

Using a Garmin PND with a Chameleon Gateway



Model	Chameleon Gateway
Revision	Rev 1.3

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Revision Control

Description	Revision	Date
Limited Release	Rev 1.0	08-July-2010
Updated for Chameleon Gateways	Rev 1.1	09-June-2011
Updated document to reflect new firmware features	Rev 1.2	19-Sept-2011
Updated to reflect new command structure and improved wording	Rev1.3	06-Oct-2011

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1 Overview

The CTM-200 supports Garmin products that support the Fleet Management Interface (FMI). When connected to the CTM-200 via serial link the CTM-200 manages the local connection between the Garmin and the CTM-200 and the wireless link between the CTM-200 and the remote server. The CTM-200 notifies the remote server when the Garmin is connected or disconnected.

The CTM-200 support for the Garmin product uses a modification of the standard PAD (Packet Assembly Disassembly) feature of the CTM-200. Default configuration set by the selecting the Garmin mode on the CTM-200 can be over ridden by individual configuration of the CTM-200 PAD settings.

Remote Server <----> Internet <--^{WAN}--> CTM-200 <--^{Serial}-->Garmin

2 Requirements

- CTM-200 running firmware R2.0.4-2441 and above.
- Garmin device with firmware that supports the Garmin Fleet Management Interface Control Specification. (FMI revision 2.1 and later)
- RS-232 serial cable to interface between Garmin and CTM-200.
- Remote Server application that is capable of sending and receiving Garmin Fleet Management Protocol messages.

3 CTM-200 Configuration

Command line:

cmd mode 19 0 0 configures the Garmin for the primary serial port

Web Interface:

Select the Garmin device from main configuration web page
config -> Main

under Serial there are 3 available serial ports (serial port availability is dependent on the version of CTM device installed)

On the drop down select

19: Garmin

4 Serial Port Configuration

Garmin serial port's characteristics are full duplex, serial data, 9600 baud, 8 data bits, no parity bits, and 1 stop bit.

Connect the FMI interface cable between Garmin's Mini USB port(type B) and the 2nd serial port on CTM-200. A custom cable is available from Garmin (010-11627-00). The Garmin cable comes with exposed pigtailed, these will need to be terminated for either DB-9 or 3 Pin serial connection depending on which serial port is being used on the CTM-200. Refer to CTM-200 documentation for serial port pinouts for correct wiring or contact Cypress Solutions technical support.

5 CTM-200 to Remote Server

- The remote server initiates a connection to the CTM-200 via a TCP connection on port 5005(default). The IP address of the CTM-200 needs to be routable IP between the CTM-200 and remote server. This is the default configuration when Garmin mode is selected, port address can also be changed.

Note: depending on the capabilities of the remote server a TCP connection could be initiated by the CTM-200 to support networks where the IP address is dynamic or cannot be accessed directly.

- The CTM-200 will manage the connection between the Garmin and the CTM-200. When the Garmin is connected and ready to receive data/messages a "link-up" message will be generated. Likewise, when the Garmin is not-ready or disconnected a "link-down" message will be generated. The remote server is required to send ACK packets for the following Link-Up and Link-Down status packets.

1. Link-Up

```
0x10 B1 00 4F 10 03
```

2. Link-Up ACK

```
0x10 06 01 B1 48 10 03
```

3. Link-Down

```
0x10 B2 00 4E 10 03
```

4. Link-Down ACK

```
0x10 06 01 B2 47 10 03
```

- The remote server should follow Garmin Fleet Management Interface Control Specification for all other packets.
- While Garmin is connected, there must be data traffic within **600** seconds or 10 minutes (default) between the Garmin device and the remote server. The traffic must be valid Garmin FMI message. It is important to note that it is the responsibility (in the default config) to maintain the connection to the CTM-200 either via traffic across the established connection or by monitoring whether the connection is up or down.

- PVT reporting from the Garmin should be disabled to limit the amount of data traffic on the network.

6 Communication Overview

6.1 Initialization steps

- Garmin device will display the disconnect icon on the top right of the screen.
- CTM-200 send **Enable Fleet Management Protocol Request** packet with Unicode and A607 support options to Garmin.
- CTM-200 waits for ACK packet.
- Garmin device will remove the disconnect icon.
- CTM-200 will send **Message Throttling Command** packet to Garmin to enable Ping.
- Wait for ACK packet.
- Send **Link-Up** packet to the Remote Server
- Wait for ACK packet.
- Resend **Link-Up** every 7~8 seconds if CTM-200 doesn't get ACK packet for **Link-Up**
- Send **Ping (Communication Link Status)** packet to Garmin every 5 seconds.
- Wait for ACK packet.
- CTM-200 will forward all data from Garmin except ACK for **Ping** to the Remote Server.
- CTM-200 will forward all data from the Remote Server except ACK for **Link-Up/Down** to Garmin.

6.2 Disconnection steps

- If CTM-200 detects 2 consecutive **Ping** failures, it will determine the serial connection to Garmin is broken.
- CTM-200 will send **Link-Down** packet to the Remote Server.
- Wait for ACK packet.
- Resend **Link-Down** up to 5 times if CTM-200 doesn't get ACK packet for **Link-Down**.
- Re-do **Initialization** steps again.

7 Links

Supported Products:

<http://www8.garmin.com/solutions/pnd/supportedproducts.jsp>

Garmin Developer:

<http://developer.garmin.com/>

8 Technical Support/Warranty

**Cypress Solutions Service
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