NEW

8-Channel Voltage Input USB Data Acquisition Modules

OM-USB-1208FS/ OM-USB-1408FS/ OM-USB-1608FS

1 YEAR WARRANTY

- 8 Analog Voltage Inputs
- 12-Bit (OM-USB-1208FS), 14-Bit (OM-USB-1408FS) or 16-Bit (OM-USB-1608FS) Resolution
- Two 12-Bit Analog Outputs (OM-USB-1208FS, OM-USB-1408FS)
- 8 Digital I/O (USB-1608FS) or 16 Digital I/O (USB-1208FS, USB-1408FS)
- One 32-Bit Counter
- No External Power Supply Required

OM-USB-1208FS shown actual size.

Model	Resolution	Analog Inputs	Digital I/O	Counter	Analog Outputs
OM-USB-1208FS	12-bit	4 DE/8 SE	16	1	2
OM-USB-1408FS	14-bit	4 DE/8 SE	16	1	2
OM-USB-1608FS	16-bit	8 SE	8	1	–

The OM-USB-1208FS, OM-USB-1408FS and OM-USB-1608FS are USB 2.0 full-speed voltage input data acquisition modules (fully compatible with both USB 1.1 and USB 2.0 ports). These are plug-and-play modules which draw power from the USB cable–no external power supply is required. All configurable options (including individual channel ranges) are software programmable, and the modules are fully software calibrated.

The OM-USB-1208FS and OM-USB-1408FS feature eight analog voltage input channels that are processed through a single A/D converter. The analog inputs to the OM-USB-1208FS are software configurable for either eight 11-bit single-ended or four 12-bit differential inputs. The analog inputs to the OM-USB-1408FS are software configurable for either eight 13-bit single-ended or four 14-bit differential inputs.

The OM-USB-1608FS offers true simultaneous sampling of up to eight 16-bit single-ended analog voltage input channels which is accomplished through the use of an individual A/D converter per channel. Models USB-1208FS and USB-1408FS have 8 independent digital I/O channels and model OM-USB-1608FS has 16 digital I/O.

All modules have one 32-bit counter channel. The digital I/O channels are software programmable for input or output. Additionally, models OM-USB-1208FS and OM-USB-1408FS have two 12-bit analog outputs.

The packaging for the OM-USB-1208FS, OM-USB-1408FS and OM-USB-1608FS ensures ease of use in a variety of applications.

Software

The OM-USB-1208FS, OM-USB-1408FS and OM-USB-1608FS modules ship with an impressive array of software, including the new TracerDAQ®, a full-featured, out-of-the-box data logging, viewing, and analysis application.

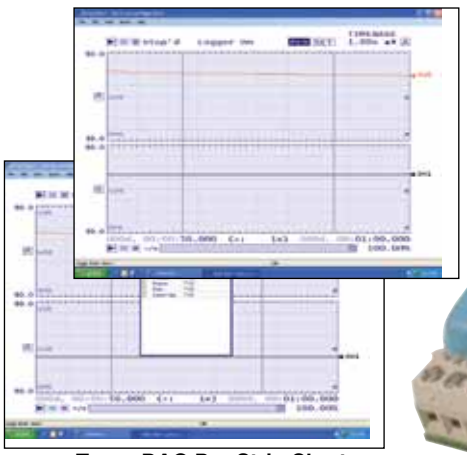
Driver support and detailed example programs are included for Universal Library programming libraries for Microsoft® Visual Studio® programming languages, and other languages, including DASYLab®, and ULx for NI LabVIEW® (comprehensive library of VIs and example programs compatible with 32-bit and 64-bit LabVIEW v8.5 through 2012) and InstaCal™ installation, calibration and test utility-powerful solutions for programmers and nonprogrammers alike. These modules operate under Micrsoft Windows® XP (32-bit only) and VISTA/7/8 (32-bit and 64-bit) operating systems.

The OM-USB-1208FS, OM-USB 1408FS and OM-USB-1608FS data acquisition modules are 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. A comparison of some of the features included in TracerDAQ vs TracerDAQ PRO is shown on the next page.

TracerDAQ Strip Chart.



TracerDAQ Pro Strip Chart with Measurements.

OM-USB-1408FS shown smaller than actual size.

Features Comparison

Strip Chart

Feature	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

Feature	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

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

Function Generator

Feature	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

SPECIFICATIONS

ANALOG INPUTS
A/D Converter:
OM-USB-1208FS and OM-USB-1409FS; One successive approximation A/D Converter:
OM-USB-1608FS; Eight successive approximation A/D converters
Number of Channels:
OM-USB-1208FS and OM-USB-1408FS;
8 single-ended/ 4 differential:
OM-USB-1608FS;
8 single-ended
Resolution:
OM-USB-1208FS;
12-bit (differential),
11-bit (single-ended):
OM-USB-1408FS;
14-bit (differential),
13-bit (single- ended):
OM-USB-1608FS;
16-bit (single-ended)
Integral Linearity Error:
±1 LSB typical
Differential Linearity Error:
±0.5 LSB typical
Repeatability: ±1 LSB typical
Input Voltage Range for Linear Operation (Single-Ended Mode):
±10V max
Input Common-Mode Voltage Range for Linear Operation (Differential Mode):
-10V min, 20V maximum
Absolute Maximum Input Voltage:
OM-USB-1208FS and OM-USB-1408FS; ±28V maximum:
OM-USB-1608FS; ±15V maximum
Input Impedance:
OM-USB-1208FS and OM-USB-1408FS; 122 kΩ:
OM-USB-1608FS; 100 MΩ minimum
Throughput:
OM-USB-1208FS and OM-USB-1408FS; 250 S/s typical (software paced, PC dependent); 50 kS/s (continuous scan):
OM-USB-1608FS; 500 S/s all channels (software paced); 100 Ks/s divided by the number of channels (50 Ks/s maximum per channel, scan to PC memory); 200 Ks/s divided by the number of channels (50 Ks/s maximum per channel, burst scan to to 32K sample FIFO)
Channel Gain Queue: Software configurable channel, range and gain

DC Voltage Ranges and Absolute Accuracy at 25°C (mV, typical)

Range	OM-USB-1208FS OM-USB-1408FS Single-Ended	OM-USB-1208FS OM-USB-1408FS Differential	OM-USB-1608FS Single-Ended
± 20V	–	± 11.0 mV	–
± 10V	–	± 7.3 mV	± 5.7 mV
± 5V	± 11.0 mV	± 3.7 mV	± 3.0 mV
± 4V	–	± 2.9 mV	–
± 2.5V	–	± 1.8 mV	–
± 2V	–	± 1.7 mV	± 1.3 mV
± 1.5V	–	± 1.2 mV	–
± 1V	–	± 1.1 mV	± 0.7 mV

Trigger Source: Software selectable
Pacer Source: Software selectable

ANALOG OUTPUTS (OM-USB-1208FS, OM-USB-1408FS Only)
Number of Channels: 2
Resolution: 12-bit (1 in 4096)
Accuracy: 4.0 LSB or 0.1 %FSR typical, 45.0 LSB or 0.9 %FSR maximum
Output Range: 0 to 4.096V (0 to 4096,1 mV per LSB)
Throughput: 250 kS/s single channel typical (software paced, PC dependent); 10 kS/s (single channel, continuous scan); 5 kS/s (dual channel, continuous scan, simultaneous update)
Output Drive:
15 mA per D/A channel
Slew Rate: 0.8 V/us typical

DIGITAL I/O
Number of Digital I/O Channels:
16 for OM-USB-1208FS and OM-USB-1408FS);
8 for OM-USB-1608FS
Type: CMOS
Configuration: Each DIO bit can be independently configured for input or output. Power on reset is input mode.
Pull-Up/Pull-Down Configuration: All pins pulled up to 5V via 47 kΩ 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 minimum, 5.5V absolute maximum
Input Low Voltage: 0.8V minimum, -0.5V absolute minimum
Output High Voltage: 0.7V maximum (IOL = 2.5 mA)
Output Low Voltage: 3.8V minimum (IOH = -2.5 mA)

COUNTER
Number of Channels: 1
Resolution: 32-bit
Counter Type: Event counter
Input Type: TTL, rising edge triggered
Schmitt Trigger Hysteresis: 20 mV to 100 mV
Input Leakage Current: ±1.0 uA typical
Input Frequency: 1 MHz maximum
High Pulse Width: 500 ns minimum
Low Pulse Width: 500 ns minimum
Input High Voltage: 4.0V minimum, 5.5V absolute maximum
Input Low Voltage: 1.0V maximum, -0.5V absolute minimum

EXTERNAL TRIGGER
Source: External digital
Mode: Software selectable
Latency: 10 us maximum
Pulse Width: 1 us minimum
Input High Voltage: 4.0V minimum, 5.5V absolute maximum
Input Low Voltage: 1.0V maximum, -0.5V absolute minimum
Input Leakage Current: ±1.0 uA

EXTERNAL CLOCK INPUT/OUTPUT
Pin Name: SYNC, software selectable direction (bidirectional); output (default), outputs internal A/D pacer clock; input, receives A/D pacer clock from external source
Input Clock Rate: 50 KHz maximum
Clock Pulse Width: 1 us minimum (input mode), 5 us minimum (output mode)
Input Leakage Current: ±1.0 uA (input mode)
Input High Voltage: 4.0 V minimum, 5.5 V absolute maximum
Input Low Voltage: 1.0 V maximum, -0.5 V absolute minimum
Output High Voltage: IOH =-2.5 mA, 3.3 V minimum: no load, 3.8 V minimum
Output Low Voltage: IOL = 2.5 mA, 1.1 V maximum; no load, 0.6 V maximum

OM-USB-1608FS, shown smaller than actual size.

GENERAL
Power Supply Voltage (Supplied by USB Port):
4.75 V minimum to 5.25 V maximum
Power Supply Current (Supplied by USB Port):
<100 mA typical (USB enumeration)
User 5V Output Voltage Range (connected to self-powered hub or externally powered root port hub):
OM-USB-1208FS and OM-USB-1408FS;
4.5V minimum to 5.25V maximum
OM-USB-1608FS;
4.9V minimum to 5.1V maximum
User 5V Output Voltage Range (connected to bus powered hub):
OM-USB-1208FS and OM-USB-1408FS only;
4.1V minimum to 5.25V maximum
User 5V Output Current (connected to self-powered hub or externally powered root port hub):
OM-USB-1208FS and OM-USB-1408FS; 420 mA maximum (total amount current that can be sourced from the USB 5V, analog outputs and digital outputs);
OM-USB-1608FS; 350 mA maximum (total amount of current that can be sourced from the USB 5V and digital outputs)
User 5V Output Current (connected to bus powered hub):
OM-USB-1208FS and OM-USB-1408FS only; 20 mA maximum (total amount of current that can be sourced from the USB 5V, analog outputs and digital outputs)
USB Device Type: USB 2.0 (full-speed)
Device Compatibility:
USB 1.1, USB 2.0
USB Cable Length: 3 m (10') maximum

TracerDAQ Strip Chart.

TracerDAQ Pro Strip Chart with Measurements.

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 70°C (32 to 158°F),
0 to 90% RH non-condensing
Storage Temperature:
-40 to 70°C (-40 to 158°F)
Weight: 91 g (3.2 oz)

OMEGACARE℠ Extended Warranty Program

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

To Order *Visit omega.com/ om-usb-1208fs_1408fs_1608fs for Pricing and Details*

Model No.	Description
OM-USB-1208FS	12-bit voltage input USB data acquisition module (4 DE/8 SE analog input channels, 16 digital I/O, 1 counter, 2 analog outputs)
OM-USB-1408FS	14-bit voltage input USB data acquisition module (4 DE/8 SE analog input channels, 16 digital I/O, 1 counter, 2 analog outputs)
OM-USB-1608FS	16-bit voltage input USB data acquisition module (8 SE analog input channels, 8 digital I/O, 1 counter)
SWD-TRACERDAQ-PRO	TracerDAQ Pro software

All models include a 1.8 m (6') USB cable, software and user manual on CD.
***Ordering Example: OM-USB-1208FS**, 12-bit voltage input USB data acquisition module and **OCW-1,** 1-year extended warranty adds 1 year to standard 1-year warranty.*