



Government of Goa
Directorate of Mines and Geology
Ground Floor of Institute Menezes Braganza,
Panaji-Goa.

Minimum Specifications for the GPS/GPRS Hardware Device that will be mounted on Barge/Truck involved in transportation of Ore

The monitoring of the trucks/barges will be carried out from the VTS link on official portal of the Directorate of Mines & Geology (<http://www.goadmng.gov.in>)

Key Features

- Small size for quick and easy installation
- IP65 Compliant
- Attention Alert
- Built-in Motion Sensor for movement
- Built-in Quad band modem and GPS with internal antennas
- Event Memory: ~5K full time stamped events
- GPRS / SMS communication types
- Geo-Fence management
- Online event-driven reporting
- OTA configurable, OTA upgradable
- Operational Temperature: -30°C to +70°C full performance -40°C to +85°C -degraded communication
- Current in sleep mode: as low as 2mA
- Certifications: CE (R&TTE, EMC, Safety), FCC EMC, IC EMC, E-Mark, PTCRB
- Primary Device data to transmit to the platform after complying with all formalities of DMG.

Technical Specifications	
Description	Barge/Truck Mounted Hardware Unit
GSM Modes	GPRS class 10, PDU SMS
Bands	Quad band: 850, 950, 1800,1900MHz
Power output	2W, 1W
SIM	Internal, replaceable
Antenna	Internal, quad band GSM antenna
Packet data	TCP/IP, UDP/IP
SMS	PDU
GPS	
Technology	Chipset: SiRF StarIV
Sensitivity (tracking)	-163dBm
Acquisition (normal)	Cold <35Sec, Warm<35Sec, Hot<1Sec
Antenna (GPS/GPRS)	Internal
Inputs & Outputs	
Inputs and Outputs	1 internally pulled down input, dedicated for Ignition switch. 2 internally pulled up general purpose inputs with assignable functionality and configurable polarity 2 general purpose open drain outputs (250mA max) with assignable functionality
Interfaces	
COM (TTL/RS232) port	Selectable baud rate (9600 or 115000bps) TTL supports (Transparent mode) for external serial communication 8 bit; 1 Stop Bit; No Parity Configuration Firmware upgrade
Connectors	10pin Molex, Automotive
Power	
Input voltage	9-32 VDC
Average Current consumption	Normal: 40mA, Economic: 23mA, Hibernation: <2mA
Internal Battery	Li-Ion Polymer, 3.7V, 440mAh,rechargeable Embedded NTC for temperature controlled charging Operating Temperature: -18 (65%charge) to 60°C
Vehicle environment immunity	
Immunity	Compliant with ISO 11452 and 7637 (in accordance with UN ECE-R10 E-Mark directive)
Environment	
Temperature operating	-30°C to +70°C full performance
Temperature storage	(-40°C to +85°C)
Humidity	95% non condensing
Protection	IP 65
Vibration, Impact	ISO 16750
Mounting	Marine and Mining Compliant

Certifications	
FCC	Part 15 Subpart B, part 22/24 compliant
CE	CE EMC & R&TTE according to 89/336/EEC or 1999/5/EC CE Safety EN60950-1:2006+A11:2009 Automotive Directive 2004/104/EC (E-Mark)
IC	Industrial Canada
E-Mark	UN ECE-R10 directive
PTCRB	TRP, TIS, Spurious and harmonics emission
Additional requirements for the Project	
Corrosion Proof	Yes
Cables and Wires for installations	Should be Marine compliant
Health Check	Events of battery power (both Internal and External Battery Health)
Protocol Documents, Configuration Tools and Support	To be provided by Vendor along with a sample device for testing and integration purposes before adopting this device for the Iron Ore transportation Project.
Proven Device	Test reports of field reports shall be provided
Implementation	Should have worked in Marine Projects and Mining Projects
Evaluation Reports	Functional Test reports of the product working in Goan Environment
Cellular Parameter tests	Basement Tests, Forest Foliage Tests, Defence Area Jamming Tests,
Multi Engine Tests	Data to provide Engine operations for two Engines of Barge

The communication protocol with the server will be shared with the vendor after the sample device has been tested for meeting the requirements.

After the integration is carried out the details of the truck/barge should be visible on the VTS link on the DMG website for monitoring.