

Portable Data Logger

OM-CP-SQ2040



Optional

- ✓ 16 True Differential or 32 Single-Ended Universal Analog Inputs for Voltage, Current or Resistance Measurements—Plus 2 High Voltages, 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
- ✓ User Selectable Logging Rates of Up to 100 Hz on Up to 4 Channels
- ✓ Download of Internal Data to Removable MMC/SD (Multi Media Card/Secure Digital) Memory
- ✓ Large Non-Volatile Internal Memory—Data Retention is Virtually Indefinite
- ✓ Ethernet, Wi-Fi (On the OM-SQ2040-2F16-WIFI and OM-SQ2040-4F16-WIFI) USB and RS-232 Communication Ports
- ✓ Sensor Power and FET Alarm Outputs For Use With External Devices
- ✓ Easy Access to Information Using the 2 Line, 20 Character LCD and Push Button Panel
- ✓ Calculated Channels Derived from Real Channels Using Advanced Mathematical Functions

The OM-SQ2040 Series combines a higher channel count with the same high performance, comprehensive features and universal inputs as the OM-SQ2020 in a neat compact and portable instrument. Using multiple 24-bit analog to digital converters, twin processors and removable memory options provide great flexibility to handle a wide range of complex and demanding multi-channel applications. The OM-SQ2040 series are the ideal data loggers for industrial, scientific research and quality assurance applications. The OM-SQ2040 provides stand-alone data acquisition, advanced networked solutions and data analysis straight out-of-the-box.



OM-SQ2040-2F16-WIFI data logger shown smaller than actual size.

Input Connections

The OM-SQ2040-2F16 data logger has two analog to digital converters (A/D's) which increases logging flexibility over the OM-2020-1F8 model. The first corresponds to inputs on blocks A, B, C and D and the second corresponds to inputs on blocks G, H, J and K. 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-SQ2040-4F16 data logger has four analog to digital converters (A/D's) which increases logging flexibility over the other OM-SQ2020 and OM-SQ2040 models. The first corresponds to inputs on blocks A and B, the second corresponds to inputs on blocks C and D, the third corresponds to inputs on blocks G and H and the fourth corresponds to inputs on blocks J and K. 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-SQ2040 series uses multiple analog to digital converters that enables true concurrent sampling and logging. This allows the user to configure up to 4 channels to log at a rate of 100 Hz while retaining different sample speeds on other channels.

This makes the OM-SQ2040 ideal for measuring dynamic parameters that change at different rates such as temperature and pressure.

Communications Ethernet, Wi-Fi (on the OM-SQ2040-2F16-WIFI and OM-SQ2040-4F16-WIFI) USB and RS-232 serial ports are built-in. This allows quick connection to either a PC based TCP/IP network, a wireless to PC connection or to a modem for remote data downloading.

This flexibility enables global data access and retrieval as well as complete system integration of the OM-SQ2040 series into complex and critical applications.

Multiple Configurations Stored in the 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

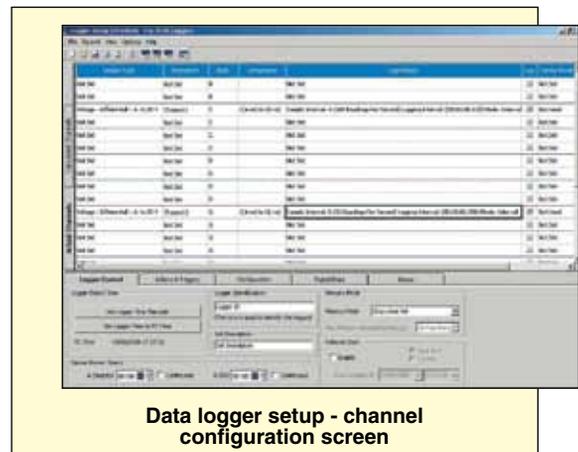
The OM-SQ-SOFT software (supplied with the OM-SQ2040 series data loggers) allows logger configuration, data download and data export while giving the user full control over the OM-SQ2040.

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-SQ2040 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.

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.



Input Channels

Analog Input Channel Options	OM-SQ2040-2F16	OM-SQ2040-4F16
Analog to Digital Converters	2	4
Differential	16	16
Single ended	32	32
3 or 4 wire	0	8
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	2 temperature	2 temperature
Logging Speeds	1 sec to 1 day in sec increments 2, 5, 10, 20 or 100 Hz (20 or 100 HZ only on 2 channels)	1 sec to 1 day in sec increments 2, 5, 10, 20 or 100 Hz (20 or 100 HZ only on 4 channels)

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 15620

* 2-wire only on OM-SQ2040-2F16, 3- or 4-wire on OM-SQ2040-4F16
** or user-defined thermistor (enter Steinhart-Hart coefficients or RT pairs)

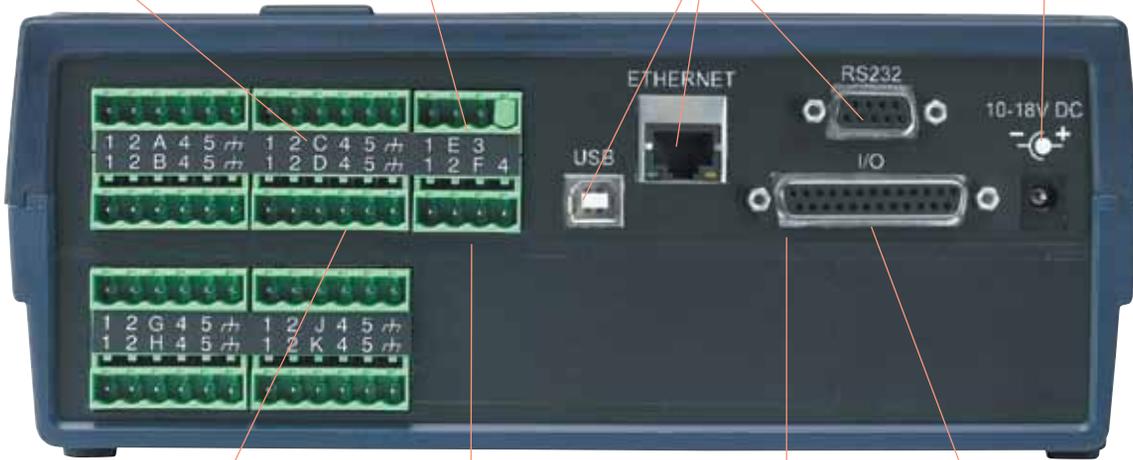
Thermocouple Type	Range °C	Range °F
K	-200 to 1372	-328 to 2501
T	-200 to 400	-328 to 752
J	-200 to 1200	-328 to 2192
N	-200 to 1300	-328 to 2372
R/S	-50 to 1768	-58 to 3214

16 to 32 universal analog inputs for recording temperature, current, voltage and resistance

Power output for sensor excitation/ external devices

USB, Ethernet and RS232 connectivity for quick and easy PC and remote communication and networking

Power supply—internal alkaline batteries or external DC power supply



OM-SQ2040 data logger, rear view, shown smaller than actual size.

Easy to use, removable connector system

2 high voltage channels (20, 40 or 60V) for automotive applications

Range of trigger functions via 8 digital inputs; 4 pulse rate/ counter inputs

4 alarm outputs for triggering external devices

Standard Ranges for dc Voltage

Each voltage channel can be any of the voltage ranges below. Mixed differential and single ended configurations are permitted.

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 0.15V	-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

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 Input Ranges
-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	

Specifications

ANALOG INPUTS

Accuracy: See table

Common Mode Rejection: 100 dB

Input Impedance: >1MΩ

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 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 PA2/802.11i

Network: Infrastructure only with

specified SSID (external power pack required for Wi-Fi connection)

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.

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 1 GB— 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

OM-SQ2040-2F16-WIFI data logger shown smaller than actual size.



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.

To Order Visit omega.com/om-sq2040 for Pricing and Details

Model No.	Description
OM-SQ2040-2F16	Portable data logger with 2 fast channels
OM-SQ2040-4F16	Portable data logger with 4 fast channels
OM-SQ2040-2F16-WIFI	Portable data logger with 2 fast channels and integrated Wi-Fi networking
OM-SQ2040-4F16-WIFI	Portable data logger with 4 fast channels and integrated Wi-Fi networking

Comes complete with software, USB cable, wall bracket, 6 "AA" batteries, 10 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-SQ2040-2F16 portable data logger with 2 fast channels, OM-SQ-SOFT-PLUS software and OCW-1 OMEGACARE 1 year extended warranty for OM-SQ2040-2F16 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-SQ2040 plus software
OM-SQ-SOFT-PLUS-LIC	OM-SQ2040 plus software multi-user license