

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/ALD/382/19-Y

Dated: 13-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	Qty
1	DC Power Distribution Unit. Please refer Annexure for detailed specification.	Set	1
Single / Double Bid		Single	
Bid Security (EMD) (in INR)		Bid Security Declaration should be enclosed with quotation.	
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/ALD/382/19-Y dated: 13-Dec-19	
3	Tender Type (Open/Limited/EOI/Auction/Single)	Open	
4	Type/Form of Contract (Work / Supply / Auction / Service / Buy / Empanelment / Sell)	Supply	
5	No of Covers (One/Two/Three/Four)	One	
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	DC Power Distribution Unit.	
11	Work Description	DC Power Distribution Unit.	
12	Delivery Schedule	60 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 -	17-Dec-19	1800 Hrs
	b) Document Download Start Date-	17-Dec-19	1800 Hrs
	c) Bid Submission Start Date-	17-Dec-19	1800 Hrs
	d) Bid Submission End Date-	06-Jan-20	1000 Hrs
	e) Bid Opening Date-	07-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	

1 SPECIFICATION OF ELECTRICAL DC POWER DISTRIBUTION UNIT

1.1 Introduction

CSIR-NAL is developing 19 seater multirole light transport aircraft, SARAS Mk2. As part of this program, Avionics Integration Test Rig (AITR) is being setup. This facility shall be used piloted evaluation of aircraft avionics functionality and Avionics LRU testing.

Avionics LRUs of SARAS Mk II are mounted on 19" width, 42U height and 1000mm depth racks. 28VDC Power is supplied from Electrical System Rack to all avionics LRUs. Specifications of Electrical rack is described in following sub sections.

AITR has four DC power supplies which represents four Main power sources of aircraft. Output of each power supplies are connected to different buses so as to arrive at aircraft electrical bus configuration.

Bus architecture are implemented in Distribution Boxes. AITR is architected with three Distribution Boxes. Distributed power from these boxes are fed to the CB and Switch Panel. CB and Switch panel is connected to individual LRUs for the supply of power.

Responsibility of vendor is to fabricate three DC Power Distribution Unit

(PDU). Description of PDUs are as provided in following subsections.

1.2 SPECIFICATIONS

1.2.1 General

- Three DC Power Distribution Units shall be fabricated as per the wiring diagram provided.
- All PDU are supplied with 28VDC power from Power supply through connector.
- Power inside PDU shall be distributed to each LRU by using Junction Modules.
- DC Ground from Power supply shall be connected to chassis of PDU.
- Each PDU shall be provided with digital voltmeter and emergency cutoff switch.

1.2.2 DC Power Distribution Unit 1

- Interconnections of DC Power Distribution Unit 1 shall be made as shown in **Figure 7**.
- BOM with part number, quantity and nomenclature of item are as provided in **Table 1**.
- Front panel shall be installed with Emergency stop switch, CBs and digital voltmeters with legends to indicate the name of each bus as shown in **Figure 1**.
- Rear panel shall be installed with D38999 connectors as shown in **Figure 2**.

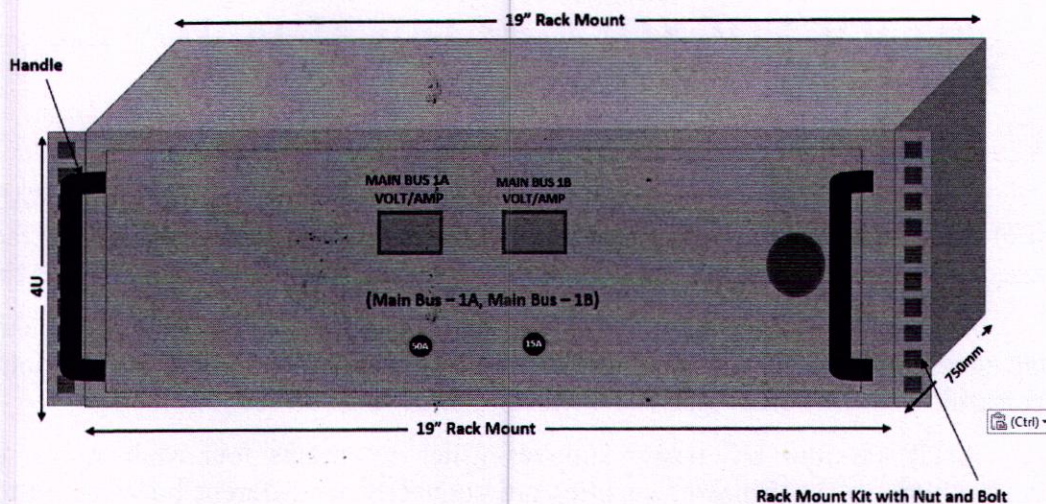


Figure 1: Front panel of PDU1

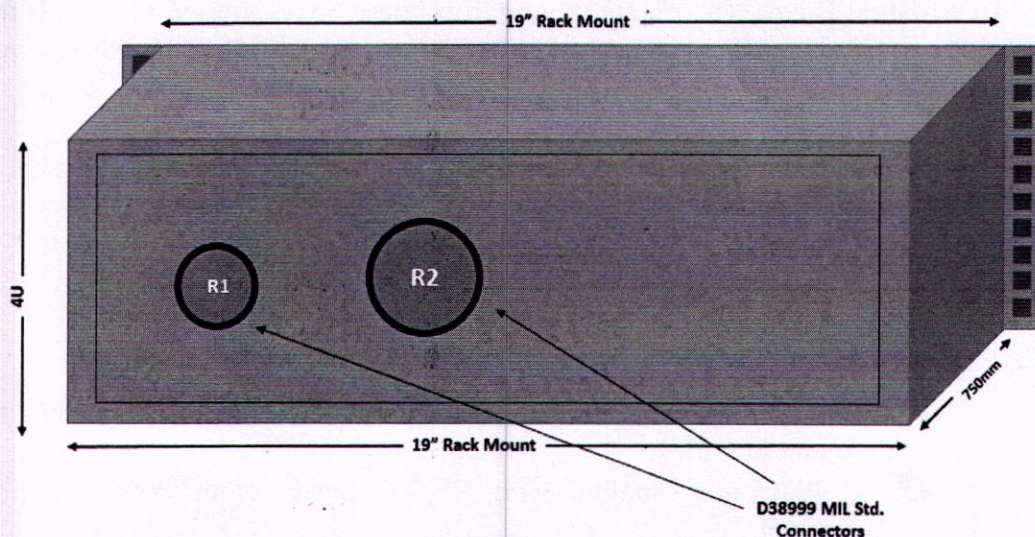


Figure 2: Rear panel of PDU1

1.2.3 DC Power Distribution Unit 2

- Interconnections of DC Power Distribution Unit 2 shall be made as shown in **Figure 7**.
- BOM with part number, quantity and nomenclature of item are as provided in **Table 1**.
- Front panel shall be installed with Emergency stop switch, CBs and digital voltmeters with legends to indicate the name of each bus as shown in **Figure 3**.
- Rear panel shall be installed with D38999 connectors as shown in **Figure 4**.

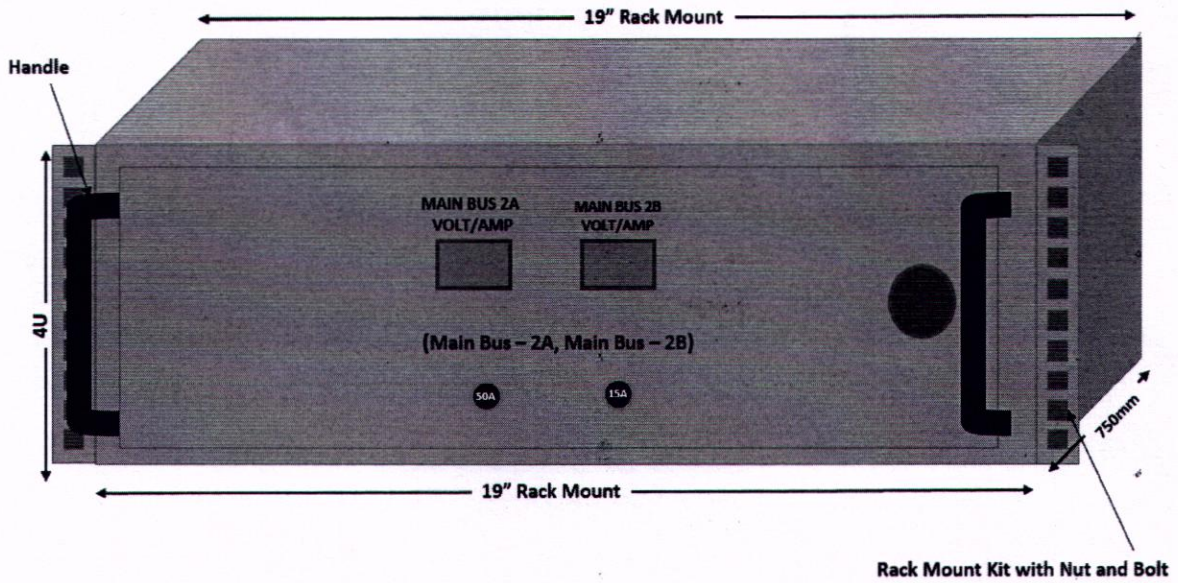


Figure 3: Front panel of PDU2

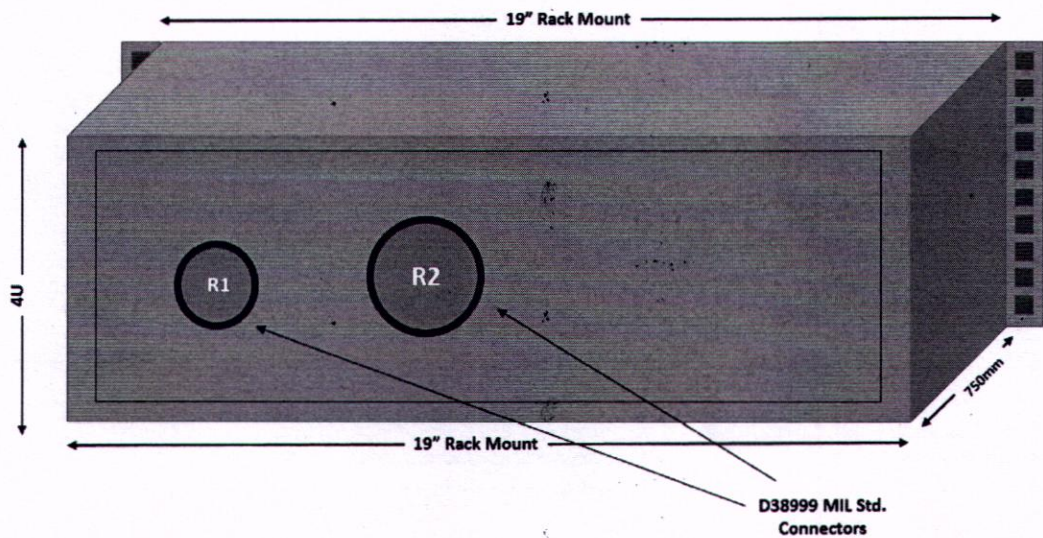


Figure 4: Rear panel of PDU2

1.2.4 DC Power Distribution Unit 3

- Interconnections of DC Power Distribution Unit 3 shall be made as shown in **Figure 7**.
- BOM with part number, quantity and nomenclature of item are as in **Table 1**.
- Front panel shall be installed with Emergency stop switch, CBs and digital voltmeters with legends to indicate the name of each bus as shown in **Figure 5**.
- Rear panel shall be installed with D38999 connectors as shown in **Figure 6**.

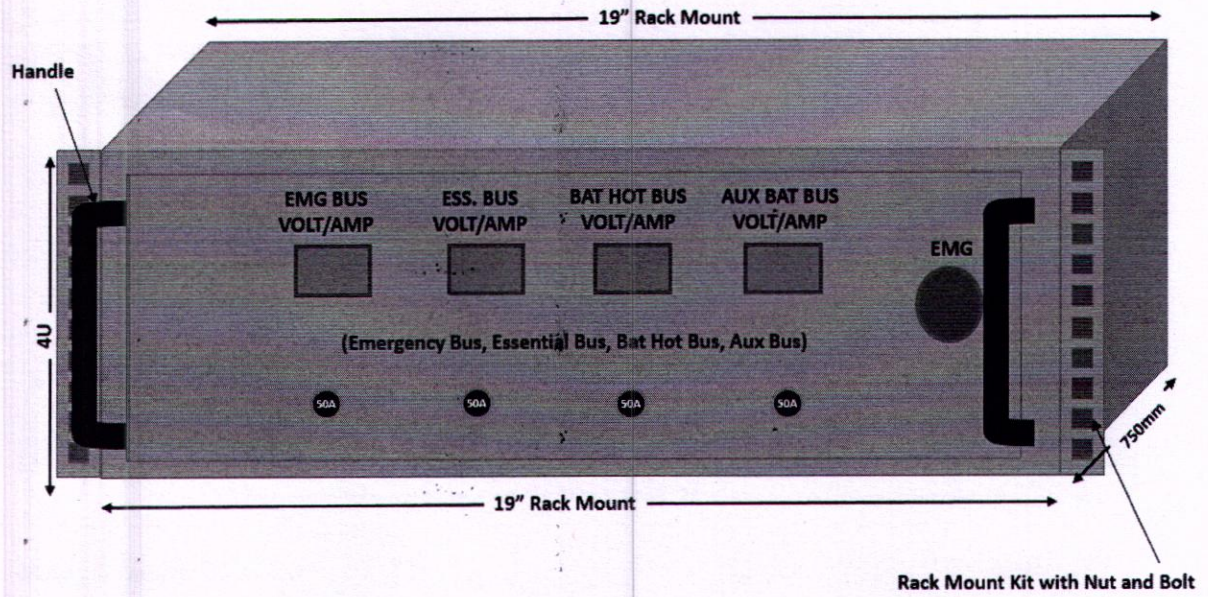


Figure 5: Front Panel of PDU 3

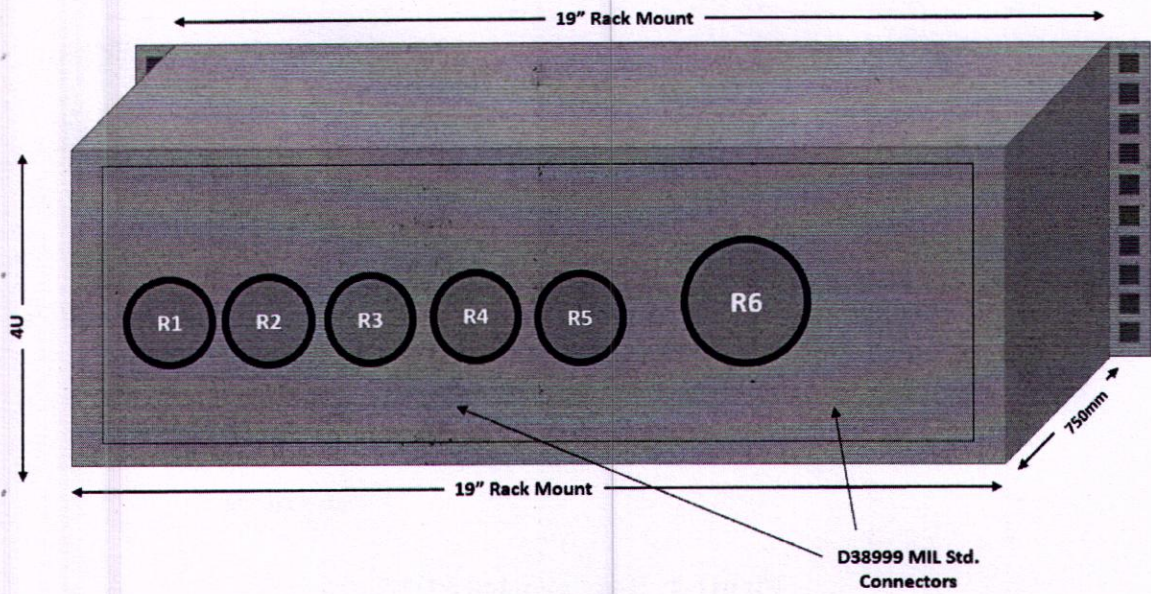


Figure 6: Rear Panel of PDU 3

[Handwritten signature]

1.2.5 Bill of Material

Bill of Material of DC Power Distribution Unit is as provided in **Table 1**.

Table 1: Bill of Material

SL. NO.	ITEM	Make	PART NUMBER	Quantity	Unit
1.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-20WD - 75PN	1+1	PDU1 & PDU2
2.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-26WD-75 SN	1+1	PDU1 & PDU2
3.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-20WD -75 PA	1	PDU3
4.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-26WD-75 SA	1	
5.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-20WD -75 PB	1	
6.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-26WD-75 SB	1	
7.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-20WD -75 PC	1	
8.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-26WD-75 SC	1	
9.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-20WD -75 PD	1	
10.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-26WD-75 SD	1	
11.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-20WD -75 PE	1	
12.	4 contact 8AWG Connector (Power Contact)	Amphenol	D38999-26WD-75 SE	1	
13.	21 contact 16AWG Connector	Amphenol	D38999-20WH-21 SN	1+1	PDU1 & PDU2
14.	21 contact AWG Connector	Amphenol	D38999-26WH-21 PN	1+1	PDU1 & PDU2
15.	37 Pin 16AWG Connector	Amphenol	D38999-20WJ-37 SN	1	PDU3
16.	37 contact 16AWG Connector	Amphenol	D38999-26WJ-37 PN	1	PDU3
17.	Back shell	Amphenol	M85049-39-21W	1+1+5	PDU1, PDU2 & PDU3
18.	Back shell	Amphenol	M85049-39-23W	1+1	PDU1 & PDU2

SL. NO.	ITEM	Make	PART NUMBER	Quantity	Unit
19.	Back shell	Amphenol	M85049-39-25W	1	PDU3
20.	12 AWG x 2 contact, 16 AWG x 6 contact	AirLB	00 1755-501-02	4+4+7+3 spare	PDU1, PDU2 & PDU3
21.	12 AWG Pin	AirLB	00 1104-400-02	8+8+14+10spare	PDU1, PDU2 & PDU3
22.	16 AWG Pin	AirLB	00 1104-300-02	24+24+42+20spare	PDU1, PDU2 & PDU3
23.	7 Module Base	AirLB	00 1751-107-00	1+1+3+3spare	PDU1, PDU2 & PDU3
24.	16AWG single core unshielded	Sanghvi	M22759/86-16	As reqd	PDU1, PDU2 & PDU3
25.	12 AWG single core unshielded	Sanghvi	M22759/86-12	As reqd	PDU1, PDU2 & PDU3
26.	Digital Voltammeter	Xuluma	Rated to min 40V, 100A DC	2+2+5+3spare	PDU1, PDU2 & PDU3
27.	Emergency Cutoff Switch (Rated to DC)	Schneider Eletric	Rated to 40VDC 70A or more	1+1spare	PDU1
28.	Emergency Cutoff Switch (Rated to DC)	Schneider Eletric	Rated to 40VDC 70A or more	1+1spare	PDU2
29.	Emergency Cutoff Switch (Rated to DC)	Schneider Eletric	Rated to 40VDC 70A or more + 40VDC 40A or more + 40VDC 40A or more	1+1+1	PDU3
30.	CB	ETA	482-G212-K1M1-A1S0-50A	2+1spare	PDU1, PDU2
31.	CB	ETA	483-G411-K1M1-A1S0Z-10A	2+1spare	PDU1,PDU3
32.	CB	ETA	483-G411-K1M1-A1S0Z-15A	1+1spare	PDU 2
33.	CB	ETA	483-G411-K1M1-A1S0Z-30A	1+1spare	PDU3
34.	CB	ETA	483-G411-K1M1-A1S0Z-5A	1+1spare	PDU3
35.	Bus Bar	--	--	3+3++7+2spare	PDU1, PDU2 & PDU3

1.2.6 Power and Grounding

- Power to each PDU is provided from DC power supply via dedicated D38999 connector.
- GND terminal shall be connected to cassis of PDU internally.
- Chassis of PDU shall be connected to copper ground strip rear side of rack.

1.2.7 Interdependency

Interdependency of each sub-elements of AITR are described below which helps in understanding the interconnection between them.

- DC power supply out terminal shall be connected to PDU IN connector.
- PDU OUT connector shall be connected to CB and Switch unit.

1.2.8 Legends

- Legends on front and rear panel of each PDU shall be printed as per the respective drawing provided.

1.3 Scope of Work

1.3.1 CSIR-NAL

- NAL shall provide detailed ICD or wiring drawing for interconnections after the selection of bid to the selected vendor.

1.3.2 Vendor

- Vendor shall make loom for all subsystems as defined in drawing.
- Vendor shall procure and install front panel and rear panel items as defined in drawing and any other consumables like wires, sleeves, etc.
- Vendor shall make grounding arrangements as per drawing.
- Vendor shall install the Power distribution unit on racks at NAL and shall carry out the ATP for the unit.
- Vendor shall take the approval from NAL before finalizing the actual design.
- NAL representative will monitor the job progress and inspect the quality of the job as and when required.
- Vendor shall successfully carry out continuity, megger and power ON test of Rig.
- Vendor shall prepare the ATP and the same shall be approved with NAL.
- Vendor shall execute the ATP at CAIR-NAL.
- Vendor shall provide the bill of materials, applicable data sheets of hardware modules and Certificate of Compliance (COC).



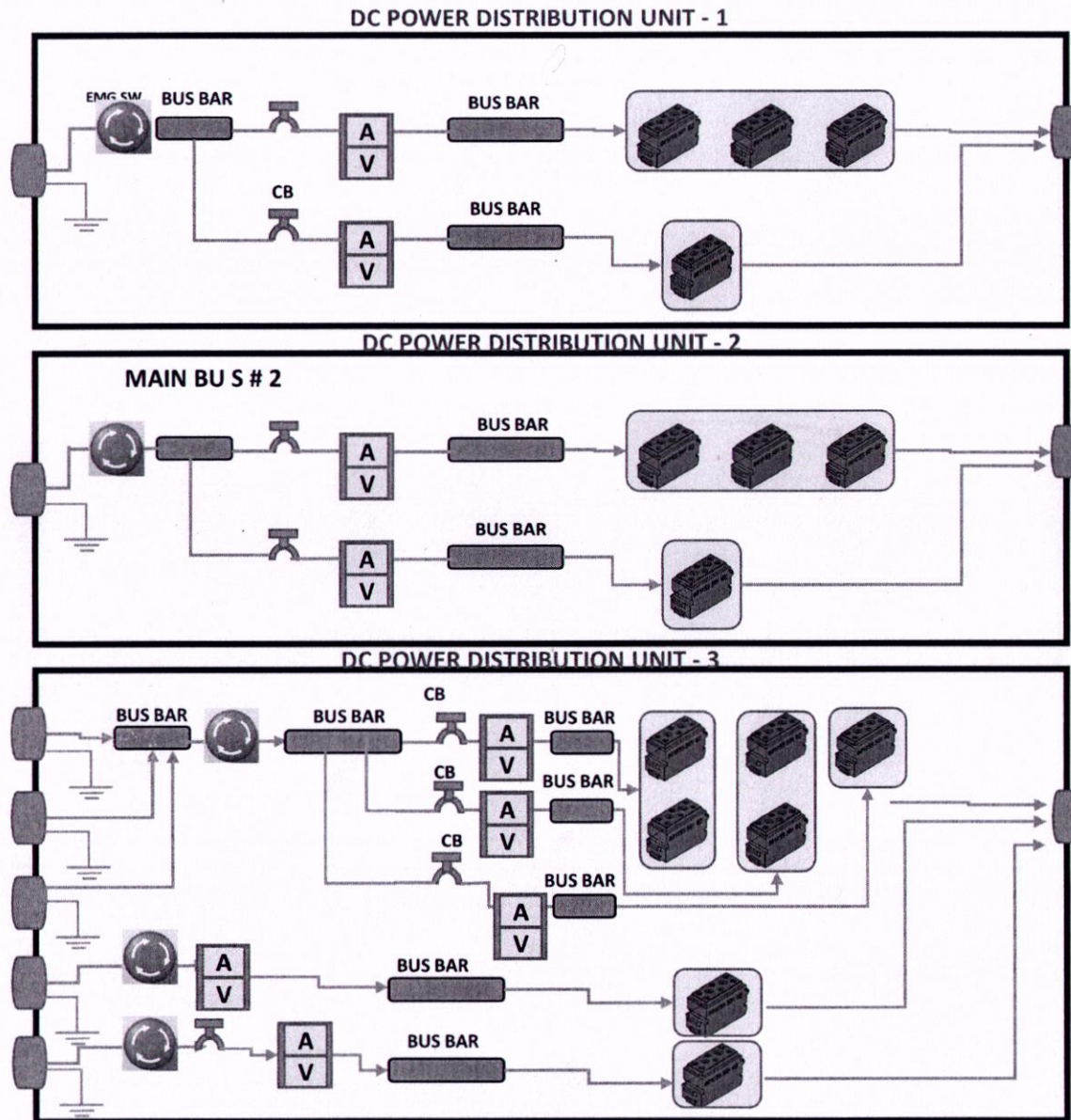


Figure 7: DC Power Distribution Unit 1, 2 and 3

Tender No.: NAL/PUR/ALD/382/19-Y

BID-SECURING DECLARATION FORM

Date: _____

Bid No. _____

To (insert complete name and address of the purchaser)

I/We. The undersigned, declare that:

I/We understand that, according to your conditions, bids must be supported by a Bid Securing Declaration.

I/We accept that I/We may be disqualified from bidding for any contract with you for a period of one year from the date of notification if I am /We are in a breach of any obligation under the bid conditions, because I/We

(a)	have withdrawn/modified/amended, impairs or derogates from the tender, my/our Bid during the period of bid validity specified in the form of Bid; or
(b)	having been notified of the acceptance of our Bid by the purchaser during the period of bid validity, (i) fail or reuse to execute the contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders.

I/We understand this Bid Securing Declaration shall cease to be valid if I am/we are not the successful Bidder, upon the earlier of (i) the receipt of your notification of the name of the successful Bidder; or (ii) thirty days after the expiration of the validity of my/our Bid.

Signed: (insert signature of person whose name and capacity are shown)
in the capacity of (insert legal capacity of person signing the Bid Securing Declaration).

Name: (insert complete name of person signing the Bid Securing Declaration)

Duly authorized to sign the bid for an on behalf of: (insert complete name of Bidder)

Dated on _____ day of _____ (insert date of signing)

Corporate Seal (where appropriate)

Note:

1. In case of a Joint Venture, the Bid Securing Declaration must be in the name of all partners to the Joint Venture that submits the bid.
2. Bid Security declaration must be signed in by the Proprietor/CEO/MD or equivalent level of Officer of the company.