AERO GAUGE PORT

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Table of Contents

Product models

Model Number	Model No. Description
Aero gauge port (Built-in air regulator and converter)	
AERO 111R	Single channel air gauge port, RS232 output.
AERO 111A	Single channel air gauge port, Analog output.
AERO 211R	Two channel air gauge port, RS232 output.
AERO 211E	Two channel air gauge port, Ethernet output.
AERO 211A	Two channel air gauge port, Analog output.
AERO 411R	Four channel air gauge port, RS232 output.
AERO 411E	Four channel air gauge port, Ethernet output.
AERO 911R	Nine channel air gauge port, RS232 output.
AERO 911E	Nine channel air gauge port, Ethernet output.
Aero gauge port (Without Pneumatic)	
AERO 400R	Four channel air gauge port, RS232 output.
AERO 400E	Four channel air gauge port, Ethernet output.
AERO 400A	Four channel air gauge port, Analog output.
AERO 800R	Eight channel air gauge port, RS232 output.
AERO 800E	Eight channel air gauge port, Ethernet output.

1. Introduction

The pneumatic measurement or air gauging interface units are mostly used for measuring fixtures such as bores, shaft diameter, cylindrical work piece, ovality, and roundness. It is a non-contact measuring technique that performs dimensional and checks of the geometric part.

Aero gauge interfaces have two types: with pneumatic and without pneumatic. Aero gauge interface with pneumatic series covers a one, two, four and nine channels unit. The aero gauge interface without pneumatic series covers a four and eight channels unit.

Virtually maintenance free, these devices have been in use over many years in industry delivering excellent measurement performance in varying industrial environments.

2. Features

- Built-in air electronic, pressure regulator and sensor. (With pneumatic Aero convertor).
- RS-232 serial interface for communication.
- Default baud rate for a system 19200, we can set to maximum 115200 Baud rate using utility.
- Multiple such units can be cascaded in a chained fashion.
- Communication protocols: ASCII continuous transmission.
- Configuration: Through serial interface (RS232) using software utility.
- Ethernet interface (Factory option).
- It's possible to set scaled resolution using software utility.
- 4 isolated digital inputs, 4 isolated digital outputs for automation purpose.
- Pre-calibrated with 0.1micron least count and 0.3micron repeatability. Device can be re-calibrated on-site using aero utility software.
- Powered from universal input SMPS enables the unit to operate from 110VAC to 265VAC 50/60Hz.
- Library for .NET available for quick start application software development. Also, explore our PrimeSaver™ software for immediate deployment to multi-gauging systems.
- An external converter is required. (Without pneumatic Aero interface).

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, 57600,15200(Factory default is 19200).

b. Electrical specifications

- Power supply: 110VAC to 265VAC, 50/60Hz.Fused with 1A slow blow glass fuse. A stable earth point is must for proper operation of the device.
- Digital input:0 to 30V optically isolated.
- Digital output: Potential free, sink output. Up to 150mA sink capacity

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.

- **Accuracy**
  ±0.1% within linear operation of inductive probe (1micron over the range of 1mm)
- **Drift**
  0.3micron over a period of 1hour
- **Repeatability**
  After power cycle: 0.2micron
  After mechanical movement: 0.2micron
- **Stability**
  ±0.1micron of nominal measured value at fixed position
- **Maximum sampling time**
  For inductive probe: 1mSec (1000samples per second)
- **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 specification

- Built-in air regulator and converter:
  1 channel (With pneumatic):75mm (L) X 160mm (W) X 130mm (H).
  4 channel and 9 channel:230mm(L) X 300mm(W) X165mm(H).
- Without pneumatic:
  170mm(L) X 270mm(W) X 70mm(H).

4. Software Connection Diagram

Figure 1

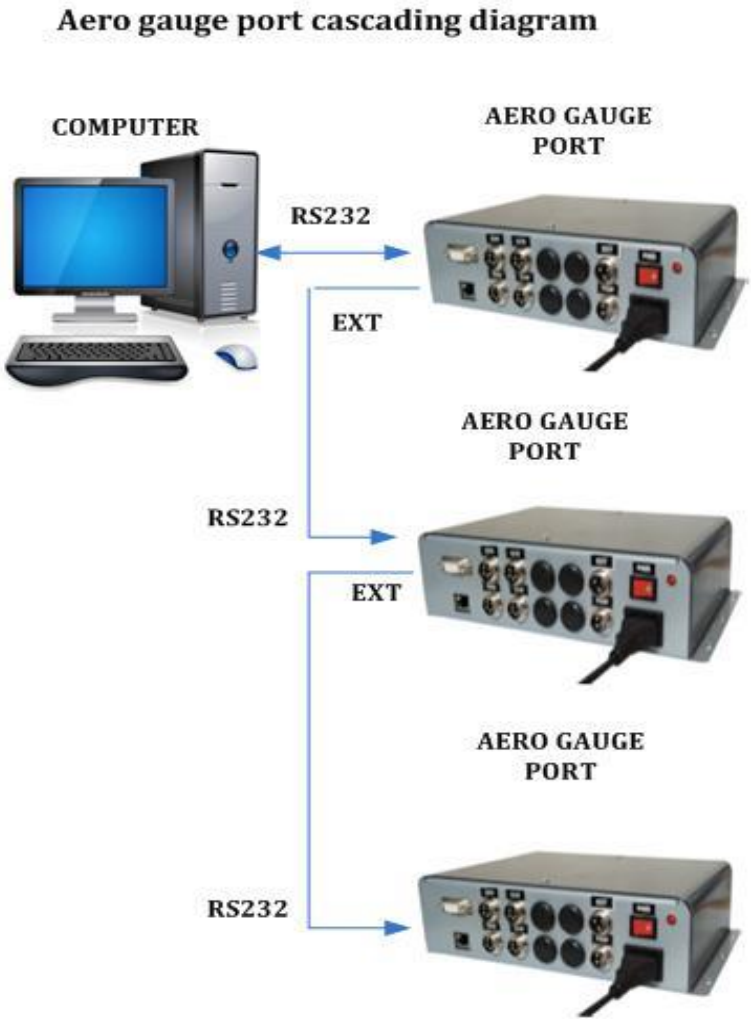

Figure 2

The aero gauge interface requires an external air regulator and converter.

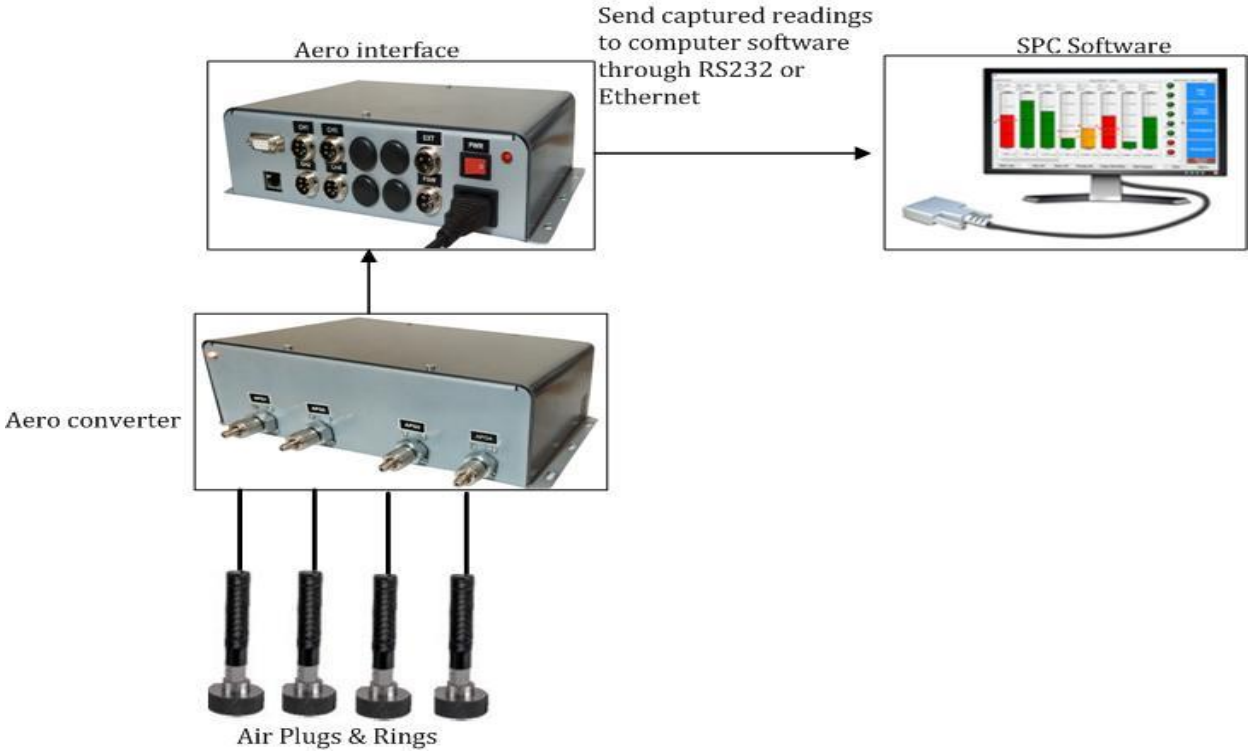

Figure 3

The aero gauge interface is built into the air regulator and converter.

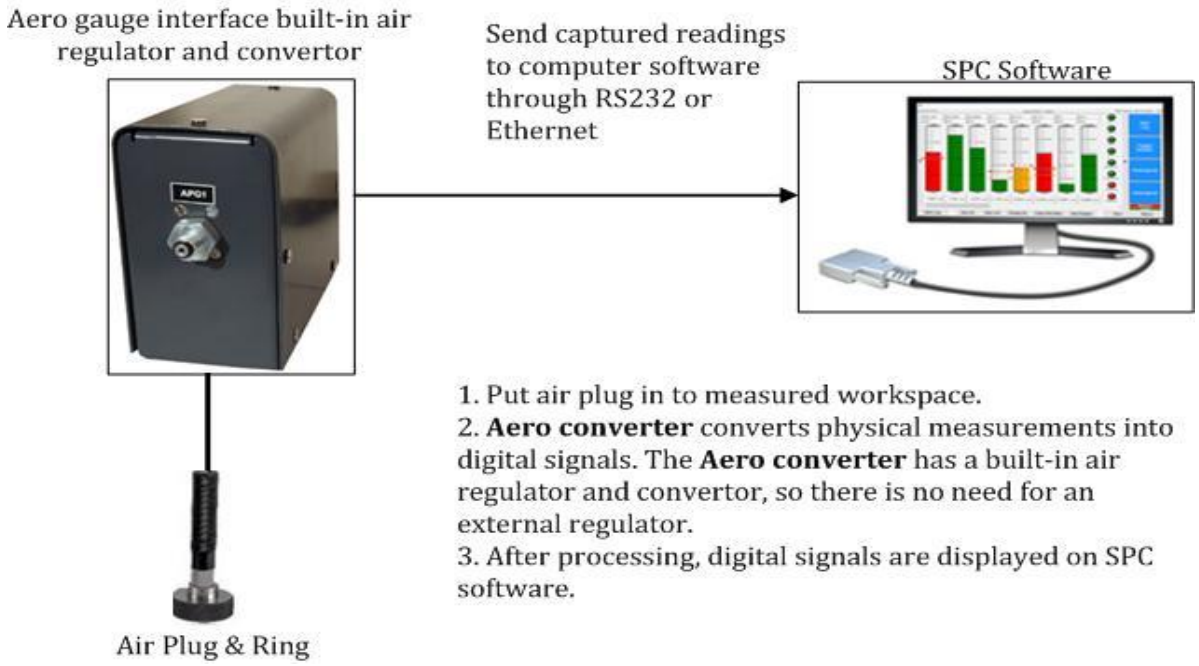

Figure 4

5. Connection details

a. Serial Communication Port

Aero 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.

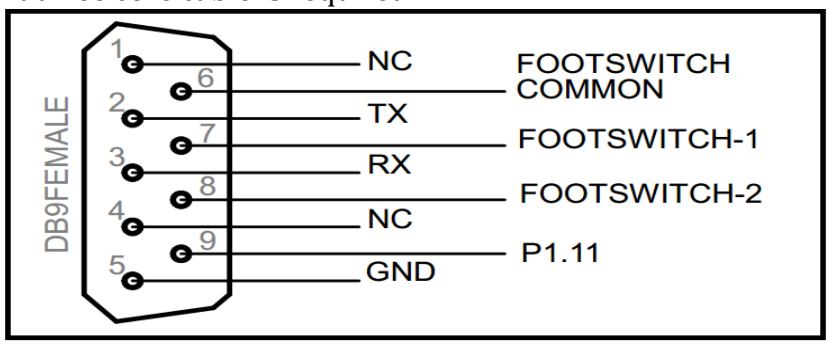

Figure 5

DB9 PIN	SIGNAL NAME
1	NC
2	TXD RS232
3	RXD RS232
4	NC
5	GND
6	Foot-switch common
7	Foot-switch-1
8	Foot-switch-2
9	P1.11
Case	Connected to GROUND

Table 1

Table-1 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

b. Extension connector

Aero Interface box has mx 3pin male connector for extension interface. Using this feature user can cascade up to 5 interface units. For extension purpose DB9MALE to 3pinMX female three core cable is required. Below are pin details for this cable as shown in Figure 6. Cascading of interface shown in Figure 7.

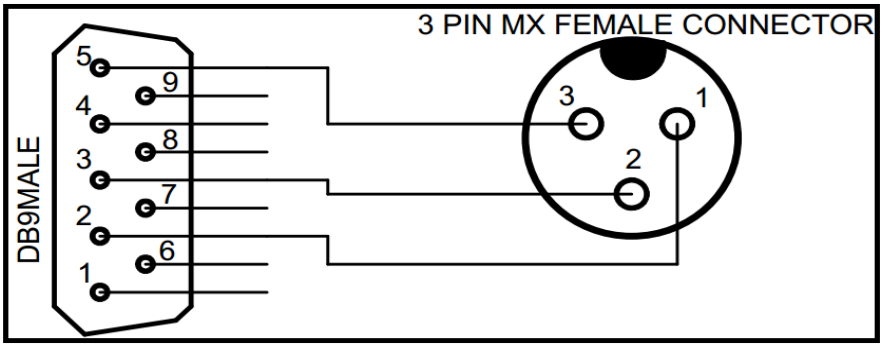

Figure 6

3-Pin round Male Connector On Backside	DB9 Female
1	RXD
2	TXD
3	GND

Table 2

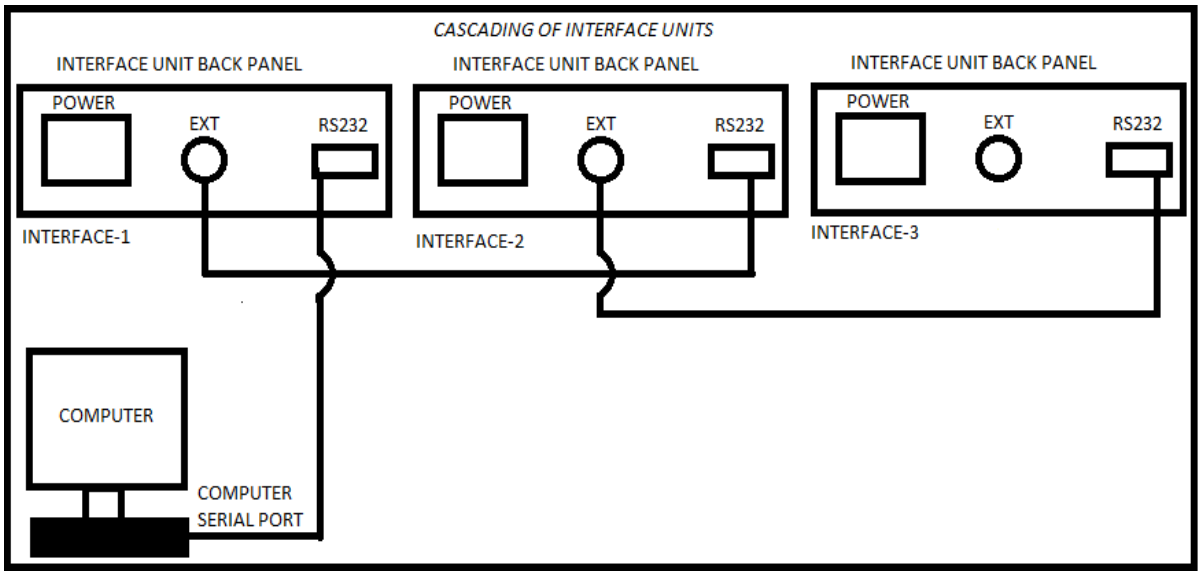

Figure 7

c. Digital input connector

Aero Interface box has round isolated DIN 8pin male connector for Digital input. Any PNP type sensor or active high output signal can be used as digital inputs. Input range is 0V to 30VDC. 5VDC considered as logic high. Below pin details of digital input connector.

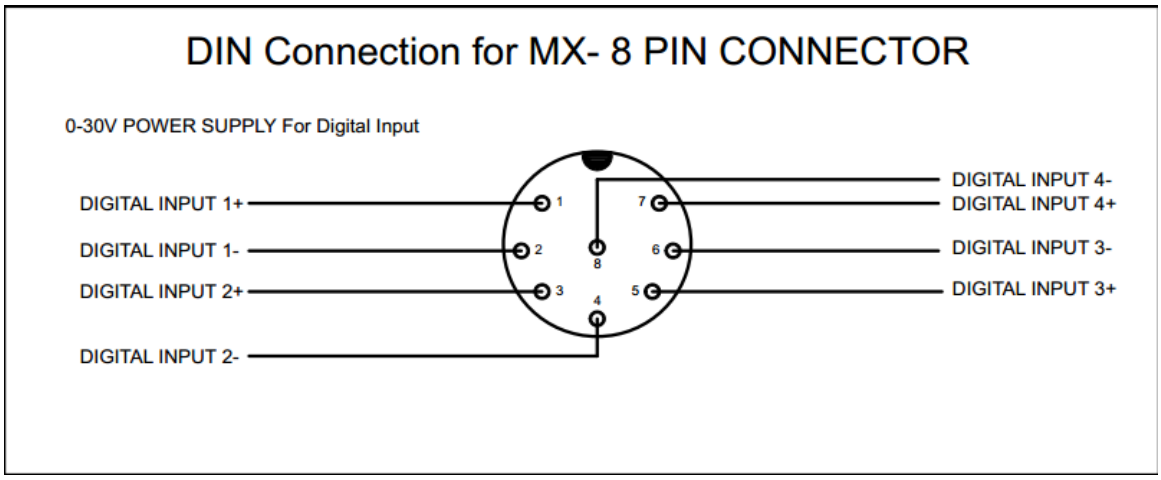

Figure 8

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

PIN NUMBER	SIGNAL NAME
1	Digital input 1+
2	Digital input 1-
3	Digital input 2+
4	Digital input 2-
5	Digital input 3+
6	Digital input 3-
7	Digital input 4+
8	Digital input 4-

Table 3

d. Digital Output

Aero Interface box has round isolated DOUT 6pin male connector for Digital output. User can control output devices using digital outputs. For proper working of digital outputs user should connect only +24VDC supply, other than +24VDC supply digital output misbehave. Below pin details of digital output connector and wiring connections figure 9.

PIN NUMBER	SIGNAL NAME
1	+24VDC
2	Ground
3	Out-1
4	Out-2
5	Out-3
6	Out-4

Table 4

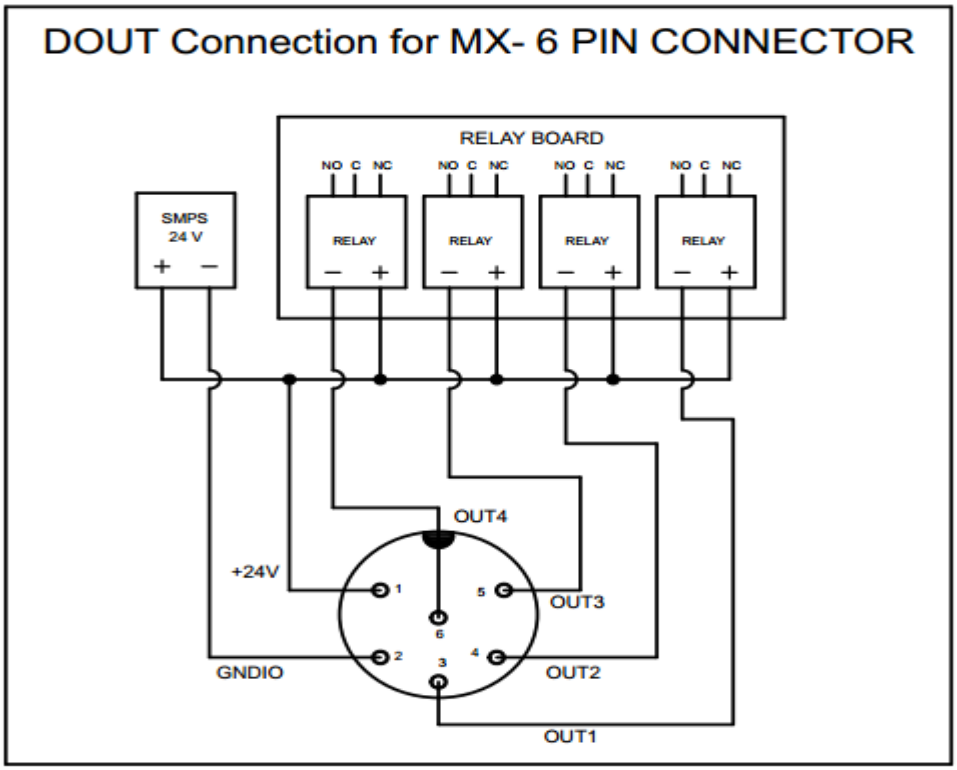

Figure 9

Warning: Wrong connection or over voltage at DOUT connector pin may damage the device permanently

6. Software installation notes

- First step is to install the software on the computer. Please make sure that the computer on which the software is being installed has at least one serial communications port available. After clicking on the Aero gauge port application, the main page will open as shown in Figure 10.
- To start with, connect the power cable on the device and put into 3pin wall socket of 230VAC. Attach the communication cable to the RS232 port on the device. The other end of the communication cable should be connected to the serial port on the computer. Now, device can be powered on.
- Set the lower master values and higher master values for every channels as shown in Figure 10.

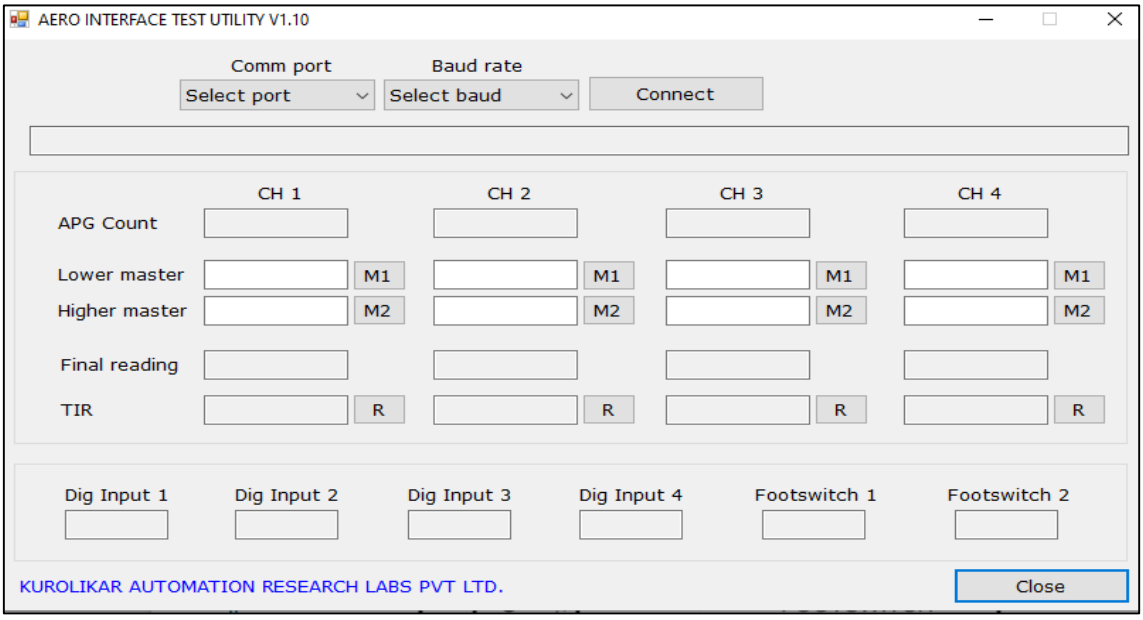

Figure 10

- Press M1 for the lower master and press M2 for the higher master. The final readings and an AGC count will be displayed after setting this fixture. The final reading will appear on the fixture gauge in which the plug is placed.
- Digital input will show in ON or OFF as shown in Figure 11.
- Check the digital output on the calibration utility as shown in image 11. Download the Haley calibration utility from [www.micronbeats.com/haleyunits.html.](www.micronbeats.com/haleyunits.html)

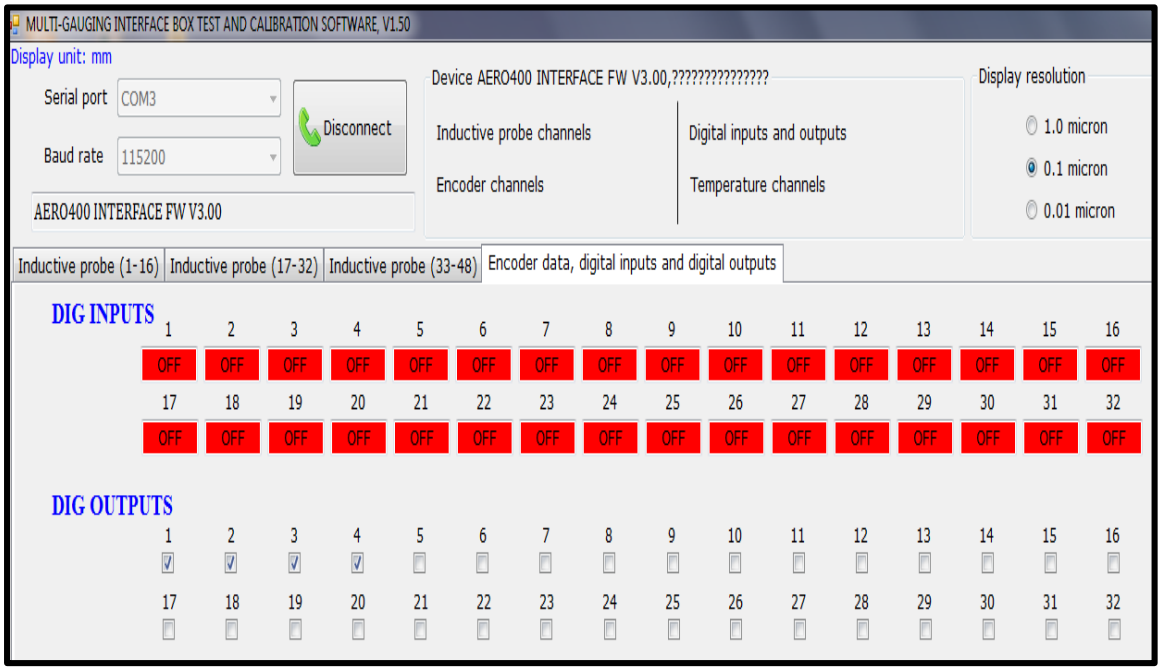

Figure 11

- A footswitch definition is a switch that is simply operated by someone's foot.

Do's

- ✓ Check input AC supply voltage it should be 230VAC
- ✓ After power on check the indicator LED on device is turning on or not.
- ✓ After successful turning on device.
- ✓ Do mastering of component first. Otherwise it will show the wrong component reading.

Don'ts

- × Do not keep the device on wet surface it may cause electric shock hazard and may damage the device.
- × Do not try to open device it may cause electric shock hazard.
- × Do not make wrong connections for DIN, DOUT, EXT, RS232 connectors.
- × Do not give over voltage to device and its DIN, DOUT, EXT, RS232 ports.

7. Software utilities

Open the Aero interface test software. Select com port and desired baud rate of device. Set the lower master values and higher master values for each channel as shown in Figure 13 and click on connect button.

Figure 12

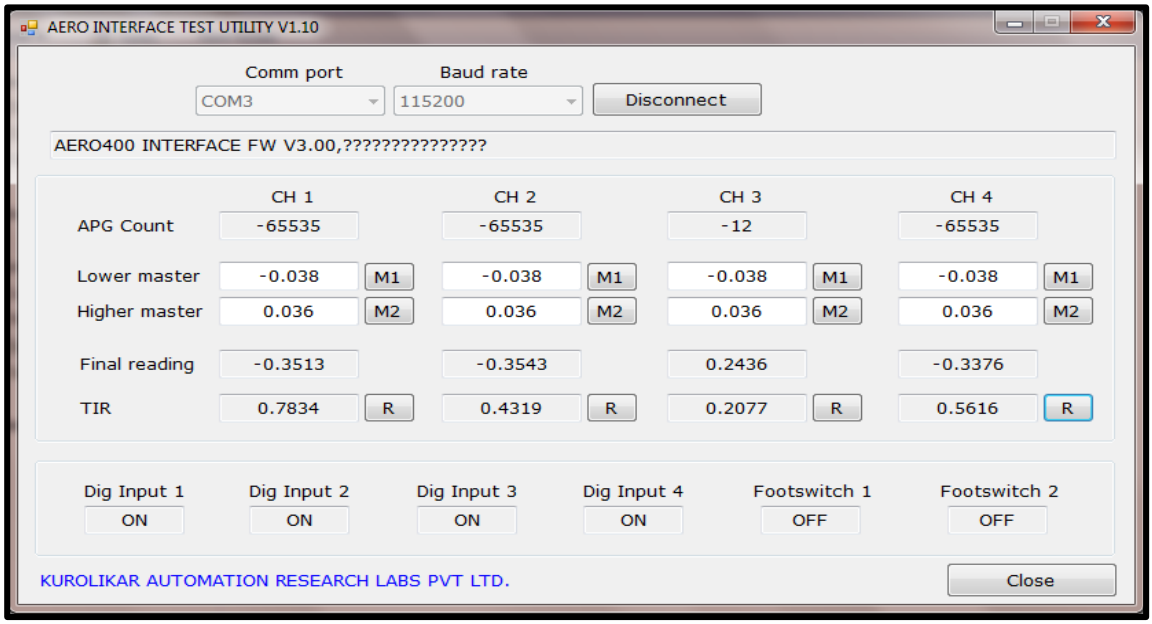

Figure 13

1. **Port Name**: Select the port name to communicate with the computer and the Aero Interface Box. For Ex-COM3.
2. **Baud rate**: The baud rate is the rate at which information is transferred through a communication channel. Select baud rates of 4800, 9600, 19200, 38400, or 57600. Default baud rate for a system is 19200, but we can set it to maximum 115200 using utility.
3. **Connect Button**: Click on the Connect button, and the software utility and the Aero interface box will connect.
4. **APG Count**: The air plug count is shown here.
5. **Lower Master**: Enter the actual value of the lower master that was mentioned on the lower master component.
6. **Higher Master**: Enter the actual value of the higher master that was mentioned on the higher master component.
7. **Final Reading**: Here, the final value will be displayed.
8. **TIR**: Here, the TIR value will be displayed.
9. **M1**: Press "M1" key for saving lower master value.
10. **M2**: Press "M2" key for saving M2 master value.
11. **R**: Clicking on the reset button resets the TIR.
12. **Digital input**: Digital input will show in ON or OFF.
13. **Footswitch**: A footswitch is a switch that can be is operated by someone's foot.
14. **Close**: By clicking on the Close button, the main window will close.

8. How to do mastering

1. Before mastering, enter the lower master value and higher master value to set every channel.
2. To start the measurement cycle, first check that all the plugs are within the proximity of the sensor rest position.
3. Place the plug into the lower master and press the M1 key.
4. Place the plug into the higher master and press the M2 key.

9. Data transmission frame format

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 19200. The data frame is always terminated by ASCII code of carriage return. The air reading data are enclosed in APG delimiter and values within braces are separated by comma.

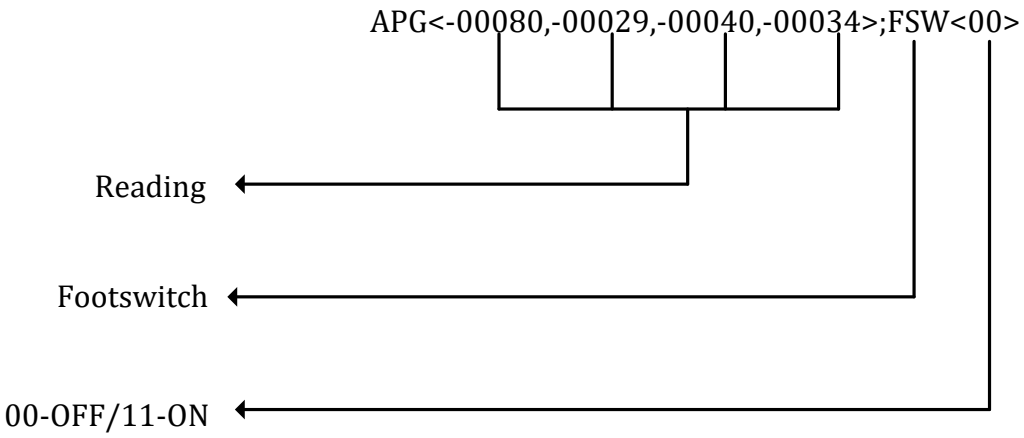

Figure 14

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. MICRONBEATS Metrology Solutions, 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 MICRONBEATS Metrology Solutions 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 MICRONBEATS Metrology Solutions 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.

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