

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.

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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.

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Step 8: Configure Device

"Next" and "OK" to program the transducer. Click "Exit" or "Setup Another Transducer".

RS485 Bus Requirements

Consideration should be given to apply best practices for the RS485 bus.

1. Proper wiring topology: Wire in a multi-drop configuration. Minimize stub lengths (max length 5 m). A stub is a branch off of the main RS485 trunk line.
2. Use twisted pair cable designed for RS485 busses: We recommend UL 2919 style cable, 22-24 AWG, 120 Ohm Nom. Char. Impedance, 42pF/m Nom. Capacitance, 100% foil, 90% braided shield with drain wire. Signals A and B should be routed in one twisted pair. It is recommended to tie drain wire to shield connection on PX409-485 side, and to earth ground on supply side. The PX409-485 case must be grounded.
3. Cable routing and length up to 1200 meters, but might be reduced by a noisy environment or other installation issues.
4. Number of devices on the bus: Maximum of 16 units on the bus when requiring a sample rate of 1 sample per second. The PX409-485 is a 1/8 unit load.
5. Termination: it is recommended that RS485 busses are terminated at each end with a 120 Ohm resistor across A and B signals for proper impedance matching. The PX409-485 has a built-in 120 Ohm resistor that is software enabled.

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External Referenced Materials

Omega PX409-485 Transducer Command Reference (TCR): Defines the protocol used to communicate with PX409-485. Use this if writing your own app or using a terminal program. FTP site: <ftp://ftp.omega.com/public/DASGroup/products/USBH/>

Texas Instruments App Note SLLA272B

<http://www.ti.com/lit/an/slla272b/slla272b.pdf>

TIA application recommendation document TSB-89

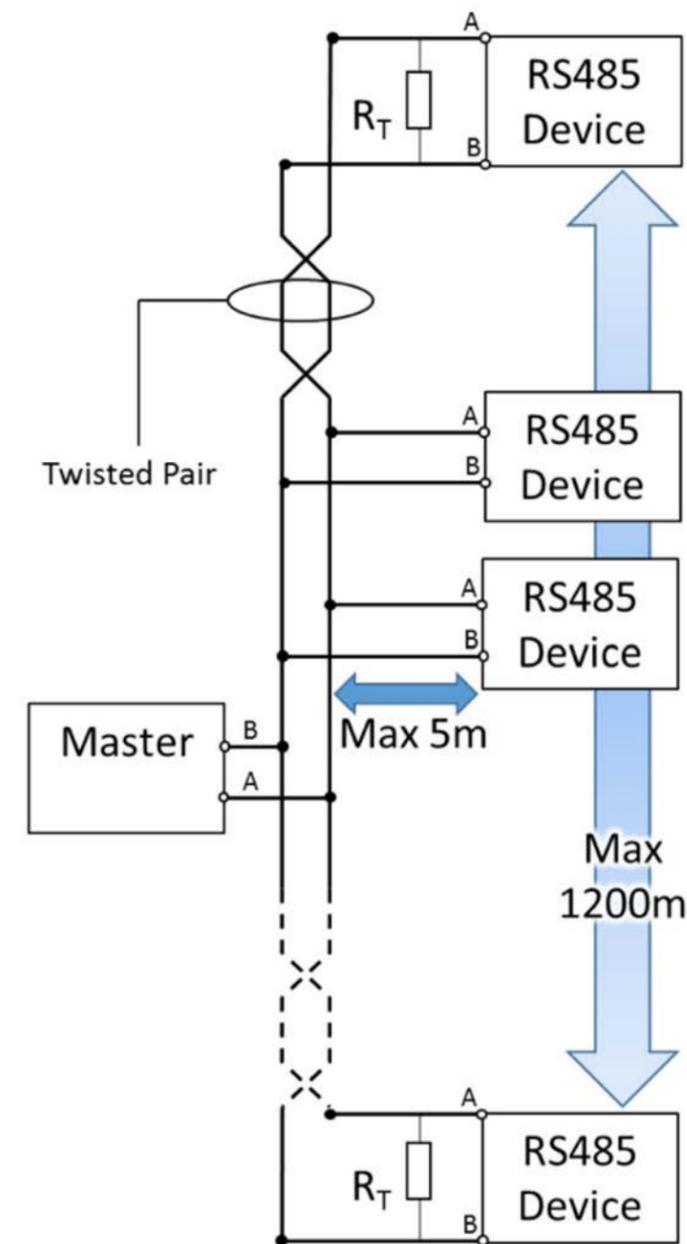


Figure 6: RS485 Bus

QUICK START



PX409-485/PXM409-485
High Speed RS485 Pressure Transmitter

OMEGA

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Servicing North America:

U.S.A.: OMEGA Engineering, Inc., One Omega Dr.
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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)
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e-mail: info@omega.com

For Other Locations Visit omega.com/worldwide

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

Using This Quick Start Manual

Use this Quick Start Manual with your Omega PX409-485 or PXM409-485 series high speed RS485 pressure transmitter for quick configuration of the transducer RS485 settings and RS485 bus.

General Description

The PX409-485 pressure transmitter is an industrial Silicon Pressure Transmitter with both a digital RS485 and analog output. This enables you to connect and monitor multiple devices on one RS485 bus while using the analog output to provide process control.

Connecting To A Computer

To connect to a Computer a RS485 hardware interface must be used, which can be purchased from Omega. You can use either a RS485 to USB converters, or card that plugs directly into the PC's motherboard.

Follow the setup instructions of the interface before connecting the PX409-485, and configure the interface as Half Duplex, 115200 Baud, No Parity, 8 Data bits, 1 Stop Bit, No Hardware Flow control.

Pinout Of PX409-485

PX409-485 has an integral 8 pin Type-A Male M12 connector. Mating connectors are available at Omega.com part number: M12.8-S-F-FM

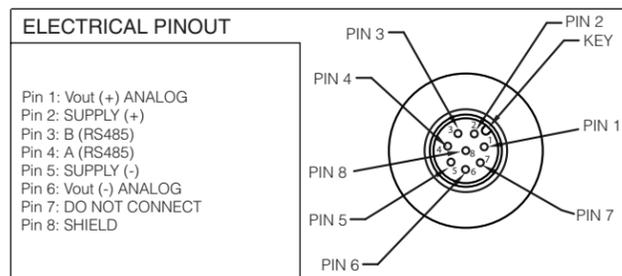


Figure 1: Electrical Pinout Of PX409-485 As Viewed From The Connector Side.

NOTE:

An external DC power supply is required (not included). Refer to Spec Sheet

PX409-485 Bus Modes

PX409-485 is a slave device on a bus where the PC is the master, and only responds to commands sent by the master, except when the transducer is streaming data in Standalone mode.

There are two modes that the PX409-485 can operate in:

1. Multidrop Mode: Multiple PX409-485 units can coexist on the same RS485 bus. Each unit must have a unique address. The master computer sends specific commands to the addressed device. Maximum poll rate for each transducer is 1 SPS with up to 16 units.
2. Standalone Mode: Standalone mode allows the full bandwidth of the transducer (up to 640 SPS) to be used. Only one PX409-485 unit is allowed on the bus at a time. The unit is not addressed.

Digital Transducer Application (DTA)

The Digital Transducer Application is a free software solution provided by Omega that allows you to interface with pressure and load digital transducers manufactured by Omega. The software enables you to monitor, chart, and data log outputs from your devices, while also providing a convenient way to set-up your PX409-485 transducer.

Analog Output

The PX409-485 comes with either a 0-5 VDC (-5V Part Number suffix) or 4-20 mA (-I suffix) analog output, depending on which model you purchased. The analog output defaults to "on", but can be disabled using the instructions in this document. The analog output follows the pressure, and is not affected by the tare feature in the DTA.

RS-485 Configuration Using The Digital Transducer Application (DTA)

If only one PX409-485 is to be on the bus, no RS-485 configuration besides adding the termination resistor is required. If multiple units are to be on the bus in Multidrop mode, each unit must be physically added to the bus one at a time, changing the address of the newly added unit from the default of "123" to a unique address from 001 to 127.

Step 1: Install

Digital Transducer Application, Link: <ftp://ftp.omega.com/public/DASGroup/products/USBH/>

Step 2: Connect

Transducer to the computer and power it on.

Step 3: Open

DTA software, Click "Click here to configure your serial ports. (RS485)". OR Tools menu → Configure Serial Ports.

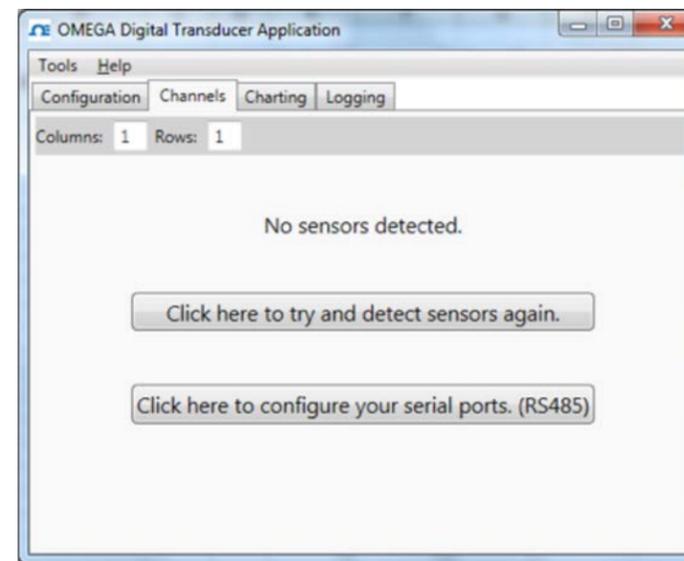


Figure 2: DTA Initial Screen

Step 4: Click

"Scan COM ports for device". The RS485 COM port should appear in the "COM Ports associated with selected device" area. Close this window.

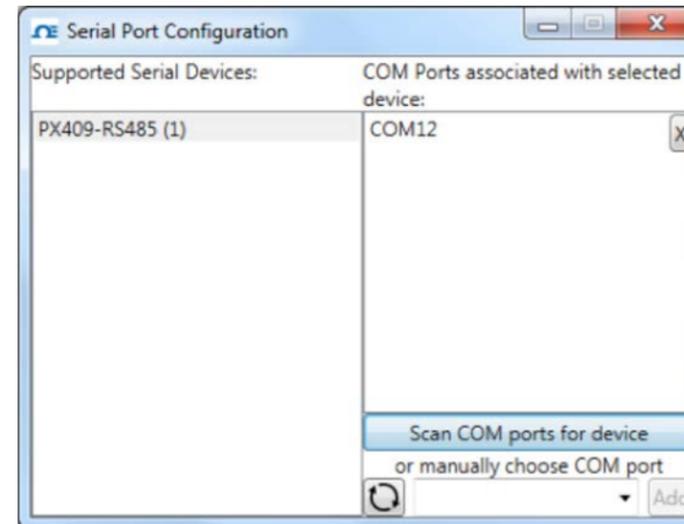


Figure 3: Serial Port Configuration Screen

Step 5: Select

1. Configuration Tab in the DTA and select a transducer in the Channels window.

Step 6: Click

- 1 "Configure RS485" button

Configure RS485

in the "Sensor Configuration" area, which will open the RS485 Setup Wizard. Select the appropriate transducer in the drop-down list, and click "Next".



Figure 4: Select Transducer Screen

Step 7: Configure Device

1. Change address (123 is the default), for multidrop busses it is critical to have a unique address for each device.
2. Standalone mode, activate this option to allow device streaming, only one device is allowed on the bus. Deactivate for Multidrop mode.
3. Analog Output, Deactivating this option will disable the analog output of the device.
4. Termination resistor, enable or disable (default) the internal 120 Ohm resistor across A and B. Activate this option for devices that are at the end of a BUS.



Figure 5: Configure Device Screen