1 YEAR WARRANTY

RoHS

QUICK START

OM-DAQXL
Multi-Channel Universal Input Touch Screen Data Logger

1 Introduction

Thank you for purchasing our OM-DAQXL Multi-channel touch screen data logger.

This Quick Start guide briefly describes the key operations and provides setup examples of the OM-DAQXL so that you can quickly operate the device for the first time.

In addition to this quick start manual, the complete User manual can be downloaded from Omega's website (http://www.omega.com/manuals/) . The User manual provides detailed information regarding all of the functions and operations of the OM-DAQXL. Use it together with this Quick Start Manual.

After reading this manual, keep it in an easily accessible place for later reference.

2 Hardware

2.1 Included Items

The following items are supplied in the box:

Data Logging Instrument
Verify the model number shown on the rear label of your data logger matches what was ordered.

Model	Specifications
OM-DAQXL-1-*	8 channel data logger with USB host/device
OM-DAQXL-2-*	16 channel data logger with USB host/device

Included Items

No.	Model No.	Description
1	**OM-DAQXL-RB**	Rubber boot for impact resistance
2	**SD32GB**	32GB SD card
3	**OM-DAQXL-USB**	6' USB cable
4	**OM-DAQXL-CABLE6**	Digital I/O cable ,6 ft.
5	**OM-DAQXL-TB8**	Alarm/excitation terminal block
6	**OM-DAQXL-ADAPTOR-***	12Vdc, 5A power adaptor
7	**SCREWDRIVER-2.5mm**	Omega screwdriver
8	**MQS-5570**	OM-DAQXL Series quick start guide
9	**5TC-TT-K-20-36**	Type K thermocouples 5 pack with stripped leads
10	**NA**	Crimp on ground lug
11	**PT-USB-1**	1GB Flash drive
12	**OM-DAQXL-RF**	Snap-on round cable ferrite

Table 2-1 OM-DAQXL Included Items

* Specifies the country code.

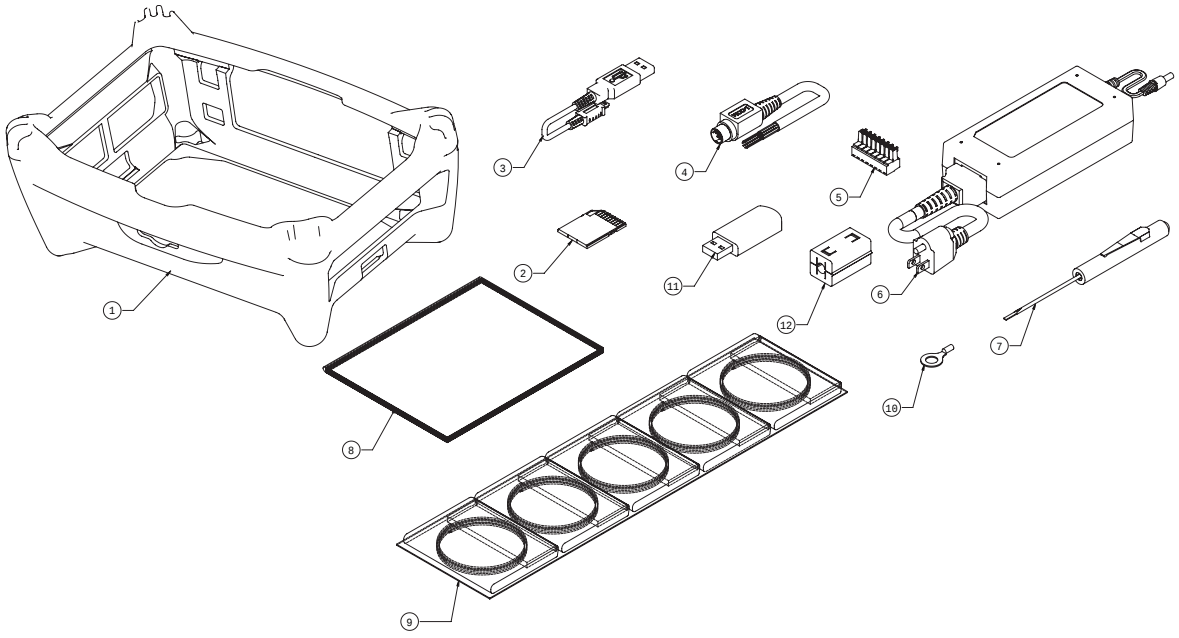


Figure 2-1 Included Items

2.2 Views and descriptions

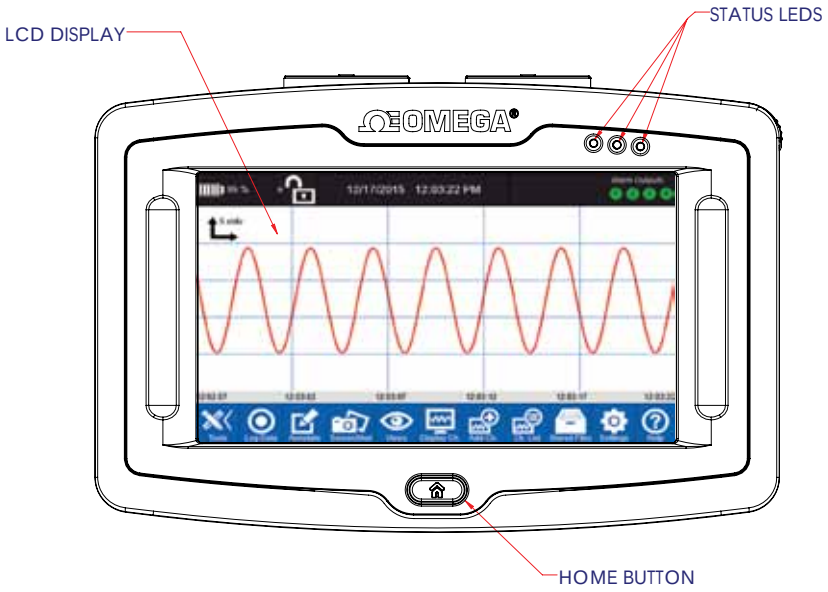


Figure 2-2 OM-DAQXL Front View

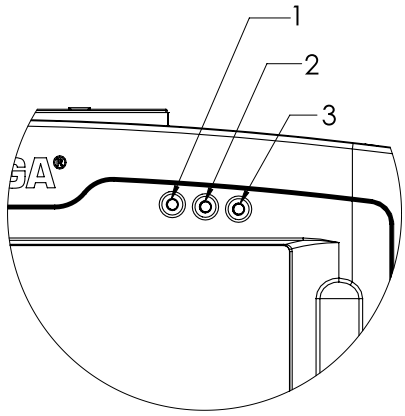


Figure 2-3 Status LED Locations

LED	STATUS		COLOR and STATE
	DC Adapter	Battery	
1 – Power/Charging	Connected	Charged	Green
	Connected	Charging	Green Flashing
	Not connected	Discharging	Green, amber battery <40% remaining, red battery <15% remaining.
	Connected	No battery	Flashing amber
2 – Logging	Logging		Flashing Green
	Not logging - Error		Red
	Armed mode		Amber
	Free running		Green
3 - Alarm	Alarm condition		Red
	No alarm		Green
	Alarms disabled		Off

Table 2-2 Status LED States

3 Sensor Wiring

Sensor Type		Any Channel	
		+	–
Temperature	Thermocouple	TC+	TC-
Process	Voltage	V+	V-
	Current	I+	I-

Table 3-1 Two Wire Sensor Connections.

Sensor Type		Odd Channel		Even Channel	
		+	-	+	-
Temperature	2 Wire RTD	RTD+	RTD–		RTD-
	3 Wire RTD	RTD+	RTD–		RTD-
	4 Wire RTD	RTD+	RTD–	RTD+	RTD-
	Thermistor	Th+	Th-		Th-
Bridge	Strain Gage	EXC+	EXC-	V+	V-
	Load Cell	EXC+	EXC-	V+	V-
	Pressure Transducer	EXC+	EXC-	V+	V-

Table 3-2 Three and Four Wire Sensor Connections

Note: For bridge type sensors, only channels 1, 2, 3, 4, and 9, 10, 11, 12 are available.

Signal Name	Pin #	Wire Color
Digital Input 1	1	Purple
Digital Input 2	2	Grey
Digital Input 3	3	Red
Digital Input 4	4	Green
Digital Output 1	5	Brown
Digital Output 2	6	Blue
Digital Output 3	7	Orange
Digital Output 4	8	Yellow
Isolated Ground	9	Black

Table 3-3 Digital I/O Cable Pinout.

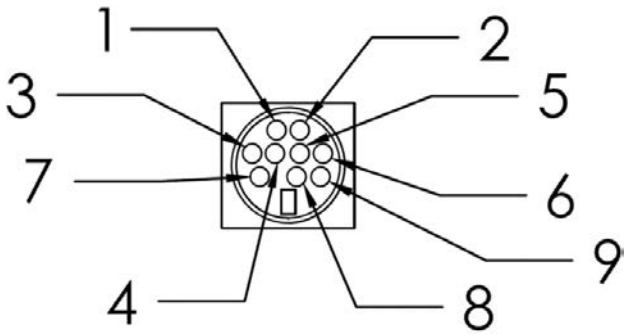


Figure 3-1 Digital I/O Connector Pin Numbers

Signal Name	Terminal #
Alarm 1	1
Alarm 2	2
Alarm 3	3
Alarm 4	4
Ground	5
External Trigger	6
Isolated Ground	7
+24 Vdc	8

Table 3-4 Alarm Terminal Block Signals

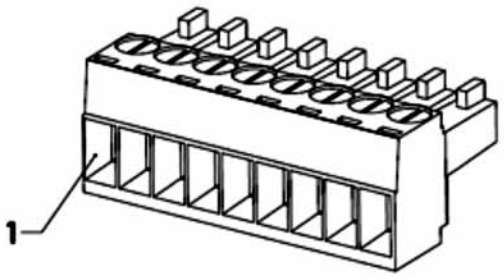


Figure 3-2 Alarm Terminal Block

3.1 User Interface Flowchart

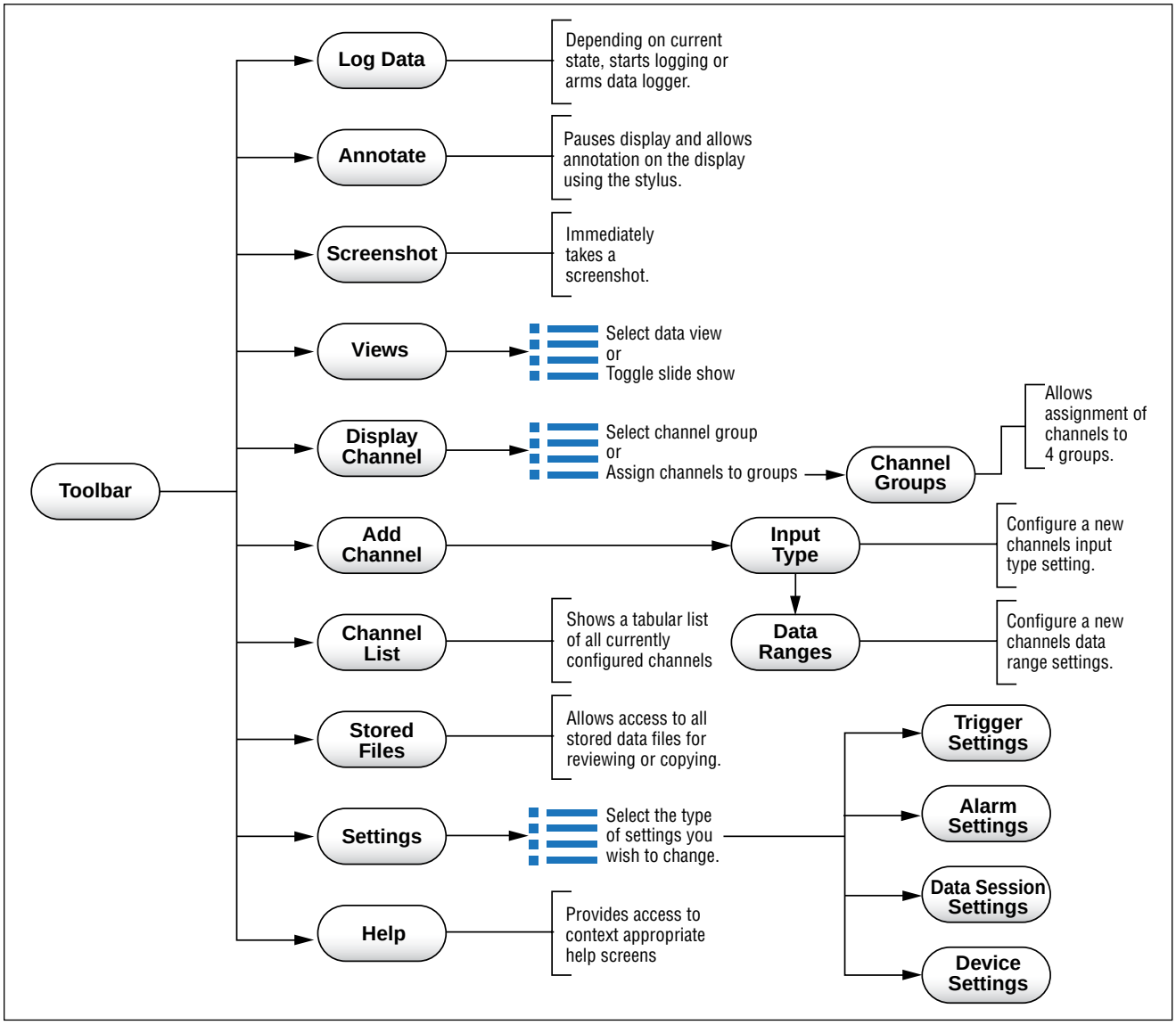


Figure 3-3 Menu Flowchart

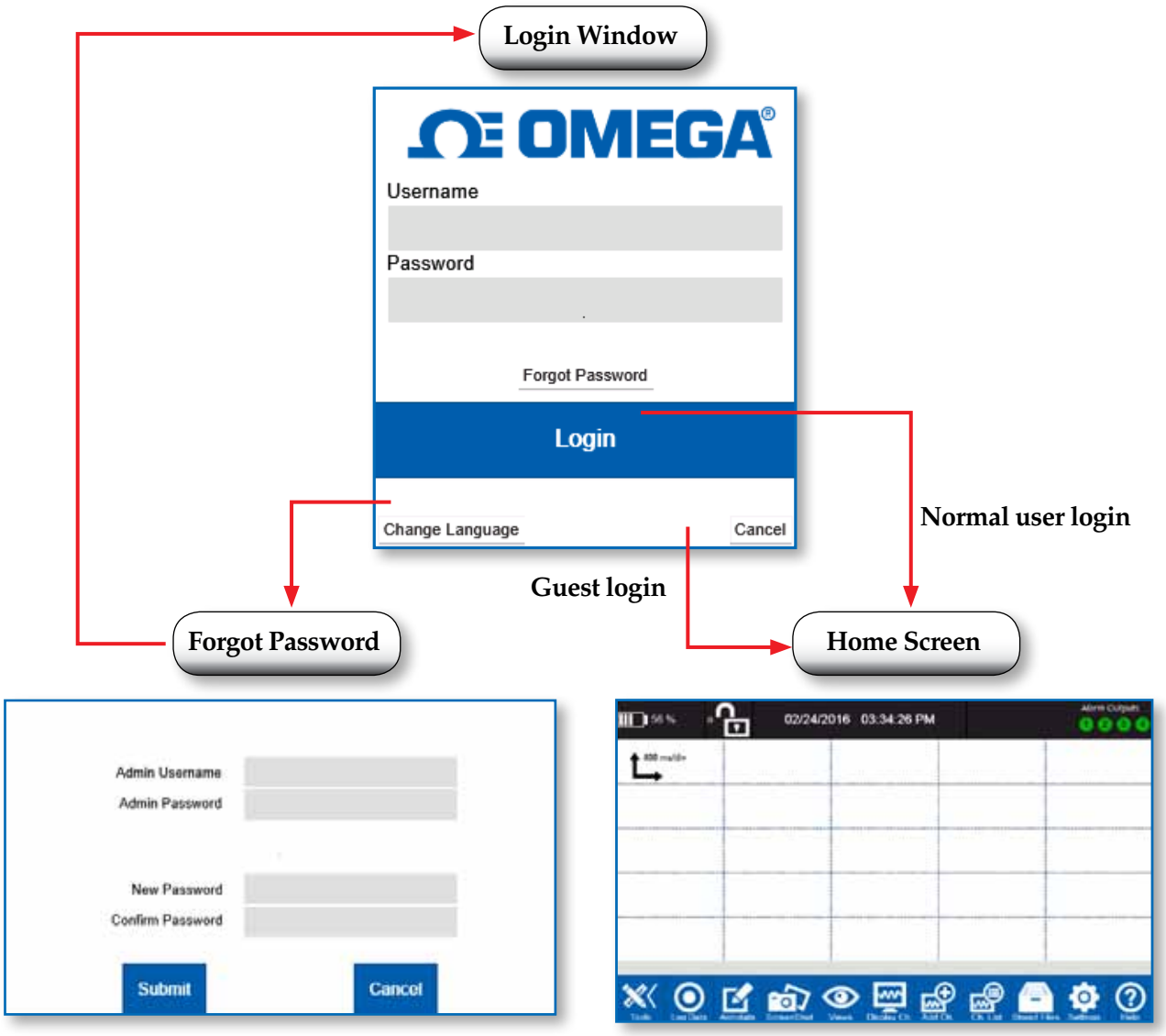


Figure 3-4 Menu Flowchart

NOTE: For initial login use the default account with user name and password: omega, omega. This is an administrator account allowing additional users to be created.

3.2 Home Toolbar

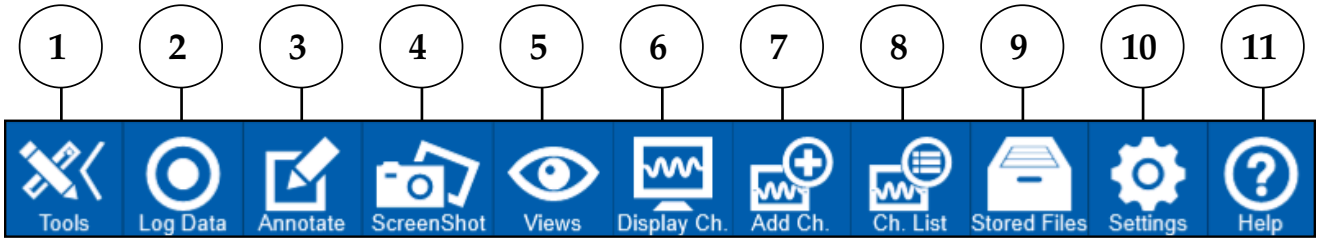


Figure 3-5 Home Toolbar

1. **Tools Button -** Extends or retracts the toolbar with each tap. When the toolbar is retracted there is additional channel information displayed in the toolbar area.
2. **Log Data -** The log data button is used to change the logging state of the data logger. Depending upon the current state this button will appear white (free running), red (logging) or orange (armed).
3. **Annotate –** The annotate button freezes the current display and allows the user the ability to make annotations on the display using the stylus. A screenshot will then be saved showing the annotation.
4. **Screen Shot –** Takes a screenshot of the current display and saves it to the memory location specified in the data session settings.
5. **Views –** Invokes a fly-out menu list with selections for the 4 different view modes as well as a selection for toggling the slide show feature.
6. **Display Channels –** Invokes a fly-out menu list with selections for the four channel groups as well as selection to bring the user to the channel group channel selection screen.
7. **Add Channel –** Opens the add channel screen with the next available channel selected for configuration.
8. **Channel List -** Opens the channel list screen which lists all the currently configured channels.
9. **Stored Files –** Opens the stored files screen to perform various operations on files in stored in memory.
10. **Settings –** Invokes a fly-out menu list with selections for trigger, alarm, and data session and device settings. Each selection opens a screen where settings related to that function can be set and saved.
11. **Help –** Opens a context sensitive help screen which will display content appropriate to the current screen. This button is present in all of the various UI screens.

3.3 Add Channels

Channel settings can be configured for new channels using the Input Type and Data Ranges screens. To add a new input channel and configure its settings, hit the Add Channel button on the toolbar to navigate to the Input Type screen. There are two types of channels which can be configured, physical input channels and virtual math channels. Depending on the type of channel being configured, the Input Type screen will have different settings available. The toolbar appears as shown below when adding channels.

Input Setup – Physical Input Channel
The Input Type screen is used to configure the basic settings for an input channel. For physical input channels the input type selected will determine the settings available.

Temperature Inputs
For temperature input types the Input Type screen will appear as shown below.

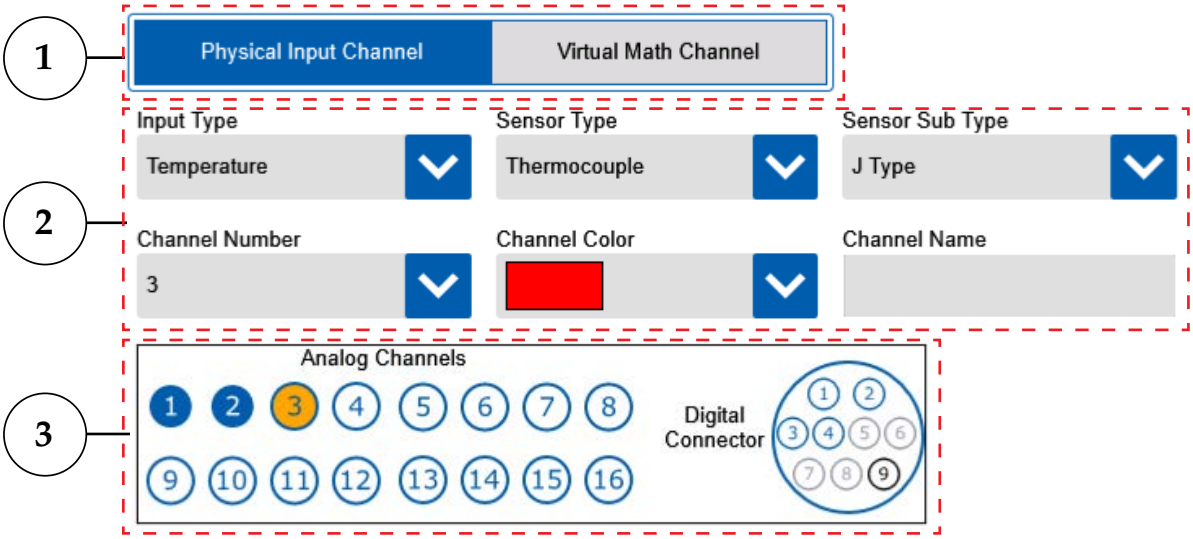


Figure 3-6 Input Type - Temperature

1. **Channel Type Button**
   The channel type selects between physical and math channel input types. Temperature inputs are physical input channels.

2. **Input Type Settings**
   For temperature inputs there are multiple sensor types available. These include thermocouple, RTD and thermistor. Each of these sensor types have additional sensor sub types available. The sub type drop-down list will populate with the appropriate subtypes for each sensor type. A channel number, color and name must be assigned for each channel.

3. **Channel Map**
   The channel map provides a quick view of which channels have already been configured (blue) and the currently selected channel (orange). Some temperature input types require the use of two input channels.

The Data Ranges screen appears the same for all temperature input types. Depending on the sensor type selected the fixed values shown for the input and display range will vary.

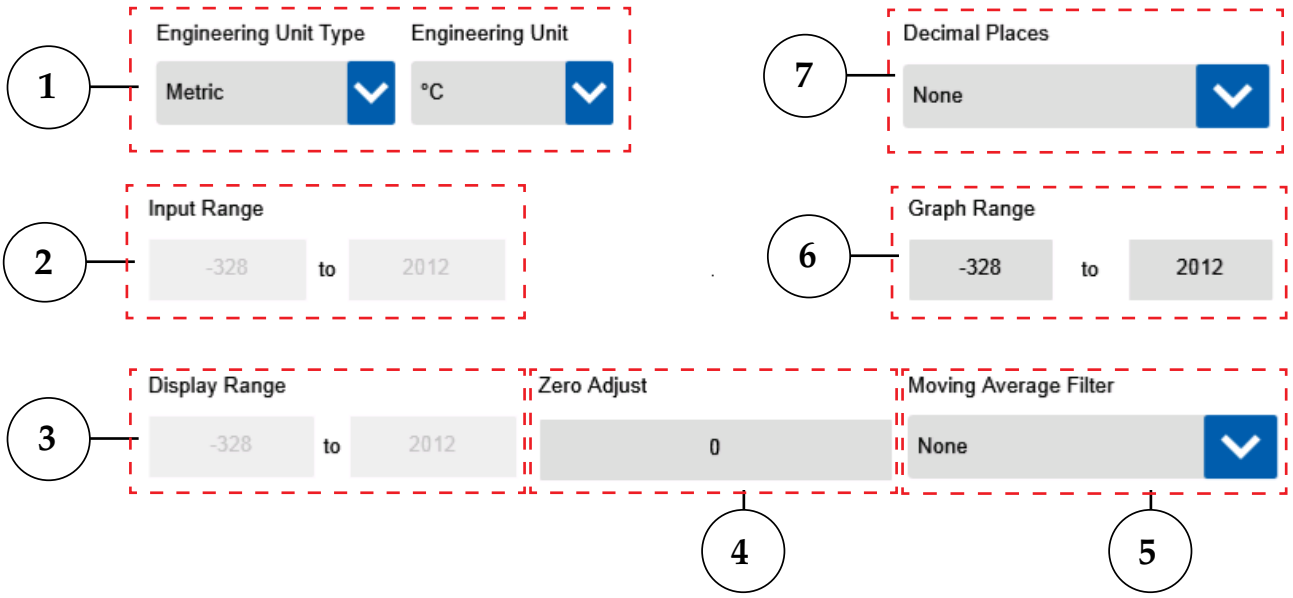


Figure 3-7 Data Ranges - Temperature

1. **Engineering Units**
   The two drop downs allow selection of various engineering units for display.

2. **Input Range**
   The input range boxes show the full measureable input of the data logger for the sensor type being configured. These are not editable.

3. **Display Range**
   The display range boxes show the full display range available on the data logger. The graph range can be any subset of this range. This range is fixed for all temperature inputs.

4. **Zero Adjust**
   The zero adjust provides a user configurable offset adjustment, in engineering units, which will be applied to measurements across the full range of input.

5. **Moving Average Filter**
   This setting provides the option to average an individual channels input samples.

6. **Graph Range**
   The graph range is the y-axis range that will be shown on the waveform view of the data logger. This can be any subset of the display range and is defined in the assigned engineering units. It can also be adjusted on the waveform view.

7. **Decimal Places**
   Selects the number of decimal places to display.

4 Specifications

4.1 General

Display: 7.0" TFT color LCD (WVGA: 800 x 480 pixels) with chemically hardened touch panel.

Internal Memory: 1 GB FLASH Memory

SD Memory Card: 32 GB

USB Flash Drive: 1GB

Operating Environment: 0 to 50°C (32 to 122°F), 0 to 95% RH non-condensing

Storage Conditions: -10 to 60°C (32 to 140°F)

Computer Interface: USB

Dimensions

With Rubber Boot: (9.00 X 6.5 X 3.5")

Without Rubber Boot: (8.75 X 5.75 X 2.42")

Weight: 3.2 lbs (1.45 kg)*

Power Supply: AC Adapter Input:100 to 240 Vac, 50 to 60 Hz, 1.5 A max

AC Adapter Output: 12 Vdc, 5A max

Battery: Lithium Ion Rechargeable (7.2 V, 4800 mAh)

Battery Life: Approximately 4-8 hours depending on display settings before recharge

Screen Time Out: 30 sec, 1 min, 2 min, 5 min, 10 min, Never

Slide Show Timing: 5 sec, 10 sec, 15 sec, 20 sec, 30 sec

Auto Power Shut Down: 5 minutes after screen time out

Line Graph Time Scale: From 400 msec/div up to 1 hr/div

External Excitation Output: 24 Vdc, regulated (±2%) isolated. Maximum current output 50 mA.

External I/O: 4 digital inputs, 4 digital outputs, 4 alarm outputs, 1 external trigger input.

*Includes battery and rubber boot

4.2 Inputs

Number of Analog Inputs: 8 or 16

Sampling Rate

Maximum Sampling Rate per Number of Channels (Analog and Digital):
1 Channel: 125 s/sec
2 Channels: 50 s/sec
4 Channels: 25 s/sec
8 Channels: 10 s/sec
16 Channels: 5 s/sec

Logging Rate

Maximum logging Rate per Number of Channels (Analog and Digital):
1 Channel: 125 s/sec
2 Channels: 50 s/sec
4 Channels: 25 s/sec
8 Channels: 10 s/sec
16 Channels: 5 s/sec

Thermocouple

Type	Range (°C)	Range (°F)	Accuracy
J	-200 to 1100°C	-328 to 2012°F	±(0.15% of reading +1.1°C)
K	-200 to 1370°C	-328 to 2300°F	
T	-200 to 400°C	-328 to 752°F	±(0.15% of reading + 1.7°C)
E	-200 to 1000°C	-328 to 1832°F	
N	-100 to 1300°C	-148 to 2372°F	
R	0 to 1760°C	32 to 3200°F	±(0.15% of reading + 2.0°C)
S	0 to 1760°C	32 to 3200°F	
B	500 to 1820°C	932 to 3308°F	
C	0 to 2315°C	32 to 4200°F	

RTD

Type	Range (°C)	Range (°F)	Accuracy
Pt 100, Pt 500, Pt 1000 (0.00385 curve)	-200 to 850°C	-328 to 1562°F	±(0.25% of reading +1°C)
Pt 100, Pt 500, Pt 1000 (0.00392 curve)	-200 to 660°C	-328 to 1220°F	±(0.25% of reading +1°C)

Thermistor

Type	Range	Accuracy
2252 Ω	-30 to 150°C	±1°C
10,000 Ω	-5 to 150°C	±1°C

Current

Range	Measurement Range	
20mA	-20 to 20mA	±0.1% of FS

Frequency

Measurement Range	Accuracy
0 to 250 KHz	±2 Hz

Voltage

Range	Measurement Range	Accuracy
50mV	-50 to 50mV	±0.1% of FS
100mV	-100 to 100mV	
1V	-1.00 to 1.00V	
5V	-5.00 to 5.00V	
10V	-10.00 to 10.00V	
20V	-20.00 to 20.00V	
50V	-50.00 to 50.00V	

Measurement Accuracy

*At room temperature after 30 minute warm up period.

Input Type: Thermocouple, RTD, Thermistor, Voltage, Current, Strain Gage

Strain Gage Input: Only Channels 1, 2, 3, 4, 9, 10, 11, 12 are available.

Frequency Update Rate: 250 msec

Digital Input and Functions: Frequency, volumetric flow rate, totalization, resettable counter

Virtual Math Channels 1 to 16: Math equation of any two physical channels

Filter:

- Per channel selectable moving average filter: None, 2, 5, 10, 20 or 100 samples
- Data session selectable 50 or 60 Hz filter.

Resolution: One to four decimal places depending on the Input type

Statistics: Peak to peak, average, minimum, maximum, RMS

Input Sampling/Logging Rate: 125 s/sec (1 Channel), 50 s/sec (2 Channels), 25 s/sec (4 Channels), 10 s/sec (8 Channels), 5 s/sec, 1 s/sec, 12 s/min, 6 s/min, 2 s/min, 1 s/min, 12 s/hr, 6 s/hr, 2 s/hr, 1 s/hr (For All Channels)

Logging Mode: Interval, average

Trigger Conditions (Start & Stop): Timer, date and time, weekday and time, alarm output, external trigger

Logging Condition: On command or trigger condition

4.3 Functions

Display

Views: Waveform, waveform and table, table only, digital, slide show

Display Channels: 4 channels per group – 4 groups

Stored Files: Screen capture and log (internal, SD card, USB drive)

Data Review: Up to any 4 channels – scroll or page right and left, zoom in, zoom out, annotate

Device Settings:

- General – Set current Time & Date
- Display Option – Screen Timeout, Background & Grid color, Brightness, Slide show timing, Key sound, Calibrate Touch screen
- Diagnostics – Analog, Digital, Power shut down test & generate report
- User Management – Admin, Normal User (Set User ID & Password)
- About – Firmware Upgrade

Help:

- Help screen for every menu screen

Virtual Math Channels: Up to 16 virtual channels can be created.

Statistics: Peak to Peak, Average, Minimum, Maximum, RMS

Triggers

Trigger Types:

- Start, Stop, Repeat

Trigger Conditions:

- Timer, Date & Time, Weekday & Time, Alarm Output, External Trigger

Logging

Logging Modes:

- Interval, Average

Logging Conditions:

- On demand or trigger condition

Digital input functions:

Frequency, Volumetric flow, Totalization, Resettable counter

4.4 Communication

USB: High speed USB 2.0 host for external Flash drive; USB device for external PC communications.

4.5 External I/O:

Alarm Outputs: 4 open collector alarm outputs rated for 0.5A @ 30 Vdc with audible alarm buzzer

Digital Outputs: 4 open collector digital outputs rated to 30 mA @ 5 Vdc logically tied to alarm outputs

Digital Inputs: 4 Schmitt trigger based inputs

- 0 to 24 Vdc single ended, grounded input range
- Logic high threshold 2.5 V; Logic low threshold 1.5 V
- Contact closure detection
- Maximum input frequency: 250 kHz

Power Input to Digital I/O Isolation: 1.5 kVrms

Alarm Condition: High, Low, Window In, Window Out, Open Sensor

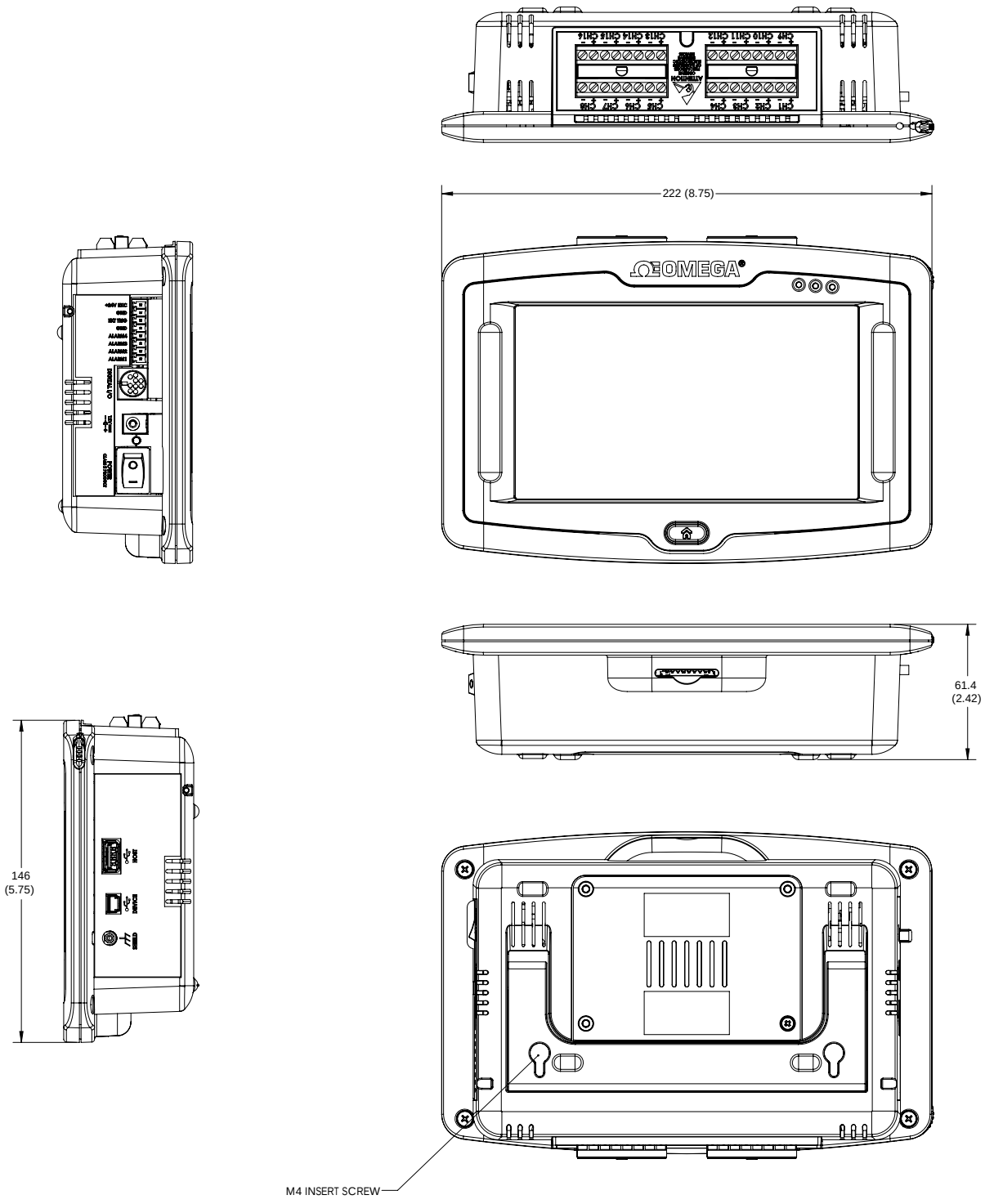
On Alarm Event: Map to 4 Alarm outputs, Sound Buzzer, Take Screen shot

Alarm Type: Latch, Non-Latch

Alarm per Channel: Two

4.6 Dimensions

Dimensions: mm (inch)



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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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.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

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,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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