astra telematics

Application Note: Remote Device Test

Scope
AT240, AT110, AT210, AT200

Overview
The self-test command is used to check the identity and status of a device and diagnose common issues related to configuration and installation.

Related Documents
The following documents are recommended reading to accompany this document:

- AT240, AT110, AT200 & AT210 User Guides

The User Guides can be obtained from:

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

Command
The command can be sent via SMS, as follows:

$TEST

Format of the Response
The format of the $TEST response starts with TEST: and is followed by:

Line	Description	Comments
1	Device model	e.g. AT240
2	Firmware version number	e.g. 4.0.41.0
3	IMEI	15 digits, e.g. 357322042745742
4	Network operator name	e.g. Orange UK
5	External input voltage	In Volts followed by percentage of power present over last 7 days, e.g. PWR:12.5V (99%)
6	Battery level	As a percentage, e.g. BAT:100%
7	GPS status (% availability)	OK, ERR or JAM followed by percentage, e.g. GPS:OK (95%)
8	GPRS service status (% availability)	OK, ERR or N/A if errors in any above status, e.g. GPRS:OK (98%)
9	APN connection status	OK, ERR or N/A if errors in any above status, e.g. APN:OK
10	TCP socket status	OK, ERR or N/A if errors in any above status, e.g. SKT:OK
11	TCP acknowledgment status	OK, ERR or N/A if errors in any above status, e.g. ACK:OK
12	Ignition inactivity	OK or ERR, e.g. IGN:OK + current state of IGN
13	CANbus Inactivity	OK or ERR, e.g. CAN:OK (CANBus based protocols only)
14	Immobilisation output state	ON, OFF or N/A
15	Number of queued reports	0 – 9999

Notes on status results:

GPS N/A after power-up, until the first fix has been acquired
OK thereafter, if GPS is available, or has been available in the last minute
ERR if GPS has been unavailable for the last minute or more

GPRS ERR at first power up, or whenever the device has no GPRS network service
OK when the device has GPRS network service

APN N/A at first power-up
N/A until the device tries to communicate
N/A if the device has no GPRS network service, which is a prerequisite
OK when the device has activated a pdp context (connected to the APN/internet)
ERR when the device has tried to activate a pdp context, but failed

TCP N/A at first power-up
N/A until the device tries to communicate
N/A if the device has no GPRS network service or has an APN error (no internet)
OK when the device has opened a TCP socket to specified IPAD/PORT
ERR when the device has attempted to open a TCP socket, but failed

ACK N/A at first power-up
N/A until the device has successful status for all previous communication steps
OK when the device has sent a report and received an ACK from the host server
ERR when the device has sent a report, but not received an ACK within TCPT
seconds

IGN ERR if no change of state of ignition has been detected since power-up
ERR if no change of state of ignition has been detected in the last 24 hours
OK if a change of state of ignition has been detected in the last 24 hours
(ignition method will depend on IGNM setting)

CAN N/A at power up, until the device has seen ignition ON
OK when CANBus data has been received within the last 20 seconds, whilst the
ignition is ON
ERR when CANBus data has not been received within the last 20 seconds, whilst
the ignition is ON, or if no CANBus data was received during the last ignition On
period

IMOB N/A if no digital output has been assigned to the immobiliser application
ON when the immobiliser has been assigned, and is currently active
OFF when the immobiliser has been assigned, and is currently inactive
(note that the immobiliser logic is define using the DRIC command, to determine
whether active corresponds to the output switch being ON or OFF

REPQ Number of reports stored in non-volatile flash memory

Some examples responses are shown below:

Example 1: device with no errors/problems:

```
TEST:AT240
4.0.41.0
357322042745742  ←————confirm that the device IMEI matches the system / server configuration
O2 UK
PWR:12.5V (100%)
BAT:100%
GPS:OK (95%)
GPRS:OK (98%)
APN:OK
SKT:OK
ACK:OK
IGN:OK (OFF)
IMOB:OFF
REPQ:0
```

Example 2: device with a GPS problem:

```
TEST:AT240
4.0.41.0
357322042745742
Orange UK
PWR:12.5V (100%)
BAT:100%
GPS:ERR (12%)
GPRS:N/A (98%)
APN:N/A
SKT:N/A
ACK:N/A
IGN:OK (OFF)
IMOB:OFF
REPQ:0
```

Example 3: device with incorrect APN settings:

```
TEST:AT240
4.0.41.0
357322042745742
Vodafone
PWR:14.6V (100%)
BAT:100%
GPS:OK (98%)
GPRS:OK (93%)
APN:ERR
SKT:N/A
ACK:N/A
IGN:OK (ON)
IMOB:ON
REPQ:179
```

Guidance on Interpretation of Errors and Resolution of Problems

GPS Error or poor GPS availability (low % GPS availability)
A GPS ERROR indicates that no fix has been returned for a fixed timeout period. Could be an indication of a device/antenna fault or simply that the vehicle is parked in covered area (e.g. underground car park). Persistent GPS errors and low availability are most often caused by installation issues, poor device location, incorrect orientation or vehicle issues such as interference or athermic glass windscreens.

A 'JAM' status indicates that the GPS receiver has detected CW interference which could be cause by the use of a GPS jamming device in close proximity, typically within 5-10m (i.e. in the vehicle itself).

GPRS Error
This means that the device has no GPRS service. Can be simply due to GSM network coverage/service, but persistent GPRS ERROR is an indication that the GSM SIM card is not enabled for GPRS. We suggest that you discuss with your SIM provider and consider trying a SIM refresh or replacing the SIM.

APN Error
This is usually caused by incorrect GPRS access point settings (APAD, APUN and APPW). Please check the correct settings with your network/SIM provider and configure the device accordingly using the commands:

$APAD,<apn-address>
$APUN,<apn-username>
$APPW,<apn-password>

TCP Socket Error
The modem has failed to open a socket on the specified IP address and port number. Can be caused by incorrect TCP address settings (IPAD, PORT), a fault at the host server or even wider internet problems. If necessary, re-configure the IPAD & PORT using the commands:

$IPAD,<ip-or-hostname>
$PORT,<port-number>

Modem TCP acknowledgment Error
This indicates that the *device* can proceed all the way to open a socket and deliver the report packet, but does not get the normal acknowledgment response from the host TCP application. This is normally caused by a fault at the host end. Ensure that the device is correctly provisioned on your application/software, correct type, protocol and that the 15 digit IMEI in the $TEST reply matches the one on your system.

Ignition Input Inactivity Error
This error is set when no ignition events have been detected for more than 24 hours. This is usually caused by poor/incorrect installation. Consider using an alternative ignition mode with the following commands:

$IGNM,0   // use GPS speed / accelerometer data for journey mode detection
$IGNM,3   // use external voltage for journey mode detection

CANBus Inactivity Error (AT110 and AT240 only)
This error is set when no CANBus data has been received for 60 seconds or more, whilst the vehicle ignition is ON (i.e. device digital input 1 is HIGH). Whist the ignition is off, the status will be based on the presence of CANbus data during the last ignition ON period.

Immobilisation Issues

If status shows as 'N/A', the immobiliser application is not assigned to any digital output. Please refer to the CDOP command in the user guide for the appropriate device, for details of how to assign applications to digital outputs.

The ON/OFF status refers to the physical status of the device output, which may relate to immobiliser status ON or OFF, based on the immobiliser logic defined in the DRIC command.

Reports Stored in Non-Volatile Memory Queue

When there are communications issues, either with the device itself, or with the host server, reports cannot be successfully sent and will be stored in non-volatile flash memory. Each device will hold several thousand reports until they can be successfully sent, and acknowledgment received from the server. This number indicates the quantity of reports stored and awaiting transmission. Device comms errors (possibly caused by configuration) or server issues must be resolved, in order for the device to be able to successfully send the reports. Please check for comms related errors in the $TEST reply and resolve using the guidance on the previous page. Also conform correct device configuration and server operational status / availability.