OM-320 Portable Data Logging System

$1300
Basic Unit

MADE IN USA | 1 YEAR WARRANTY | OMEGA CARE Extended Warranty Program

- **Portable, Battery Powered, Weatherproof**
- **Records up to 24 Analog and/or Digital Channels**
- **Software Configurable Plug-In Interface Modules**
- **Icon-Based Windows Software**
- **13 Bit Analog to Digital Converter**

Model OM-320

OM-320 Portable Logging System, $1300, shown smaller than acutal size

The OM-320 portable data logging system consists of the OM-320 system base, a choice of plug-in interface modules and icon-based Windows software. Several optional accessories including modem modules and PCMCIA data memory modules are also available. The OM-320 system base is a latching weatherproof enclosure containing the microprocessor, data storage memory, analog to digital converter, liquid crystal display, batteries, input/output terminal strip connector and six interface ports that accommodate the interface modules and accessories.

The system base is programmed for operation via the included Windows based software. Simple to complex programming is readily implemented by developing the program visually on the PC by dragging and dropping icons and interconnections, then transferring the program via RS-232 or modem to the OM-320 memory before deployment. Alarming, conditional logging, algebraic data manipulation and a multitude of other functions are easily accomplished with this visual programming software.

Six interface ports, providing up to 24 analog and/or digital channels are accessible by removing two thumbscrews and lifting the hinged OM-320 front panel. Each port can accept interface modules ranging from four channel universal Vdc modules (software configurable for six thermocouple types, 15 ranges of volts dc or amps dc) to four channel digital I/O modules (software configurable for frequency, event, counter input, digital output), to PCMCIA data memory modules, to 14.4 KBaud modem modules and more.

Analog interface modules with full differential inputs, software programmable gain and configuration, included front-end completion circuitry and rugged suppression protection circuitry insure reliable accurate signal conditioning. The OM-320 has an enhanced self-calibration feature that includes user programmable self-calibration cycles for both interface modules and the system base analog to digital converter. Precision trimmed, temperature stabilized references insure accurate self-calibration performance over time and temperature.

Designed for portable, plant floor and long-term remote data collection applications, the OM-320 incorporates low power CMOS circuitry and extensive energy conserving circuitry. The OM-320 will run for up to one month from its six internal alkaline D-cells. The D-cells are readily accessible in a lid mounted battery holder providing for quick and easy field replacement. For longer term logging applications, low voltage external power can be directly connected to the system base. In the event of external power failure, the OM-320 will automatically transfer to the internal batteries provided uninterrupted logging.

The OM-320 front panel includes user control buttons for Enable, Stop, System Status display, Power and Output Relay override. Additionally, a two-line liquid crystal display is provided for real-time data display of actual and calculated input signal readings as well as providing detailed system status reporting ranging from battery state of charge to current mode of operation to display of user programmed alarm messages. Front panel LEDs can be user programmed for status and alarming applications.

Included in each OM-320 system base is a general purpose digital input that provides a user programmed event or counter input, two alarm relay outputs, three TTL level digital alarm outputs and a cold junction compensation sensor for thermocouple measurements or general purpose temperature input. Input and output wiring is uniquely handled through the use of a terminal strip adapter (TSA) board which allows for mass connection and disconnection of wiring while maintaining the integrity of the sealed enclosure. Through the use of the terminal strip adapter, an OM-320 can be quickly disconnected from its associated I/O wiring harness, moved to another site and reconnected to a new set of I/O wiring.

OM-320 Interface Modules

OM-320 interface modules plug directly into one of the six interface module ports in the system base logger and provide various functions ranging from digital and analog signal input to alarm and digital output to special applications such as modem and PCMCIA memory card interface

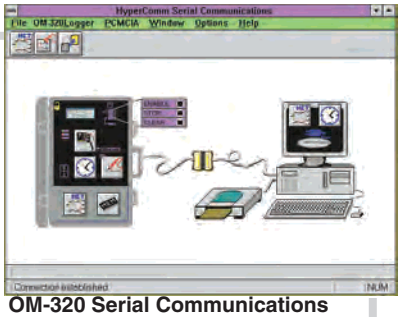
Analog and digital interface modules allow for direct connection and data recording from a full spectrum of input signals and sensor types. Various modules provide excitation, filtering, transient protection, amplification and software codes as required by the connected sensor/transducer or sensed parameter. True differential inputs with precision instrumentation amplifiers insure high signal to noise ratio performance.

Special function interface modules available include modem interface modules and PCMCIA memory card modules. Modem interface modules incorporate FCC approved modems supporting direct telephone line connection for remote interrogation and control of the OM-320 as well as advanced functions such as alarm paging. The PCMCIA memory card interface module allows for data collection to a removable "credit card style" memory module. This memory card provides massive data storage capability and can easily be removed and replaced in the field.

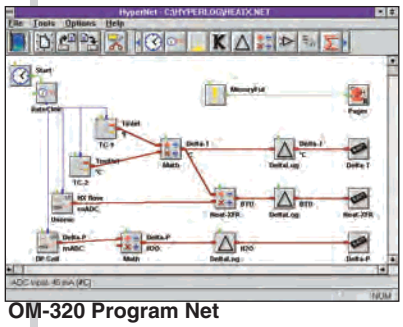
Interface modules plug directly into one of the six interface module ports in the system base logger allowing for standard I/O wiring through the terminal strip adapter on the system base logger. Each interface module contains encoded information for immediate self-configuration. Upon installation of the interface module into the OM-320 system base, the microprocessor reads the module type and stores calibration information for use during readings. The interface modules are then configured for application and signal type via the icon based visual programming method in the OM-320 Windows software. Interface modules include front end completion circuitry, such as 4 to 20 mA burden resistors and voltage dividers, thus minimizing field requirements for interfacing real world signals.

OM-320 Windows Software

The OM-320 system base includes a powerful multi-purpose Windows software package that facilitates serial communications, datalogger programming, real-time data display, collected data graphic display and data export to other applications. Direct RS-232 and telephone modem communications are handled with a communications screen. To establish a connection between the PC and the datalogger, just click on the serial link icon. This visual communications implementation allows for quick and simple communications between the PC and a connected OM-320 for status, collected data downloads, programming and remote control.With the OM-320 software a program is developed graphically on the PC using icons and interconnects and is then transferred to the OM-320 memory. The OM-320 is then ready for standalone logging and can be disconnected and enabled for operation from its new program. Programming the OM-320 is simple and is a three-step process:



OM-320 Serial Communications



OM-320 Program Net

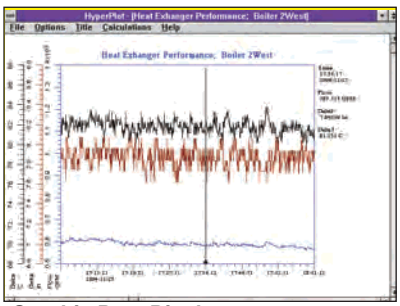
1. Query the OM-320 for its current hardware configuration (installed modules and accessories) via a serial link connection.

2. Visually develop the OM-320 program by dragging and dropping icons onto the program development screen from the toolbar and add interconnection lines. Individual icons are configured by double-clicking on the icon and completing the pop-down dialog box. Upon completion, save the program to disc and return to the communication screen.

3. From within the OM-320 communication screen, drag the created program icon from the virtual PC to the virtual OM-320. The program is automatically error checked and transferred to the OM-320's memory and is ready for deployment and data collection.

Data Exported to Microsoft Word

After data has been acquired in the field by the OM-320 and downloaded to the PC via modem or RS-232 link, the software's powerful graphic data plotting tool can be used to graphically plot up to seven data channels vs. time. Data analysis is enhanced with mouse stroke zooming and a full spectrum of display options including X and Y-axis scaling and formatting, grids, cursor data display, symbols, instant min/max/average and integral view analysis and more.



Graphic Data Display

Complying with the Windows standard, plots generated from within the OM-320 software can be printed directly or saved as *.BMP files (Windows bit map format). The *.BMP plot can be seamlessly integrated into other Windows applications including word processors and spreadsheets allowing for powerful report generation. The software also includes additional post-processing options including collected data conversion to ASCII columnar (text) files and direct output to the Microsoft Excel spreadsheet format.

The OM-320 software also provides a real-time, scrolling display of data collected by the OM-320 on a serially connected PC screen. This is an extremely valuable tool for critical real-time process monitoring as well as serving as a quick method of checking on OM-320 I/O values and status.

OM-420 Expanded Feature Model

The OM-420 is an expanded feature model of the OM-320 portable data logging system. The OM-420 consists of the OM-320 system base, plug-in interface modules, standard Windows software and any user-specified accessories along with an OM-220-RPS-1 Rechargeable Power Supply housed in a NEMA 4X (IP66) rated enclosure. The OM-420 was designed to meet the needs of remote data logging applications where power is unavailable for excitation of sensors and transmitters. Additionally, the OM-420 is ideal for data collection installations at unattended sites with no available grid power. The OM-220-RPS-1's two rechargeable gell cell batteries are readily recharged via photovoltaic, wind or other power sources.

Integral to the OM-420 is the OM-220-RPS-1 Rechargeable Power Supply. Two user programmable power supply outputs are available which can source seven different regulated voltage levels from 3.5 to 22 Vdc. Outputs are short circuit/over-current protected. The two power supply outputs can be independently programmed for output voltage as well as operational mode. Two modes are available; Continuous ON and Automatic Operation. In Automatic Operation, the power supply is under control of an optically isolated low voltage (5 Vdc, 0.5 mA) control input signal. This control input interfaces directly to any of the datalogger's three digital outputs which can then provide intelligent cycled power to the field transducers/transmitters under control of the software program. This cycled power technique maximizes the OM-220-RPS-1 battery life. The OM-220-RPS-1 can also be used as a rechargeable power supply for the datalogger.

Specifications

OM-320 SYSTEM BASE

Data Storage Memory: Redundant battery backed up SRAM; approx. 30,000 samples internal, up to 330,000 samples with optional PCMCIA removable memory card

Data Memory Backup: Lithium cell, 1 year @ 25°C (included)

Memory Utilization: User programmable, stop when full or rotary (FIFO) memory

A/D Converter: 12 bit plus sign (13 bit) SAR converter; programmable first order filtering and 50/60 Hz noise rejection options

A/D Converter Accuracy: ±0.1% Rdg + 1 bit

Sampling Throughput Rate: 150+ samples/sec throughput (analog input to memory); rate is dependent on number and type of channels and programmed signal processing

Interface Module Ports: 6 ports for plug-in interface modules and special function modules (modem, PCMCIA)

Digital Port: Integral general purpose digital input channel, user programmable for event or counter applications

Outputs: 2 low voltage N/O relays, 500 mA max; 3 current limited TTL digital outputs (0/5 Vdc)

Display: Two line, 16 character per line LCD; system status and user definable conditional messaging

Clock: Date and time, 24 hour, battery backed up

Glitch Recovery: Hardware watchdog reset followed by software restart of last operation

Power Consumption: 9 Vdc nominal provided by 6 internal D-cells; approx. 7 mA between readings and 50 mA during readings

External Power (optional): Terminal strip connection for external power source, accepts 9-16 Vdc, 10-20 Vac from any semi-regulated external source

Operating Temperature: -10 to 60°C (14 to 140°F), 90% relative humidity, noncondensing

Storage Temperature: -30 to 70°C (-22 to 150°F)

Enclosure: Gasketed rain-proof plastic, supplied with liquid-tight wiring fittings and I/O wiring plate

Dimensions: 10.5" W x 14" H x 6.5" D (26.7 x 35.6 x 16.5 cm)

Weight: 4.5 Kg (10 lbs)

OM-420 EXPANDED FEATURE MODEL

Operating Temperature: -10 to 40°C (14 to 104°F) for full battery capacity and life; -10 to 60°C (14 to 140°F) with reduced battery life and capacity

Enclosure: NEMA 3, 4X, and 12 (IP66) rated enclosure, hinged door with lockable latches, stainless steel hardware, molded wall mounting flanges

Dimensions: 15.5" W x 17.5" H x 8.0" D (39.4 x 44.5 x 20.3 cm)

Weight: 9 to 13.6 Kg (20 to 30 lbs) depending on configuration

OM-220-RPS-1 POWER SUPPLY COMPONENT (INCLUDED IN OM-420 EXPANDED FEATURE MODEL)

Power Supplies: Two independent user programmable power supplies

Output Voltage: 3.5, 5, 10, 12, 15, 18, 22 Vdc dip switch selectable; each power supply can be set independently

Current Output: 250 mA max per supply, short circuit protected

Power Supply Batteries: Two rechargeable 1.8 AH 12 V gel-cells, series (24 Vdc) or parallel (12 Vdc) operation; a three position user switch selects 12 Vdc, 24 Vdc or off

Charging Circuitry Input Voltage: 14 to 20 Vac/Vdc for 12 Vdc operation; 26 to 32 Vac/Vdc for 24 Vdc operation

Charging Current: 150 mA max, automatic current limit control

Charging Technique: Tapering current, fixed voltage; 13.6 V in 12 Vdc mode; 27.4 V in 24 Vdc mode

Input/Output Wiring: 7/16" binding head terminal strips

Model OM-420, $1800, shown smaller than actual size

Control Signal: 5 Vdc, 0.5 mA, optically isolated; high turns ON power supplies in AUTO mode

State of Charge Indicator: 10 step bar-graph LED display of relative battery voltage under load, indicates low to full charge

OM-320 INTERFACE MODULES

OM-320-HLIM-1 ANALOG INTERFACE MODULE

Channels: This module provides 4 individually programmable analog input channels. Any combination of the following analog input types/ranges can be configured on a module.

THERMOCOUPLES

Type: J. K, T, E, R, S

Accuracy: ±0.2 to 1.0°C depending on range and type (±5.0°C for types R and S)

Cold Junction Compensation (CJC) Range: -10 to 60°C (14 to 140°F)

CJC Accuracy (see system base spec): ±0.5°C

DC VOLTAGE

Full Scale Ranges: ±20 mV, ±40 mV, ±50 mV, ±70 mV, ±100 mV, ±200 mV, ±1 V, ±2 V, ±5 V, ±10 V, ±30 V

Accuracy: ±0.3% F.S.

Common Mode Range: 3.5 Vdc, full differential input

Input Resistance: >2.5 M for 5, 10 and 30 Vdc; >10 M for all other ranges

DC CURRENT

Full Scale Ranges: ±400 uA, ±1.2 mA, ±2.5 mA, ±11 mA, ±22 mA

Input Resistance: 100 ohm (all ranges)

OM-320-HLIM-2 DIGITAL INTERFACE MODULE

Channels: This module provides 4 individually programmable digital input channels. Any combination of the following interfaces can be configured on a module.

FREQUENCY

Input Range: 5 to 50 kHz (sine)

Input Waveform: ac; 300 mV p-p min, 15 V p-p max

EVENT

Time Resolution: 1 second or 5 mS with OM-320 in sub-second mode

Input Signal: Contact closure or TTL (0 to 15 Vdc max)

Debounce: 50 mS; software enable/disable

COUNT

Input Signal: Contact closure or TTL (0 to 15 Vdc max); 20 kHz max input frequency

Debounce: 50 mS; software enable/disable

Maximum Count: 16 million; maximum accumulated counts between reads

DIGITAL OUTPUT

Output Signal: Low output = tri-state (floating); high output = 4.0 Vdc @ 1 mA, 3.2 Vdc @ 10 mA

Current Limit: short circuit protected; max current = 12 mA (approx.) per channel

OM-320-HLIM-4 RTD, THERMISTOR AND RESISTANCE INTERFACE MODULE

Channels: this module provides 4 individually programmable channels of resistance input. Any combination of the following types/ranges can be configured on a module

RTD

Type: 100 and 1000 Ohm @ 0°C

Curve: 0.00385 (European) and 0.00392 (American)

Ranges: -328 to 572°F (-200 to 300°C); -328 to 1562°F (-200 to 850°C)

Accuracy: ±-0.1 to 0.4°C depending on range and wiring configuration

Configurations Supported: 2-wire, 3-wire and 4-wire (3 and 4-wire configurations require two channels to implement)

THERMISTOR

Type: 10 K‰ @ 25°C, Fenwall #16 or equiv

Ranges: -26 to 356°F (-32 to 180°C); 25 to 356 °F (-4 to 180°C); 50 to 356°F (10 to 180°C); 77 to 356°F (25 to 180°C)

Accuracy: ±-0.2 to 0.5°C depending on range

RESISTANCE

Ranges: 12 ranges from 200 ‰ full scale to 400,000 ‰ full scale

Accuracy: ±0.1 to 0.3% of rdg depending on range and wiring configuration

Configurations Supported: 2-wire, 3-wire and 4-wire (3 and 4-wire configurations require two channels to implement)

OM-320-HLIM-5 PCMCIA INTERFACE MODULE

Interface: PCMCIA memory card interface. Provided socket accepts 512 K (OM-320-MC-50), or 4 MB (OM-320-MC-400) or 2 MB (OM-320-MC-200) SRAM cards. Module requires installation into OM-320 system base port 6. PCMCIA socket installs through front panel Option Port 2. Memory cards are required in addition to this module. This module is also required for optional plug-in telephone modems(OM-320-MM-14.4).

Socket: PCMCIA Type socket with button ejector

OM-320-HLIM-8 EIGHT CHANNEL DIGITAL I/O INTERFACE MODULE

Channels: 8 digital I/O channels individually user configurable as inputs or outputs

Input Signal: Contact closure or TTL input (0 to 26 Vdc max)

Output Signal: OFF = tri-state (floating); ON = 5 Vdc, short circuit protected, max current = 5 mA (approx.)

OM-320 ACCESSORIES

OM-320-MC-50,-200,-400 PCMCIA MEMORY CARDS

Capacity: OM-320-MC-50, 50,000 to 80,000 samples; OM-320-MC-200, 200,000 to 300,000 samples OM-320-MC-400, 400,000 to 600,000 samples (capacity depends on signal type and format)

Power: Replaceable internal lithium cell (cell lasts approx. 1 year)

Dimensions: 2.1" H x 3.4" W x 0.15" D (53 x 86 x 4 mm) approx.

OM-320-MM-14.4 MODEM (14.4 KBAUD)

Operation: 14.4 KBaud telephone modem module option. Allows for direct connection to telephone lines for auto-answer and pager dial out alarm functions. Low power design for operation from the OM-320 internal batteries. Requires OM-320-HLIM-5 interface module.

Baud Rates:
1200, 2400, 9600, 14.4 K

OM-320 WINDOWS SOFTWARE

PC Requirements: 386 or higher IBM compatible, 4 MB RAM, 10 MB available hard disc space, Windows 2000/XP, Windows supported /installed mouse, VGA display, serial port for OM-320 connection, Windows supported/installed printer

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order ***(Specify Model No.)***

Model Number	Price	Description
OM-320	**$1300**	Data logger system base*
OM-420	**1800**	Data logger system base with OM-220-RPS-1 power supply*
OM-320-HLIM-1	**229**	Analog interface module
OM-320-HLIM-2	**220**	Digital interface module
OM-320-HLIM-4	**220**	Resistance interface module
OM-320-HLIM-5	**180**	PCMCIA interface module
OM-320-HLIM-7	**340**	Isolated analog interface module
OM-320-HLIM-8	**180**	Digital I/O interface module

** Purchase system base plus desired interface modules. System base comes complete with one four-channel **OM-320-HLIM-1** analog interface module, Windows software, RS-232C cable, RJ-11 to DB9 serial port adaptor, liquid-tight fittings, six internal D-cell batteries, 115/230 Vac power adapter and complete operator's manual.*
Ordering Example: OM-320** data logger system base, **OMEGACARE**℠ 1 year extended warranty for **OM-320** (adds 1 year to standard 1 year warranty), plus five **OM-320-HLIM-1** analog interface modules, $1300 + 130 + 5 (229) = **$2575.

Accessories

Model Number	Price	Description
OM-320-MM-14.4	**$160**	14.4 Kbaud modem
OM-320-MC-50	**120**	512K PCMCIA memory card
OM-320-MC-200	**160**	2 MB PCMCIA memory card
OM-320-MC-400	**370**	4 MB PCMCIA memory card
OM-320-PD-2	**280**	PCMCIA drive connects to IBM PC serial port or USB port for reading data from PCMCIA SRAM cards (includes software drivers)
OM-320-TSA-1	**120**	Terminal strip adapter
OM-320-FTG-1	**14**	Liquid-tight fittings
OM-320-DCXF-115/12	**14**	115 Vac power adapter
OM-320-CAR-4	**16**	RS-232C cable
OM-320-RJDB-9H	**28**	RJ-11 to DB9 adapter

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