



Wall-Mount Room Air Temperature
Monitoring System

T2X DWB

User's Manual

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Customer Support

Moore Industries is recognized as the industry leader in delivering top quality to its customers in products and services. We perform a sequence of stringent quality assurance checks on every unit we ship. If any Moore Industries product fails to perform up to rated specifications, call us for help. Our highly skilled staff of trained technicians and engineers pride themselves on their ability to provide timely, accurate, and practical answers to your process instrumentation questions. Our headquarters and other facilities phone numbers are listed below.

There are several pieces of information that can be gathered before you call the factory that will help our staff get the answers you need in the shortest time possible. For fastest service, gather the complete model and serial number(s) of the problem unit(s) and the job number of the original sale.

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The T2X DWB

The T2X-DWB Wall-Mount Air Temperature Monitoring System delivers the long-term stability of Moore Industries T2X transmitter but is also enclosed in a durable wall-mounted box. It can be used in a wide range of indoor temperature sensing applications.

The PC-programmable T2X-DWB has an internal 1000 ohm RTD for room temperature sensing. It provides a proportional 4-20mA output that is linear with temperature, and ready for direct interface with a monitoring/control system.

Setting up the T2X-DWB

Configuring and programming the T2X-DWB is simple. Begin by gathering all of the necessary equipment (listed in Table 1), installing the T2X-DWB PC Configuration Program onto your computer, then connecting the instrument as shown in Figure 1. It is necessary to connect the T2X-DWB to the PC before creating a configuration file.

Figure 1. Connecting the T2X-DWB to the PC for Configuration

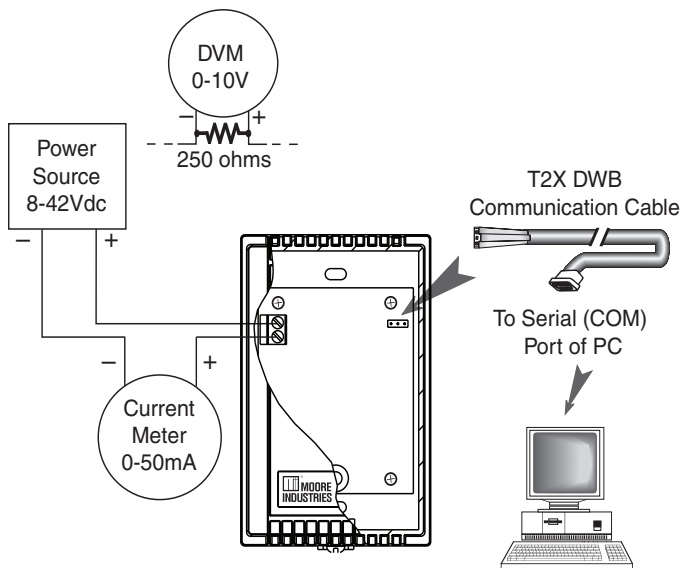


Table 1. Equipment Needed for Setting Up the T2X DWB

Device	Specifications
Power Supply	24-42Vdc, ±10%
Multimeter	Accurate to ±0.025%, e.g. Fluke Model 87
Personal Computer	Microsoft Windows based PC; 16Mb free RAM; 20MB free disk space on hard drive Microsoft Windows XP, 7, or 10 1 (one) serial port or one available USB port (with optional USB cable)
Moore Industries' T2X DWB Configuration Program	Version 1.0, or greater, successfully installed on the hard drive of the specified PC
Moore Industries' Communication Cable	Non-Isolated Serial Cable: 803-040-26 Isolated Serial Cable: 803-039-26 Fuse Protected, Non-Isolated USB Communication Cable: 804-030-26

Installing the Configuration Software

Refer to Table 1 for the equipment needed.

1. Insert the *Moore Industries Interface Solution PC Configuration Software* CD into the CD drive of the PC. Access the CD and open the "T2X DWB PC Configuration Software" folder.
2. Double-click the installation program located in the folder. Follow the prompts to correctly install the program.

Once the configuration software is installed on the PC, the T2X-DWB can be connected to equipment to simulate input and monitor output. You can then change the transmitter's operating parameters.

Configuring the T2X-DWB

One of the benefits of the T2X-DWB is that there are no internal or external controls to adjust or settings to change. All operating parameters are set using a PC and Moore Industries' T2X-DWB PC Configuration Software Program.

The software settings are downloaded to the transmitter in the form of a configuration file and stored in the instrument's memory. You can save a backup copy of the file on your PC hard drive or other media.

Default Configuration Settings

Input: RTD 2W Pt3850 1000Ohms 0-100degF

Filter: 60Hz

Broken Wire: ON

Filter: 60Hz

Output: 4-20mA

Sensor Failure: Up 24mA

Note:

The new settings will not take effect until you have programmed the T2X-DWB with the new configuration file. To program the transmitter, (with the T2X-DWB attached) click *Stop*, then *Prog*.

Managing Configuration Files

Once all of the parameters for a transmitter are set, they can be saved using the *File* menus and fields.

Saving a Configuration File to your PC – To save a configuration file to your PC, click the *File* button. Enter the name of the file you wish to save in the *Selected File Name* box. Select the location for the file to be saved and click *Save*. Follow the prompts accordingly to finish saving the file.

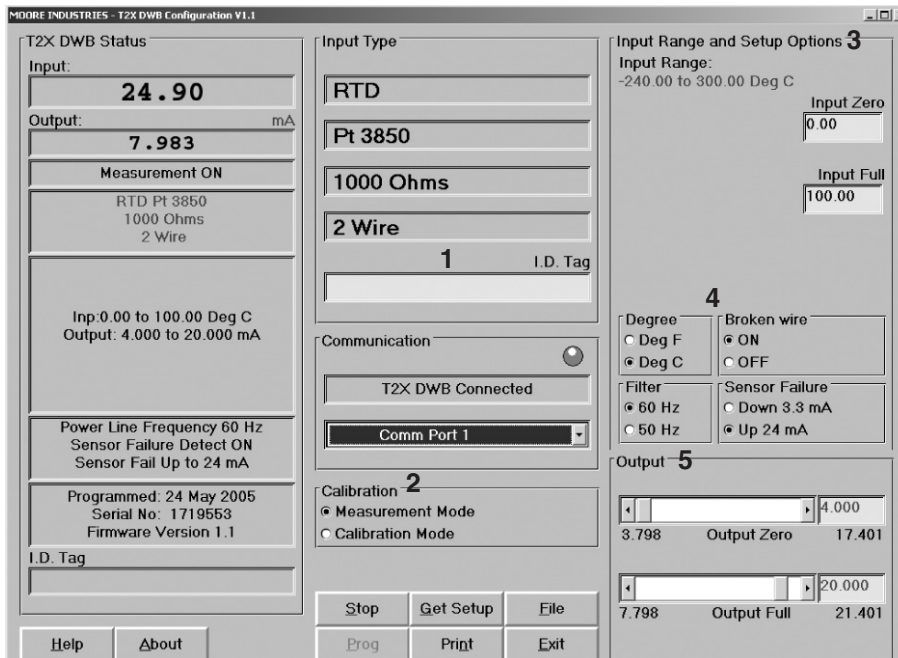
Retrieving a Configuration File from your PC – To retrieve a file, click the *File* button. Use the display on the left to locate and click on the file to be retrieved. Click on the *Quit File* button. Follow the prompts accordingly to finish loading the file. The file can now be downloaded to a T2X-DWB.

Retrieving a Configuration File from a Connected T2X DWB – To retrieve the configuration file from a connected T2X-DWB, simply click *Stop*, then *Get Setup*. The screen will reflect any changes. This file can now be saved or downloaded to a different T2X-DWB.

T2X DWB

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Figure 2. T2X-DWB PC Configuration Software Screen



To apply selections from the following list to your transmitter, click the *Stop/Start* button at the bottom of the screen and then click the *Program* button. This will download the settings from the configuration software to the memory of the connected transmitter.

1. I.D. Tag

Use this parameter to place an identifying descriptor for your instrument.

2. Calibration

Calibration Mode is intended for **factory use only**.

For normal measurement operations, the instrument must be placed in *Measurement Mode*.

3. Input Range and Setup Options

Scaling the input allows you to set the T2X-DWB to scale its output to the desired temperature range. In a reverse output application, the T2X-DWB output drops in proportion to a rise in input, and conversely rises in proportion to a drop in the input.

To scale the input—Enter the desired zero input value for your application in the *Input Zero* box. Next, enter the desired full input value into the *Input Full* box.

To set reverse output—Follow the instructions to scale the input, but enter a value in the *Input Zero* box that is greater than the *Input Full*, and a value in the *Input Full* box that is less than the *Input Zero*.

4. Setting Degree, Broken Wire, Filter and Sensor Failure Functions:

Degree—Select how you choose to view temperature readings (Fahrenheit or Celsius).

Broken Wire—Select whether to enable/disable the Broken Sensor Wire feature.

During operation, the T2X-DWB sends random microamp pulses through the internal sensor to check for an inoperative sensor. To disable this feature, select *OFF*.

Filter—This setting is used to configure the input filter. Use this filter to reduce the effects of mains-induced noise. The input filter value should be set to the frequency of the local AC supply—50Hz or 60Hz.

Sensor Failure—This button configures the transmitter to drive its output, up to 24.0mA or down to 3.3mA, if the internal sensor fails.

5. Scaling the Output and Setting Damping

The T2X-DWB can be configured to scale its 4-20mA output to offset the performance or calibration of other instruments in the process loop.

You can also introduce a delay (0-5sec) into the response of your unit in order to stop short-lived spikes from indicating a failure.

To scale the output—Enter the desired zero output value in the *Output Zero* box, or use the slide bar to adjust the value. Next, select the *Output Full* box and enter the desired full output value.

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Specifications

<p>Performance</p> <p>Input Accuracy: Platinum RTD, ±0.4°C (±0.7°F)</p> <p>Output Accuracy: Input Accuracy + 0.1% of output span</p> <p>NOTE: Overall accuracy is determined by combining input and output accuracy. It includes the combined ef- fects of linearity, hysteresis, repeatability and adjustment resolution. It does not include ambient temperature effect.</p> <p>Calibration Accuracy: Set at factory; sensor cannot be removed</p> <p>Minimum Span: 10°C (18°F)</p> <p>Stability (maximum span): 1 year = ±0.12% 3 years = ±0.21% 5 years = ±0.27%</p> <p>Measurement Cycle: Out- put updates at least 8 times per second</p>	<p>Performance (continued)</p> <p>Output Response Time: 256msec typical, 360msec maximum, for the output to change from 10% to 90% for an input step change of 0% to 100%</p> <p>Over-Voltage Protec- tion: Input, 4Vdc peak, maximum; Output, 48Vdc, maximum; Reverse Polarity, 48Vdc, maximum</p> <p>Digital Input Filter: User-selectable, 50/60Hz</p> <p>Power Requirement: 8-42Vdc</p> <p>Power Supply and Load Effects: Negligible within specified power limits</p> <p>Load Capability: 700 ohms@24V</p> <p>$\frac{\text{Supply Voltage} - 8V}{0.024A} = \text{Ohms}$</p> <p>Burnout Protection: User-programmable, Upscale to 23.6mA; Downscale to 3.3mA</p> <p>RTD Lead Wire</p> <p>RTD Excitation: 250 microamps, ±10%</p>	<p>Ambient Operating Range:</p> <p>Conditions -40°C to + 85°C (-40°F to + 185°F)</p> <p>Storage Range: -55°C to +105°C (-67°F to +221°F)</p> <p>Relative Humidity: 0-95%, non-condensing</p> <p>Ambient Temperature Effect: ±0.015% of span/°C change</p> <p>RFI/EMI Immunity: 10V/m@80-1000MHz, 1kHz AM when tested according to IEC 61326 with an error of 0.5% of span or less</p> <p>Noise Rejection: Common mode: 100dB@ 50/60Hz; Normal Mode: 70dB typical at 200mVp-p@50/60Hz</p> <p>Set Up All settings are made using Moore Industries' T2X-DWB PC Configuration Software, and then stored in nonvolatile memory</p> <p>Weight 113 g (4 oz)</p>
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Accessories

Each T2X-DWB order comes with one copy of our Configuration Software (Windows® compatible) on CD.

To order additional software or cables:

Part Number	Part
750-75E05-01	T2X-DWB PC Configuration Software Program
803-039-26	Isolated Serial Configuration Cable
803-040-26	Non-Isolated Serial Configuration Cable
804-030-26	Fuse Protected, Non-Isolated USB Communication Cable

T2X DWB

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Installation

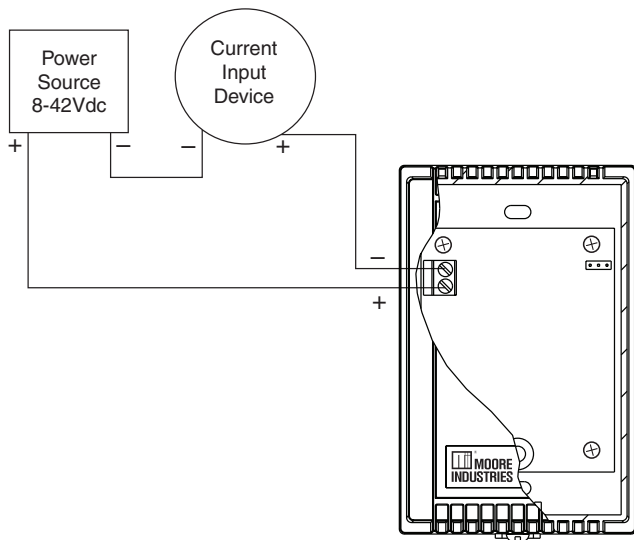
Installation consists of physically mounting the unit and completing the electrical connections. Moore Industries suggests installing the T2X-DWB by first mounting the unit in its intended application, then making the electrical connections to output and power. Before any installation, make sure that the unit has been bench checked to ensure that it is configured and calibrated properly for its intended application.

Mounting

Mounting the T2X-DWB simply consists of mounting it to a wall.

Connecting the T2X DWB

Figure 3. Connecting the T2X-DWB into the loop



Recommended Ground Wiring Practices

The following ground wiring practices must be followed to ensure proper performance of the T2X-DWB in any application. Moore Industries recommends the following ground wiring practices:

- Any Moore Industries product in a metal case or housing must be grounded.
- The protective earth conductor must be connected to a system safety earth ground before making other connections.
- All input signals to, and output signals from, Moore Industries' products should be wired using a shielded, twisted pair wiring technique. Shields should be connected to an earth or safety ground.
- For the best shielding, the shield should be run all the way from the signal source to the receiving device. (see Note below)
- The maximum length of unshielded input and output signal wiring should be 2 inches.

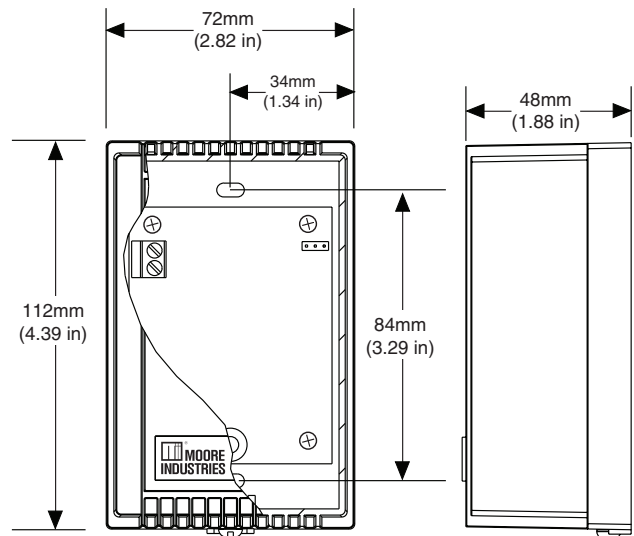
Note:

Some of Moore Industries' instruments can be classified as receivers (IPT2, IPX2, etc.) and some can be classified as transmitters (TRX, TRY, etc.) while some are both a receiver and a transmitter (SPA2, HIM, etc). Hence, your shield ground connections should be appropriate for the type of signal line being shielded. The shield should be grounded at the receiver and not at the signal source.

Maintenance

Moore Industries suggests a quick check for terminal tightness and general unit condition every 6-8 months, depending upon the severity of conditions. Things such as ambient vibration, corrosive atmospheres, extreme heat or cold, etc., can play a role in shortening the service life of any piece of electronic equipment. Always adhere to any site requirements for programmed maintenance.

Figure 4. T2X-DWB Dimensions



CE Conformity

Installation of any Moore Industries products that carry the CE certification (Commission Electrotechnique) **must** adhere to guidelines set forth in the applicable EMC (Electromagnetic Compatibility) directive EN 61326.

Warranty Disclaimer

Moore Industries ("The Company") makes no express, implied or statutory warranties (including any warranty of merchantability or of fitness for a particular purpose) with respect to any goods or services sold by the company. The company disclaims all warranties arising from any course of dealing or trade usage, and any buyer of goods or services from the company acknowledges that there are no warranties implied by custom or usage in the trade of the buyer and of the company, and that any prior dealings of the buyer with the company do not imply that the company warrants the goods or services in any way.

Any buyer of goods or services from the company agrees with the company that the sole and exclusive remedies for breach of any warranty concerning the goods or services shall be for the company, at its option, to repair or replace the goods or services or refund the purchase price. The company shall in no event be liable for any consequential or incidental damages even if the company fails in any attempt to remedy defects in the goods or services, but in such case the buyer shall be entitled to no more than a refund of all monies paid to the company by the buyer for purchase of the goods or services.

Any cause of action for breach of any warranty by the company shall be barred unless the company receives from the buyer a written notice of the alleged defect or breach within ten days from the earliest date on which the buyer could reasonably have discovered the alleged defect or breach, and no action for the breach of any warranty shall be commenced by the buyer any later than twelve months from the earliest date on which the buyer could reasonably have discovered the alleged defect or breach.

Return Policy

For a period of thirty-six (36) months from the date of shipment, and under normal conditions of use and service, Moore Industries ("The Company") will at its option replace, repair or refund the purchase price for any of its manufactured products found, upon return to the Company (transportation charges prepaid and otherwise in accordance with the return procedures established by The Company), to be defective in material or workmanship. This policy extends to the original Buyer only and not to Buyer's customers or the users of Buyer's products, unless Buyer is an engineering contractor in which case the policy shall extend to Buyer's immediate customer only. This policy shall not apply if the product has been subject to alteration, misuse, accident, neglect or improper application, installation, or operation. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

To return equipment to Moore Industries for repair, follow these four steps:

1. Call Moore Industries and request a Returned Material Authorization (RMA) number.

Warranty Repair –

If you are unsure if your unit is still under warranty, we can use the unit's serial number to verify the warranty status for you over the phone. Be sure to include the RMA number on all documentation.

Non-Warranty Repair –

If your unit is out of warranty, be prepared to give us a Purchase Order number when you call. In most cases, we will be able to quote you the repair costs at that time. The repair price you are quoted will be a "Not To Exceed" price, which means that the actual repair costs may be less than the quote. Be sure to include the RMA number on all documentation.

2. Provide us with the following documentation:
 - a) A note listing the symptoms that indicate the unit needs repair
 - b) Complete shipping information for return of the equipment after repair
 - c) The name and phone number of the person to contact if questions arise at the factory
3. Use sufficient packing material and carefully pack the equipment in a sturdy shipping container.
4. Ship the equipment to the Moore Industries location nearest you.

The returned equipment will be inspected and tested at the factory. A Moore Industries representative will contact the person designated on your documentation if more information is needed. The repaired equipment, or its replacement, will be returned to you in accordance with the shipping instructions furnished in your documentation.



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