

## Standard Operating Procedure (SOP)

### Procurement and Installation of GPS based VTS Device by Vehicle Owners from Suggested Vendors/Integrators

#### a) Objective

This SOP defines the process for vehicle owners to procure and install AIS-140 compliant Vehicle Tracking System (VTS) devices from Suggested Vendors/Integrators to ensure compliance with Department of Rajasthan Mines guidelines.

#### b) Scope

Applicable to:

- Vehicle Owners / Fleet Operators mandated to install VTS devices.
- Suggested Vendors/Integrators by Rajasthan Mines.
- Installation Centers approved by Vendors/Integrators and verified by Rajasthan Mines.

#### c) Roles and Responsibilities

Stakeholder	Responsibilities
Vehicle Owner	Select vendor/integrator, make payment, present vehicle for installation, ensure compliance.
Suggested Vendor/integrator	Supply certified device, install, configure, and integrate with the monitoring system.
Rajasthan Mines	Publish vendor/integrator list, verify compliance post-installation, maintain central VTS database.

#### d) Process Workflow

Steps	Activities
Step-1	Access Suggested Vendor/integrator List <i>Vehicle owner visits the Rajasthan-Mines portal and downloads/view list.</i>
Step-2	Vendor/integrator Selection and Order Placement <i>Contact chosen vendor/integrator, confirm order, and make payment.</i>
Step-3	Device Allocation and Appointment Scheduling <i>Vendor/integrator assigns device serial number and installation slot</i>
Step-4	Installation and Configuration <i>Install device, configure SIM and platform integration.</i>
Step-5	Data Integration and Compliance Update <i>Vendor/integrator updates details in Raj-Mines' VTS portal and generates Installation Certificate.</i>
Step-6	Completion and Documentation <i>Vehicle owner receives installation certificate, warranty, user manual.</i>

#### e) Service Level Agreement (SLA)

- Device Installation Time : Within 3 working days of order confirmation.
- Device Replacement : Within 48 hours in case of failure under warranty.
- Technical Support : 24x7 helpline for connectivity and functional issues.

#### f) Compliance and Penalty

- Non-installation within stipulated time may attract penalty as per Rajasthan-Mines.
- Vendor/integrator must maintain device uptime  $\geq 99\%$  and ensure data transmission to the central system.
- Failure to comply may result in vendor/integrator delisting.

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g) Documentation Checklist

- Proof of Payment.
- AIS-140 Compliance Certificate for the device.
- Installation Certificate issued by the vendor/integrator.
- Owner's KYC (if required by regulation).

h) Annexure

- Annexure 1: Installation Checklist
- Annexure 2: Payment Receipt Template
- Annexure 3: Installation Certificate Template
- Annexure 4: VTS Device Technical Specifications
- Annexure 5: AMC and Support Details

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निदेशालय खान एवं भू-विज्ञान विभाग  
राजस्थान, उदयपुर

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**Annexure 1  
Installation Checklist**

Vehicle Owner Name	
Vehicle Registration Number	
Device IMEI Number	
Date of Installation	
GPS Signal Tested (Yes/No)	
SIM Activated (Yes/No)	

**Annexure 2  
Payment Receipt**

Receipt No	:	_____
Date	:	_____
Received from	:	_____
Amount Paid	:	₹ _____
Mode of Payment	:	_____
For VTS Device IMEI No	:	_____
Vendor/integrator Name & Signature	:	_____

**Annexure 2  
Installation Certificate**

This is to certify that the VTS Device with the following details has been successfully installed:

Vehicle Registration Number	:	_____
Device IMEI Number	:	_____
Date of Installation	:	_____
Installed By	:	_____
Vendor/integrator Authorized Signatory	:	_____
Seal & Stamp		

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*(Handwritten signatures)*

Annexure 4  
AIS 140 GPS based VTS Device Technical Specifications

1) Device Specifications

a) GNSS (GPS) Module

Satellite Support: GPS, GLONASS/BDS, Galileo, and IRNSS (NavIC recommended) for Real Time Tracking

Position Accuracy:  $\leq 2.5$  meters CEP

Cold Start:  $\leq 35$  seconds

Hot Start:  $\leq 1$  second

Antenna: Internal or External GNSS Antenna

b) GSM / LTE Connectivity

Network Support: 4G LTE fallback 2G

GSM Bands: 850/900/1800/1900 MHz

SIM Type: eSIM / Nano SIM / Micro SIM

GPRS Class: Class 12 or higher

Data Transmission: TCP/IP, SMS fallback

c) Processor & Memory

Processor: ARM Cortex / Equivalent high-performance MCU

RAM: Minimum 512 KB

Flash Memory: Minimum 4 MB (for logs & event storage) Minimum 40000 Location Record or 4 hours of data when GSM/GPRS is unavailable. Auto-upload on network restoration.

d) Digital / Analog Inputs & Communication Interface

Minimum 4 Digital Inputs (e.g. ignition, door, panic button), 2 Digital Outputs, and 2 Analog Inputs.

RS232 / RS485 / USB interface for configuration and integration.

e) Power Supply

Operating Voltage: 9V – 36V DC

Power Consumption:  $< 2W$  (normal operation)

Backup Battery: Minimum 4-hour operation during power failure

Protections: Reverse polarity, overvoltage, and short circuit

Operating Temperature:  $-20^{\circ}C$  to  $+70^{\circ}C$

f) Enclosure & Indicators

Enclosure : Rugged enclosure with minimum IP65/IP66 protection (dust and water resistant).

Tamper-proof design with sealable mounting and provision for secure installation inside the vehicle.

Indicators : LED indicators for GPS, GSM, and Power status.

2) Software & Functionality

a) Data Logging & Storage

Min. Transmission Frequency: Position data update at least every 10 seconds during vehicle movement and 60 seconds when idle.

b) Security & Compliance

Data Encryption: TLS/SSL

Authentication: Device IMEI-based authentication for secure communication

Firmware Upgrade: OTA (Over-The-Air) updates supported

c) Geo-Fencing & Alerts

Geo-Fencing: Configurable multiple geofences

Alert Types: Speeding, tampering, power disconnection, SOS, route deviation, SIM Removal or casing open events with corresponding alerts.

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**d) Server Communication & Software Integration**

Support AIS 140 protocol for real-time data transmission

Device must be configurable to communicate with both Central Command & Control Server (Transport Department) and the Vendor/integrator's Application Server.

Packet Format: Compatible with standard APIs REST/JSON/XML format for integration or as final during implementation.

**3) Certifications & Legal Compliance in India**

- AIS 140 Certification: By ICAT / ARAI / BIS / Other Govt. Labs  
WPC Approval: For wireless communication (GSM/GPRS/LTE)
- IP Rating: IP65/IP66/IP67 for rugged, outdoor use
- Device shall comply with AIS 140 environmental and EMC/EMI standards.
- Warranty: Minimum 3 years onsite warranty including replacement in case of hardware failure.

**4) Accessories & Installation**

- Accessories: All required cables, mounting brackets, SIM slots, and panic buttons must be provided.
- Installation: Installation shall be carried out by authorized technicians ensuring compliance with transport department norms.

**Annexure 5  
AMC & Support Details**

Vendor/integrator shall provide the following AMC and support services:

1) AMC Duration: \_\_\_\_\_ years (From \_\_\_\_\_ To \_\_\_\_\_)

2) Support Availability: 24x7 / Business Hours

3) Response Time: \_\_\_\_\_ hours

4) Contact Details for Support:

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

5) Escalation Matrix:

Level 1: \_\_\_\_\_

Level 2: \_\_\_\_\_

Level 3: \_\_\_\_\_

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राजस्थान, उदयपुर

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उदयपुर सफ्ट, उदयपुर

  
