

CALIBRATION INSTRUCTIONS

Interface module LVA for inductive sensors

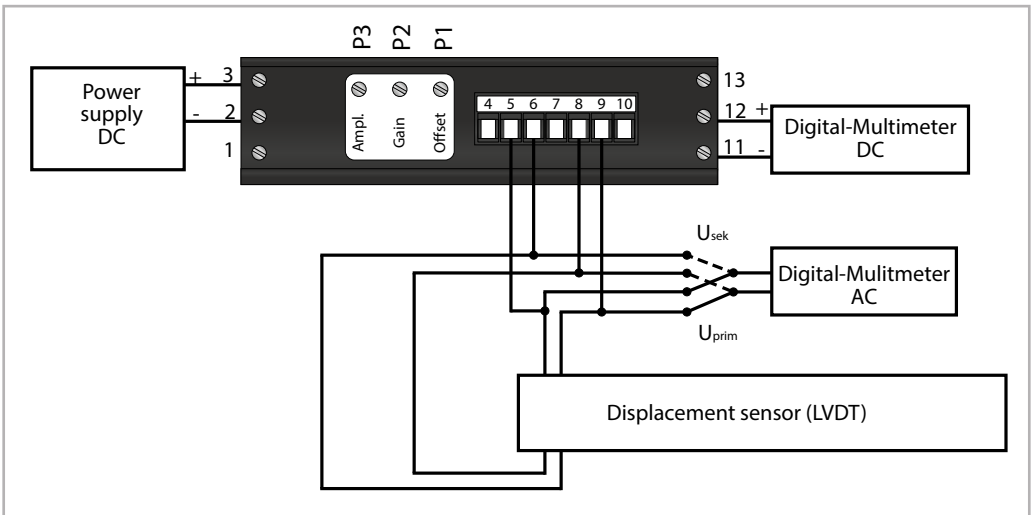
For further information please see the data sheet at
<https://www.waycon.biz/products/inductive-sensors-lvdt/>

MEASURING AND AUXILIARY EQUIPMENT

For the handling of the interface module LVA you need the following measuring and auxiliary devices:

- ▶ LVA-LVDT to be calibrated with enclosed 7-pin plug for connection of the LVDT displacement sensor (pin 5 to pin 9)
- ▶ LVDT displacement sensor to be calibrated with LVA-LVDT. Sensitivity in mV/V/mm must be known
- ▶ Mounting unit with the possibility to choose exact positions of the plunger
- ▶ Power supply 24 VDC / 600 mA stabilized (or 12 VDC/1 A for the LVA-LVDT version with 12 V supply)
- ▶ DC voltage multimeter (range ± 20 V) or DC current multimeter range (0...50 mA) depending on output of LVA LVDT
- ▶ AC-multimeter (true RMS) for $0.05...5 V_{RMS}$

TEST SETUP



STEPS TO CALIBRATE THE LVA-LVDT

1.

Build an assembly as shown in Figure.

Connect the LVDT sensor to the enclosed 7-pin connector (primary coil to Pin 5 and Pin 9, secondary coil to Pin 6 and Pin 8). Switch on supply voltage of the LVA LVDT.

2.

Measure the primary AC-voltage (Pin 5 and Pin 9) with the AC voltmeter and adjust the amplitude using potentiometer P3 (Amplitude) on the LVA-LVDT to the recommended value according to the LVA-LVDT product description. In case the LVDT sensor used is not from WayCon, calculate the recommended primary voltage as follows: $U_{\text{prim}} = U_{\text{sek}} / (E \cdot S)$

E: Sensitivity of the LVDT sensor given in mV/V/mm

S: Half measurement range of the LVDT sensor in \pm mm

U_{sek} : Is given as follows:

Sensitivity for sensor supply

U_{sek}

(see LVA-label)

5 kHz, 3 V_{eff} 200 mV

5 kHz, 3 V_{eff} 500 mV

5 kHz, 3 V_{eff} 1000 mV

5 kHz, 3 V_{eff} 1500 mV

2.5 kHz, 3 V_{eff} 1900 mV

The value for V_{prim} must not be greater than 3 V_{eff}. If the calculation of V_{prim} gives a higher value, 3 V_{eff} must be used.

3. Checking the polarity of the secondary coil

Change the position of the plunger and observe the output signal generated by the LVA-LVDT using the DC voltmeter (between Pin 12 (+signal) and Pin 11 (GND)). Check that the output signal associated with this change moves in the expected direction. If this is not the case, the connections to the secondary coil (Pin 6 and Pin 8) must be swapped.

Standard: Sensor extended: 0 V, sensor retracted: F.S.

4. Determining the physical origin of the distance sensor

Measure the secondary voltage (Pin 6 and Pin 8) using the AC voltmeter and change the position of the plunger until the secondary voltage takes the lowest value possible. Mark this position or fix it mechanically. This is the origin of the LVDT sensor. The end positions of the plunger are located \pm the half measurement range from the origin of the sensor, even if the plunger can be mechanically moved further than this. The sensor will not work properly beyond these end positions.

5. Phase calibration

Not applicable.

STEPS TO CALIBRATE THE LVA-LVDT

6. Calibration of the offset

Move the plunger to the position listed in the table below, according to the type of output signal of the LVA LVDT shown on the label. Observe the output signal using the DC multimeter (between Pin 12 and Pin 11). Use potentiometer P1 (Offset) to adjust the output signal to 0 V (or 0 mA resp. 4 mA).

LVA-LVDT output range

0...10 V
4...20 mA

Position of plunger for LVA-LVDT calibration offset

Lower (minimum) end position
Lower (minimum) end position

7. Calibration of the gain

Move the plunger to the upper (maximum) end position. Observe the output signal using the DC multimeter (between Pin 12 and Pin 11). Use potentiometer P2 (Gain) to set the output signal to the value listed in the table below according to the type of output signal shown on the label of the LVA-LVDT.

LVA-LVDT

0...10 V
4...20 mA

Output voltage

10 V
16 mA

8. Only for the Version 4...20 mA of LVA-LVDT: Calibrate offset to 4 mA:

Move the plunger to the lower (minimum) end position. Observe the output signal using the DC multimeter (between Pin 12 and Pin 11). Use potentiometer P1 (offset) to adjust the output signal to 4 mA.



DISPOSAL

Please always dispose of defective or irreparable appliances in an environmentally friendly manner and in accordance with the applicable legal provisions and disposal regulations. If required, we will be happy to assist you with environmentally friendly disposal.

Caution: Incorrect disposal can cause environmental damage!

Certain components such as electrical waste, electronic components, lubricants and other auxiliary materials must be disposed of as hazardous waste.

Please note that hazardous materials may only be disposed of by authorized specialist companies.

Dismantled components should be disposed of as follows:

- Metal components with scrap metal
- Electronic components with electronic waste
- Plastic parts at the recycling centre
- Other components must be sorted and disposed of according to their material properties