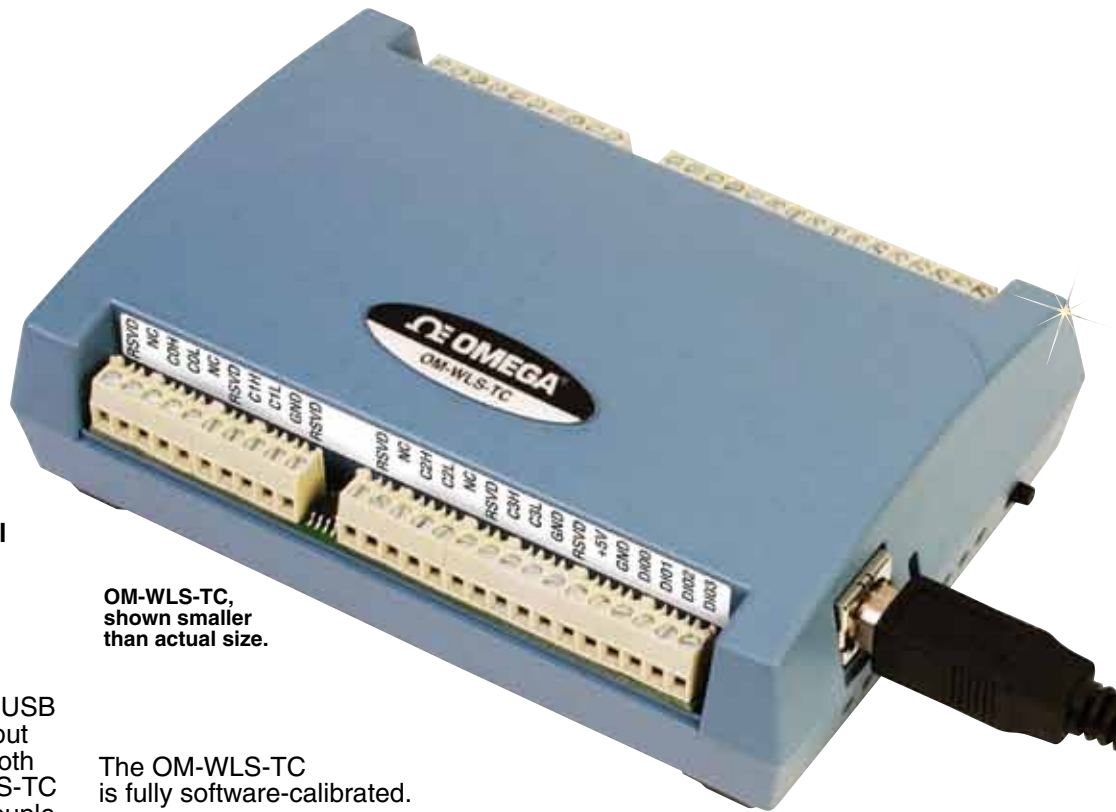


Eight Channel Wireless Thermocouple Input Module

OM-WLS-TC



- ✓ 8 Thermocouple Input Channels
- ✓ Supports Thermocouple Types J, K, T, E, N, R, S, B
- ✓ Built-In Cold Junction Compensation and Open Thermocouple Detection
- ✓ Eight Digital I/O—User Configuration for Alarms
- ✓ 802.15.4 Wireless Protocol
- ✓ Range: Up to 46 m (150') Indoors and 732 m (2400') Outdoors



OM-WLS-TC, shown smaller than actual size.

The OM-WLS-TC is a wireless USB 2.0 full-speed thermocouple input module (fully compatible with both USB 1.1 and 2.0). The OM-WLS-TC provides 8 differential thermocouple input channels. Eight independent, TTL compatible digital I/O channels are provided to monitor TTL level inputs, communicate with external devices and to generate alarms. The digital I/O channels are software programmable for input or output.

The OM-WLS-TC supports Types J, K, T, E, N, R, S and B thermocouples. Two integrated cold junction compensation (CJC) sensors are included for thermocouple measurements. An open thermocouple detection feature allows detection of a broken thermocouple. An onboard microprocessor automatically linearizes the measurement data.

The OM-WLS-TC features 8 independent temperature alarms. Each alarm controls an associated digital I/O channel as an alarm output. The input to each alarm is one of the temperature channels. The output of each alarm is software configurable as active high or low. The temperature threshold conditions to activate each alarm are software programmable. When an alarm is activated, the associated digital output channel is driven to the output state. All configurable options are software programmable.

The OM-WLS-TC is fully software-calibrated.

The OM-WLS-TC can be operated as a standalone plug-and-play device which draws power through the USB cable. The unit can also be operated as a remote device that communicates with the computer through the OM-WLS-IFC USB-to-wireless interface device. An external power supply is shipped with the device to provide power during remote operation.

When operating as a remote device, the OM-WLS-TC communicates with the computer through the OM-WLS-IFC device connected to the computer's USB port. Before the OM-WLS-TC can be operated remotely, it needs to be connected to the computer's USB port and the network parameters configured to establish a wireless link with the interface device.

Only devices with the same parameter settings can communicate with each other. All configurable options are software programmable using the included InstaCal™ utility software.

LEDs on the OM-WLS-TC indicate the status of communications over the wireless link. A LED bar graph shows the fade margin of signals received by the OM-WLS-TC.

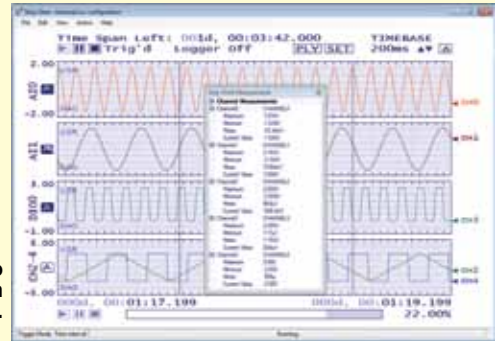
Software

The OM-WLS-TC module ships with an impressive array of software, including TracerDAQ®, a full-featured, out-of-the-box data logging, viewing, and analysis application. Driver support and detailed example programs are included for Universal Library programming libraries for Microsoft® Visual Studio® programming languages, and other languages, including DASyLab®, and ULx for NI LabVIEW® (comprehensive library of VIs and example programs compatible with 32-bit and 64-bit LabVIEW 2010 or later) and InstaCal™ installation, calibration and test utility-powerful solutions for programmers and nonprogrammers alike. These modules operate under Microsoft Windows® VISTA/7/8/10 (32-bit and 64-bit) operating systems.

TracerDAQ Strip Chart.



TracerDAQ Pro Strip Chart with Measurements.



The OM-WLS-TC data acquisition module is supplied with TracerDAQ software which is a collection of four virtual instrument applications used to graphically display and store input data and generate output signals:

- Strip Chart—Log and graph values acquire from analog inputs, digital inputs, temperature inputs and counter inputs
- Oscilloscope—Display values acquired from analog inputs
- Function Generator—Generate waveforms for analog outputs
- Rate Generator—Generate waveforms for counter outputs

TracerDAQ PRO is an enhanced version of TracerDAQ and is available as a purchased upgrade (SWD-TRACERDAQ-PRO). A comparison of some of the features included in TracerDAQ vs TracerDAQ PRO is shown below.

Features Comparison Strip Chart

Features	TracerDAQ	TracerDAQ Pro
Channel Types	Analog input, temperature input, digital input, event counter	Analog input, temperature input, digital input, event counter
Number of Channels	8	48
Number of Lanes	2	8
Maximum Samples per Channel	32,000	1 million
Alarm Conditions	No	Yes
Measurements Window	No	Yes
Enter Annotations	No	Yes
Software Triggering	No	Yes
Hardware Triggering	No	Yes
Time-of-Day Triggering	No	Yes
Linear Scaling	No	Yes

Oscilloscope

Features	TracerDAQ	TracerDAQ Pro
Channel Type	Analog input	Analog input
Number of Channels	2	4
Measurements Window	No	Yes
Reference Channel	No	Yes
Math Channel	No	Yes

Rate Generator

Features	TracerDAQ	TracerDAQ Pro
Channel Type	Counter output	Counter output
Number of Channels	1	20

Function Generator

Features	TracerDAQ	TracerDAQ Pro
Channel Type	Analog output	Analog output
Number of Channels	1	16
Waveform Types	Sine	Sine, square, triangle, flat, pulse, ramp, random, arbitrary
Duty Cycle	No	Yes
Phase	No	Yes
Gate Ratio	No	Yes
Rate Multiplier	No	Yes
Sweep (Linear and Exponential)	No	Yes

DATA ACQUISITION SYSTEMS

SPECIFICATIONS

ANALOG INPUTS

A/D Converter: Four dual 24-bit sigma delta A/D converters

Input Isolation: 500 Vdc min between field wiring and USB interface

Number of Channels: 8 differential thermocouple inputs

Differential Input Voltage Range: $\pm 0.080V$

Absolute Maximum Input Voltage: $\pm 25V$ (power on), $\pm 40V$ (power off)

Throughput Rate: 2 samples/sec max for all active channels

Input Impedance: 5 G Ω min

Input Leakage Current: 105 nA max (with open thermocouple detection enabled)

Normal Mode Rejection Ratio: 90 dB min

Common Mode Rejection Ratio: 100 dB min

Warm-Up Time: 30 minutes max

Open Thermocouple Detection: Automatically enabled when a channel is configured for a thermocouple sensor

CJC Sensor Accuracy: $\pm 0.25^{\circ}C$ typical, $\pm 0.5^{\circ}C$ max (15 to $35^{\circ}C$); -1.0 to $0.50^{\circ}C$ max (0 to $70^{\circ}C$)

DIGITAL I/O

Digital I/O Channels: 8

Type: CMOS

Configuration: Each DIO bit can be independently configured for input or output. Power on reset is input mode unless bit is configured for alarm

Pull-Up/Pull-Down Configuration: All pins pulled up to 5V via 47 k Ω resistors (default). Pull-down to ground (GND) also available

Digital I/O Transfer Rate (Software Paced):

Digital Input: 50 port reads or single bit reads per second (typical)

Digital Output: 100 port writes or single bit writes per second (typical)

Input High Voltage: 2.0V min, 5.5V absolute max

Input Low Voltage: 0.8V min, -0.5V absolute min

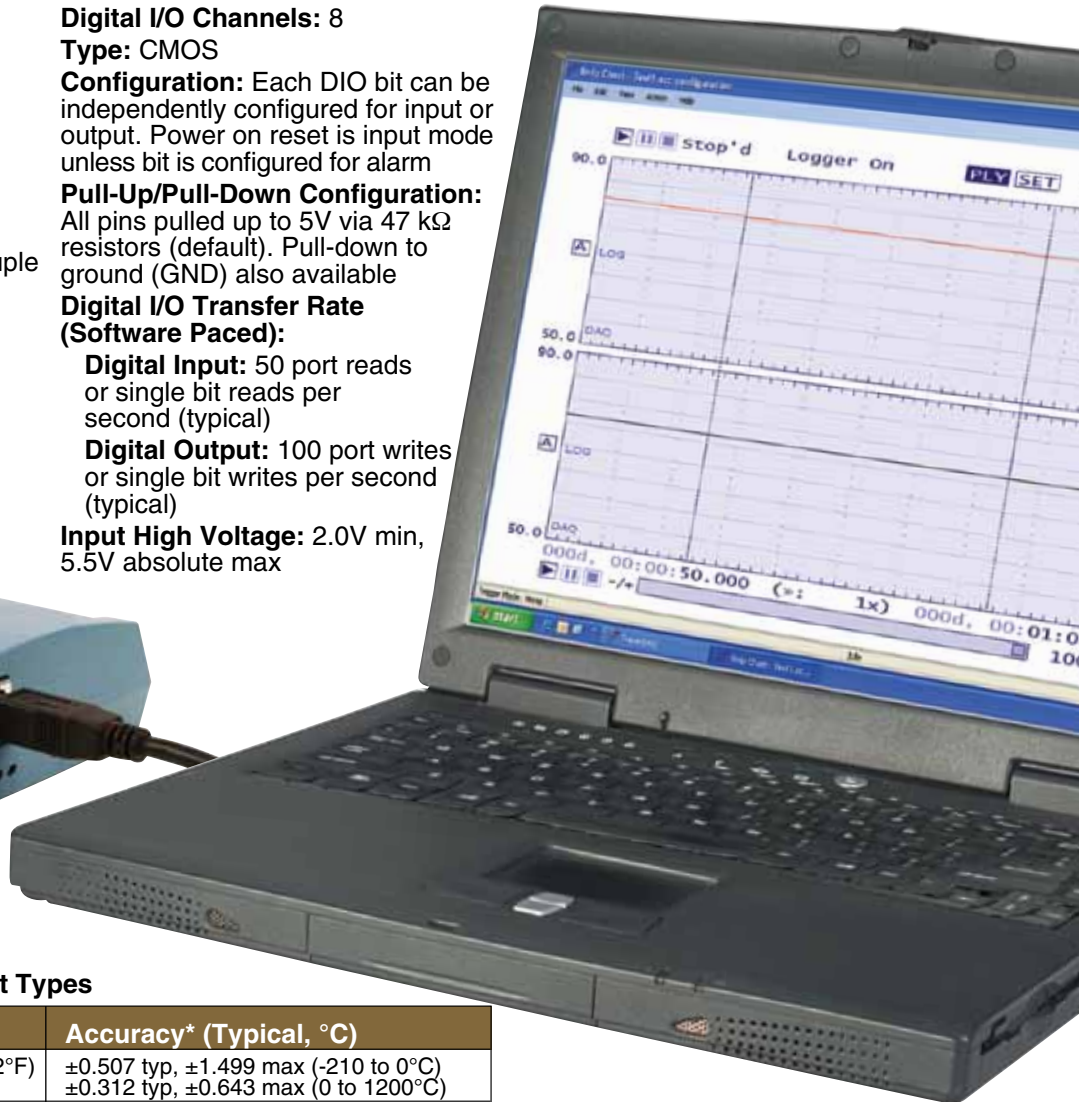
Output High Voltage: 0.7V max (IOL = 2.5 mA)

Output Low Voltage: 3.8V min (IOH = -2.5 mA)

Temperature Alarms: 8 (one per digital I/O line)



OM-WLS-TC, shown smaller than actual size.



Compatible Thermocouple Input Types

Type	Temperature Range	Accuracy* (Typical, °C)
J	-210 to 1200°C (-346 to 2192°F)	± 0.507 typ, ± 1.499 max (-210 to 0°C) ± 0.312 typ, ± 0.643 max (0 to 1200°C)
K	-210 to 1372°C (-346 to 2502°F)	± 0.538 typ, ± 1.761 max (-210 to 0°C) ± 0.345 typ, ± 0.691 max (0 to 1372°C)
T	-200 to 600°C (-328 to 1112°F)	± 0.514 typ, ± 1.717 max (-200 to 0°C) ± 0.256 typ, ± 0.713 max (0 to 600°C)
E	-200 to 1000°C (-328 to 1832°F)	± 0.462 typ, ± 1.471 max (-200 to 0°C) ± 0.245 typ, ± 0.639 max (0 to 1000°C)
R	-50 to 1768°C (-58 to 3214°F)	± 0.650 typ, ± 2.653 max (-50 to 250°C) ± 0.358 typ, ± 1.070 max (250 to 1768°C)
S	-50 to 1768°C (-58 to 3214°F)	± 0.648 typ, ± 2.491 max (-50 to 250°C) ± 0.399 typ, ± 1.841 max (-50 to 1768°C)
B	250 to 1820°C (482 to 3308°F)	± 0.581 typ, ± 1.779 max (250 to 700°C) ± 0.369 typ, ± 0.912 max (700 to 1820°C)
N	-200 to 1300°C (-328 to 2372°F)	± 0.502 typ, ± 1.969 max (-200 to 0°C) ± 0.272 typ, ± 0.769 max (0 to 1300°C)



OMEGACARESM extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARESM covers parts, labor and equivalent loaners.

WIRELESS COMMUNICATIONS

Protocol: IEEE 802.15.4,
ISM 2.4 GHz

Range: Up to 50 m (150') indoor/
urban; up to ½ mile (750 m) outdoor
line-of-sight

Transmit Power: 10 mW (10 dBm)

Receiver Sensitivity: -100 dBm
(1% packet error rate)

RF Channels: 12 direct sequence
channels available, channels
12-23 (2.410-2.465 GHz), software
selectable

Addressing: 16-bit PAN (personal
area network) IDs per channel
(software selectable)

Encryption: 128-bit AES
(software selectable)

GENERAL

Memory: EEPROM

Microcontroller: Three high-
performance 8-bit RISC
microcontrollers

**Power Supply Voltage
(Supplied by USB Port):**
4.75V min to 5.25V maximum

OM-WLS-IFC,
shown smaller than
actual size.



**Power Supply Current
(Supplied by USB Port):**
500 mA maximum

User Output Voltage (+5V):
4.75V min to 5.25V maximum,
10 mA maximum (connected to
self-powered hub)

Isolation: 500 Vdc min
measurement system to PC

**Wireless Communications
Operation Supply Current:**
500 mA maximum (ac adaptor
required for remote wireless
communications operation)

USB Device Type:
USB 2.0 (full-speed)

Device Compatibility:
USB 1.1, USB 2.0

USB Cable Length:
3 m (10') maximum

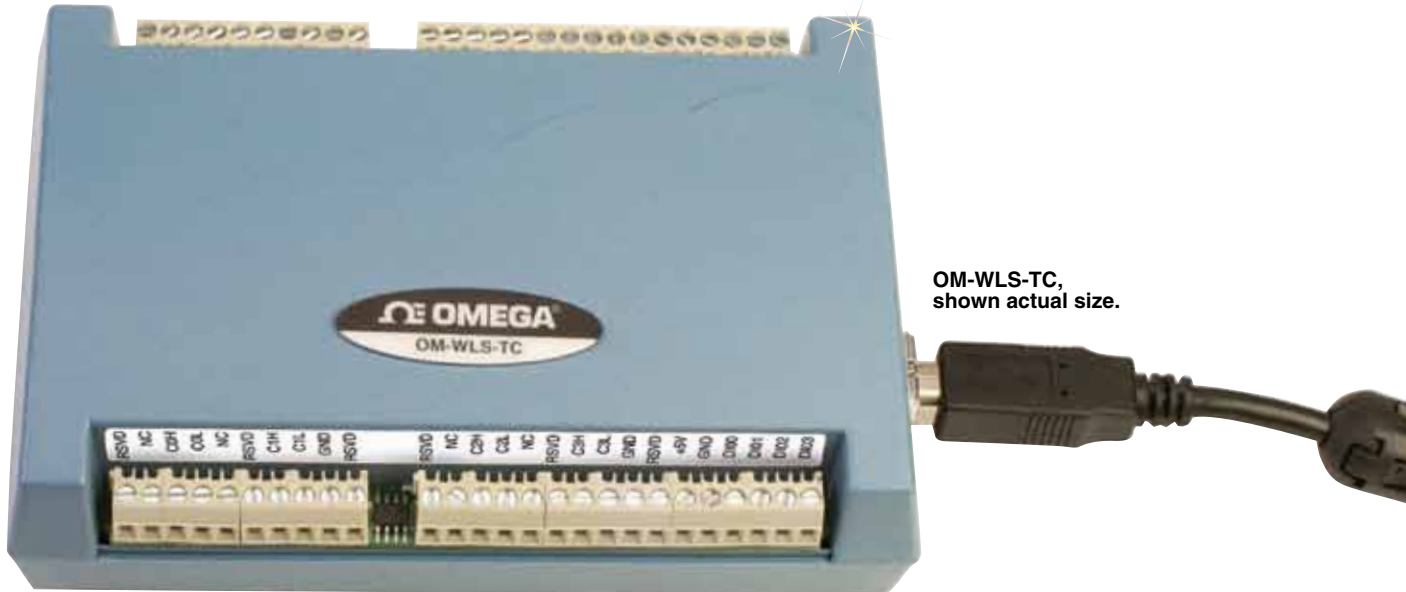
Dimensions:
127 L x 89 W x 36 mm H
(5.0 x 3.5 x 1.4")

Input Connections:
Screw terminal blocks
(accept 16 to 30 AWG wire)

Operating Temperature:
0 to 50°C (32 to 122°F),
0 to 90% RH non-condensing

Storage Temperature:
-40 to 85°C (-40 to 185°F)

Weight: 180 g (6.4 oz)



OM-WLS-TC,
shown actual size.

To Order

Model No.	Description
OM-WLS-TC	8-channel wireless thermocouple input module
OM-WLS-IFC	USB-to-wireless interface device (receiver)
SWD-TRACERDAQ-PRO	TracerDAQ Pro software

Comes complete with a 2 m (6') USB cable, 100 to 240 Vac ac adaptor with USA plug, Quick Start Guide, TracerDAQ software and operator's manual on CD.

Ordering Example: OM-WLS-TC, 8-channel wireless thermocouple input module and OCW-1 OMEGACARESM 1 year extended warranty adds 1 year to standard 1 year warranty.