INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION

PR NO. 1000050464 **RFx No. 6100002453**

Digital to Analogue Converter (DAC) – 2 Nos.
Technical specification

Sr. No	Parameters	Specification	Technical Compliance (Yes / No)	Additional Information (if any)
1	Digital to Analogue Converter (DAC)Channels	Should have 48 independent DAC channels to provide DC voltage distributed in not more than three 19-inch rack-mountable units		
2	Connection	Connection to each channel should be made separately through SMA/BNC/similar connectors		
3	DC voltage range	-10 V or lower to + 10 V or higher		
4	DC voltage resolution	5 μV or finer		
5	DC Voltage stability	±2 μV or lower drift over 8 hours or more		
6	Noise	20 $nV/\sqrt{Hz}$ or lower, within the 0.1 Hz to 10 kHz range (wideband noise). Noise data from at least 2 channels of the multi-channel instrument must be provided by the manufacturer		
7	Temperature stability	10 $\mu V/°C$ or lower at 25 °C throughout the DC voltage range (-10 V or lower to + 10 V or higher). Temperature stability data from at least one channel should be provided by the manufacturer.		
8	Settling time	1 ms or lower (0 – 1 V step). This settling time must be achievable without compromising the noise specifications. Settling time data for at least one		

		channel should be provided by the manufacturer		
9	Sync output	Each 19-inch rack-mountable unit should have at least one sync output, so that other instruments can be synchronised to voltage sweeps		
10	Current Sensing	a) Each channel, along with providing the above-mentioned DC voltage, should be capable of sensing currents from 30pA or less up to 100 μA or more b) Current sensing resolution should be 30pA or less for currents up to 1 nA c) Current sensing resolution should be 1 nA or less for currents between 1nA and 1 μA d) Current sensing resolution should be 1 μA or less for currents above 1μA e) Current sensing data from at least 2 channels of the multi-channel instrument must be provided by the manufacturer		
11	Interfacing with a computer	a) Remote programming of each channel from a computer, via a single communication channel per 19-inch rack-mountable unit, which can be USB or Ethernet, should be provided b) The computer control interface must be galvanically isolated from the voltage generation module c) Should be compatible with QCodes d) Any future upgradation in the firmware should be provided free of cost		
12	Warranty	The instrument should have a minimum comprehensive warranty of 3 years		
13	Power Line	The instrument should be compatible with the standard Indian power line (supply)		