Description of items	Quantity
PUR/25/URASG/PK/L/2024-25	
CUSTOMIZED MULTI-BEAM LONG ENDURANCE FORWARD LOOKING SONAR BASED SYSTEM FOR DYNAMIC OBSTACLE DETECTION WITH AN UNDERWATER ROBOT INCLUDING- a) IMAGING SONAR b) LONG ENDURANCE BATTERY MODULE c) PROCESSING MODULE FOR IMAGING BASED OBSTACLE DETECTION Details as per attached annexure-'A'	1 No.

1. **DELIVERY:**

   The delivery is to be completed within 21 days from the date of issue of Purchase Order.

2. **PAYMENT TERMS:**

   100% payment shall be paid within 30 days after delivery of Customized multi-beam long endurance forward looking sonar based system for dynamic obstacle detection with an underwater robot and acceptance of the material upon submission of claim supported by the acceptance certificate issued by the purchaser.

3. **WARRANTY:**

   06 (One) months or more for instruments On-site warranty will be provided by the supplier form the date of satisfactory installation of ordered goods.
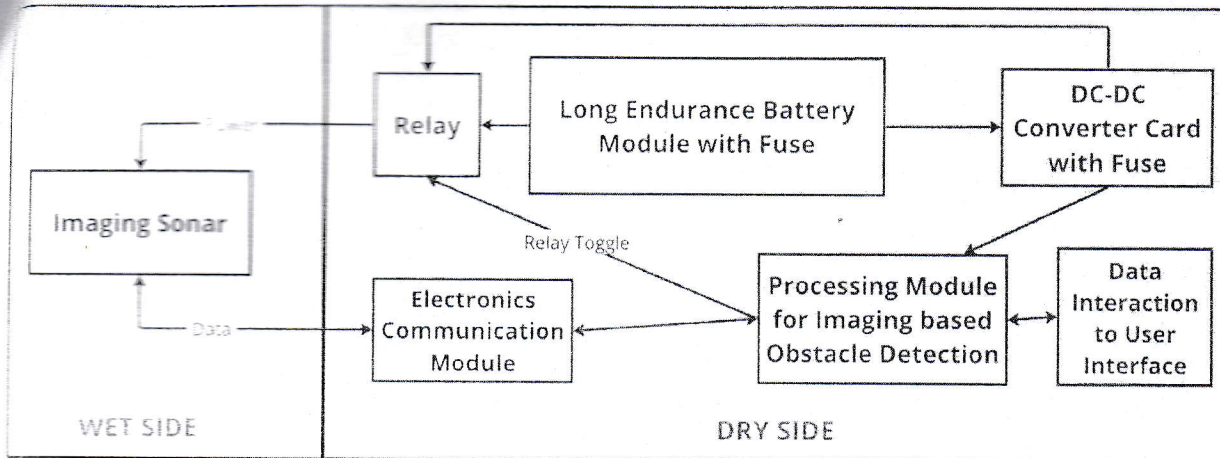
4. **MANUFACTURER AUTHORISATION FORM:**

   Manufacturer Authorisation Form will be provided by the supplier.

5. **MAKE IN INDIA CERTIFICATE FOR LOCAL CONTENT**

   Certificate for local content to be provided by the supplier in form 14 (Format attached along with Tender Document). Percentage of value addition & Name and address of the factory where the value addition was made should be mentioned clearly in the Form 14.

Annexure

Supply of Customized Multi-Beam Long Endurance Forward Looking Sonar based System for Dynamic Obstacle Detection with an Underwater Robot as per design. Specifications of the Modules in the Design:

1. Imaging Sonar

Parameter	Value
Operating Depth	200 m or more
Frequency	200 kHz - 1000 kHz
Minimum Range	4 m or lesser
Maximum Range	50 m or more
Ping Rate	More than 10 Hz
Scan Range (Sector)	75° or more
Vertical Beam Width (Transmit)	20° or more
Data Interface	Ethernet / Serial
Power Input	12-24V DC

2. Battery Module for Long Endurance Imaging

Battery Pack Voltage (VDC)	14.8 VDC
Per Pack Capacity (AH)	16.8 AH
Total Battery Capacity (AH)	33.6 AH

Note: As shown in design, the battery module should power all the electronic modules. Necessary Fuses and DC-DC converters should be provided.

3. Processing Module for Imaging based Obstacle Detection

The processing module should trigger the sonar for imaging (on Wet Side) and subsequently through a relay module for saving sonar from continuous powering. Through the electronics interface cards / module the sonar data should then be fetched by the Processing Module. The image should be processed for obstacle detection. This should be available to User Interface Module on Dry Side.

Specification of Processing Module:

CPU / GPU	64-bit CPU / 1024 CUDA Cores and 32 tensor cores
Memory	8GB 128-bit LPDDR5 68GB/s
Storage	SD card / external NVMe
Video Decode	H.265
USB	USB
Networking	Ethernet
Display	DP / HDMI
Ports / Modules	UART, SPI, I2S, I2C, GPIO, microSD