A-308 True-Ratiometric DIN rail mounted LVDT/RVDT signal conditioner

A. A. Lab System's A-308 is a High Accuracy, DIN rail mounted signal conditioner designed for any LVDT application where an analog DC voltage output of +/-10V or 4-20mA current output is required. The units may also be used with any LVDT / RVDT sensor with 5 or 6 wires.
The unit is most suitable for aerospace LVDT sensors which requires **high excitation levels and high excitation current.**

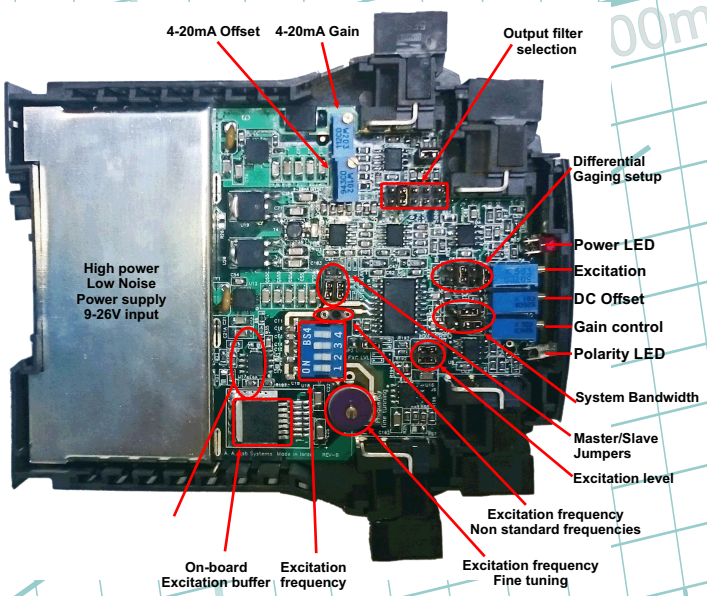
Features

- ***Small size.***
- ***Can be easily configured for 5,6 wire LVDT/RVDT sensors.***
- ***Adjustable Gain, Offset, Excitation level, Excitation frequency, Bandwidth.***
- ***13 user defined excitation frequencies with fine tuning adjustment.***
  Non-Standard frequencies may be configured at no charge.
- ***4 fixed output Low-Pass filters: 50 Hz, 100Hz, 250Hz, 500Hz.***
- ***High linearity: Nonlinearity of less than0.05%***
- ***Can be used as Master or Slave unit***
  (for multiple sensor operation, same excitation frequency and phase)
- ***Very Low drift: <50ppm/°C of F.S.***
- ***High frequency response: 50,100,250,500Hz.***
- ***Operates with remote sensors: up to 100m cable length.***
- ***High current excitation driver: Up to 26Vrms, 250mA***
- ***Voltage and Current output proportional to position.***
- ***Single supply operation voltage: 9-26Vdc.***
- ***True ratiometric measurement. Calculates (Va-Vb)/(Va+Vb)***
- ***Built-in controls of frequency, filter, offset, gain, excitation.***
- ***Precision Differential Gaging - Analog "math" input is added or subtracted***
  From current module output voltage (for connection of 2 modules with 2 sensors together).

The Universal Din rail mounted LVDT Signal Conditioner is a stand-alone unit. It may be powered from +9V to +26V DC. The L VDT transducer is connected to it via detachable screw terminals. The unit will output a voltage which is highly linear (Non-Linearity of less than 0.05%) to the displacement (limited by L VDT sensor manufacturer's specifications) or a 4-20mA current loop signal with the same high linearity. The unit is mounted in a standard DIN rail case (22.5mm width).

The LVDT conditioner boards are designed around high accuracy ASIC that produces a low distortion Sine-wave excitation for driving the LVDT sensor. This ASIC also demodulates the signal from the LVDT sensor and converting it to a high accuracy , low noise signal, ready to interface with the highest accuracy A/D conver ter units. All sensitive components are thermally coupled on the silicon chip level, making the LVDT conditioner almost insensitive to temperature variations.

The LVDT signal conditioner board is also insensitive to Excitation level and Excitation loading due to a State- of the-art True-Ratiometric measurement technology .
The LVDT excitation is measured at real time and the output is compensated in real time for any changes in excitation voltage level. The unit is almost insensitive to noises from EMI/RFI interferences on hte sensor's cable.



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The A-308 Signal conditioner can operate any type of 5/6 wires L VDT/ RVDT sensors . It's wide dynamic range (with wide range Gain and DC Offset controls) mak e it suitable for a wide range of LVDT sensors with 5 or 6 wires. The adjustment of these controls is ver y easy and can be done by an inexperienced user using a small screwdriver .
Most common excitation frequencies can be set by user (13 settings) with fine tuning adjustment to match your sensor's frequency . Non-standard frequencies are set by the factory or by installing an on-board capacitor . Fine tunning of frequency is available.
On-board 4 Low pass filters limit the output noise and allow you to control the dynamic response of the sensor (50Hz, 100Hz, 250Hz, 500Hz).

The A-308 DIN rail mounted LVDT Signal conditioner may also operate with very long LVDT wires (up to 100m).

Precision Differential Gaging - Each unit features an analog input summed or subtracted from the modules reading for configuration of difference or addition of measurements (Thickness measurements etc.)

More than one module can be configured together for synchronous operation of multi-L VDT sensors applications with the same excitation frequency and phase (Master -Slave configuration).

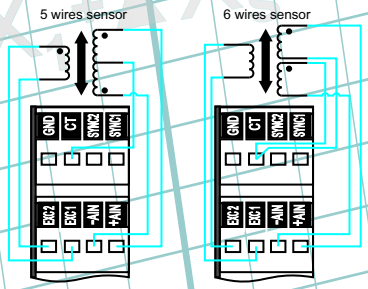
Dual color polarity LED indicator on front panel for easy center (Zero) setup.

A high power excitation driver is capable of generating any excitation voltage between 3Vrms to 26Vrms at output current of up to 250mA - Most suitable for aerospace sensors.

SPECIFICATIONS:

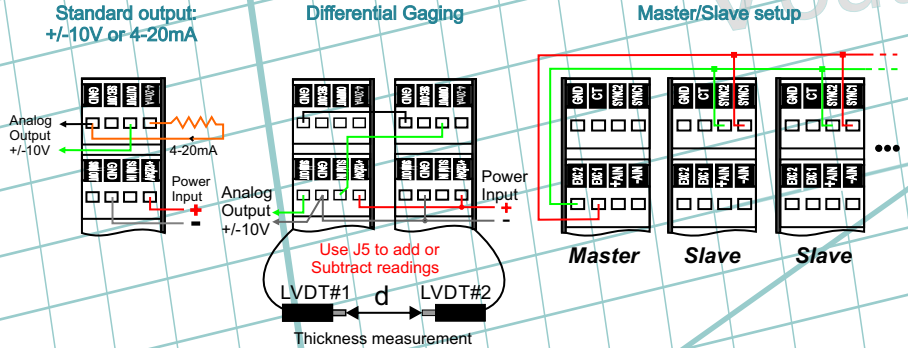
Bandwidth:	50,100,250,500Hz.
Non-Linearity:	Better than 0.05% of FS
Gain Drift:	20 ppm/°C of FS max.
Offset Drift:	10 ppm/°C of FS max.
Output:	Unipolar or Bipolar
LVDT sensor type:	Any sensor with 5,6 wires
Supply Voltage:	+9V to +26V DC
Output Voltage:	±10V, 0-10V, 4-20mA
Primary to Secondary phase shift	Insensitive
Transducer null voltage	Insensitive
Transducer cable length:	Up to 100 m
Output cable length:	Up to 200 m
Excitation range:	3 - 26V RMS
Excitation T.C.	100 ppm/°C max
Excitation Voltage Rejection	100 ppm/dB
Output Current	250mA peak (Ext. fan opt.)
Short Circuit Current	300 mA
Frequency range	930Hz. To 10KHz.
Excitation Frequency T.C.	200 ppm/°C
THD	- 50 dB
Voltage range	+9V to +26V DC
Current (@ no load)	40 mA
Temperature range:	-25 - +70°C

Input connections for 5/6 wire sensors

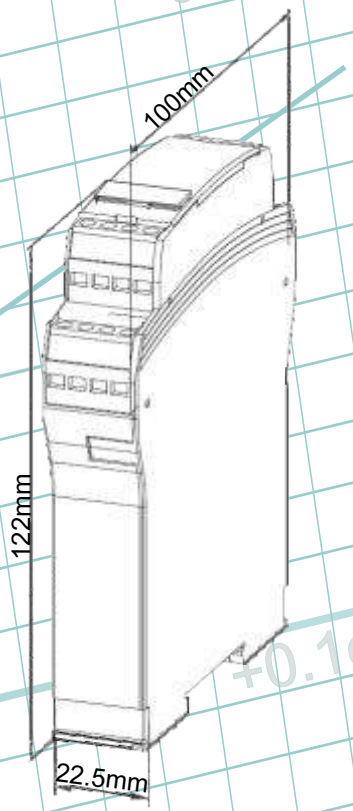


What is "True-Ratiometric" measurement?
The 5/6 wires LVDT transducer contains a primary winding (input) where a sine wave excitation is connected to and 2 secondary output windings.
If our conditioner board is measuring only the output voltage, we will call it a "Differential" signal conditioner board. When we measure the divverence of the secondary voltages and divide it by the sum of those voltages (without measuring the excitation), we call it “True Ratiometric”. The output is linear to (Va-Vb)/(Va+Vb)

Typical applications:



Mechanical dimensions:



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