprehensive variety of supporting instrumentation (<https://appmeas.co.uk/products/instrumentation/>). Contact Applied Measurements expert and friendly technical team to discuss your requirements.

TECHNICAL SPECIFICATIONS

CHARACTERISTICS	AML/IE	AML/IEJ	AML/IEU	AML/IEU -10	AML/IEI	AML/IED	UNITS
Stroke Measurement Range:	$\pm 0.5, \pm 2.5, \pm 5, \pm 10, \pm 12.5, \pm 15, \pm 25, \pm 50, \pm 75, \pm 100, \pm 125, \pm 150, \pm 175, \pm 200, \pm 250$ $\pm 300, \pm 400, \pm 500, \pm 550$ (maximum stroke is ± 125 for Sprung Loaded Core & Extension)						millimetres
Signal Output:	See Table Below		0-5volt	0-10volt	4-20mA	± 2.5 volt	
No. of Wires	6	4	3	3	3	4	
Supply Voltage (unregulated):	2 to 5Vrms @ 1 to 5kHz		10-24Vdc	14-24Vdc	14-24Vdc	12Vdc regulated	
Supply Current:	-		35mA @ 15V	35mA @ 15V	35mA typ.	35mA @ 12V	
Max. Loop Resistance:	-		-	-	300 @ 30V	-	ohms
Max. Output Sink Current:	-		0.5	1	-	0.1	milliamps
Non-Linearity:	<0.50						\pm %/Rated Output (BFSL)
Repeatability:	<0.10						\pm % Stroke Range
Output Bandwidth (flat):	100						Hz
Output Ripple:	-		30mV max.	30mV max.	0.1% @ 20mA	30mV max.	
Operating Temperature Range:	AML/IE & IEJ: -30 to +85 Standard / -30 to +150 and +200 Optional -20 to +85 on DC/DC models / 0 to +70 for in-line conditioner (where fitted)						$^{\circ}$ C
Zero Temperature Coefficient:	<0.020		<0.010				\pm %Stroke Range/ $^{\circ}$ C
Span Temperature Coefficient:	<0.020		<0.030				\pm %Stroke Range/ $^{\circ}$ C
Vibration Resistance:	20g up to 2kHz						
Shock Resistance:	1000g for 10milliseconds						
Construction Materials:	Body & Extension Rod: 303 St/Steel, Core: 416 St/Steel, Cable Gland: Nickel-Plated Brass, Spring: 316 St/Steel, Rod-End Bearings: Mild Steel (St/Steel on IP68 version)						
Connecting Cable:	2 metre screened PVC cable* (*IP68 = PUR / Hi-Temp = PTFE).						
Environmental Sealing:	IP65 (IP68 optional)						
Note: On DC output version (0Vdc / 4mA) is given with the core in the extended / outwards position. This can be reversed if required, please request Option Y on your order.							

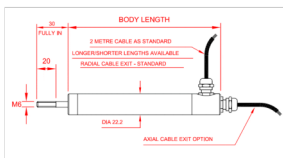
Product Dimensions

AC Output, Plain Core & Extension, and Rod Ends Dimensions Table

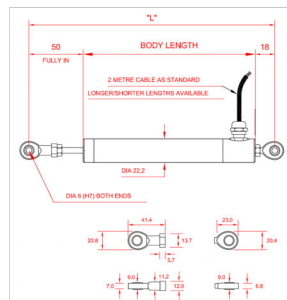
Stroke (mm)	Standard (Plain Core + Extension)	Standard and Option R				Option R (Rod End Bearings)		
	Body Length (mm)	Sensitivity @ 3kHz with 50K Load (mV/V FRO)	Null (mV)	Primary Resistance (ohms)	Secondary Resistance (ohms)	Body Length (mm)	M6 "L" (mm)	M8 "L" (mm)
± 0.5	100	175	20	40	1800	100	168	171



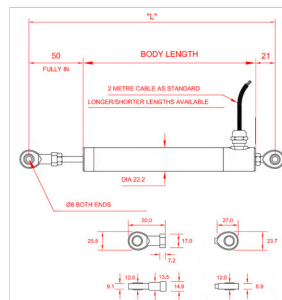
	Standard (Plain Core + Extension)	Standard and Option R			Option R (Rod End Bearings)			
±2.5	100	140	5	130	740	100	168	171
±5	115	135	5	48	108	120	188	191
±10	140	270	5	70	170	140	208	211
±12.5	160	195	5	120	190	160	228	231
±15	175	246	5	90	190	175	243	246
±25	235	225	5	130	210	235	303	306
±50	320	260	5	200	270	320	388	391
±75	390	390	20	260	460	390	458	461
±100	450	240	5	150	150	450	518	521
±125	500	260	5	180	320	500	568	571
±150	560	230	5	210	290	560	628	631
±175	615	260	2	230	360	615	683	686
±200	700	285	10	250	430	700	768	771
±250	810	310	10	290	560	810	878	881
±300	920	270	5	690	770	920	988	991
±400	1150	440	20	450	1010	1150	1218	1221
±500	1410	475	10	550	1530	1410	1478	1481
±550	1410	345	10	550	1530	1410	1478	1481



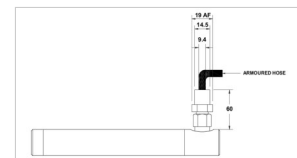
AML-IE Industrial LVDT
 Displacement Transducer AC
 Version Plain Outline



AML-IE Industrial LVDT
 Displacement Transducer AC
 Version with M6 Rod End
 Bearings (R+M6) Outline



AML-IE Industrial LVDT
 Displacement Transducer AC
 Version with M8 Rod End
 Bearings (R+M8) Outline



AML-IE Armoured Hose

Plain Core + Extension AML-IE Industrial AC Version Options: A = axial cable exit; R = radial cable exit; J = 4-wire device; G = extension rod wiper; W = waterproof IP68; H = high temperature 150°C with PTFE cable; VH = very high temperature 200°C with PTFE cable; Z = armoured hose.

Option R M6 AML-IE Industrial AC Version with M6 Rod End Bearings Options: R = radial cable exit ONLY; J = 4-wire device; G = extension rod wiper; W = waterproof IP68; H = high temperature 150°C with PTFE cable; VH = very high temperature 200°C with PTFE cable; Z = armoured hose.

Axial cable exit is NOT available with rod ends unless rod end is on the extension ONLY.

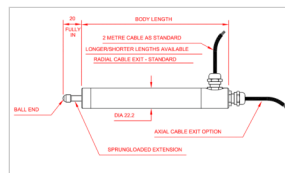
Option R M8 AML-IE Industrial AC Version with M8 Rod End Bearings Options: R = radial cable exit ONLY; J = 4-wire device; G = extension rod wiper; W = waterproof IP68; H = high temperature 150°C with PTFE cable; VH = very high temperature 200°C with PTFE cable; Z = armoured hose.

Axial cable exit is NOT available with rod ends unless rod end is on the extension ONLY.



AC Output, Sprung-Loaded Dimensions Table

Stroke (mm)	Body Length (mm)	Sensitivity @ 3kHz with 50K Load (mV/V FRO)	Null (mV)	Primary Resistance (ohms)	Secondary Resistance (ohms)	Spring Rate (N/mm)
±0.5	100	175	20	40	1800	0.2591
±2.5	100	140	5	130	740	0.2591
±5	115	135	5	48	108	0.1457
±10	160	270	5	72	138	0.0833
±12.5	160	195	5	72	138	0.0833
±15	175	246	5	90	190	0.0648
±25	235	225	5	130	210	0.0530
±50	320	260	5	200	270	0.0364
±75	390	390	20	260	460	0.0291
±100	440	240	20	260	460	0.0233
±125	525	260	5	145	230	0.0179



AML-IE Industrial LVDT
 Displacement Transducer AC
 Version Sprung-Loaded (S)
 Outline

Option S AML-IE AC Version Sprung Loaded Options: R = radial cable; A = axial cable; J = 4-wire device; G = extension rod wiper; SW = waterproof IP68; H = High Temperature 150°C, Z = armoured hose.

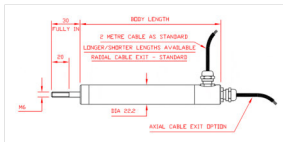
VH = high-temperature 200°C option not available on spring loaded.

DC Output Dimensions Table

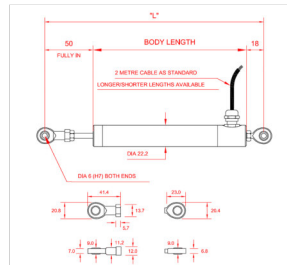
Stroke (mm)	Standard	Option R (Rod End Bearings)			Option S (Sprung-Loaded)	
	Body Length (mm)	Body Length (mm)	M6 "L" (mm)	M8 "L" (mm)	Body Length (mm)	Spring Rate (N/mm)
±0.5	130	130	198	201	130	0.1295
±2.5	140	140	208	211	140	0.1166
±5	165	165	233	236	165	0.0897
±10	180	180	248	251	180	0.0729
±12.5	210	210	278	281	210	0.0614
±15	225	225	293	296	225	0.0555
±25	285	285	353	356	285	0.0416
±50	370	370	438	441	370	0.0291
±75	440	440	508	511	440	0.0233



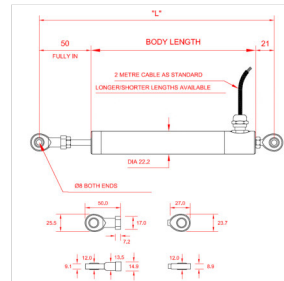
	Standard	Option R (Rod End Bearings)			Option S (Sprung-Loaded)	
±100	500	500	568	571	440	0.0233
±125	550	550	618	621	525	0.0179
±150	610	610	678	681	n/a	n/a
±175	665	665	733	736	n/a	n/a
±200	750	750	818	821	n/a	n/a
±250	860	860	928	931	n/a	n/a
±300	970	970	1038	1041	n/a	n/a
±400	1200	1200	1268	1271	n/a	n/a
±500	1460	1460	1528	1531	n/a	n/a
±550	1460	1460	1528	1531	n/a	n/a



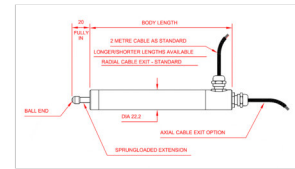
AML-IE Industrial LVDT
 Displacement Transducer DC
 Version Plain Outline



AML-IE Industrial LVDT
 Displacement Transducer DC
 Version with M6 Rod End
 Bearings (R+M6) Outline



AML-IE Industrial LVDT
 Displacement Transducer DC
 Version with M8 Rod End
 Bearings (R+M8) Outline



AML-IE Industrial LVDT
 Displacement Transducer DC
 Version Sprung-Loaded (S)
 Outline

Plain Core AML-IE Industrial DC Version Options: A = axial cable exit; R = radial cable exit; G = extension rod wiper; W = waterproof IP68 with PU cable; I = 4-20mA output; U = 0-5V output; U-10 = 0-10V output; D = DC bipolar output; Y = reverse output (e.g. 4mA fully in instead of default 20mA); Z = armoured hose.

H & VH = high temperature options not available

Option R M6 Rod Ends AML-IE Industrial Version with M6 Rod End Bearings Options: R = radial cable exit only; G = extension rod wiper; W = waterproof IP68 with PU cable and stainless steel M6 rod end bearings; I = 4-20mA output; U = 0-5V output; U-10 = 0-10V output; D = DC bipolar output; Y = reverse output (e.g. 4mA fully in instead of default 20mA); Z = armoured hose.

H & VH = high temperature options not available

Option R M8 Rod Ends AML-IE Industrial DC Version with M8 Rod End Bearings Options: R = radial cable exit only; G = extension rod wiper; W = waterproof IP68 with PU cable and stainless steel M8 rod end bearings; I = 4-20mA output; U = 0-5V output; U-10 = 0-10V output; D = DC bipolar output; Y = reverse output (e.g. 4mA fully in instead of default 20mA); Z = armoured hose.

H & VH = high temperature options not available

Option S AML-IE Industrial DC Version Sprung Loaded Options: R = radial cable exit; A = axial cable exit; G = extension rod wiper; W = waterproof IP68 with PU cable; I = 4-20mA output; U = 0-5V output; U-10 = 0-10V output; D = DC bipolar output; Y = reverse output (e.g. 4mA fully in instead of default 20mA); Z = armoured hose.

H & VH = high temperature options not available

WIRING DETAILS

4-WIRE AC VERSION (PVC OR PTFE, HIGH TEMPERATURE 150°C AND 200°C)



Wire	Designation
Red	Primary +ve
Yellow	Primary -ve
Blue	Secondary +ve
Green	Secondary -ve
Ground	Screen (not connected to sensor body)

6-WIRE AC VERSION (PVC)

Wire	Designation
Yellow	Primary +ve
Black	Primary -ve
Green	Secondary 1 +ve
Red	Secondary 1 -ve (centre tap)
White	Secondary 2 +ve
Blue	Secondary 2 -ve (centre tap)
Ground	Screen (not connected to sensor body)

6-WIRE AC VERSION (PTFE, HIGH TEMPERATURE 150°C AND 200°C)

Wire	Designation
Yellow	Primary +ve
Black	Primary -ve
Green	Secondary 1 +ve
Red	Secondary 1 -ve (centre tap)
Brown	Secondary 2 +ve
Blue	Secondary 2 -ve (centre tap)
Ground	Screen (not connected to sensor body)

3-WIRE DC VERSIONS (4-20MA, 0-5VDC, 0-10VDC, ±2.5VDC)

Wire	Designation
Red	Supply
Blue	0V Common
Green	Signal
Ground	Screen (not connected to sensor body)

ORDERING CODES & OPTIONS

AML/IEU10+/-500mm-WR0A-0.2-000 (example code)	AML/IE	U10	+/-500mm	-	WR	O	A	-	0.2	-	000
Product Family											



AML/IEU10+/-500mm-WR0A-0.2-000 (example code)	AML/IE	U10	+/-500mm	-	WR	O	A	-	0.2	-	000
AML/IE	AML/IE										
Electrical Output											
Blank = 6-wire AC mV/V		Blank									
J = 4-wire AC mV/V		J									
U = 0-5Vdc		U									
U10 = 0-10Vdc		U10									
I = 4-20mA		I									
D = ±2.5Vdc (12Vdc regulated supply required)		D									
Stroke Range											
+/-0.5mm (0-1mm)			+/-0.5mm								
+/-2.5mm (0-5mm)			+/-2.5mm								
+/-5mm (0-10mm)			+/-5mm								
+/-10mm (0-20mm)			+/-10mm								
+/-12.5mm (0-25mm)			+/-12.5mm								
+/-15mm (0-30mm)			+/-15mm								
+/-25mm (0-50mm)			+/-25mm								
+/-50mm (0-100mm)			+/-50mm								
+/-75mm (0-150mm)			+/-75mm								
+/-100mm (0-200mm)			+/-100mm								
+/-125mm (0-250mm)			+/-125mm								
+/-150mm (0-300mm)			+/-150mm								
+/-175mm (0-350mm)			+/-175mm								
+/-200mm (0-400mm)			+/-200mm								
+/-250mm (0-500mm)			+/-250mm								
+/-300mm (0-600mm)			+/-300mm								
+/-400mm (0-800mm)			+/-400mm								
+/-500mm (0-1000mm)			+/-500mm								
+/-550mm (0-1100mm)			+/-550mm								
Mechanical Configuration											
G = Guided Core & Extension Rod					-		G				
S = Spring Loaded Core & Extension Rod with Ball-Tip (±125mm max range)					-		S				
SW = IP68 Rated to 5bar/50m with Spring Loaded					-		SW				
R = M6 Rod-End Bearings - Mild Steel (with Guided Core) (IP65 versions only)					-		R				
R8 = R8 Rod End Bearings - Mild Steel (with Guided Core) (IP65 versions only)					-		R8				
M8 = 8mm Core and Extension with M8 Male Thread					-		M8				
H = 150°C High Temperature Version with Guided Core (AC only) (DC output requires in-line amplifier @ 70°C max)					-		H				
HR = 150°C High Temperature Version with Stainless Steel M6 Rod-End Bearings					-		HR				



AML/IEU10+/-500mm-WR0A-0.2-000 (example code)	AML/IE	U10	+/-500mm	-	WR	O	A	-	0.2	-	000
HR8 = 150°C High Temperature Version with Stainless Steel M8 Rod-End Bearings				-	HR8						
VH = 200°C Very High Temperature Version with Guided Core (DC output requires in-line amplifier @ 70°C max)				-	VH						
VHR = 200°C Very High Temperature, Stainless Steel M6 Rod End Bearings with Guided Core (AC output only)				-	VHR						
VHR8 = 200°C Very High Temperature Version + Stainless Steel M8 Rod End Bearings with Guided Core (DC output requires in-line amplifier @ 70°C max)				-	VHR8						
W = IP68 Rated - Waterproof/Submersible to 5bar External Pressure (50 metres) with Guided Core + Extension				-	W						
WR = IP68 Rated with Stainless Steel M6 Rod-End Bearings - Waterproof/Submersible to 5bar External Pressure (50 metres)				-	WR						
WR8 = IP68 Rated with Stainless Steel M8 Rod-End Bearings - Waterproof/Submersible to 5bar External Pressure (50 metres)				-	WR8						
<i>For the below configurations please speak to our technical team.</i>											
HS = 150°C High Temperature Version Spring Loaded Core & Extension Rod with Ball-Tip (±125mm max range) (DC output requires in-line amplifier @ 70°C max)				-	HS						
HSW = IP68 Rated to 5bar/50m with Spring Loaded 150°C High Temperature Version Spring Loaded Core & Extension Rod with Ball-Tip (±125mm max range) (DC output requires in-line amplifier @ 70°C max)				-	HSW						
HRW = 150°C High Temperature, IP68 Rated with Stainless Steel M6 Rod-End Bearings - Waterproof/Submersible to 5bar External Pressure (50 metres) (AC output only)				-	HRW						
HR8W = 150°C High Temperature, IP68 Rated with Stainless Steel M8 Rod-End Bearings - Waterproof/Submersible to 5bar External Pressure (50 metres) (AC output only)				-	HR8W						
VHRW = 200°C Very High Temperature, IP68 Rated with Stainless Steel M6 Rod-End Bearings - Waterproof/Submersible to 5bar External Pressure (50 metres) (AC output only)				-	VHRW						
VHR8W = 200°C Very High Temperature, IP68 Rated with Stainless Steel M8 Rod-End Bearings - Waterproof/Submersible to 5bar External Pressure (50 metres) (AC output only)				-	VHR8W						
Output Direction (only affects DC output versions)											
0 = Zero with core extended, Full Scale with core retracted									0		
Y = Full Scale with core extended, Zero with core retracted									Y		
Cable Exit Direction											
A = Axial (not available on rod-end bearing version)									A		
R = Radial									R		
Cable Length (in metres)											
02 = 2 metres (standard)									-	2	
0,2 = 0.2 metres									-	0,2	
10 = 10 metres									-	10	
02Z = 2 metres Armoured Hose									-	02Z	
10Z = 10 metres Armoured Hose									-	10Z	
Specials Code											
000 = No Special Requirements											- 000
021 = Extension Rod Wiper											- 021

CASE STUDIES

Universal Fabric Tension Tester for All Fabrics and Styles



The Challenge - Accurately Measure Fabric Tension on Any Style of Furniture. Fabric strength testing guarantees the fabric being used on furniture meets the high quality needed for durability, comfort and support. Choosing the wrong type of fabric can lead to fabric tearing, loss of customer



satisfaction and a decrease in sales and profit. Find out how our miniature s-beam load cell, intuitive4-L digital indicator and industrial LVDT displacement sensors were used to determine fabric strength.

Read more... (<https://appmeas.co.uk/blog/fabric-tension-tester/>)

Array

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