

A-308 Universal DIN rail mounted LVDT Signal Conditioner

A. A. Lab System's A-308 is a High Accuracy, Low cost, DIN rail mounted signal conditioner designed for any LVDT application where an analog DC voltage output or 4-20mA current output is required. The units may also be used with any LVDT sensor. with 3,4, 5 or 6 wires, RVDT or half bridge sensors (3 wires) .

Features

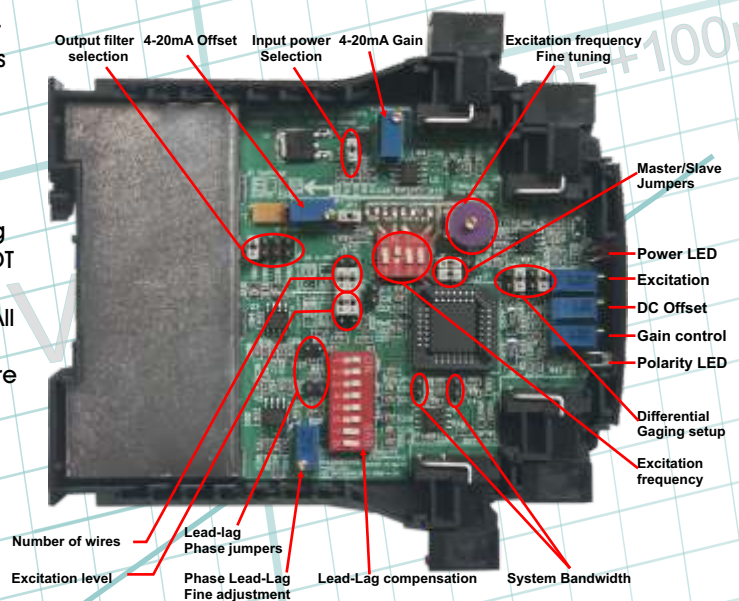
- ✓ **Small size.**
- ✓ **Can be easily configured for 3,4,5,6 wire LVDT/RVDT sensors.**
- ✓ **Adjustable Gain, Offset, Excitation level, Excitation frequency, Bandwidth.**
- ✓ **16 user defined excitation frequencies with fine tuning adjustment.**
Non-Standard frequencies may be also configured at no charge.
- ✓ **4 fixed output Low-Pass filters: 50 Hz, 100Hz, 250Hz, 500Hz.**
- ✓ **High linearity: 0.05%**
- ✓ **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 sensor: up to 100m cable length.**
- ✓ **Operation of Half-Bridge LVDT transducer.**
- ✓ **Voltage and Current output proportional to position.**
- ✓ **Single supply operation voltage: 12V or 24V (other Voltages available per request)**
- ✓ **Lead-Lag phase compensation for long cable operation.**
- ✓ **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 +28V DC (switched by the user). The LVDT transducer is connected to it via detachable screw terminals. The unit will output a voltage which is highly linear (0.05%) to the displacement (limited by LVDT sensor manufacturer's specifications) or a 4-20mA current loop signal with the same 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 converter 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 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 A-308 Signal conditioner can operate with almost any type of LVDT sensor available. Its wide dynamic range (with wide range Gain and DC Offset controls) make it suitable for a wide range of LVDT sensors with 3, 4, 5 or 6 wires. The adjustment of these controls is very easy and can be done by inexperienced user using a small screwdriver. Most common excitation frequencies can be set by user (16 settings) with fine tuning adjustment to match your sensor's frequency. Non-standard frequencies are set by the factory. Fine tuning 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 by setting the internal Lead/Lag compensation network (on board).

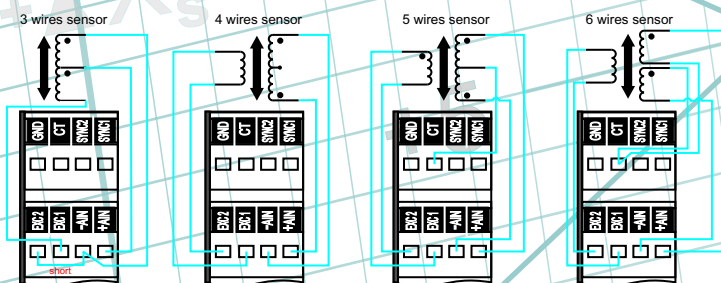
Precision Differential Gaging - Each unit features an analog input summed or subtracted from the modules reading for configuration of difference or addition of measurements (Thickness measurements etc.)

More than one module can be configured together for synchronous operation of multi-LVDT 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.

External excitation buffer for sensors consuming 40mA - 500mA is available.

Input connections for 3-6 wire sensors

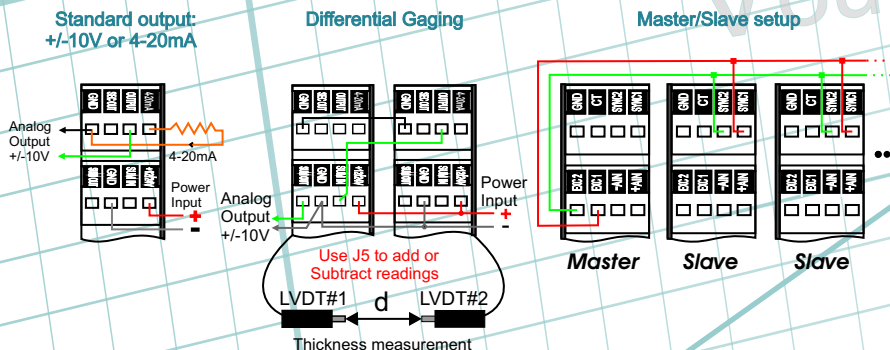


What is "Ratiometric" measurement?

The LVDT transducer contains a primary winding (input) where a sine wave excitation is connected to and one or 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 output Voltage (or the difference of the output windings) and divide it by the excitation Voltage (or the sum of the output windings), then we call it "Ratiometric" conditioner because we measure the ratio of the output to the input (Ratio = V_{out}/V_{in}).

Typical applications:



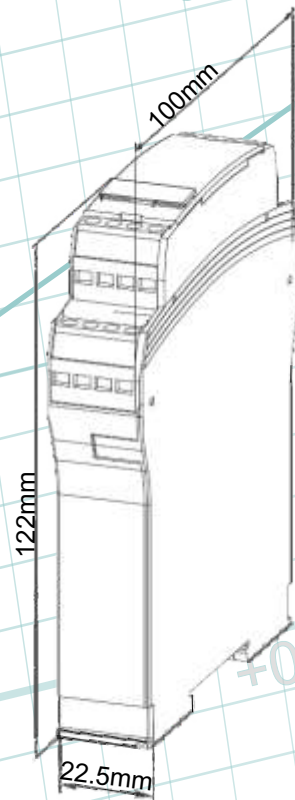
SPECIFICATIONS:

Bandwidth:	50,100,250,500Hz.
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 3,4,5,6 wires
Supply Voltage:	+9-14V or +16-28V DC
Output Voltage:	±10V, 4-20mA
Primary to Secondary phase shift	Insensitive
Transducer null voltage	Insensitive
Transducer cable length:	Up to 30 m
Output cable length:	Up to 100 m
Excitation range:	3 - 20 V RMS
Excitation T.C.	100 ppm/°C max
Excitation Voltage Rejection	100 ppm/dB
Output Current	40 mA RMS minimum
Short Circuit Current	60 mA
Frequency range	930Hz. To 10KHz.
Excitation Frequency T.C.	200 ppm/°C
THD	- 50 dB
Excitation current may be increased to 500mA (optional).	
Voltage range	+9-14V or+16-28V DC
Current (@ no load)	40 mA
Temperature range:	0 - 70°C

Excitation buffer for High current sensors



Mechanical dimensions:



A.A. LAB SYSTEMS LTD.

Head office: 33 Hayetzira st., Ramat-Gan 52521, ISRAEL, Tel:972-3-5756327/8 Fax:972-3-5756326
 U.S.A office: 9 Blossom Drive, Kennett Square, PA19348, Tel:(302)478-2881 Fax:(610)444-5544