Annexure 1 for "Development of Flight Sensor Electronics for Digital iCRG"

1. Scope of work

1. Fabrication of PCBs: PCB-A:50Nos, PCB-B: 50No.s.
2. Procurement of components.
3. Wiring of PCBs (PCB-A, PCB-B, PCB-C).
4. Basic Electrical Upbringing of boards including testing.
5. Integration wiring of PCBs, Sensing Unit wiring, Connector wiring and QC Inspection of PCBs.
6. Integrated test& test report generation.
7. Conformal coating of cards after card testing.
8. QC clearance and assembly in Mechanical package.
9. Electrical Burn in Test (168 Hrs, 60℃).

- **Parties should have necessary ISRO Qualifications and Certifications for the above activities (mandatory). Proof of the same to be submitted along with the quotation.**
- **Party should ensure that following minimum manpower with Qualification/Experience for wiring, inspection, testing is available.**

Sl.No	Function	Qualification	Experience(Minimum)
1	Fine Pitch Wiring	ITI+ISRO Wiring Certification	3 years
2	QC inspection including fine pitch components	ITI+ISRO QC Certification	3 years
3	Test Engineer	Diploma in Electronics	3 years
4	Supervising Engineer	B.Tech in Electronics	5 years

Employee details to be provided along with the quotation.

- **Party can deliver the total 50 Nos in part delivery basis. First part :5Nos (under IISU training/supervision), Second Part:15 Nos, Third Part:15Nos Fourth Part:15 Nos. All related documents, as specified in the subsequent sections, also shall be submitted.**

- **Parties to quote for each of the above activities separately. Order will be placed for all activities. However, as this is a technically challenging activity IISU reserves the right to execute any part of the order from items 5 to 9. IISU will provide necessary training/supervision for first five sensors. Pro rata payment will be released.**

- **Detailed workflow of activities, responsibility and site of activity is provided in Annexure 8. Some of the activities may overlap. Party to maintain a diary of activity showing the actual number of days for each of the activities.**

- **Personnel from IISU should be allowed to visit and witness the realization activities at any time.**

- **For all the activities at IISU party shall depute required wireman/QC inspector/test engineer/Supervising Engineer. Party shall arrange all necessary equipments/ tools/consumables/ materials. IISU will provide necessary workspace for the activity.**

2. PCB Fabrication

1. PCBs (PCB-A and PCB-B) should be fabricated by an ISRO approved PCB manufacturer. PCB-C will be supplied by IISU. PCB should confirm to ISRO-PAX-304 Rev1.
2. Technical Specifications for PCB fabrication is attached in Annexure 2. All specifications to be strictly complied.
3. Vias to be solder plugged.
4. PCB test reports from manufacturer to be submitted to IISU prior to starting of wiring and same has to be cleared by IISU.
5. PCB to be manufactured preferably from HiQ, ELTEK & Micropack (with 3rd party Micro sectioning report)

3. PCB Wiring:

1. Wiring to be done in ISRO approved facility by ISRO Certified personnel. (Qualification certificate of the proposed personnel & facility to be provided along with quotation) All norms as per approval to be followed (Including material procurement).
2. All ESD protection features to be observed. (Grounded straps, mats and tools to be used).
3. Party should have ISRO certified QC operator who is able to identify and establish conformances to ISRO / IISU procedures. All quality related aspects of this PO should be inspected and certified by the QC.
4. Card wiring, assembly and integration shall be carried out at party's facility in accordance with IISU process requirements. Documents containing detailed process and inspection requirements will be provided by IISU.
5. During the realization / QC inspection activities at IISU, if the corrections have to be carried out, Party has to depute certified wireman and QC for the same.
6. Party should maintain a separate wiring file for each PCB and should be handed over to IISU along with wired PCBs. All details of operations carried out in the PCBs should be logged in this wiring file.
7. Details of materials used, including shelf life/pot life, batch no. etc to be supplied/entered in the wiring file.
8. Wires, if any to be taken for testing and integration purpose, shall be taken from pads on edges of PCB. Length – up to 50mm, Type – M16878/6 ET Grade 30AWG 7 Strand wire (Preferred Make: Alpha).
9. Reflow soldering is mandatory for all SMD components. Manual soldering is to be done for correction / integration wiring. Soldering to be done with temperature controlled (±3°C) solder iron, with grounded tip. (Preferred Make: Weller)
10. To use flux core eutectic solder (63/37) (Preferred Make: BT Solders) and liquid RMA flux (Preferred Make: Alpha 615).
11. Necessary fixtures (if any required for wiring of PCBs) to be realized by party.
12. Consumables like IPA, flux, solder etc. shall be procured by the party and shall be tested & certified by VSSC or any of the VSSC approved agencies. Certificate to be provided in wiring file.

13. Fabrication of PCB-C need not be carried out by the party. PCB-C will be supplied as FIM. Wiring, QC inspection and integration of PCB-C should be carried out by party.
14. Cleaning to be done after wiring of each PCB and also at end of the day. It shall be always ensured that cleaning is done not later than 8 hours after soldering.
15. Cleaning to be done using EL grade IPA (less than one-year-old) (Preferred Make: Rankem /Merck).
16. 10X inspection under magnifier to be done for all solder joints and higher magnification to be used for specific observations.
17. Maximum upto 10% repair/reworks based on changes in requirements/ unplanned reworks to be accounted for wiring.

4. Component Quality Details:

1. All components used should conform to the standards specified by the part numbers in Bill of Material (BoM) **Annexure 3**.
2. Component procurement should be through authorized suppliers of the manufacturer / directly from manufacturer. Authorisation certificate to be attached along with CoC while sending to IISU.
3. All the passive components preferably from Manufacturer AVX/Kemet/Vishay.
4. All components used should have date code. Components should be less than 3 years old at the time of wiring.
5. If any components used in the project has Minimum Order Quantity (MOQ) requirement/ cost advantage while purchasing higher quantity, such cases shall be indicated in the quotation. Party should prepare a list with each component in BoM against proposed procurement quantity considering MoQ and cost aspects. **This list is to be mandatorily attached along with quotation (Technical Bid).** Excess quantity procured should be supplied to IISU at the end of project with material consumption statement.
6. Minimum of 10% of the BOM components shall be planned as spares and procured additionally. This is to accommodate for minor variations that can occur in the final wiring list. At the end of the project, excess quantity should be supplied to IISU with material consumption statement.
7. In case of non-availability of any components in BoM at the time of realization, party shall consult IISU and use alternate components as per mutual agreement between party and IISU.
8. 10 samples from each type and date code (except processor, Connector) to be supplied in vacuum sealed storage pouches for component level testing/ sample screening at IISU as per requirement. For processor (U1A) 5 samples to be supplied.
9. **Certificate of Conformance (manufacturer/authorized distributor) for all the above components should be supplied to IISU for approval prior to start of wiring.** QC Inspection of components should be carried out by the party at the time of procurement itself. Components with visual deviations should not be accepted.

5. Testing of Wired PCBs:

1. Testing is to be carried out at site of the party. Types of circuits are provided in Annexure 4. Functional Block diagram is given in Annexure 5.

5.1 Testing of PCB-A:

1. Before testing party shall carryout permanent integration between PCB-A and micro-D connector (to be carried out at Party site. IISU will provide connector integration details, wire length, loop requirements, reference photographs). Wires also shall be taken from other interfaces with extra length (length as per requirement of testing) for testing.
2. All test equipment's should be calibrated.
3. Party has to perform passive isolation & continuity measurements and has to power the boards and perform basic electrical measurements. (supply voltage of major ICs, current taken by the board).
4. Following test cases to be executed on PCB-A board: (1) Configure both USART/UART modules for RS485 and communicate with a serial terminal software on the PC (2 Mbps). (2) Configure both SPI peripherals in PCB-A (3) Configure ADCs and DACs and generate/acquire waveforms through ADC/DAC (4) interface testing with PCB-B. Detailed test procedure followed at IISU will be shared with party. Party has to handover softcopy of the all-projects files developed for the board.
5. Required firmware for the above tests to be developed by the party.
6. Party should arrange necessary harness for electrical and interface testing.
7. Party should arrange the necessary USB to serial (USART-RS422/RS485) hardware setup for testing RS485 serial communication with PC.
8. Party should arrange the necessary programming hardware and cabling required for programming of wired PCBs. **Two set of these programming hardware and cabling should be supplied to IISU.**
9. Party has to prepare an Acceptance Test Procedure (ATP) Document: The document shall be discussed mutually and cleared for testing. Test result formats should be based on ATP document.

5.2 Testing of PCB-B and PCB-C:

1. Party has to perform passive isolation & continuity measurements.

6. Integration wiring of PCBs:

Integration activity is to be carried out by party at IISU for first 5 set. Based on the technical maturity further batches to be done at Party's site after IISU approval.

1. Necessary integration between PCB-A and PCB-B has to be carried out by the party. IISU will provide technical details for integration (wire length, loop requirements, reference photographs).
2. For the activities at IISU, Party has to depute qualified wireman and QC for this activity. IISU will provide workspace for the activity. Party shall bring all necessary tools and consumables required for activity.
3. Refer to the wire specification details in PCB wiring section for details of wires to be used for integration.
4. Reference Photographs of Integration is attached as Annexure 6:
5. PCB-C is a small PCB (size:10mm X 10 mm) used to mount TMP117 temperature sensor IC. PCB-C will be provided by IISU as FIM.
6. Tested sensing Unit will be supplied by IISU at the time of wiring.
7. All integration activities to be carried out by the party.
8. Trial suiting in mechanical package is to be carried out at Party site. Mechanical package will be provided by IISU as FIM.

After integration party must bring the integrated PCBs (without sensing unit wiring) to IISU to program actual software.

After fusing the of actual software, Sensing Unit to be wired.

7. Post integration Testing

Post Integration testing carried out by party at IISU for first 5 set. Based on the technical maturity of the party/quality of work, the activity can be moved to party's site after IISU approval.

1. Post integration electrical testing procedure will be provided upon request.
2. The test is to be done at IISU for first 5 sets. Clearance of this test is mandatory.
3. For the activities at IISU, Party has to depute qualified test engineer/technical assistant. IISU will provide workspace for the activity. Party shall arrange all necessary tools/equipments and consumables required for activity.

8. Conformal Coating

1. QC inspection and rework if any has to be done prior to conformal coating.
2. Through cleaning of card is essential and contamination testing is required.
3. Baking as per IISU production procedure is mandatory.
4. Masking of critical areas, mounting holes, connectors and sensing Unit will be required as per production / IISU procedures.
5. RTV arresting will be required as per Production / IISU procedures.
6. Conformal coating material – Silicone (DC-1-2577).
7. Brush coating to be done for PCB-B, C and normal coating for PCB-A.
8. Post conformal coating testing is essential for health verification.

9. Assembly in Mechanical Packaging

Packaging is to be carried out by party at IISU for first 5 set. Based on the technical maturity of the party/quality of work, the activity can be moved to party's site after IISU approval.

Mechanical packaging is to be carried out at Party's site as per the procedures given by IISU. Mechanical package will be provided by IISU as FIM.

1. Detailed instruction will be provided by IISU after Order placement.
2. For the activities at IISU, Party has to depute qualified engineer/technical assistant. IISU will provide workspace for the activity. Party shall arrange all necessary tools and consumables required for activity.
3. Assembly package photograph is attached as Annexure 7.

10. Electrical Burn In Test

1. Burn In test to be done by placing the card (assembled in mechanical package) in a suitable thermal chamber at 60℃for 168 Hrs in powered condition.
2. Card test data to be continuously acquired during this test and report to be prepared.

3. Thermal chamber should have necessary protection features and temperature should be stable within ±2℃ during the test.
4. Temperature of specimens to be logged independently during the test.

11. Inputs to the vendor from IISU:

1. Mechanical Drawing of PCBs with connector layouts.
2. IISU QC approved Gerber files.
3. Bill of Material with specific part types and part nos.
4. Wiring Details for PCBs: PCB-A, PCB-B and PCB-C.
5. Integration detail between PCB-A and PCB-B.
6. Integration detail between PCB-A and PCB-C.
7. Connector Integration details.
8. Sensing Unit wiring details.
9. FIM (Free Issue Material)

SI.No	Material	Cost of FIM in Rs
1	PCB-C(bare PCB)	500
2	Sensing Unit	30000
3	Mechanical Package	20000

12. Deliverables to IISU:

1. Fifty sets of tested Sensors packed in anti-static boxes.
2. Soft copy of all projects files and test results for test programs executed.
3. Wiring files &test reports as specified in ATP.
4. Two set of interface testing harness.
5. Two set of 'PC-USB to DUT (Device Under Test) serial port hardware' setup for acquiring serial data in PC.
6. Two set of programming hardware and cabling.
7. Excess quantity of components and sealed test samples.
8. Photographs of PCBs at all realization stages to be taken and the same supplied to IISU in the wiring file.
9. PCB test reports from manufacturer.
10. CoC of Components.

13. General Instructions

1. Party has to purchase 10% extra components as per BoM for catering to rework requirement if any, component rejection due to QC issues etc. Balance material to be returned to IISU with consumption statement.
2. Party has to plan for up to 10% reworks/modifications for the items supplied in this order.
3. Party should strictly adhere to all ISRO procedures and follow guidelines and instructions provided by IISU to avoid rejections and to realize the product suitable for Launch Vehicle application. These products will be taken up for detailed testing (electrical and environmental) by IISU after acceptance and engineers of party has to be available for technical clarifications even after completion of all deliveries.
4. Item to be delivered in packaging indented for long term storage.

5. Transportation and storage to be done in individual ESD safe boxes.
6. In case of any deviations/observations at any stage of realization/testing stage the same is to be informed to IISU and clearance to be obtained before proceeding further.
7. Minor wiring related issues to be cleared by the party's ISRO certified QC. Same to be recorded in detail in the wiring file and communicated to IISU.
8. Major issues to be reported to IISU and resolution steps as suggested by IISU to be implemented.
9. The item will be accepted after incoming inspection by IISU and audit of the log sheet/process traveler, test results/reports.
10. IISU QA/QC audit formats to be filled up and submitted. All audit related queries should be satisfactorily addressed.
11. All equipment's should have valid calibration at the time of usage and these details should be part of the test report.

14. Payment Terms and Warranty:

1. Payments shall be on pro rata basis of final acceptance of Sensors as per Section 1.
2. Sensors will be subjected to incoming inspection/verification at IISU. All adverse observations are to be rectified. Only fully cleared sensors will be accepted.
3. Total supply to be completed in 9 months after PO placement and receipt of all inputs from IISU as specified in section 11 (Inputs to the vendor from IISU).
4. Sensors under this supply has to be provided with a warranty of 1Year after Final acceptance.

15. Other Terms& Conditions:

1. **Detailed price-break up of each activity in section 1 of this Annexure should be attached along with commercial bid. Unit cost for each item to be provided.**
2. Party should have experience of executing at least three similar projects with IISU/any ISRO centers within last 5 years. **Proof of such experience, that is Purchase order, Invoice & proof of receipt of payment/Completion certificate, is to be attached along with technical bid.** In the absence of this proof, quotation will not be considered.
3. **A financial split-up of locally sourced content (engineering cost& component cost) and imported content to be given.**
4. Party shall use Indian make & locally sourced materials to the maximum extant technically feasible. More than 50% of the overall project cost should be Indian origin.
5. **Party should mandatorily provide a technical compliance matrix (statement) against each of the specifications in this Annexure**. Quotations without technical compliance matrix will not be considered.
6. All details in this indent/contract are confidential and should not be disclosed to third parties (Parties not directly involved in execution of this order). Party has to enter into a Non-Disclosure Agreement for the purpose.
7. Technical clarifications -Contact Persons: DDH, ASED (Phone: 0471-2569304)

Annexure 2: TECHNICAL SPECIFICATIONS of PCB

1. Name of the PCB : PCB A: CRG_D_V0_A
   PCB B: CRG_D_V1_B
2. QC NO. : PCB A: ISQC-F[D]-811-0-23
   PCB B: ISQC-F[R]-834-1-23

Sl.No		PCB A	PCB B
1	No of Layers	8	6
2	PCB Thickness	1.6mm	1.6mm
3	Dimension	Circle R25 Converted into curved square (20mm×20mm)	36mm×30mm

3. Dielectric layer thickness : 0.15 mm (minimum)
4. Base Cu (Outer layers) : 1/2 Oz/sq. ft
5. Base Cu (Inner layers) : 1 Oz/sq. ft
6. PCB Material : 370 HR/ FR4
7. Quantity required : PCB A (50No.s) PCB B (50 No.s)
8. PCB manufacturer : Any IISU/ISRO Qualified PCB manufacturers
9. Surface finish : HASL,Sn 63%,Pb 37%
10. Solder Masking is required on both sides
11. PCB have micro vias (0.35mm dia) used as Via-in-pad. Via hole plugging and Cap plating are required.
12. Line width/spacing : > 5 mil/5 mil
13. Buried vias are not used in PCB. HDI interconnects not used in PCB.
14. Silkscreen printing not required.
15. Controlled impedance not required.
16. Maximum number of PCBs to be accommodated in a single panel for cost advantage.
17. Bare Board Testing (BBT) to be done and certified.
18. Visual inspection of exposed layers (100%).
19. Contamination test (before solder masking) to be carried out and report to be attached. Certificate of Conformance to be provided.
20. Mechanical measurements report, PCB visual inspection report to be attached.
21. Two sets of ISRO test coupons (diagonally opposite) to be added for each panel. Tests as per ISRO-PAX-304 Rev1 (including micro sectioning) to be done on one of the test coupons and report to be submitted. Third party micro sectioning report to be submitted as applicable.
22. All other technical specifications, tests and test reports shall be as per the standards agreed upon between IISU/ISRO .

Annexure 3: Bill of Materials: Digital iCRG -PCB A

ITEM	REFERENCE	QUANTITY	Value	Manufacturer Part Number	PACKAGE
1.	C1,C3,C5,C6,C7,C8,C9,C10,C11,C12,C13, C14,C15,C16,C17,C18,C19,C20,C22,C23, C24,C28,C29,C34,C35,C40,C41,C44,C47, C50,C53,C55,C57,C60,C62,C63	36	100nF/50V	LD035C104KAB2A	0603 (1608metric)
2.	C2	1	2.2uF/25V	LD053C225KAB2A	0805(2012 metric)
3.	C21	1	10pF/50V	LD035A100JAB2A	0603 (1608metric)
4.	C4,C25,C26,C31,C32,C37,C38,C52,C54, C56,C59	11	10uF/25V	CGA4J1X7S1E106K125AC	0805(2012 metric)
5.	C27,C30,C33,C36,C39,C42,C43,C46,C49, C58,C61	11	1uF/25V	CGA3E1X7R1E105K080AC	0603 (1608metric)
6.	C45,C48,C51	3	220nF/50V	CGA3E1X7R1E224K080AC	0603 (1608metric)
7.	D1	1	SD103BW	SD103BW-HE3-18	SOD-123
8.	L1,L2,L3,L4,L5	5	470 Ohm	BLM18KG471BH1D	
9.	R1,R4,R5,R9,R23,R24	6	10K	M55342K12B10E0R	0603 (1608 metric)
10.	R2	1	33E	M55342K12B33D0R	0603 (1608 Metric)
11.	R3,R6,R8,R10	4	1K	M55342K12B1E00R	0603 (1608 Metric)
12.	R7	1	5.62K	M55342K07B5E62R	1206 (3216 Metric)
13.	R11, R15	2	10K/DNP	M55342K12B10E0R	0603 (1608 metric)
14.	R12,R14,R16,R18	4	10E	M55342K07B10D0R	1206 (3216 Metric)
15.	R13,R17	2	121E	M55342K07B121DR	1206 (3216 Metric)
16.	R19,R20,R21,R22	4	0E	M32159B12MWB	0603 (1608 Metric)
17.	R25,R26	2	100K	M55342K12B100ER	0603 (1608 Metric)
18.	R30,R31,R32	3	4.7K/0.1W	M55342K12B4E70R	0603 (1608 Metric)
19.	U1A	1	SAMV71Q21B-AAB	ATSAMV71Q21B-AAB	144-LQFP
20.	U2	3	12 MHz CRY.OSC	MC3225Z12.0000C19XSH	SMT-MC-Z Series
21.	U3,U20,U19	2	TMP117AIDRVT	TMP117AIDRVT	WSON(6)
22.	U5 , U6	2	LTC2862AMPS8	LTC2862AMPS8-1#PBF	S8 Package
23.	U7 ,U8	3	TPS7A4701	TPS7A4701RGWR	VQFN

24.	U13,U14	2	ADS8355	ADS8355IRTER	WQFN(16)
25.	U16,U17	2	DAC80502	DAC80502DRXT	WSON
26.	Connector	1	15 Pin Micro D	MDA215PFSB/ MDC-ALPN15P-B	
27.	Mating Connector	1	15 pin Micro-D Female	MDA215SFSB/ MDC-ALPN15S-B	
28.	Capacitor	1	0.047uf/100V	C0603T473JAT2A	0603

Bill of Materials: Digital iCRG -PCB B

ITEM	REFERENCE	QUANTITY	VALUE	Manufacturer Part Number	PACKAGE
1	C62	1	100nF/50V	LD035C104KAB2A	0603 (1608metric)
2	C63,C64,C65,C70	4	1nF/50V	LD035C102JAB2A	0603 (1608 metric)
3	C66,C69	2	TBD		0603 (1608 metric)
4	C67,C68	2	4.7nF/50V	LD035C472KAB2A	0603 (1608 metric)
5	L6	1	470 Ohm	BLM18KG471BH1D	0603 (1608 Metric)
6	R27	1	12K	M55342K12B12E0R	0603 (1608 Metric)
7	R28,R33	2	49.9E	M55342K07B49D9R	1206 (3216 Metric)
8	R29,R32	2	0E	M32159B12MWB	0603 (1608 Metric)
9	R30,R31	2	SEL		0603 (1608 Metric)
10	R34	1	100K	M55342K12B100ER	0603 (1608 Metric)
11	R35	1	240E	M55342K07B240DR	1206 (3216 Metric)
12	R36,R41	2	0E/DNP	M32159B12MWB	0603 (1608 Metric)
13	R37,R38,R39,R40	4	750E	M55342K12B750DR	0603 (1608 Metric)
14	R42	1	5K	M55342K12B5E00R	0603 (1608 Metric)
15	U9,U10	2	OPA2211 EP	OPA2211AIDRGT	PWSON-8
16	U11,U12	2	OPA2376	OPA2376AIDGKRG4	VSSOP8

Annexure 4 : Type of Circuits in the PCBs

PCB A (Processor Card)

- SAMV71processor& associated Circuits
- Reset & clock Circuit for processor.
- ADC & DAC Circuit for Digital & Analog Conversion
- LDO Circuit- TPS7A4701 for 3.3V (Digital) and 5V (Analog)
- RS 485 Interface Circuit

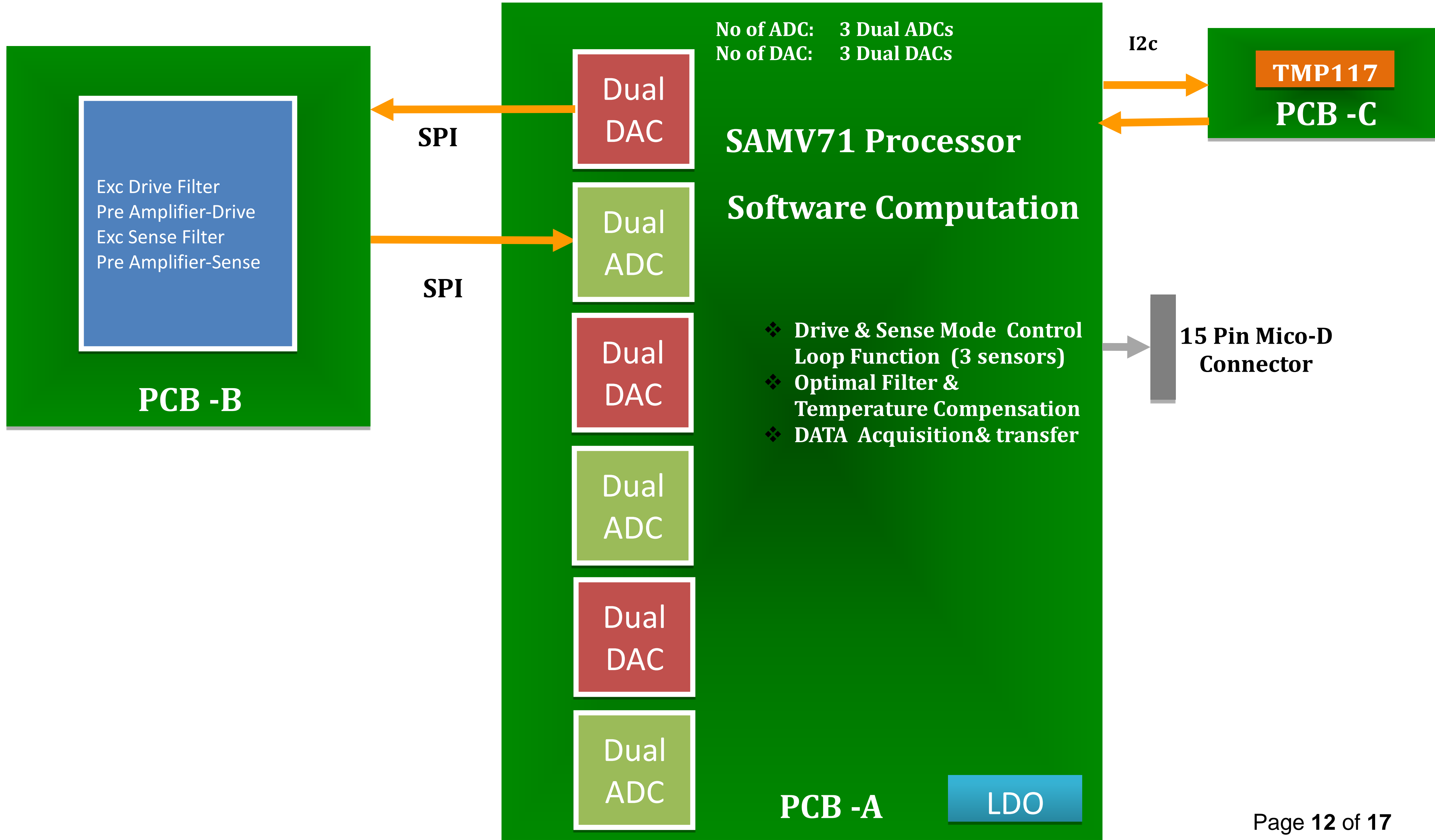
PCB B (Sensor Card)

- Amplifier Circuits
- Filter Circuit for smoothening of Sampled sinewave from DAC
- Buffer circuit for Reference
- Sensor will be directly wired on PCB

PCB-C (Temperature sensor card)

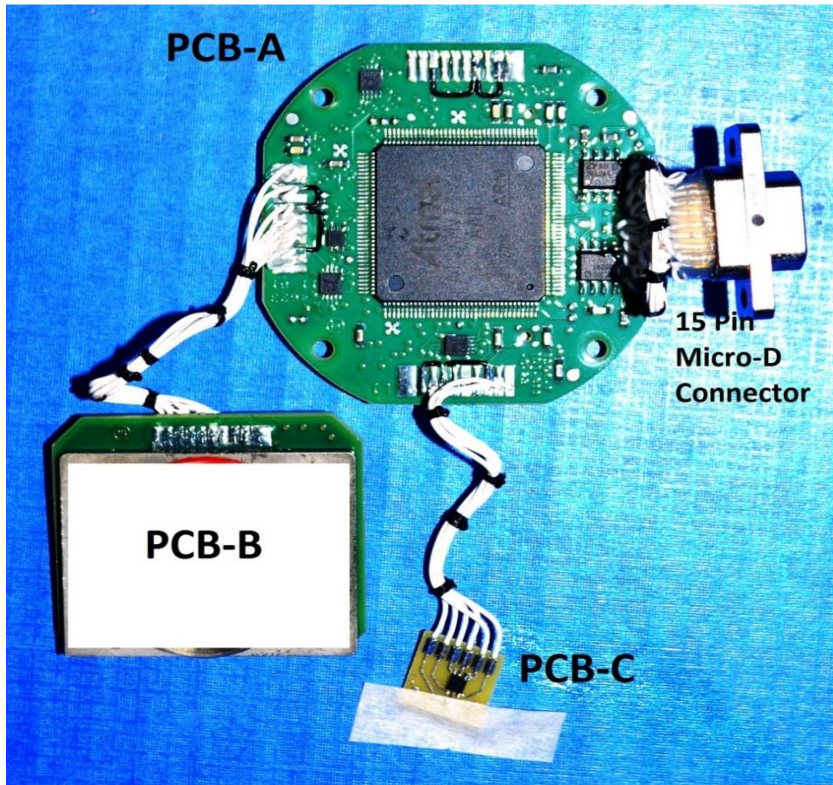
- I^2C temperature sensor
- Card will be provided as FIM (Details provided in Annexure 1)

Annexure 5: Functional Block Diagram-Digital iCRG



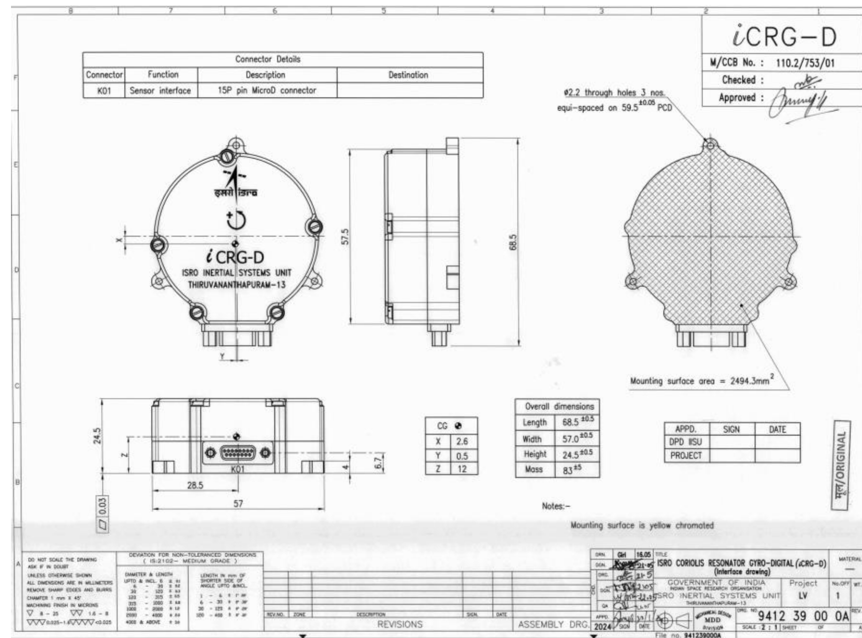
Annexure 6: Reference Photographs of Integration

Top Layer



Bottom Layer

Annexure-7: Mechanical Assembly



Annexure-8: Workflow of activities

Sl No.	Activity	Responsibility	Site of activity
1	Firm PO Placement	IISU	--
2	Party Receives all fabrication, FIM and other inputs from IISU (including PCB-C)	IISU	--
3	Fabrication of PCB-A and PCB-B by party	Party	--
4	Component Procurement	Party	--
5	Clearance of PCB and components by IISU (PCB test reports, Components CoCetc. will be Audited)	IISU	--
6	Wiring of PCBs	Party	Party
7	QC Inspection of wired PCBs at IISU	Party	Party
8	Testing of PCBs (all PCBs)	Party	Party
9	Delivery of all PCBs with test reports	Party	--
10	QC inspection prior to integration	Party	Party
11	Integration of PCBs at IISU: PCB-A to PCB-B, PCB-A to PCB-C, Sensor Wiring on PCB-B, Connector wiring on PCB-A.	Party	Party
12	Trial Suiting in mechanical package	Party	Party
13	QC Inspection of PCBs after integration	Party	Party
14	Integrated testing of Electronics	Party	Party
15	Test Results Verification and Retest if required	IISU & Party	Party

16	Conformal Coating	Party	Party
17	Electrical testing and QC inspection for Acceptance of the Card	Party	Party
18	Assembly of card in mechanical package	Party	Party
19	Electrical Burn In Test	Party	Party
20	Final Delivery and Acceptance	Party	IISU

Note:

Activity Serial No11,12,14,17,18 is to be carried out by party at IISU Site for first 5 Nos. Party shall depute the necessary workforce including wireman, QC inspector, Test Engineer for doing the activity done at IISU. Based on the technical maturity of the party, the activity can be moved to party’s site.