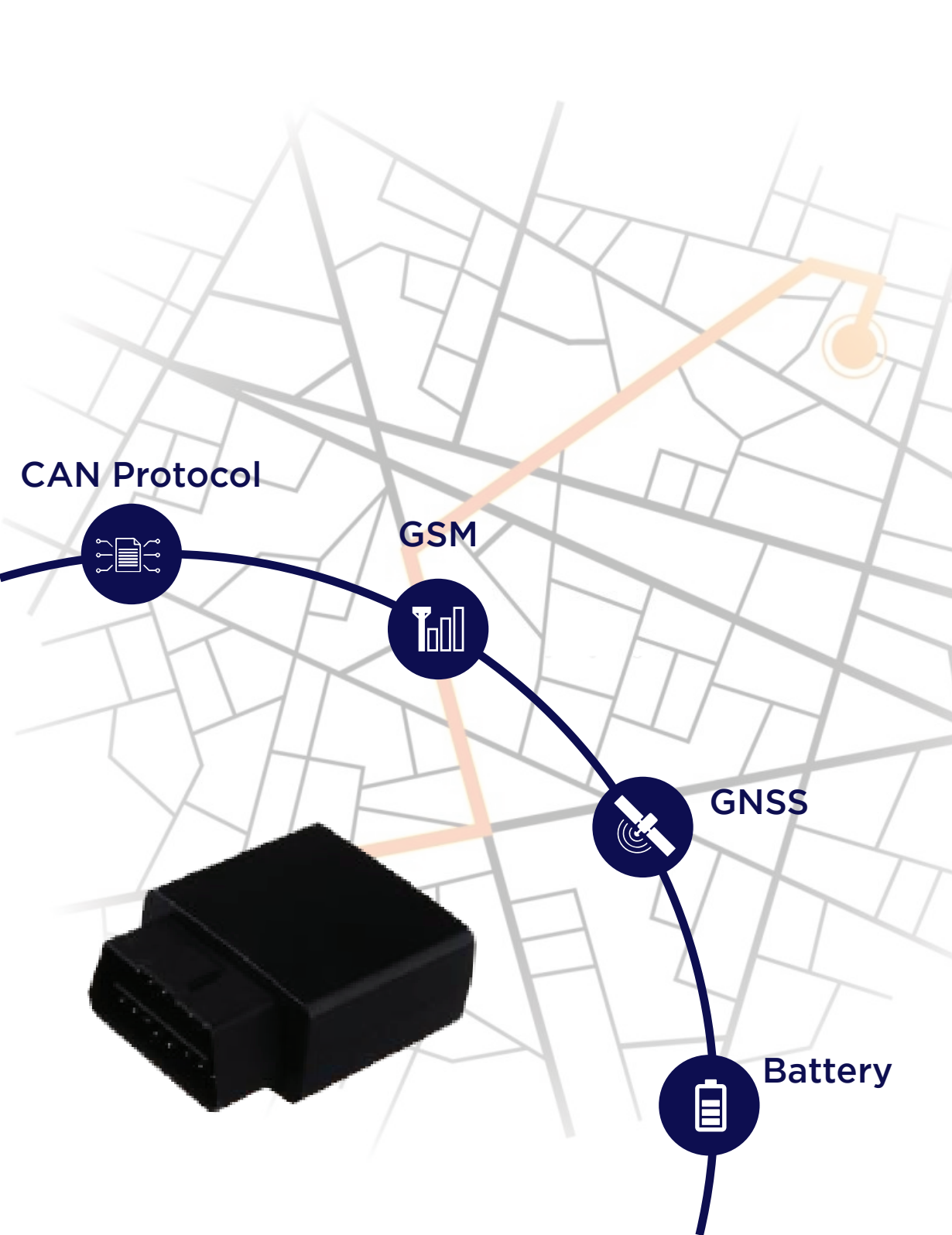


# 0-400 VEHICLE TRACKING DEVICE TECHNICAL MANUAL



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# 1. Introduction

O400 is a smart OBD diagnostics & asset tracking device which has a high efficiency LTE module with GSM fallback and GNSS built-In. Configuration is available over USB, SMS and BLE. This device supports all the major OBD protocols including the Heavy duty SAE J1939 protocol. The device also contains a built-In battery and optional BLE and Wi-Fi.

# 2. Acronyms & Definitions

GPS	Global Positioning System
GSM	Global System For Mobile Communication
GPRS	General Packet Radio Service
I/O	Input / Output
AI	Analog Input
DI	Digital Input
DO	Digital Output
OBD	On-Board Diagnostic

## 3. Technical Specification

### 3.1 Navigation

GNSS	GPS/ GLONASS/ QZSS/ SBAS
Channels	99 Tracking / 33 Acquisition Channel
Sensitivity	-163dBm
Hot Start	< 1sec
Warm Start	< 32sec
Cold Start	< 33sec

### 3.2 Cellular Network

Band	<b>LTE:</b> B1/ B2/ B3/ B4/ B5/ B8/ B12/ B13/ B18/ B19/ B20/ B25/ B26/ B27/ B28/ B66/ B71/ B85 <b>GSM:</b> B2/B3/B5/B8
RF Power	Class 4(2W@ 850/900MHz/Class 1 (1W@1800/1900MHz)
Data	GPRS : Multislot class, 12 Coding scheme CS1,2,3,4
Communication Protocol	TCP/ IP/ UDP/ FTP/ HTTP

### 3.3 Power

Working Voltage	8-36V DC
Battery	350mAh Li-Po 3.7V





### 3.4 Operating Environment

Working Current	Sleeping mode<25mA, Active mode <100mA
Operating Temperature	10°C to 80°C
Humidity	5% to 95%

### 3.5 Key Features

I/OS:	Digital Inputs: 1, Digital Output: 1,
GNSS & GPS Antenna	Internal High Gain Antenna
Indicators	4 LED's (Power, Charging, GSM, GPS)
SIM	Micro SIM
Memory	4MB (50K Packets).
OBD II	ISO 15765-4 ISO 14230-4 ISO 9141-2 SAE J1850 VPW SAE J1850 PWM ISO 15765 ISO11898 SAE J1939

## 4. LED Indications

CHARGING (RED & GREEN)  	GSM (GREEN) 	GPS (BLUE) 
This LED Represents The Charging Of Device	This LED Represents The Network Registration	This LED Represents The GPS Lock Of The Device
RED LED ON – Device Charging	LED 1s (OFF/ON) : Out Of Network	LED OFF - GPS Not Fix
Blinking LED ON- Device Charged.	LED 1s ON/ 3s OFF: GSM Signal Available	LED ON – GPS Fix
	Fast Blinking : GSM Sending Data To The Server	

## 5. Installation Process

### 5.1 Precautions:

- (i) The installation of O-400 device and its accessories must be done by trained technician only.
- (ii) The O-400 device should not be installed at a location which can be exposed to water or rain. Take care of water splash to and High voltage to O-400, while vehicle servicing.
- (iii) Pay special attention to the amount of remaining credit & expiry date of SIM card.

### 5.2 Mandatory Requirements:

- (i) Wire Stripper
- (ii) Wire Cutter
- (iii) Multi-Meter
- (iv) Tool to remove the vehicle dashboard (Spanner Set, Allen Key Set, Screwdrivers etc.)
- (v) Cables Ties
- (vi) Insulation Tapes

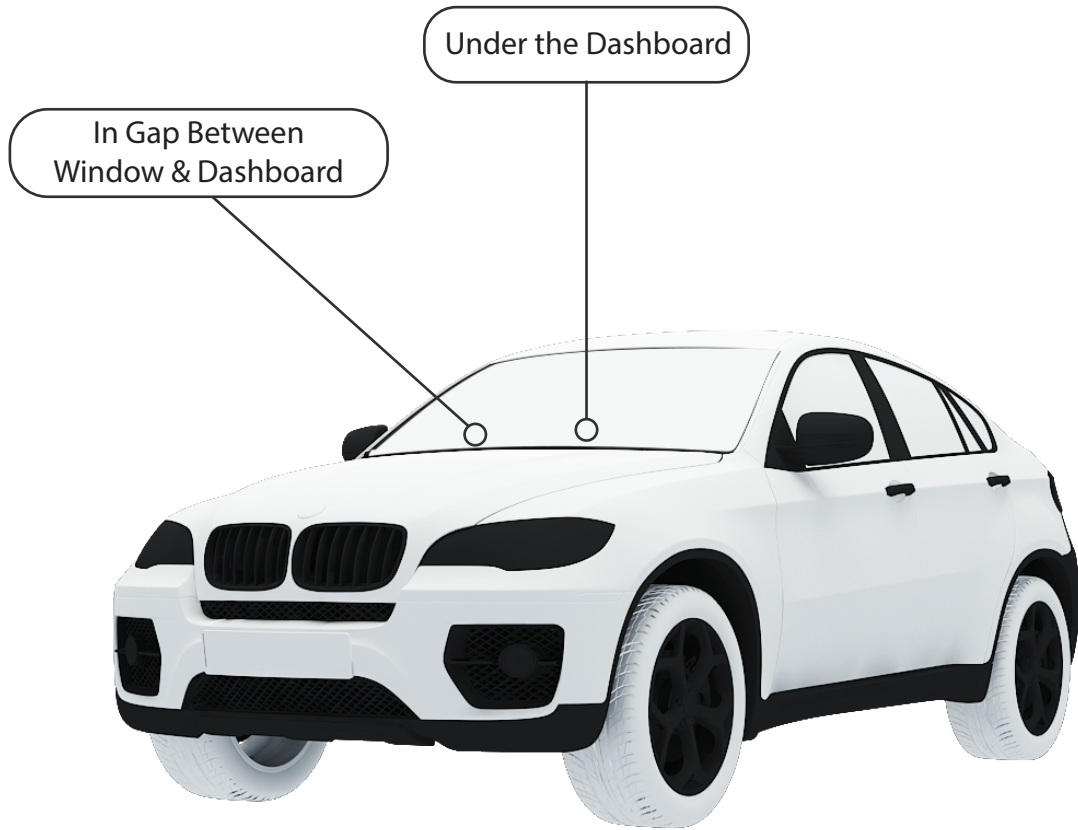
### 5.3 Pre- Installation Instructions:

- (i) It is advised to use the wire stripper to peel the wires to prevent the wire damage.
- (ii) Vehicle components must be functioning perfectly during, before & after the installation.
- (iii) All Wired connections should be covered with insulation tapes. Use cables ties to keep wires and device together.
- (iv) Don't insert the multi-meter probe in to any of the device connector to check the voltage. This can cause the widening of the connectors and may loose the connection.

### 5.4 Device Orientation:

The orientation of the device is very important to get a good GNSS reception. The LED indicators should face the sky and should not have any obstruction of Metal Shield.

## 5.5 Mechanical Overlay:





## 5.6 Installation Steps:

- (i) Insert SIM card in to the SIM slot, make sure that the mobile number is recorded. (Inserting SIM will turn ON the switch)  
(Note:- Inserting SIM card will switch ON the device so remove the SIM card if the device is not fitted to vehicle to save internal battery).
- (ii) Plug your OBDII device into your OBDII port.
- (iii) Connect the device to OBD port and wait for Indicators.
- (iv) RED LED- Indicates the battery charging, if LED is ON means Battery charging, OFF means battery FULL.
- (v) Within 10 to 40 seconds the unit will begin to work and acquire the GSM signal as well as the GPS signals. The GSM indicator (GREEN LED) will flash when the unit has received the GSM signal.
- (v) Once the GPS signal has received. The GPS indicator (BLUE LED) starts blinking.
- (vi) Use SMS commands and GUI tool to configure your Tracker and OBD parameter. (if you already know your command and its response status.)

## 6. Commands

### 6.1 Configuration Commands:

#### 6.1.1 SMS Commands Description

The Device would accept commands from any number if the password provided is correct. The password is a four digit number. The users can change the password of their device. The Device would reply to all commands send by user.

**Example:** - The command format would be

The password would be a 4 digit number and default password is 6906, So the command to get **FIRMWARE VERSION** would be

**VERSION<6906>**

**Note:-** the brackets (< , >) are must in the command

• **PW::1234;< password>** - This command is used to change the password. After this command the password will be 1234 **Ex.: PW::1234 ;< 6906>**

Eg: **PW::1234;<6906>**

#### 6.1.2 APN Configuration

- (i) **#CONFIG::APN::username::password;<password>** This command is used to configure your GPRS account. APN (Access Point Name) which is used to get to the GPRS gateway provided by network operator.

Username and Password: for your GPRS account is provided by your network operator or else leaves it blank.

Eg. For idea command would be **#CONFIG ::internet ::;;< 6906>**

- (ii) **#CONFIG?<Password>** This command replies with GPRS APN,User Name and Password already saved.

**Response:** APN: XXX, (GPRS USERNAME) XXX, (GPRS PASSWORD) XXX

### 6.1.3 PPI Configuration

To Start Live Tracking On Internet:

Send “**WEBSTART**<xxx/H/M/S><**password**>” to the device, device will send confirmation SMS and then start sending data to our web server.

- XXX means digits from 001-999
- H means HOURS, M means MINUTES, S means Seconds

**Example** – when we send the command **WEBSTART002M**<6906>, The Device will start sending the data to web server at 2 minutes interval.

To Start Live Tracking On Internet:

Send “**OBDSTART**<xxx/H/M/S><**password**>” to the device, the device will send confirmation SMS and then start sending OBD data to our web server.

- XXX means digits from 001-999
- H means HOURS, M means MINUTES, S means Seconds

**Example** – when we send the command **OBDSTART002M**<6906>, The Device will start sending OBD data to web server at 2 minutes interval.

### 6.1.4 Enable Distance Based Tracking

- (i) **DBT**<xxxM/K><**password**>” to O-400, device will send confirmation SMS and then start sending data to web server after as soon as covering the set distance and on deviation of 30 degree from the normal course.

- XXX means digits from 001-999
- M means METERS, K means KILOMETERS

**Example** – when we send the command **DBT500M**<6906>, O-400 will start sending the data to web server at every 500 meters and on deviation of 30 degree from the normal course..

- (ii) **SDBT**<**password**> This command will stop the distance and angle based tracking

### 6.1.5 TCP Server Settings

(i) **To Port The Device To A Server**

Command to port the Device to the first server (with IP and PORT)

**#SERVERCHANGE::IP::PORT;<password>**

**Example** – #SERVERCHANGE::196.168.175.12::20000;<6906>, this command would point The Device to the server with IP=196.168.175.12 and Port= 20000.

(ii) **To Port The Device To Second Server**

Command to port the OBD TRACKER to the first server (with IP and PORT)

**#SERVERCHANGE1::IP::PORT;<password>**

**Example** – ##SERVERCHANGE1::196.168.175.12::20345;<6906>, this command would point OBD TRACKER to the server with IP=196.168.175.12 and Port= 20345. Now the Device would send data to two different servers

(iii) **To Remove The Second Server**

Command to remove second server settings from The Device

**#SERVERCHANGE::--;<password>**

### 6.1.6 To Set PID For OBD

**PID@POSITION1:COMMAND1:LENGTH: START  
POSITION:NO OF BYTE REQUIRE@ POSITION2:  
COMMAND2: LENGTH: START POSITION:NO OF BYTE  
REQUIRE @@@@ @@@@ @@@@ @@@@;**

This SMS command is going to use for set your OWN PIDs. '@' are going to use for command separation and ':' are use for data separation.

**Example: PID@01 : 010C : 04 : 05 : 04@02 : 0103 : 04 : 05 : 04 @@@@  
@@@@@@@@;**

## 6.2 Functionality Commands

### 6.2.1 GET GPS

**To get GPS data for one time in SMS**

Send “GETGPS<password>” to the Device

**Response:**

OBD Tracker will send:

- If the GPS satellites are unreachable, you will receive “**GPS NOT FOUND**”
- If the GPS satellites are reachable, you will receive **Web link to view location (It will show you the location on map)**

Speed: XXX (It will tell you the speed of the vehicle in KPH)

Date: XXX (It will tell you the date of this particular data)

Time: XXX (It will tell you the time of this particular data in IST)

To observe the exact location on Google map for a corresponding LAT – LONG, open [www.maps.google.com](http://www.maps.google.com), in the search bar enters the latitude and longitude coordinates separated with a comma (,). It will show you the location.

- **GMS::xxxxx;<password>**

Command to set the GMT drift value, xxxxx stands for values in minutes.

## 6.2.2 Command To Configure Odometer

- (i) **SETODO::12345; <password>** - This command is used to calibrate the odometer where 12345 is the present odometer reading.
- (ii) **SETODO? <password>** - This command is used to get/read the present accelerometer reading of vehicle.

# 7. Troubleshooting

## 7.1 Diagnostic Commands

**SYSSTATUS<password>**

**Response:**

Main Power Status	MPON/MPOFF
Ignition Status	IGNON/IGNOFF
OBD Protocol	PROTOCOL-CAN/ PROTOCOL-J1939
Reserved Field	DIPOFF
Odometer (KM)	0.00
On Board Temp.	25.6
Battery Voltage (internal)	4.0

## 7.2 GPRSS TATUS

**GPRSSTATUS**<password> This command is used to get the complete status of the device, and the command format is **GPRSSTATUS** <6906>.

Description of the reply

Entries	Description	Remark
CN:	Current Network	
DBTON/OFF	Distance based tracking	Set distance would br e shown here with DBTON
SOFF	Sleep status	SOFF for SLEEPOFF and SON for SLEEPON
SS	GSM signal strength	Should be > 10 for proper GPRS comm..
CC	Current configuration	Currently using APN, UN, PWD
IP	Server address	Currently using Server details (IP, PORT)
WTI	Web tracking interval	Web tracking Interval
OBDWDT	OBD Web tracking interval	OBD Web tracking interval
ID	Device ID	15 Char Device ID (shows only if enabled)
GPS	GPS availability	A= available, V= void
SF	Data sending fail	Shows two fields if duel IP enabled
CF	Connection fail with server	Shows two fields if duel IP enabled
MU	Internal memory unsent count	Shows two fields if duel IP enabled
MUOBD	OBD Internal Memory Unsent Data Count	Shows two fields if duel IP enabled
PD	PDP Deact Error	Network error occurs normally if APN is wrong
IGN	IGN ON/IGN OFF	Ignition Status
GMS	GMT Shift	330 for India
LHC	Location hit count per day	Customized, client specific

### 7.3 Troubleshooting Table

S.NO	Scenario In General	Troubleshooting
1.	No LED indication	<ul style="list-style-type: none"> <li>• Check SIM card position</li> <li>• Check the Harness wiring</li> </ul>
2.	GREEN LED not blinking at 1 sec. interval	<ul style="list-style-type: none"> <li>• Check SIM card validity</li> <li>• Check SIM security settings (No PIN recommended)</li> </ul>
3.	BLUE LED not blinking	<ul style="list-style-type: none"> <li>• Restart Your Device</li> <li>• Keep the device in open space for 2-3 minutes for GPS fix.</li> </ul>
4.	SMS not accepted: "WRONG COMMNAD"	There may be some spelling mistake in the command or the command may be invalid. Please recheck the command phrase and resend.
5.	No response from OBD Tracking	<ul style="list-style-type: none"> <li>• Check your balance in case of Pre-Paid connection.</li> <li>• Check the network status. (No Or weak network connection could be the reason)</li> <li>• Resend the desired commands again.</li> <li>• Check the password.</li> <li>• Give Some Motion To Your Device.</li> </ul>
6.	SMS is not Delivered:	<ul style="list-style-type: none"> <li>• Check your balance in case of Pre-Paid connection.</li> <li>• Check the network status. (No Or weak network connection could be the reason)</li> <li>• Resend the desired commands again.</li> </ul>
7.	"NO DATA" from device	
8.	OBD response status not proper/ not getting Alerts	

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