User Manual

Two Channel Interface Box V1.00

UASAGE NOTICE

INDEX

1. Introduction

The two channel interface box provides an easy solution to connect measuring sensors and other modules to control system. The main system can be a PLC or computer running gauging software. The device directly gives scaled measurement values in millimeters up to the selected resolution.

This reduces the external interface components and system integrators can focus on single device for achieving the best results.

This interface box provides maximum flexibility to the system integrators so as to combine varying probes, scales and sensors in to a single system and get digital data through single interface.

Above all, the interface box accompanies an interface DLL for .NET software developers who can use the DLL directly in their software and get started with the final gauging application within few minutes. The interface DLL and configuration utility provides easiest way of using this interface box in some of the most complex gauging applications.

2. Features

- Probe type: Full bridge or half bridge inductive probe (PETERHIRT/TESA make half/full bridge LVDT probes)
- Two channels of Linear scales or incremental encoder with RS422 differential or single end TTL drive
- Data interface: Serial RS232
- Communication protocols: ASCII continuous transmission

- Configuration: Through serial interface using configuration software utility
- Can connect to PETERHIRT/TESA make half/full bridge LVDT probes.
- Can be calibrated on site using utility software
- Can be used with air gauging
- Can be interfaced easily through interface library for .NET

3. Specification

a. Functional specifications

- Communication settings: RS232 interface, no parity, 8 data bits, one stop bit
- Baud rate: Settable as 4800, 9600, 19200, 38400, 57600, 115200 (Factory default is 115200)
- Data frame interval: Settable from 30mSec to 200mSec in steps of 1mSec (Factory default is 50mSec)
- Resolution options for probe: 0.01micron, 0.1micron, 0.5micron, 1micron
- Measurement range for probe: +-1mm, +-1.5mm, +-2mm, +-2.5mm, +-3mm
- Room temperature: Two channels, 0.1deg cel resolution
- Component temperature: Two channels, up to 650deg cel, 1deg cel resolution

b. Electrical specifications

- Power supply: 150VAC to 260VAC, 50/60Hz. Fused with 1A slow blow glass fuse. A stable earth point is must for proper operation of the device.
- Probe excitation: 2.5Vpp sine wave. 10 KHz for full bridge LVDT, 13 KHz for half bridge Tesa compatible probes. (Other factory options available on request).

c. Performance specifications

Following performance specifications have been identified at test lab when all the power supply specifications and operating conditions are at nominal values. These values may vary depending upon the field conditions. Proper care must be taken when high precision gauging is required.

a. Accuracy

±0.1% within linear operation of inductive probe (1micron over the range of 1mm)

b. Drift

0.3micron over a period of 1hour

c. Repeatability

After power cycle: 0.2micron
After mechanical movement: 0.2micron

d. Stability

±0.15micron of nominal measured value at fixed position

e. Maximum sampling time

a. For inductive probe: 1mSec (1000samples per second)

b. For encoder channels: 500uSec (2000samples per second)

f. Warm-up time

The device must be allowed to stabilize for at least 60seconds before actually using the measurement reading from the connected probes. Although instrument requires much less time to stabilize, it is good practice to allow some spare time after power on. The warm-up delay may not be required when instrument is powered off and then on within short time.

d. Mechanical specifications

- Probe connectors: DIN standard 5pin Amphenol female connector (Tesa compatible pin-out)
- Dimensions
  - For 6 or less number of probe channels
    96mm (H) x 192mm (W) x 200mm (D)
    Weight: approx. 1Kg
  - For 7 to 12 number of probe channels
    235mm (W) x 120mm (H) x 170mm (D)
    Weight: approx. 1.6Kg
  - 13 to 24 number of probe channels
    235mm (W) x 160mm (H) x 170mm (D)
    Weight: approx. 2.2Kg
  - Above 24 up to 32 probe channels
    300mm (W) x 160mm (H) x 170mm (D)
    Weight: approx. 3.0Kg

4. Connections details

a. Serial communication port

Interface box has D sub miniature 9pin female connector for serial interface. Below are pin details for this connector. If the interface box is being connected to computer's serial port, one to one straight three core cable is required.

DB9 PIN	SIGNAL NAME
1	NC
2	TXD RS232
3	RXD RS232
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC
Case	Connected to Ground

Table Terminology

NC: Do not make any electrical connection to these pins. Some or all of these pins might be used for internal testing and factory settings.
GND: Supply negative

Warning: Wrong connection or over voltage at any of the D type connector pin may permanently damage the device.

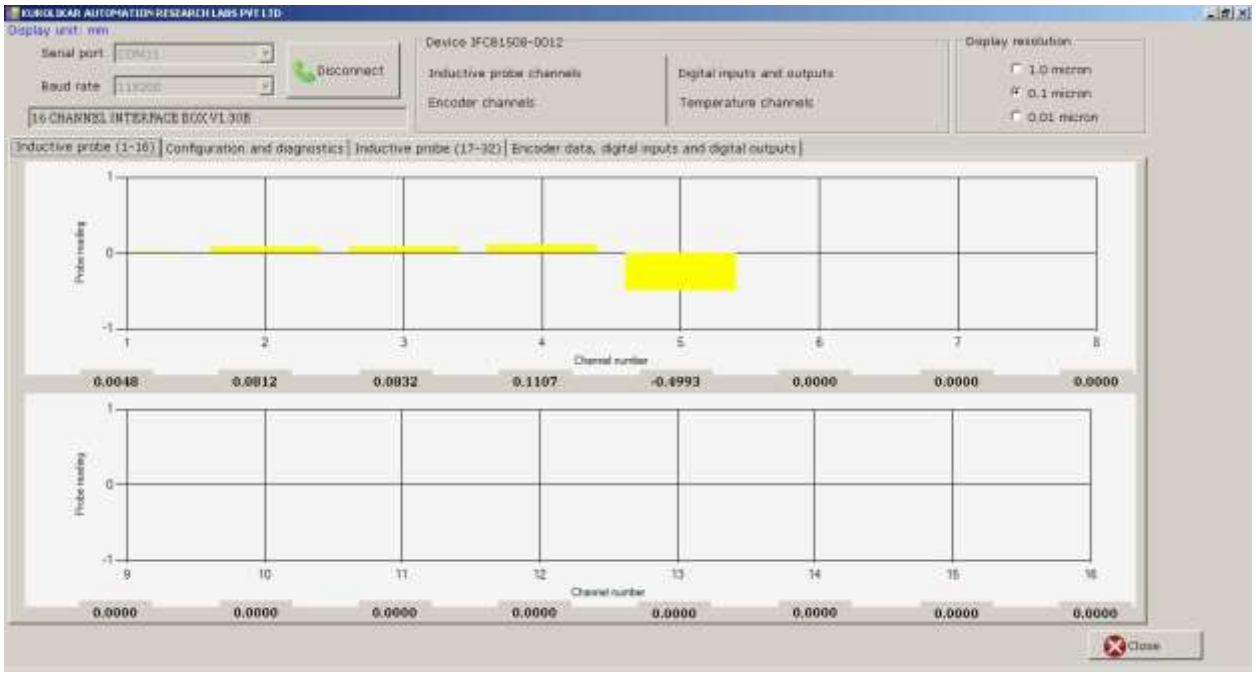
5. Installation Notes

Interface box comes with communication cable and power supply cable. Depending upon the customized configuration, it may also include temperature sensors, encoder bridge cables and probes.

- First step is to install the testing software on the computer. Please refer Appendix A of this document for details of software installation. Please make sure that the computer on which the software is being installed has at least one serial communications port available.

- To start with, connect the power cable on the back side of device and put into 3pin wall socket of 230VAC. Connect communication cable to port named RS232 on the back side of instrument. The other end of communication cable is to be connected to computer's serial port. Now, instrument can be powered on. To check for the measured probe readings, open the interface box software by clicking on its icon.

- A window as shown below will open. Select the serial port to which the device is connected and press Connect button. The window will start showing the probe readings along with its bar chart representation as shown in the figure.



6. Data format of transmitted frame

A data frame is sent over RS232 port at predefined interval. All the data is in ASCII format and can be viewed on hyper terminal. Default interval setting is 50mSec and default baud rate is 115200. The data frame is always terminated by ASCII code of carriage return. The probe reading data are enclosed in PRB delimiter and values within braces are separated by comma.

PRB<Channel 1 Reading,Channel 2 Reading, ...><CR>

WARRANTY STATEMENT

All the products are covered under warranty for a period of 12 months against manufacturing defects, workmanship and malfunction under normal operating conditions. The warranty is subject to the terms and conditions mentioned below.

1. The warranty commences from the date of sale for a period of 12 months irrespective of the actual installation date.
2. The warranty is against manufacturing defects and any subsequent malfunction of the instrument during the normal operation. The warranty shall not be applicable in case of accidental damage, damage due to wrong operation, connection or conditions that are out of normal operating specifications.
3. KARL PL, at its discretion may repair or replace the product depending on the condition of instrument, availability of spare parts and type of failure.
4. In case of warranty claim, the warranty period will not be extended and remains same as stated earlier from the date of sale.
5. Maximum liability of KARL PL remains up to repair or replacement of the product only. Any damages or losses raised out of use of the instrument are not covered by this warranty. In any case, cost of the product will not be refunded.
6. In case of warranty claim, the product should be sent over to KARL PL immediately after noticing the defect or failure. A detailed note of operating conditions in which fault occurred will be helpful in rectifying the defect.
7. Do not try to open or repair the instrument on your own. Warranty will stand null and void in such case. Products with tampered warranty seal will not be considered for warranty claims and regular service charges will be applicable.
8. In all claims, the company's decision will be final and legally binding.
9. Any and all disputes are subject to pune jurisdiction only.

Kurolikar Automation Research Labs Pvt Ltd
#226, Laxmi colony, Lane No.5 behind
manish market, Hadpasar, Pune – 411028.
www.AutomationResearchLabs.com
Email: sales@AutomationResearchLabs.com