

वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्
Council of Scientific & Industrial Research
राष्ट्रीय वांतरिक्ष प्रयोगशालाएं
National Aerospace Laboratories



CSIR - NAL Estd. 1959
ISO 9001 : 2015
Certified Organization

INVITATION FOR BIDS/NIT

Tender No. NAL/PUR/FMCD/369/19-Y

Dated: 12-Dec-19

CSIR- National Aerospace Laboratories (NAL), Bengaluru, India is one of the premier laboratories under Council of Scientific and Industrial Research (CSIR), an autonomous body under Department of Scientific and Industrial Research, Government of India, New Delhi. CSIR-NAL is a Science and Knowledge based Research, Development and Consulting Organization. It is internationally known for its excellence in Scientific Research in Aerospace Engineering.

The Director, CSIR-NAL invites online quotation for procurement of the following item(s) for day to day research work.

Sl.No.	Description of Items	Unit	Quantity
01	Supply and Installation of Programmable Automation Controller Based Data Acquisition System for: Digital Inputs - 176 Channels Digital Outputs - 96 Channels Differential Analog Inputs - 16 Channels. Please refer Annexure for detailed specification.	Set	01

Single / Double Bid	Two Bid
Bid Security (EMD) (in INR)	Rs. 20000/-
Performance Security	10% of the purchase order value

01. Tender Documents may be downloaded from Central Public Procurement Portal <https://www.etenders.gov.in>. Aspiring Bidders who have not enrolled/ registered in e- procurement should enroll/ register before participating through the website <https://www.etenders.gov.in>. The portal enrolment is free of cost. Bidders are advised to go through instructions provided at 'Instructions for online Bid Submission'.
02. Tenderers can access tender documents on the website (For searching in the NIC site <https://www.etenders.gov.in>, kindly go to Tender Search option, select tender type and select ' Council of Scientific and Industrial Research' in organization tab and select NAL-Bengaluru-CSIR in department type Thereafter, Click on "Search" button to view all CSIR-NAL, Bengaluru tenders). Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website <https://www.etenders.gov.in> as per the schedule given in the next page.
03. Either the Indian Agent on behalf of the Foreign principal or the Foreign principal can bid directly in a tender but not both. However, the offer of the Indian Agent should also accompany the authorization letter from their principal. To maintain sanctity of tendering system, one Indian Agent cannot represent two different Foreign principals in one tender.
04. Unsolicited / conditional / unsigned tenders (Quotations) shall not be considered. Quotations received after the due date and time shall be summarily rejected.
05. The Bidder shall comply the terms and conditions of the tender, failing which, the offer shall be liable for rejection.
06. The Director, CSIR- National Aerospace Laboratories., Bengaluru reserves the right to accept any or all the tenders either in part or in full or to split the order without assigning any reasons there for.


Raman Kumar
(Section Officer S&P)

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SCHEDULE CUM CRITICAL DATE SHEET

1	Name of Organization	CSIR-National Aerospace Laboratories, Bengaluru	
2	Tender Reference No	NAL/PUR/FMCD/369/19-Y dated: 12-Dec-19	
3	Tender Type (Open/Limited/EOI/Auction/Single)	Open Tender	
4	Type/Form of Contract (Work / Supply / Auction / Service / Buy / Empanelment / Sell)	Supply	
5	No of Covers (One/Two/Three/Four)	Two	
6	Tender Category (Services/Good/Works)	Goods	
7	Allow Resubmission (Only in online mode within scheduled period)	Yes	
8	Allow Withdrawal (Only in online mode within scheduled period)	Yes	
9	Allow Offline Submission	No	
10	Work Item Title	Supply and Installation of Programmable Automation Controller Based Data Acquisition System for: Digital Inputs - 176 Channels Digital Outputs - 96 Channels Differential Analog Inputs - 16 Channels.	
11	Work Description	Supply and Installation of Programmable Automation Controller Based Data Acquisition System for: Digital Inputs - 176 Channels Digital Outputs - 96 Channels Differential Analog Inputs - 16 Channels.	
12	Delivery Schedule	90 days from the date of purchase order	
13	Product Category (Civil Works / Electrical Works / Fleet Management / Computer Systems)	R & D Equipment	
14	Is Multi Currency Allowed	Yes	
15	a) Tender Publishing Date -	13-Dec-19	1800 Hrs
	b) Document Download Start Date-	13-Dec-19	1800 Hrs
	c) Bid Submission Start Date-	13-Dec-19	1800Hrs
	d) Bid Submission End Date-	02-Jan-20	1000 Hrs
	e) Bid Opening Date-	03-Jan-20	1100 Hrs
16	Bid Validity Days	90 days	
17	Address for communication	Stores and Purchase Officer CSIR-National Aerospace Laboratories, HAL Airport Road, Kodihalli, Bengaluru - 560017	
18	Inviting Officer	Director, CSIR-NAL	
19	Contact No	25086040, 25086041	
20	E-mail Address	purchasek@nal.res.in	
21	Detailed specification of item	Refer Invitation for bids / NIT	
22	Tender Terms & Conditions & Instruction for online bid submission	The prospective bidders are requested to refer to the Standard Tender Document available on NAL Internet (www.nal.res.in) under the icon Tender-Purchase before formulating and submitting their bids	

Supply, installation and integration of Programmable Automation Controller based data acquisition System

Supply, installation and integration of Programmable Automation Controller based data acquisition System for following no of inputs/outputs

1. Analog input 16bit, voltage range up to +/-28V differential: 16 Channels
2. Digital input: 256 channels
3. Digital Output:80 channels

The IO Modules has to be wired to 37 pin I/O connector block. Cockpit inputs and outputs has to be wired to the same I/O connector block. The I/O block and Controller should be DIN Rail mounted in a cabinet with cooling fans. The block diagram of wiring is shown below

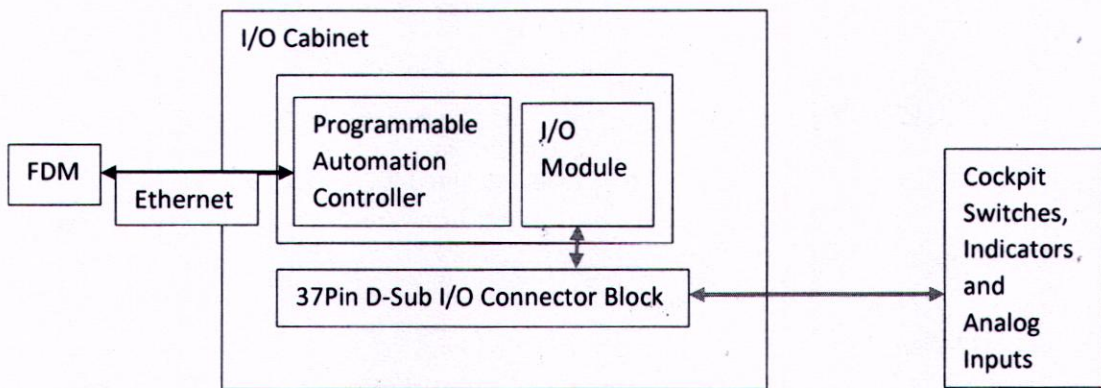


Table -1 Deliverables

Controller (As per Detailed specification in Table 2)	03 Nos
Digital Input Module (As per Detailed specification in Table 3)	16 Nos
Digital Output Module (As per Detailed specification in Table 4)	5 Nos
Analog input Module (As per Detailed specification in Table 5)	2 Nos
I/O Connector block with DIN rail mounting and 37 pin D-sub connector	12 Nos
DIN Rail mount power supply 24V 2.5 A	4 Nos
DIN Rail mount power supply 5V 2 A	1 No
Enclosure- Cabinet with interfacing cables and cooling fans	1 No
PTFE Cable	200m
Wiring and harnessing	1 Set

Table 2: Controller Specification

System Software	
OS	DOS-like embedded operating system
Program Download Interface	RS-232 (COM1) or Ethernet
Programming Language	C language
Compilers to create.exe files	TC++ 1.01 (Freeware) TC 2.01 (Freeware) BC++3.1~5.2x MSC 6.0 MSVC++(before version 1.5.2)
	C Language Programming TCP/IP Library
CPU Module	
CPU	80186 or compatible (16-bit and 80MHz)
SRAM	768 KB
Flash	512 KB (100,000 erase/write cycles) with Flash protection switch
Communication Ports	
Ethernet	RJ-45 x 2, 10/100 Base-TX (Auto negotiating, Auto MDI/MDI-X, LED indicators)
COM 1	RS-232 (to update firmware) (RxD, TxD and GND); non-isolated
I/O expansion slots	
Number of Slots	8
Mechanical	
Dimensions (W x L x H)	355 mm x 132 mm x 111 mm
Installation	DIN-Rail
Power	
Input Range	+10 ~ +30 VDC
Isolation	1 kV
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 VDC) for alarm
Capacity	0.9 A, 5 V supply to CPU and backplane, 5.1 A, 5 V supply to I/O expansion slots, 30 W in total
Consumption	7.2 W (0.3 A @ 24 VDC)

Table 3: Digital Input Modules

Input Channels	16 (Source)
Input Type	Non-isolated
On Voltage Level	Connect to GND
Off Voltage Level	Open
Effective Distance	500m Max.
4KV ESD Protection	Contact for each channel
LED Display	
1 LED as Power Indicator	
16 LEDs as Digital Input Indicators	

Power	
Power Consumption	0.22A @ 5V = 1.1W, +/- 5% For Hardware version 1.4
Environment	
Operating Temperature	-25 to 75 °C
Storage Temperature	-30 to 85 °C
Humidity	5 to 95% RH, non-condensing
Dimensions	
30 mm x 102 mm x 115 mm (W x L x H)	

Table 4: Digital Output Module

Output Channels	16 (source)
Output Type	Isolated Open-collector
Max Load Current	100 mA/channel
Accuracy	5 VDC ~ 30 VDC
Intra-module Isolation, Field to Logic	3750 Vrms
LED Display	
1 LED as Power Indicator	
16 LEDs as Digital Output Indicators	
Power	
Power Consumption	0.18 A @ 5 V = 0.9 W, +/- 5% For Hardware version 1.4
Environment	
Operating Temperature	-25 ~ 75 °C
Storage Temperature	-30 ~ 85 °C
Humidity	5 ~ 95%, Non-condensing
Dimensions	
30 mm x 102 mm x 115 mm (W x L x H)	

Table 5: Analog Input Module

Input Channels	16-ch Single-ended/8-ch Differential
Input Range	+/- 10V, +/- 5V, +/- 2.5V, +/- 1.25V -20mA ~ +20mA(Requires Optional External 125 Ohm Resistor)
Resolution	16-bit
Sample Rate	Single Channel Polling Mode :250K S/s
FIFO	4K Words
Accuracy	0.05% of FSR +/- 1LSB
Scan Mode	Polling , Pacer
Scan Function	Magic Scan Type 1, Magic Scan Type 2
Overvoltage protection	+60 V~ -45 V
Input Impedance	20K,200K,20M(Jumper Select)
Intra-module Isolation, Field to Logic	2500 Vrms
LED Display	
1 LED as Power Indicator	
Power	

Power Consumption	2.5W Max
Environment	
Operating Temperature	-25 ~ 75 °C
Storage Temperature	-30 ~ 85 °C
Humidity	5 to 95% RH, Non-condensing
Dimensions	
30mm x 102mm x 115mm (W x L x H)	

Notes:

1. Data acquisition software which reads inputs from input modules and communicate to host via Ethernet has to be provided by the manufacturer. Similarly, the software should read outputs from flight model via Ethernet and has to be send to output module.
2. The units should be enclosed in a cabinet. The cabinet should be compact and easy to maintain and repair, when necessary. Dimensions of this cabinet should be finalized after site inspection and discussions with user.
3. Wiring to the cockpit and I/O terminal block has to be carried out by vendor. NAL will provide suitable circular connectors.
4. One Year onsite warranty should be provided for the hardware as well as wiring.

Pre-Qualification / Eligibility Criteria (Documentary evidence should be provided along with the quotation)

1. Bidder shall have successfully executed at least one installation of a Data Acquisition system at a single location for any Govt. or non govt. organisation in India.
2. Bidders shall enclose an affidavit stating that the company is / has not been black listed by Central / State Govt. / PSU.
3. Bidder should submit copies of purchase orders along with all technical details of previous such works.
4. Bidder should submit copies of installation reports and / or completion certificates certified by customer indicating the purchase order reference.