

## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

**OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.**

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

## RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair or calibration,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

OMEGA is a registered trademark of OMEGA ENGINEERING, INC. © Copyright 2014 OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without the prior written consent of OMEGA ENGINEERING, INC.

5

**mV method** – uses mV values from the Balance, Sensitivity, and Excitation values from the load or pressure transducer's calibration sheet:

1. In the "Low" box, enter the balance value (in mV).  
The balance value is the output of the transducer at rest. Do not use "normalized data" from the calibration sheet.
2. In the "High" box, enter the Sensitivity (in mV).  
Typical transducer sensitivity is between 1 and 5mV/V. Omega calibration sheets list Sensitivity in terms of mV, and also in terms of mV/V. Be sure to use the value of sensitivity in mV.
3. In the "Excitation" box, enter the Excitation (in mV) shown on the calibration sheet, i.e. the excitation that was applied to the transducer at the time of calibration.
4. Enter the lower and higher known calibration pressures or loads in the boxes to the right of the "Low"/"High" buttons in the Wizard.
5. Press the "Save" button, which will program the IN-USBH with the data.

EXAMPLE:

If a load cell has calibration sheet values of: Balance: 0.052mV; Sensitivity 30.011mV; Excitation: 10V. Enter the Balance value into the "Low" box: 0.052mV. The value entered in the "High" box is simply the sensitivity in mV = 30.011mV.

6

## Factory Calibrating the IN-USBH

Omega offers factory calibration of the IN-USBH with your transducer for a nominal fee. This is the most accurate method of calibration, and includes a NIST-traceable certificate of calibration for the system. Contact sales for details, using the contact information on the front of this guide.

## Starting the USBH Application

At this point, the USBH Application can be started. Your connected IN-USBH device(s) should appear in the Channels window, and the readout will begin updating with the transducer data.



**IN-USBH**  
**Field Calibratable USB Signal**  
**Conditioner**

QUICK START

**Ω OMEGA®**

omega.com info@omega.com

## Servicing North America:

OMEGA Engineering, Inc., One Omega Dr.  
P.O. Box 4047, Stamford, CT 06907-0047 USA  
Toll-Free: 1-800-826-6342 (USA & Canada Only)  
Customer Service: 1-800-622-2378 (USA & Canada Only)  
Engineering Service: 1-800-872-9436 (USA & Canada Only)  
Tel: (203) 359-1660 Fax: (203) 359-7700  
e-mail: info@omega.com

U.S.A.:

The Bluetooth® word mark is a registered trademark owned by Bluetooth SIG, Inc. and any use of such marks by OMEGA is under license.

iOS is a trademark or registered trademark of Cisco in the U.S. and other countries and is used by Apple under license.

Android is a trademark of Google, Inc.

Other trademarks and trade names are those of their respective owners.

**For Other Locations Visit [omega.com/worldwide](http://omega.com/worldwide)**

**Using This Quick Start Manual**

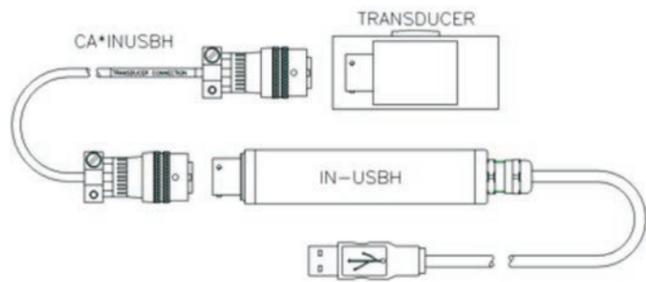
Use this Quick Start Manual with your IN-USBH high speed USB signal conditioner for quick installation and basic operation.

**General Description**

Omega's IN-USBH inline USB field-calibratable signal conditioner enables you to connect your mV\* pressure or load transducer directly to your computer. Free PC software enables you to chart, log, display, and output data from multiple IN-USBHs for analysis at sample rates up to 1000Hz. The IN-USBH signal conditioner can be field-calibrated with your transducer using two point or datasheet parameters using the included software utility.

\*350-5000 Ohm Bridge strain gage technology

**Connecting the IN-USBH to Your Transducer**



**Pin Out of IN-USBH Signal Conditioner**



CAUTION:

The IN-USBH excitation sense pins (E and F) must be wired to the corresponding transducer excitation pins. For best results, connect them as close as possible to the transducer. Pins E and F create the internal reference that accounts for the cable losses, and if not properly connected, the IN-USBH will not work correctly. For best results, purchase a CA\*INUSBH cable.

**Driver Installation**

Do this step before installing or running the USBH Application.

Plug your IN-USBH signal conditioners one at a time into a USB port, wait for the driver for the IN-USBH to install completely. The driver is completely installed when a popup in the lower

right corner of your computer says "Device Driver Software Installed Successfully".

**Field Calibrating the IN-USBH**

Field calibration of the IN-USBH is achieved using the USBH Inline Calibration Wizard. It can be downloaded from:

<ftp://ftp.omega.com/public/DASGroup/products/USBH/>

Download filename:

Omega\_IN\_USBH\_Cal\_App\_X.X.X.zip

Unzip to your computer, and run the executable. The wizard is a stand-alone application, but is also accessible through USBH Application.

There are four steps for calibrating the IN-USBH to your transducer. After completing each step, press the "Next" button. Press the back button to make corrections to earlier steps. Note: no calibration data will be written to the IN-USBH until the "Save" button is pressed in the "Parameters" step.

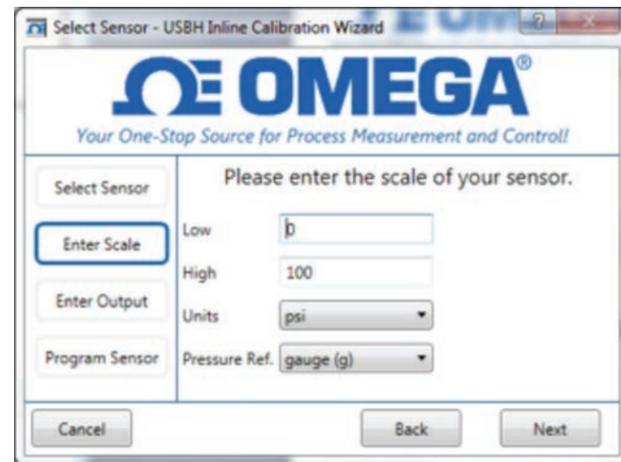
NOTE:

Previous transducer data is overwritten and irretrievable after pressing the Save button.

**Step 1: Select Transducer**

Select the appropriate IN-USBH from the drop down list. Press the "Refresh" button to display IN-USBH(s) that were plugged in after opening the wizard.

**Step 2: Enter Scale**



Enter the rated output of your transducer. Enter only the positive output portion of the scale.

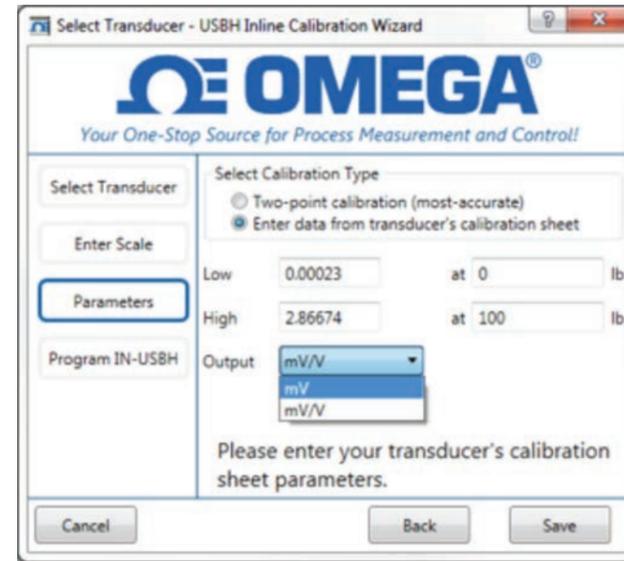
EXAMPLE:

For a 500lb load cell, enter "0" in the Low Box, Enter 500 in the "High" box, and select "lb" in the "Units" box.

**Step 3: Parameters**

Select the Calibration type needed from the two available methods by using the radio buttons:

- Two-Point Calibration Method (preferred): This is the



most accurate way to field-calibrate the IN-USBH with your transducer.

- Transducer Calibration Sheet Data Calibration Method: Calculates the calibration parameters using the transducer calibration sheet.

**Two-Point Field Calibration Method (preferred):**

This is the most accurate way to calibrate the IN-USBH, because any anomalies, cable losses, etc. are nullified. Using this method, you will apply known pressures or loads to your transducer, and the IN-USBH reads the transducer directly.

To use the Two-Point Method, select the "Two-point calibration" radio button, and follow these steps for best results:

NOTE:

Connect transducer to IN-USBH and IN-USBH to computer, and allow transducer to warm up for 5 minutes. Calibration in the environmental condition of intended use is best.

1. Connect your IN-USBH to your transducer and computer.
2. Apply the lower pressure/load, allow it to stabilize, and press the "Read" button. Press the "Read" button a few times to verify the reading has stabilized.
3. Apply the upper pressure/load, allow it to stabilize, and press the "Read" button. Press the "Read" button a few times to verify the reading has stabilized.

4. Enter the lower and higher calibration pressures or loads in the boxes to the right of the "Read" buttons in the Wizard.
5. Press the "Save" button, which will program the IN-USBH with the data.

**Transducer Calibration Sheet Data Field Calibration Method:**

This method derives an approximated calibration based on the calibration sheet specs of the transducer. For best results, have the transducer separately calibrated at an excitation voltage of 4.1VDC.

To use the Calibration Datasheet Method, Select the "Enter data from transducer's datasheet" radio button. There are two data input formats that can be used in this method: mV Output, and mV/V Output. Select mV or mV/V from the drop down menu, and then follow these steps for best results:

**mV/V method** – uses mV/V Balance and Sensitivity values from the load or pressure transducer's calibration sheet:

1. In the "Low" box, enter the balance value (in mV/V). The balance value is the output of the transducer at rest.
2. In the "High" box, enter the Sensitivity (in mV/V). Typical transducer sensitivity is between 1 and 5mV/V. Be sure to use the mV/V value.
3. Enter the lower and higher known calibration pressures or loads in the boxes to the right of the "Low"/"High" buttons in the Wizard.
4. Press the "Save" button, which will program the IN-USBH with the data.

EXAMPLE:

If a load cell has Calibration sheet values of: Balance: 0.052mV; Sensitivity 3.001mV/V; Excitation: 10V. The low value is the balance (in mV) divided by the excitation voltage: 0.052mV/10V = 0.0052mV/V. The value entered in the "High" box is simply the sensitivity in mV/V = 3.001 mV/V.