

Application Note: Journey Detection Modes

Scope

ALL DEVICES

Overview

In order to report effective and useful journey data, our devices must be able to determine when the vehicle ignition is ON (or engine running) and when it is OFF (engine not running). Our devices support a variety of '*ignition modes*' to suit different vehicles and installation types. This application note outlines the options and also offers advice about how to resolve or avoid some common journey detection problems.

Related Documents

The following documents are recommended reading to accompany this application note:

- AT240, AT200, AT210 & AT110 User Guides
- AT240, AT200, AT210 & AT110 Installation Guides

These documents can be obtained from:

<http://www.gps-telematics.co.uk/downloads.htm>

Journey Detection Options

Our Devices offer the following journey detection modes:

DIGITAL INPUT / WIRED

This method requires that the vehicle has a signal or line that goes *high* (i.e. normally to 12 or 24V) whilst the engine is running. That signal/line is then connected directly to *digital input 1* of the device (usually the WHITE wire) and the device will detect journey status on the basis of digital input 1 state, LOW corresponding to a stationary/parked vehicle and HIGH corresponding to a vehicle being in a journey. This is the recommended and default method, as it is the most accurate, reliable and universally compatible with all vehicles.

EXTERNAL VOLTAGE AUTO-DETECT

This method relies upon the fact that the vehicle voltage increases whilst the engine is running, and our devices use that to detect the vehicle journey status. The advantage of this solution is that no extra connection is required, as the device detects the vehicle voltage from its power connection. It is also accurate at detecting exact journey starts and stops. Vehicles with auto start/stop feature are managed with a stop report delay. If the engine stops for less than 180 seconds (configurable with the STPD parameter), no stop event is created. Only when the engine stops for longer than STPD seconds is a journey end created and reported by the device. This method has a one significant drawback, namely that it is not compatible with all vehicles (some vehicles have voltage regulated systems, so that the increase cannot be detected).

Journey Detection Troubleshooting

Poor installation or incorrect device configuration will inevitably cause the device to report journey data incorrectly or not at all. Some common symptoms are:

1. **No journeys reported / Ignition always OFF**
2. **Ignition always ON**
3. **Erratic ignition status, not corresponding to vehicle / engine status**
4. **False journey reports (starts and stops whilst not actually in a journey)**
5. **Missed journey reports (real journeys with no start/stop reports)**

To resolve these issues, first check the current journey detection setting by sending the command:

```
$IGNM
```

...the device will reply with the current configuration, for example:

```
$IGNM,1
```

...indicates that the device is configured in mode 1, wired ignition on digital input 1

Next, consider the following advice in relation to the appropriate IGNM value:

IGNM,1 Digital input 1 not connected correctly or blown fuse
Examine data history on digital input 1, which should be 1 throughout journeys and 0 at all other times. If not, there is an installation issue. Check installation or consider changing to an alternative journey detection mode
If an ignition switched relay is used with the device (an immobiliser for example), it's possible that a backfeed voltage can cause digital input 1 to go high whilst the ignition is off. Consider changing the installation or using an alternative journey detection mode.

IGNM,0 Poor GPS due to device installation
Consider changing journey detection rules with the command below:

```
$DIAG,26,<gps-speed>,<speed-samples>,<accel-threshold>,<accel-samples>,<distance>,<distance-timeout>
```

GPS SPEED	(default 30km/h)
SPEED SAMPLES	(default 5)
ACCEL THRESHOLD	(default 0.3 m/s/s [set using value x 10, i.e. 3])
ACCEL SAMPLES	(default 1 second equivalent to 10 samples averaged)
DISTANCE CHANGE	(default 500m)
DISTANCE TIMEOUT	(default 10)

- IGNM,3** Vehicle with regulated system voltage
Check external voltage data history for increase of 1.0V or more during journeys. If no increase, vehicle is not compatible, consider using an alternative journey detection mode.
If the voltage data shows an appropriate change during journeys, recalibrate voltage auto-detect using command **\$DIAG,5** whilst the engine is not running
- IGNM,4** CANBus connection issues
Check for CANbus data history. Zero data indicates a connection problem. If other CANbus data is present, its possible that RPM data is not available, consider changing to an alternative journey detection mode.