

### Technical Specifications for DAQ System.

Parameter	Technical Description of product
Bus Type	USB Compatible
Front connection	Screw terminal
<b>Analog Input Channels</b>	
Number of Analog Input channels	8 differential channels
ADC resolution	Upto 16 bits
Sample rate	1.25 MS/s/channel
Timing resolution	10 ns
Timing accuracy	50 ppm of sample rate
Input coupling	DC
Input range	$\pm 1$ V, $\pm 2$ V, $\pm 5$ V, $\pm 10$ V
CMRR (at 60 Hz)	75 dB
Bandwidth	1 MHz
THD	-80 dBFS
Input impedance	>100 G $\Omega$ in parallel with 100 pF
Input bias current	$\pm 10$ pA
Crosstalk (at 100 kHz)	-80 dB between Adjacent channels -100 dB between Non-adjacent channels
Input FIFO size	64 MS shared among channels used
Data transfers	USB Signal Stream, programmed I/O
Overvoltage protection for all analog input channels	$\pm 36$ V when device is ON $\pm 15$ V when device is OFF
Input current during overvoltage conditions	$\pm 20$ mA max/AI pin
<b>Analog Triggers</b>	
Number of triggers	1
Supported Functions	Start Trigger, Reference Trigger, Pause Trigger, Sample Clock, Sample Clock Timebase
Resolution	16 bits
<b>Analog Output Channels</b>	
Number of Analog Output channels	2
DAC resolution	16 bits
Maximum update rate (simultaneous)	3.3 MS/s/ch
Timing accuracy	50 ppm of sample rate
Timing resolution	10 ns
Output range	$\pm 10$ V, $\pm 5$ V, $\pm$ external reference on APFI 0
Output coupling	DC
Output impedance	0.4 $\Omega$
Output current drive	$\pm 5$ mA
Overdrive protection	$\pm 25$ V
Overdrive current	10 mA
Power-on state	$\pm 5$ mV
Power on/off glitch	1.5 V peak for 200 ms, typical
Output FIFO size	8,191 samples shared among channels used
Data transfers	USB Signal Stream, programmed I/O

Settling time	2 $\mu$ s
Slew rate	20 V/ $\mu$ s
<b>Digital IO Channels</b>	
Number of Digital I/O channels	24 total
Ground reference	D GND
Input voltage protection	$\pm$ 20 V on up to two pins
Data transfers	USB Signal Stream, programmed I/O
<b>Counter Channels</b>	
Number of counter/timers	4
Resolution	32 bits
Counter measurements	Edge counting, pulse, pulse width, semi-period, period, two-edge separation
Internal base clocks	100 MHz, 20 MHz, 100 kHz
External base clock frequency	0 MHz to 25 MHz
Base clock accuracy	50 ppm
FIFO	127 samples per counter
Data transfers	USB Signal Stream, programmed I/O
<b>Frequency Generator</b>	
Number of channels	1
Base clocks	20 MHz, 10 MHz, 100 kHz
Base clock accuracy	50 ppm
Phase-Locked Loop (PLL) Number of PLLs	1
Weight USB Screw Terminal	1.428 kg
Operational shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC 60068-2-27. Test profile developed in accordance with MIL-PRF-28800F.)
Random vibration	Operating - 5 to 500 Hz, 0.3 grms Nonoperating - 5 to 500 Hz, 2.4 grms (Tested in accordance with IEC 60068-2-64. Nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)
Operating temperature	0 to 45 $^{\circ}$ C
Operating humidity	10 to 90% RH, noncondensing
Storage humidity	5 to 95% RH, noncondensing
Safety	IEC 61010-1 EN 61010-1 UL 61010-1 CSA 61010-1
Electromagnetic Compatibility	EN 61326-1 (IEC 61326-1): Class A emissions; Basic immunity EN 55011 (CISPR 11): Group 1, Class A emissions EN 55022 (CISPR 22): Class A emissions EN 55024 (CISPR 24): Immunity AS/NZS CISPR 11: Group 1, Class A emissions AS/NZS CISPR 22: Class A emissions FCC 47 CFR Part 15B: Class A emissions ICES-001: Class A emissions

**General Terms and Conditions**

1. OEM Authorization Certificate is to be furnished by the supplier on the name of the vendor who is quoting. The OEM certificate must contain the IIT Madras Tender Reference number and the closing date of the tender mandatory. Quotations from the OEM's will not be considered as authorization letters. Vendors without the OEM authorization certificate are liable to be rejected at the technical the evaluation.
2. Client list with full address including detail of contact person with phone no. email etc to whom the similar Data Acquisition module was supplied in the past 5 years should be provided by the vendor.

**Last date for sending quotation: April 12<sup>th</sup>, 2018.**

**Address for sending hard-copies of quotation:**

Dr. Saumendra K. Bajpai,  
MSB 227A,  
Applied Mechanics Department,  
IIT Madras, Chennai-600036