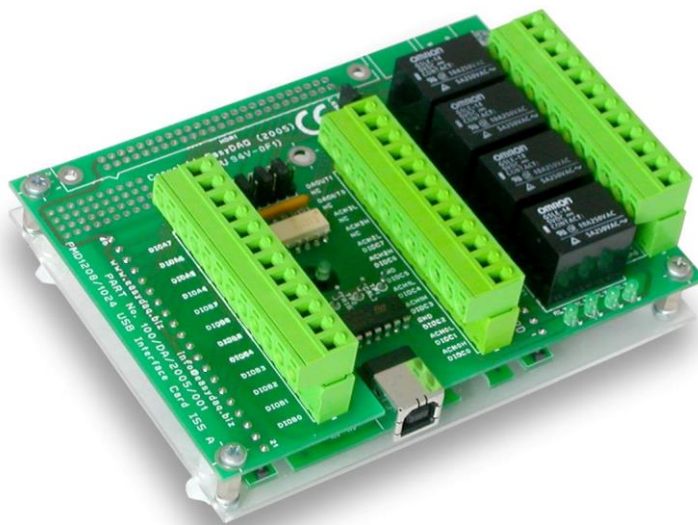


**Product Datasheet 22**

**Features**

- USB powered DAQ module - USB1.1 or 2 compatible (Type B USB connector)
- Based on a Measurement Computing™ PMD1208LS DAQ device. (MCC™ is a National Instruments owned company)
- Available with LabVIEW, Visual Studio .NET and VS.NET drivers & control examples. Calibration/test utilities and virtual instrument DAQ software available (free)
- Screw terminal access to all PMD1208 signals. Two part (male/female) connectors allow rapid connection or disconnection
- Eight single ended (11 bit) analogue input channels (or four (12 bit) differential). 1.2kS/s continuous scan rate, 8kS/s burst mode (1 channel).
- Analogue input voltage range +10V to -10V DC (or 0 to +20V DC)
- Sixteen digital I/O signals. Four of these are connected to onboard relays, leaving 12 spare. (VL 0-0.8VDC, VH 2-5.5VDC).
- 10A/240V power, or 1A/30V signal relays - PCB tracking will handle 10 Amps
- Two analogue output channels (10 bit). Output voltage range: 0 – 5 VDC (5mv per bit). Upto 100 S/s (1 channel).
- One event counter channel (32 bit)
- Onboard LED for power/test functions
- Supplied with nylon feet or clear, protective cover/base option
- CE compliant, BS9001:2000 manufacture



**Description**

Powerful, low cost, general purpose USB DAQ module, suitable for a wide range of measurement, monitoring and control purposes. Powered from the USB port, the module offers 8 analogue inputs (12 bit/1.2kS/S), 16 DIO, 4 onboard relays (power or signal type), 2 analogue outputs (0-4V, 1mV steps, 10K updates/S), 1 counter channel (32 bit) suitable for TTL pulse counting. Onboard power status/test LED.

The four onboard relays offer either 10A power or 1A signal type relays. (PCB tracking is designed to handle 10A/240VAC). Access to DAQ module and relay contacts is via 2 part (male/female) screw terminal blocks. These allow rapid connect/disconnect option so that the module to be swapped or used elsewhere quickly and easily. Spare IC/pad positions available.

**Specifications**

**USB Interface**

USB1/2 (full speed) compliant interface. Type B USB conn.

**Analogue input signals**

Range; +/- 10VDC, 12 bit, 1.2kS/S

**DIO signals**

Output high 2VDC (min), output low 0.8V (max). Max current sink/source 2.5mA.

**Operating temp range**

0-70°C

**Dimensions**

Dimensions approx 95mm (D) 129mm (W) 35mm (H) (exc feet), Weight 250g.

*Note: Detailed technical specs for all I/O signals& relays are listed on the following pages.*

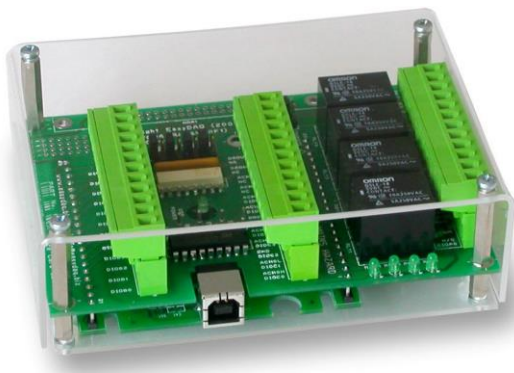
**Order code**

**USBDAQ1208LSS**

8 analogue input channels (1.2kS/s), 2 D/A outputs, 16 DIO channels, 4 signal relays. Trig, Sync and CTR inputs also available. Fitted with 2 part (male/female) screw terminal blocks for rapid connect/disconnect from target system.

**USBDAQ1208LSP**

As above, but with 4 onboard power relays (not signal relays).



**Product Datasheet 22**
**Specifications: Analogue inputs**

Parameter	Conditions	Specification
A/D converter type		Successive approximation type
Input voltage range (single ended)	CH to GND	+/- 10 volts DC max
Input common mode (differential)	CH to GND	- 10 volts min, +20V max DC max
Abs max input voltage	CH to GND	+/- 28 volts DC max
Input current		100 $\mu$ A typ
Number of channels		8 single ended, 4 differential
Input ranges, single ended mode		+/- 10VDC (Gain =2)
Input ranges, differential mode		+/- 20VDC (Gain =1) to +/-1VDC (20)
Throughput		1.2K s/S (cont scan), 8 kS/s (burst)
Channel gain		S/W configurable range & gain
Resolution		12 bits (Diff), 11 bits (SE)
CAL accuracy	CAL=2.5V	+/- 0.05% typ
Linearity error		+/- 1 LSB typ
Diff linearity error		+/- 0.5 LSB typ
Repeatability		+/- 1 LSB typ
Cal current		5mA max (source), 100 $\mu$ A typ (sink)
Trig source		S/W selectable, Ext digital, TRIG_IN

**Specifications: Relays**

Parameter	Specification (Power relays)	Specification (Signal relays)
Rated voltage/current	5VDC/80mA	5VDC/42mA
Must operate/release voltage	75%/10% of rated voltage	75%/10% of rated voltage
Contact ratings	10A/240VAC/8A 30VDC	1A/120VAC/1A 30VDC
Contact resistance	100m $\Omega$ max	100m $\Omega$ max
Operate/release time	10mS/5mS	5mS/5mS
Contact bounce period	0.6mS operate/ 7.2mS release	0.6mS operate/ 7.2mS release
Contact material	AgSnO <sub>2</sub>	AgAu
Operational life (min)	Mechanical 10 <sup>7</sup> / Electrical 10 <sup>5</sup>	Mechanical 10 <sup>7</sup> / Electrical 10 <sup>5</sup>
Contact arrangement	SPDT	SPDT

**Product Datasheet 22**

*Specifications: Analogue outputs*

Parameter	Conditions	Specification
Resolution		10 bits, 1 in 1024
Output range		0-5V (5mV per bit)
Number of channels		Two
Throughput	S/W paced	100 samples/S, (1 chan)
Throughput	S/W paced	50 samples/S, (2 chans)
Power on and reset (start up) voltage		Initialises to 000H code
Output drive current	Each channel	30 mA
Slew rate		0.14V/ mS typ

*Specifications: Digital I/O*

Parameter	Conditions	Specification
Device/signal type		CMOS
Number of channels		16, (A0 to A7, B0 to B7)
Configuration		Two groups of 8
Pull up/down configurations		47K pull up, pull down option onboard
Input high voltage threshold		2VDC min, 5.5VDC max
Input low voltage threshold		0.8VDC max, -0.5VDC min
Output high voltage threshold		3.8VDC min (IOH= -2.5mA)
Output low voltage threshold		0.7VDC max (IOH= +2.5mA)
Power on and reset status		Initialises all channels to inputs

*Specifications: External Trigger*

Parameter	Conditions	Specification
Trigger source	External digital	TRIG_IN (1.5K input protection resistor)
Trigger mode	S/W selectable	Edge sensitive, CMOS compatible
Trig latency		10 µS max
Trigger pulse width		1 µS min
I/O Voltage levels		High = 4-5.5VDC, Low = -0.5 to 1VDC

**Product Datasheet 22**
*Specifications: External clock I/O*

Parameter	Conditions	Specification
Signal name		SYNC (200 ohm input protection)
Signal direction		Input or output (S/W selectable)
Output signal function (default)		Outputs internal A/D pacer clock
Input signal function		Receives A/D pacer clock from ext src
Clock pulse width		1 $\mu$ S min (input), 5 $\mu$ S min (output)
Input Voltage levels		High = 4-5.5VDC, Low = -0.5 to 1VDC
Output Voltage levels		High = 3.3-3.8V, Low = 0.6 to 1.1VDC

*Specifications: Counter input*

Parameter	Conditions	Specification
Signal name		CTR (1.5K ohm input protection)
Signal direction/type		Input, event counter
Number of channels		1
Resolution		32 bit
Schmidt trigger hysteresis		20mV to 100mVDC
Input leakage current		+/- 1 $\mu$ A
Max input frequency		1 MHz
Pulse width (high or low)		500 nS min
Input Voltage levels		High = 4-5.5VDC, Low = -0.5 to 1VDC

*Specifications: Power*

Parameter	Conditions	Specification
Supply current		20mA (inc status LED)
5V USB power available		4.5VDC to 5.25VDC
Output current available		480mA max (if no relays active)
Relay current (per activated relay)		82mA max (inc status LED)

**Product Datasheet 22**

*Screw terminal signal connections*  
Eternal module connections are as follows:

**TB 1**

- 1. **DIOA0/RLY1NO**
- 2. **RLY1COM**
- 3. **RLY1NC**
- 4. **DIOA1/RLY2NO**
- 5. **RLY2COM**
- 6. **RLY2NC**
- 7. **DIOA2/RLY3NO**
- 8. **RLY3COM**
- 9. **RLY3NC**
- 10. **DIOA3/RLY4NO**
- 11. **RLY4COM**
- 12. **RLY4NC**

**TB 2**

- 1. **DIOB0**
- 2. **DIOB1**
- 3. **DIOB2**
- 4. **DIOB3**
- 5. **DIOB4**
- 6. **DIOB5**
- 7. **DIOB6**
- 8. **DIOB7**
- 9. **DIOA4**
- 10. **DIOA5**
- 11. **DIOA6**
- 12. **DIOA7**

**TB 3**

- 1. **ACH0H**
- 2. **ACH0L**
- 3. **GND**
- 4. **ACH1H**
- 5. **ACH1L**
- 6. **GND**
- 7. **ACH2H**
- 8. **ACH2L**
- 9. **ACH3**
- 10. **ACH3H**
- 11. **DAOUT0**
- 12. **DAOUT1**

**TB4**

- 1. **0V (PC)**
- 2. **5V (PC)**

**TP 1-4**

- 1. **CAL**
- 2. **TRIG**
- 3. **SYNC**
- 4. **CTR**

