Sl. No.	**Technical Specifications for dual phase digital Lock-In amplifier**
1.	The lock-in amplifier must have A/D Converter of 16 bits or better.
2.	**Input Signal channel:** i) Both Single-ended and Differential voltage inputs must be possible. ii) Current input with 10^8 V/A must be possible. iii) Input impedance for voltage input should be 10MΩ, both AC and DC coupling should be possible. iv) Differential input must not have noise more than 7nv/√Hz at 1kHz v) High Dynamic Reserve of 100 dB or better (without any prefilters) must be possible.
3.	**The lock in must have a Reference Channel** i) Reference Phase Resolution must be 0.005º or better. ii) Harmonic detection of up to 5th Harmonic must be possible.
4.	Output time constant should have a range of 10 µs to 10 ks.
5.	**The lock-in amplifier must have an internal sinusoidal signal generator with** i) a Frequency range of at least 1mHz to 100 kHz with resolution of 100 µHz. ii) amplitude in the range of 5 mVrms to 5 Vrms with a resolution of 2mV or better should be possible. iii) output impedance should be 50 Ω. iv) sine wave output should be able to be phase-locked to an external reference.
6.	**Inputs and Outputs** i) sampling rate should be 256 k samples/s or better. ii) Both amplitude and phase (X,Y, R, θ) data must be supplied. iii) Minimum of three auxiliary A/D inputs with at least 1 mV resolution and ±10V full scale must be available for user defined measurements. iv) Minimum of three auxiliary D/A outputs with at least 1 mV resolution and ±10V full scale must be available for user defined measurements. v) Output data should be provided in ASCII format.

7.	**Displays:** i) Dual Display (amplitude and phase) must be possible. ii) Numeric readout as well as bar graph should be possible.
8.	**Computer Interfacing:** i) GPIB as well RS232 must be possible. ii) A minimum of 1.5 meter long GPIB cable must be supplied. iii) A USB-GPIB adaptor must be supplied.
9.	**Maintenance support:** i) On-site warranty of 5 years from the date of purchase should be provided. ii) In addition, an AMC support for 1 year after warranty should also be provided for which bidder should mention its AMC charge per year separately. (The AMC charge will not be counted towards financial evaluation).
10.	**Optional** **A low-noise voltage pre amplifier with following specifications:** i) Input with AC or DC coupled, both differential as well as single ended must be possible ii) Input noise better than 5nV/√Hz at 1 kHz or better must be demonstrated. iii) CMRR: 100 dB from DC to 1 kHz or better should be possible. iv) Gain: 1 – 30000 or more. Gain should be selectable. v) Maximum output of 10 V_{pp} for 50 Ω should be possible. vi) Both low-pass and high-pass filter options must be available. vii) On-site warranty of 3 years from the date of purchase should be provided.