

Application Note: Pass Through Data Mode

Scope

AT220A, AT220B, AT240, AT210, AT110

Overview

Our devices can be used to send and receive data between a serial port device (attached to the device serial port) and a remote TCP/IP application. This technique is commonly referred to as pass through data mode and is described in this application note.

Related Documents

The following documents are recommended reading to accompany this document:

- AT220, AT240, AT210 & AT110 User Guides

These documents can be obtained from:

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

Operation of Pass Through Data Mode

Pass through data mode allows data to be sent and received from a second TCP socket and port number, as defined by parameters IPAD2 and PORT2. These parameters can be set by serial mode or OTA mode commands as usual. Once these parameters have been set, pass through data mode is enabled by setting PTDM <mode> to a value in the range 1 to 3 (default is zero).

In PTDM mode, the device will attempt to open a TCP socket to IPAD2/PORT2 and will listen for data on that socket. Any data received will be sent to the relevant device serial port (see below for device related aspects). Similarly, any data received on the serial port will be assembled into packets and sent to IPAD2/PORT2. Packets will be sent according to the PTDM parameters described in the table below. No retries or acknowledgements are implemented, it is left to the application developer to implement those features within their own serial protocols.

Device RS232 Port Aspects

The AT210 and AT220 have only one RS232 port. Enabling PTDM will suppress all other data on the serial port and further serial mode commands will not be accepted. Serial commands are accepted for 30 seconds after power up to allow PTDM mode to be disabled.

Other devices have 2 serial ports, so the second port is dedicated to pass through data mode (when enabled by PTDM <mode>).

The format of the PTDM command is as follows:

```
$PTDM,<mode>,<baud_rate>,<timeout_ms>,<packet_send_size>,<send_on_cr>
```

Field	Description	Range
<mode>	PTDM mode	0 Disabled 1 Enabled 2 Garmin FMI 3 Enabled with connect message
<baud_rate>	RS232 baud rate setting (applies to the relevant device serial port).	One of the following: 4800 9600 19200 38400 57600 115200 230400 460800 921600
<timeout_ms>	Time from last received character to force buffered data to be sent	0 – 65535
<packet_send_size>	Size of packets to send (number of bytes)	1 – 1024
<send_on_cr>	Flag to trigger sending a packet on receiving a <CR> character	0 Ignore <CR> characters 1 Send when <CR> received

Device Identification

In many cases, it is useful for the device to identify itself to the remote host each time a new connection is established. This can be enabled by setting PTDM <mode> to 3, in which case the following information will be sent to the host each time a new TCP socket is opened:

```
<DEVICE>,CONNECT,<IMEI>,<FW_VER><CR><LF>
```

Where:

- <DEVICE> is the device type / model, e.g. AT240
- <IMEI> is the 15 digit unique device serial number
- <FW_VER> is the device firmware version
- <CR> is a carriage return character
- <LF> is a line feed character

e.g. AT240,CONNECT,352218030578118,4.0.17.0

Garmin FMI Device Support

PTDM mode 2 is specifically designed for use with Garmin FMI mode. In this mode, the device will indicate to the host when the FMI appears to be online/offline based on a 90 second communication timeout. When a timeout occurs, the device will send an FMI Enable packet to the FMI. If an FMI ACK is received in return, the device will send an FMI online message to the host.

FMI offline is indicated when the device sends the following:

```
<DEVICE> , FMI_OFFLINE<\r>
```

And when the FMI comes back online:

```
<DEVICE>,FMI_ONLINE<\r>
```

Device identification (as described above) is also enabled in PTDM mode 2.

The baud rate will change to 9600 on entering PTDM mode 2.

Timing

Data can be delayed somewhat due to normal reporting activity on the primary IPAD/PORT, but typically there is no more than a second or two delay between submitting the data to the serial port and transmission to the host (and vice versa).

TCP Socket Status

If the TCP socket is inactive for several minutes, it is likely to be closed by the GPRS network operator (subject to individual network inactivity timeouts). The device will periodically check the TCP socket status and attempt to maintain an open connection. Application developers are advised to consider socket keep-alive solutions or to seek suitably long inactivity timeouts from your GPRS network service provider.

Access to GPS NMEA Data

GPS NMEA output is suspended during PTDM mode operation for devices that have only one serial port. In some cases, it may be useful for the serial device to access GPS NMEA data from time to time. This can be done by sending \$GPRMC,REQUEST to the device, which will result in a single \$GPRMC sentence being sent to the PTDM serial port. The \$GPRMC,REQUEST data string will not be sent to the TCP host.

For devices with 2 serial ports the GPS NMEA output is sent to the first serial port as usual.