Portable Data Logger

OM-SQ2020

- 8 True Differential or 16 Single-Ended Universal Analog Inputs for Voltage, Current or Resistance Measurements Plus 2 High Voltage, 4 Pulse and 8 Digital Event/State Inputs
- Analog Inputs Can Be Used With Thermistors, Thermocouples, 2-, 3- or 4-Wire RTD Temperature Sensors and 4 to 20 mA Signals
- Logging Rates of Up to 100 Hz on Up to 2 Channels (On the OM-SQ2020-2F8)
- Large Non-Volatile Internal Memory Storage for Up to 1.8 Million Readings
- Ethernet (On the OM-SQ2020-2F8), Wi-FI (On the OM-SQ2020-2F8-WIFI) USB and RS232 Communication Ports
- Download of Internal Data to Removable MMC/SD (Multi- Media Card/Secure Digital) Memory
- Sensor Power and FET Outputs for Use with External Devices
- Easy-to-Read LCD and Simple 4 Push Button User Interface
- Up to 16 Calculated/Derived Channels Can Be Created Using Mathematical Functions

OM-SQ2020-2F8-WIFI data logger, shown smaller than actual size.

The OM-SQ2020 Series of hand held data loggers combines high performance, powerful features and universal inputs in a compact and easy-to-use instrument.

Using high accuracy 24-bit analog to digital converters, removable memory and Ethernet networking (on the OM-SQ2020-2F8), the OM-SQ2020 Series is the ideal data logger for industrial, scientific research and quality assurance applications. Together with our comprehensive suite of software, the OM-SQ2020 provides standalone data acquisition, real-time metering and data analysis straight out-of-the-box.

Input Connections

The OM-SQ2020-1F8 data logger has a single analog to digital converter (A/D) which corresponds to inputs on blocks A through to D. Each connection block will accept up to 2 differential inputs or up to 4 single ended inputs (it is not possible to mix single- ended and differential inputs on a block). The OM-SQ2020-2F8 data logger has two analog to digital converters (A/D's) which increases logging flexibility over the OM-SQ2020-1F8 model. The first corresponds to inputs on blocks A and B and the second corresponds to inputs on blocks C and D. Each connection block will accept up to 2 differential inputs or up to 4 single-ended inputs (it is not possible to mix single ended and differential inputs on a block).

Concurrent Sampling

The OM-SQ2020 Series uses multiple analog to digital converters that enables true concurrent sampling and logging. This allows the user to configure a channel to log at a rate of 100 Hz (20 Hz on OM-SQ2020-1F8) while retaining different sample speeds on other channels. This makes the OM-SQ2020 Series ideal for measuring dynamic parameters that change at different rates such as temperature and pressure.

Communications

Ethernet (on OM-SQ2020-2F8), Wi-Fi (on OM-SQ2020-2F8-WIFI), USB and RS-232 serial ports are built-in. This allows simple connection to either a PC based TCP/IP network, a wireless to PC connection or to a GSM modem for remote data downloading. This flexibility enables global data access and retrieval as well as complete system integration of the OM-SQ2020 series into complex and critical applications.

Input Channels

Analog Input Channel Options	OM-SQ2020-1F8	OM-SQ2020-2F8
Analog to digital converters	1	2
Differential	8	8
Single ended	16	16
3 or 4 wire	0	4
Additional Channels		
Pulse	(2x fast—64 kHz) and (2 x slow—100 HZ)	(2x fast—64 kHz) and (2 x slow—100 HZ)
Event/Digital	8 state inputs of 1 x 8 bit binary	8 state inputs of 1 x 8 bit binary
High Voltage	2	2
Internal Channels	1 temperature	1 temperature

Multiple Configurations Stored in the Data Logger

Up to six logger configurations (channel type, names, logging speeds, triggers etc), together with the current configuration, can be held in the logger's internal memory. Additional configuration settings can also be loaded from the external MMC/SD memory card. This allows the operator to quickly and easily switch between logger configurations without the need for a PC.

Comprehensive Software Configuration

The OM-SQ-SOFT software (supplied with the OM-SQ2020 series data loggers) allows logger configuration, data download and data export while giving the user full control over the OM-SQ2020.

The optional OM-SQ-SOFT-PLUS software gives the user access to many advanced data analysis and data archiving/transfer features. The optional OM-SQ-SOFT-PLUS software lets you quickly and easily analyze the data from your OM-SQ2020 data logger in a familiar explorer style interface. Data can be displayed with 2 different auto scaling Y-axis. This is particularly useful when displaying widely varying data from different sensors on one graph.

You can also zoom in on areas of interest, use a cursor to pick out exact values, times and dates, get a statistical summary of your data, set high and low alarm thresholds and, using the calculation function, you can create new virtual channels from existing channels.

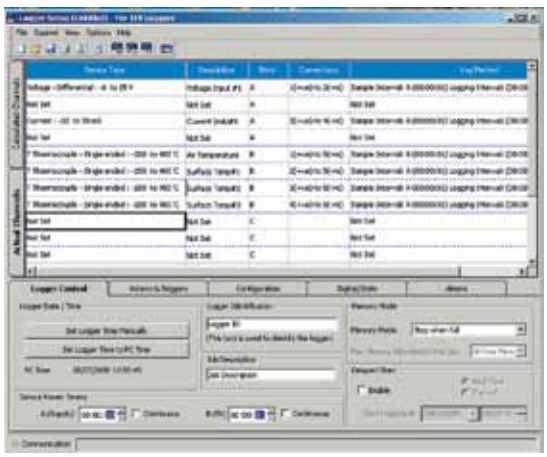
Standard Ranges for dc Voltage

Each voltage channel can be any of the voltage ranges below. Mixed differential and single ended configurations are permitted. Please refer to our technical notes for the permitted combinations of inputs.

Voltage Range	Voltage Range	High Voltage Input Ranges*
-0.075 to 0.075V	-3.0 to 3.0V	4.0 to 20.0V
-0.15 to 015V	-6.0 to 6.0V	4.0 to 40.0V
-0.3 to 0.3V	-6.0 to 12.0V	4.0 to 60.0V
-0.6 to 0.6V	-6.0 to 25.0V	
-0.6 to 1.6V		
-0.6 to 2.4V		

** Max of 2 may be selected*

The OM-SQ-SOFT-PLUS software also incorporates a report generation facility, which allows you to create custom report templates consisting of a title page with descriptive text, headers and footers, graphs, tabular list of data, statistics and data logger setup information. Templates can be setup with any of these combinations and saves time when preparing similar presentations of data.



OM-SQ-SOFT Windows software (included with OM-SQ2020 data loggers) displays data in graphical or tabular format.

Standard Ranges for Temperature Channels

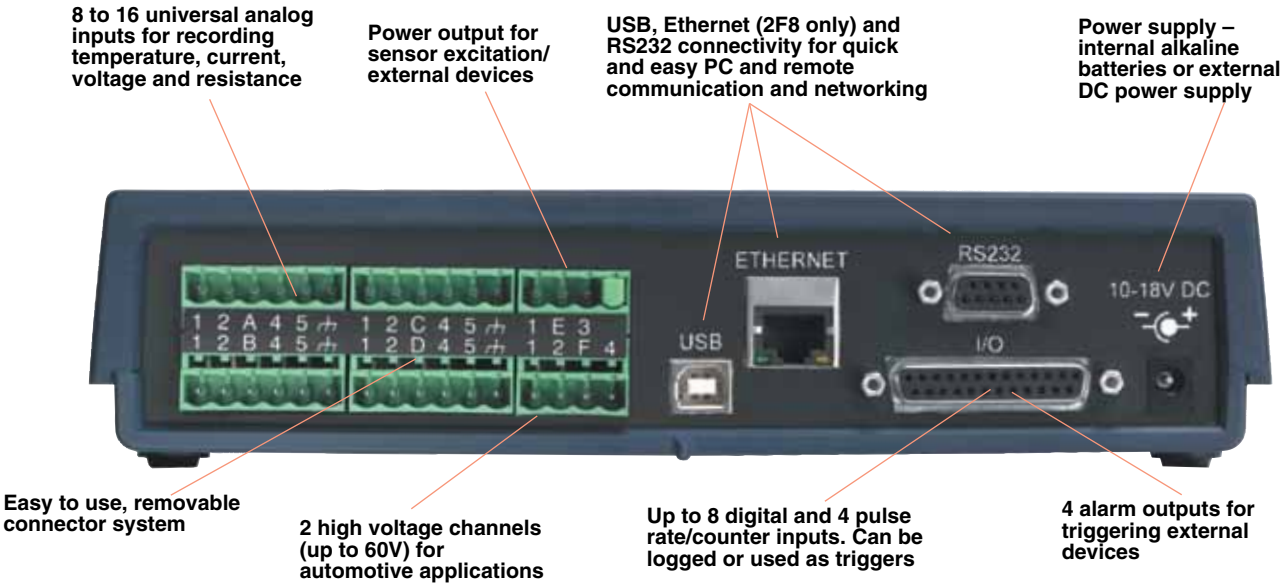
Each channel can be individually set to any of the ranges listed: Pt100 to IEC751 and JIS1604 and Pt1000 to IEC751

Input Type	Range °C	Range °F
Y & U: Thermistor **	-50 to 150	-58 to 302
Pt100/P1000*	-200 to 850	-328 to 1562

** 2 wire only on OM-SQ2020-1F8*
*** or user-defined thermistor (enter Steinhart-Hart coefficients or RT pairs)*

Thermocouple Type	Range °C	Range °F
K	-200 to 1372	-328 to 2501
T	-200 to 400	-328 to 752
J	-200 to 1200	-328 to 2192
N	-200 to 1300	-328 to 2372
R/S	-50 to 1768	-58 to 3214

OM-SQ2020-1F8 data logger, rear view, shown smaller than actual size.



Input Channels	Accuracy @ 23°C
Differential voltage	±(0.025% of reading + 0.005% of full scale)
Single-ended voltage	±(0.025% of reading + 0.005% of full scale)
High voltage on block F	±(0.075% of reading + 5 mV)
Differential current	±(0.02% of reading + 0.015% of full scale)
2-wire and 3-wire resistance (above 500 Ω)	±0.1% of reading
4-wire resistance	±(0.05% of reading + 0.15 Ω)
2-wire and 3-wire temperature	±(0.1% of reading + 0.1% of full scale)
4-wire temperature	±(0.05% of reading + 0.05% of full scale)
Differential J, K and N thermocouples (above -50°C) *	±0.075% of full scale
Differential R, S and T thermocouples (above -50°C) *	±0.175% of full scale
Single-ended J, K and N thermocouples (above -50°C) *	±0.1% of full scale
Single-ended R, S and T thermocouples (above -50°C) *	±0.225% of full scale
Pulse count and rate	±(0.0011% of reading +1)

** Includes cold junction compensation (CJC) error. Data logger held at constant temperature.*

Specifications

ANALOG INPUTS
Accuracy: See table
Common Mode Rejection: 100 dB
Input Impedance: >1 MΩ
Linearity: 0.015%
Series Mode Line Rejection: 50/60 Hz 100 dB

ANALOG INPUT
Connections: Detachable screw terminal blocks

ANALOG—DIGITAL CONVERSION Type: Sigma-Delta
Resolution: 24-bit

Sampling Rate: Up to 10, 20* or 100* readings per second per ADC
** With mains rejection off*

ALARM OUTPUTS
4 x open drain FET (18 V 0.1 A)

Digital I/O Connections: DB25F connector

CALCULATED CHANNELS
Up to 16 virtual channels derived from physical input channels

RESOLUTION
Up to 6 significant digits

PROGRAMMING/LOGGER SETUP
OM-SQ-SOFT or
OM-SQ-SOFT-PLUS software
Software compatible with WIN XP/VISTA (32-bit & 64-bit)/7 (32-bit & 64-bit)

COMMUNICATION
Standard: RS232 (automatic baud rate selection to 115200 baud)
Ethernet 10/100 base TCP/IP
USB 1.1 and 2.0 compatible
Wireless Ethernet: (Wi-Fi); 802.11b, 2.4GHz, 1 to 14 channels.
Security: Open, WEP (64 or 128bi encryption), WPA or WPA2/802.11i,
Network: Infrastructure only with specified SSID (external power pack required for Wi-Fi connection).

OM-SQ2020-2F8-WIFI data logger shown smaller than actual size.

OMEGACARE℠ Extended Warranty Program

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

External Options:
GSM, WIFI and PSTN Modems

POWER SUPPLY
Internal: 6 "AA" alkaline batteries (included)
External: 10 to 18 Vdc reverse polarity and over-voltage protected

POWER CONSUMPTION @ 9V
Sleep Mode: 600 µA
Logging: 40 to 130 mA

DISPLAY AND KEYPAD
2 line x 20 character LCD display; battery state and external power indicator; keypad lock
Navigate to:
Arm/disarm/pause/continue; meter any channel or alarm; select from up to 6 x pre-stored setups; status/ diagnostics/memory/time and date; download to MMC/SD

OPERATING ENVIRONMENT
Temperature: -30 to 65°C (-22 to 149°F)
Humidity: 90% at 40°C non-condensing

GENERAL
Power Output for External Device:
Regulated 5 Vdc at 50 mA or logger supply voltage at 100 mA
Time and Date:
Built-in clock in 3 formats
Scaling Data: Displays readings in preferred engineering units
Internal Memory: 16 MB (Up to 1,800,000 readings)
External Memory: Up to 1GB— removable MMC/SD (for transferring internal memory and storing setups only)
Dimensions:
175 H x 235 W x 95 mm D (6.9 x 9.3 x 3.7")
Weight: Approx. 1.2 kg (2.6 lb)
Enclosure Material: ABS
Memory Modes (Internal Only):
Stop when full or overwrite

Standard Ranges for Current and Resistance Channels

Each current channel can be any of the current ranges below. Current ranges use differential input channels.

Current Range (External 10 Ω Shunt)	Resistance Range 2 Wire	Resistance Range 3 & 4 Wire (2F8 Version)
-30.0 to 30.0 mA	0.0 to 1250.0 Ω	0.0 to 500.0 Ω
4 to 20 mA	0.0 to 5000.0 Ω	0.0 to 4000.0 Ω
	0.0 to 20000.0 Ω	
	0.0 to 300000.0 Ω	

To Order *Visit omega.com/om-sq-2020 for Pricing and Details*

Model No.	Description
OM-SQ2020-1F8	Portable data logger with 1 fast channel
OM-SQ2020-2F8	Portable data logger with 2 fast channels
OM-SQ2020-2F8-WIFI	Portable data logger with 2 fast channels and integrated Wi-Fi networking

Comes complete with OM-SQ-SOFT software, USB cable, wall bracket, 6 "AA" batteries, 6 input terminal blocks, 4 current shunt resistors and operator's manual.

*To order data logger with calibration certificate, add suffix **"-CAL"** to model number .*

***Ordering Example: OM-SQ2020-1F8,** portable data logger with 1 fast channel and **OM-SQ-SOFT-PLUS** software and **OCW-1** OMEGACARE 1 year extended warranty for **OM-SQ2020-1F8** (adds 1 year to standard 1 year warranty).*

Accessories

Model No.	Description
OM-SQ-NET-ADAP	Serial/ethernet converter kit
OM-SQ-GSM-KIT	GSM modem kit
OM-SQ-RF-ADAP	Wireless network adaptor
OM-SQ-UNIV-ADAP	Universal power pack
OM-SQ-UNIV-ADAP-1	Universal power pack with 1 m (3.2') flying lead
OM-SQ-CS	Spare current shunts (package of 4)
OM-SQ-SER-CABLE	OM-SQ data logger to PC serial port cable
OM-SQ-USB-CABLE	Spare OM-SQ data logger to PC USB port cable
OM-SQ-TB3	Spare 3-way terminal block with cable restraint
OM-SQ-TB4	Spare 4-way terminal block with cable restraint
OM-SQ-TB6	Spare 6-way terminal block with cable restraint
OM-SQ-SOFT-PLUS	OM-SQ2020 plus software
OM-SQ-SOFT-PLUS-LIC	OM-SQ2020 plus software multi-user license