

TECHNICAL SPECIFICATIONS OF DISPLAY UNIT			
SI No.	Parameter	Specification	Response from supplier
1	Flat Panel Display Type	8.4" / 10.4", TFT LCD Display, XGA Resolution	
2	Backlight	LED (Automatic Backlight Control)	
3	Brightness	High Brightness For Sun Readability	
4	Contrast Ratio	400:1-min	
5	Viewing Angle	Horizontal -80° TO +80° Vertical -60° TO +80°	
6	System Processor	Intel Processor- Conduction Cooled With Graphics Chipset Or Arm Based Processor / Equivalent	
7	System Memory	Minimum 4gb (Ddr Ram) Minimum 40 Gb Ssd Flash Device Along With 1tb Sata Hard Disk	
8	System I/O	Can 2.0b, Ethernet, Usb 2.0, Sd-Card Socket Serial Interface Rs232/ Rs422/ Rs485	
9	Touch Screen	Required (Resistive/Capacitive)	
10	Power Supply	18V TO 32V DC	
11	Environmental	Operating Temp: -20°C TO +70°C Storage Temp: -40°C TO +80°C	
12	Software Support	WINDOWS EMBEDDED / WINDOWS 10 / LINUX / QNX BSP Drivers For Touch Screens And Hard Buttons	
13	External Memory and Digital Interface	Integrated Hard Drive and Isolated Digital I/O	
14	Power Connector	D38999/ 20WC4PN D38999/ 26WC4PN (Mating)	
15	Enclosure	Rugged Aluminium Enclosure and EMI Filters and Gaskets	
16	Hard Buttons	Buttons To Be Provided In Left And Right To Access the Different Pages In The Display and Adjustments	
17	Hard Switches for Vehicle Control	8 Nos. (Rugged) - min	
18	Master Key Switch (MKS) for Powering ON the complete Electrical System	3-Position Rotary 0-I-II, Rated at 24V	

19	Pre-Glow pushbuttonPush-button (momentary)	Push-button (momentary)	
20	Engine Stop pushbutton	ON/OFF push button rated at 28V	
21	Emergency Start switch	ON/OFF Momentary toggle rated at 28V	
22	Start-Lock–Transmission Switch	ON/OFF toggle, rated at 28V	
23	Fording switch	ON/OFF toggle, rated at 28V	
24	APU ON switch	ON/OFF toggle, rated at 28	
25	Transmission override switch	ON/OFF toggle, rated at 28V	
26	Spare	ON-OFF-ON toggle, rated at 28V	
27	Video inputs	VGA Interface- D38999 connector	
28	Controls	Display control serial link Push button switches for manual interface. Circuit breaker at power input side Key status indicators.	
29	Connectors	Mil grade for power and signals. (38999 series)	
30	Coolant low Indication	LED Indicator (constant) - RED	
31	Coolant Flow Failure Indication	LED Indicator (constant) - RED	
32	NBC Attack Indication	LED Indicator (constant) - RED	
33	Transmission Override condition	LED Indicator (constant) - RED	
34	Transmission oil temperature	LED Indicator (constant) - RED	
35	Lockup Activation/Torque converter	LED Indicator (constant) - RED , GREEN BI COLOR	
36	Engine off indication	LED Indicator (constant) - YELLOW	
37	Throttle position actuator failure indication	LED Indicator (constant) - RED	

38	Stand by indication	LED Indicator (constant) - RED	
39	Spare	LED Indicator (constant) - RED	
40	Spare	LED Indicator (constant) - RED	
41	Unit Dimensions	400mm (W) x 250 mm (H) x 130 mm (without shock mounts, connector, key protrusion)	
42	Weight	not exceeding 15kgs	
43	Circuit Breaker for Power	As required by the circuits	
44	The Functions Of The Instrument Panel (IP)	Refer drawing for details	
45	Connector Specification	Refer drawing for details i) CAN Connector ii) Ethernet Connector iii) 20A Power Connector iv) USB Connector v) Connectors on the Module	
19	Testing And Validation	Supplier to test electrical components for compliance to the following, and provide compliance evidence from testing to Ricardo & BEML:	
		1. Mil-STD-461G (EMC/EMI)	
		2. Mil-STD-1275E (Electrical supply)	
		3. Environmental test requirements, as defined in DCS.0022.3	
		i. JSS 55555:2012 Rev3,L2J and L3 class.	
		ii. Mil-STD-2164: Environmental stress screening.	
		4. Any other validation testing as necessary to ensure durability and performance in the vehicle application	
		5. Supplier is responsible for defining this validation plan	
		6. Supplier is responsible for defining any validation testing, data, and hardware requirements from the vehicle integration activities to support the In-vehicle validation.	

20	Scope of Supply	1. Support for installation, commissioning, etc	
21	General Requirements	a) Development of complete application software as per BEML /RFQ requirements.	
		b) Development of graphical front end/screens/interface as per BEML requirements.	
		c) Compliance of requirements mentioned in the RFQ document and drawing.	
		d) Input & output analog and digital channels.	
		e) The Display and its controls should work in harsh environmental conditions.	
		f) The electronic controls are to be with latest Electronic Technology & Tools systems / components.	
		g) Training programs for R&D engineers to comprehensively transfer knowledge required for operating and maintaining the system needs to be offered by the firm along with additional training programs.	
		h) Spare parts and support should be guaranteed for a minimum period of 30 years beyond the warranty period for which, replacements compatible with offered system should be available.	
22	Documentation	Supplier to provide the following documentation	
		1. Technical specification of Display unit	
		2. Manuals (hardware and software systems):	
		-operational and maintenance	
		-service and troubleshooting	
		-installation	
		3. GA (general assembly) drawing both 2D and 3D of the complete assembly with dimensions and installation requirements	
		4. Acceptance test procedure (ATP) and acceptance test criteria (ATC) of the supplied parts	
		5. Performance and durability test certificates of supplied parts.	
		6. Report of design validation plan (DVP) tests carried out additionally (if any).	
		7. Details of warranty practices and services in after sales, number of years for which spares and service support offered to customers.	
		8. Certificates of compliance and test reports of Display unit to the electrical, EMC/EMI and environmental and robustness standards specified in the technical specification.	

23	General Requirements	1. Should have been a supplier of Display unit to global OEM's for defence application	
		2. Should have experience in working with defence machinery oem's in design, development and manufacture of Display unit for defence vehicles	
		3. The proposed Display unit should have worked on defence vehicles on a global basis satisfactorily for more than three years as on the date of submission of quotation.	
		4. The manufacturer has to extend full support and cooperation during design, at all stages of equipment build up, in-house testing & field trials along with training, documentation support etc.	
		6. Willingness to work jointly with design team from beryl and Ricardo for design, development and optimization of at customer site	
		7. Product Customisation to meet the requirement if any.	
		8. List of Development & Tooling required if any.	
24	Other General Guidelines	The firm should submit a detailed technical proposal comprising the following additional points wherever applicable:	
		a) Development approach for the activities mentioned in scope of work	
		b) Willingness letter for supplying of parts for 21 sets batch and serial production for minimum of 30 years	
		c) Any other relevant information considered necessary for successful implementation of the proposed scope of work	