ECA110

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1 ECA110 description

The ECA110 displacement sensor consists of a probe with integral 3 meter coaxial cable and a driver PCB with edge board connector for connecting to the users existing system PCB. It requires a DC input voltage and produces an output voltage proportional to the distance between the probe and the target. The user must provide the probe connector. Probe and PCB edge board connector information is specified on the adjacent page.

2 Helpful Technical Support Documents Online

The IBS Precision Engineering's website has a large selection of technical documents (TechNotes and Application Notes) in the Technical Library. These documents provide detailed descriptions of the operation and use of the products of IBS Precision Engineering.

The Technical Library can be accessed at:

https://www.ibspe.com/expertise/technical-resources

Some of the titles include:

- Understanding Capacitive and Inductive Sensors
- Comparing Capacitive and Inductive Sensors
- Z-height Measurement with Non-contact Sensors
- Sensor Operation and Optimization
- Using Capacitive Sensors in Vacuum Applications
- Understanding Electrical Runout When Using an Eddy-Current Sensor for Roundness Measurements
- Inductive Probe Cabling Considerations

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3 Driver

The PCB driver (signal conditioner) provides an edgeboard connector. This board has a “power on” LED and is factory calibrated to user specifications. There are no user adjustments. Model and serial numbers are on the back of the PCB. A thru-hole is provided in the PCB for rigid mounting to a motherboard via a standoff. Power in, signal out and probe connections are made through the edgeboard connector.

4 Probes with integrated cables

Probes are available in a variety of sizes and body styles according to the range and other parameters required for the application.

5 Calibration record

Each sensor ships with a calibration record that provides valuable information such as:

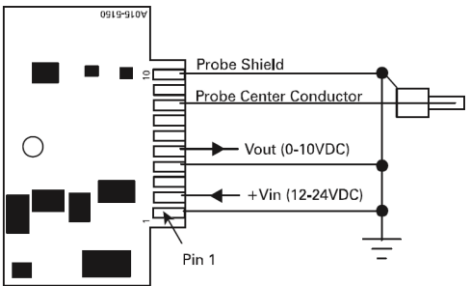
- System serial number
- Probe serial number
- Calibration target material
- Calibration information, range, offset, output, etc.
- Date of calibration

Retain this document for future reference. If misplaced, copies are maintained at the factory.

6 Driver connections

Connections to and from the ECA110 are shown below. The ten contact edge board connector is labelled J1 on the PCB.

1	Ground
2	+Vin (+12−24VDC)
4	Ground
5	V out (+0−10VDC)
8	Probe conductor
10	Probe Shield
3, 6, 7, 9	Not Used



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7 Probe connections

For maximum performance, keep trace length from the ECA110 PCB to the probe connector to a minimum. Recommended probe connectors:

- MCX Straight Jack Receptacle | Mfg. - Johnson P/N - 133-3701-211
- MCX Right Angle Jack Receptacle | Mfg. - Johnson P/N - 133-3701-311

8 PCB connections

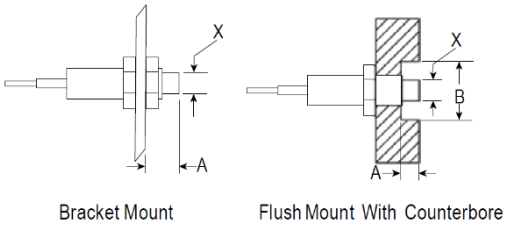
Edgeboard connectors with 10oz. withdrawal force are recommended and are generally sufficient to secure the PCB. For a more rigid mounting the mounting hole can be used with a standoff and a right angle connector.

Recommended edge connectors:

- Straight Dual 100 | Mfg. - Sullins P/N - EBC10DRAS
- Right Angle Dual 100 | Mfg. - Sullins P/N - EBC10DRTH

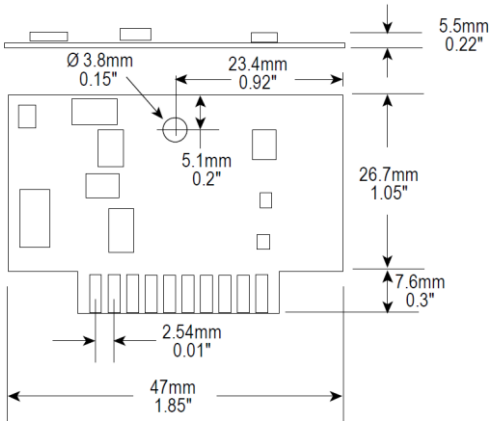
9 Probe installation

Any conductive material that engages the coil field will influence the output of the sensor. If it is not possible to meet these minimum guidelines, contact IBS Precision Engineering for guidance.



Bracket Mount Flush Mount With Counterbore

Dimensions Relative to x	
A	B
1.5X	3X



10 Factory calibration

The ECA110 does not provide any means for the user to modify the calibration. Output data points are provided in the calibration record. This data can be used to determine actual target position. Depending on the application, a user generated look up table or correction algorithm may be required to interpret the sensor output.

11 Troubleshooting

If the sensor does not appear to be performing correctly, these troubleshooting hints may help quickly resolve any operational errors. If the problem is not rectified after reviewing these hints, call IBS Precision Engineering for assistance at +31 40 290 1270.

11.1 Driver LED is not lit.

There is no power supplied to the unit.

11.2 Sudden output change and/or no response to gap change.

Check that the probe is properly connected and that the cable is not damaged.

11.3 Unexpected zero shift in the output.

Probe may be damaged. Excessive target/probe contact can result in damage to the coil in the tip of the probe. Shorted turns in the coil from such contact can cause a change in output, either positive or negative based on target material. Check the probe resistance at the cable connector and compare it with other probes you may have of that same model. The resistance values should be within a few tenths of an ohm. If you do not have other probes to compare, call Lion Precision for the resistance value of that probe model.

11.4 Power is connected but nothing happens.

The ECA110 driver is protected from reverse insertion into the edge connector. Check that the PCB is inserted correctly.

11.5 The output voltage reads negative in the calibrated range.

Check the polarity of the output connections. See the Connections section of this user guide.

11.6 There is a high frequency noise on the output.

The ECA110 is designed to operate with clean input power from a linear supply regulated to ±0.5V. Check to make sure you are not using a switching power supply. Switching power supplies can inject high frequency noise into the circuitry.