

Application Note

Using a Garmin® PND with a FOX3-2G/3G/4G



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Contacts

Lantronix, Inc.

7535 Irvine Center Drive, Suite 100

Irvine, CA 92618, USA

Toll Free: 800-526-8766

Phone: 949-453-3990

Fax: 949-453-3995

Technical Support

Online: www.lantronix.com/support

Sales Offices

For a current list of our domestic and international sales offices, go to the Lantronix web site at www.lantronix.com/about/contact

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Revision History

Date	Rev.	Comments
January 2018	1.0.0	Initial version.
October 2019	A	Initial Lantronix document. Added Lantronix document part number, logo, contact information, and links.

For the latest revision of this product document, please check our online documentation at www.lantronix.com/support/documentation.

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1 ABOUT THIS DOCUMENT

This guide shows how to connect a Garmin® PND device that support Fleet Management Interface (FMI) to a Lantronix FOX3-2G/3G/4G device and how to configure your Lantronix device, manage the connection to a Garmin® PND and the connection to the GpsGate server.

1.1 Requirements

1. FOX3-2G/3G/4G device running firmware version avl_2.13.0 and above.
2. Garmin® device with firmware that supports the Garmin® Fleet Management Interface Control Specification
3. Garmin FMI 15 data cable
4. CA31 cable to interface Garmin® and FOX3-2G/3G/4G. (See wiring details below)
5. Remote Server with integrated Garmin® Fleet Management Protocol. In this application note the Lantronix devices will be connected to GpsGate server as it has implemented FMI protocol. Of course, other servers with implemented FMI protocol will also work with this configuration.
6. For other servers, refer to the document



1.2 Interface Garmin® PND with FOX3-2G/3G/4G

To interface both devices use CA31. This cable has all you need, the RS-232 communicate interface and power supply lines to power both devices. The 4pin connector provides an RS-232 interface (RX, XT) and power pins (IN+, GND) for Garmin® device. At the end of this cable there is also the power supply lines that need to be connected to an external power source ranging from +12 to +32 VDC (e.g. 12 VDC).

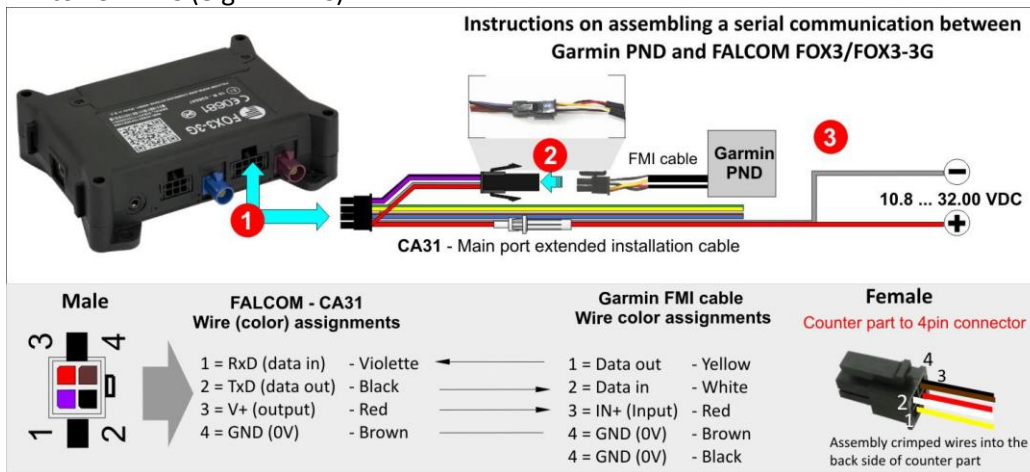


Figure 1: Use the CA31 cable to interface a Garmin® device to FOX3/FOX3-3G device

To connect the Garmin® FMI cable with the CA31 you have to use your 4pin female dual row connector (the counter part to the 4pin connector on the CA31) and mount it at the end of Garmin® FMI cable. The counter part with manufacturer part number "662004113322" can be ordered from third-party distributors.

Below a picture how the counter part to the 4pin connector looks like after assembled to the Garmin® FMI cable.



Figure 2: 4pin female dual row connector assembled at the end of the FMI cable

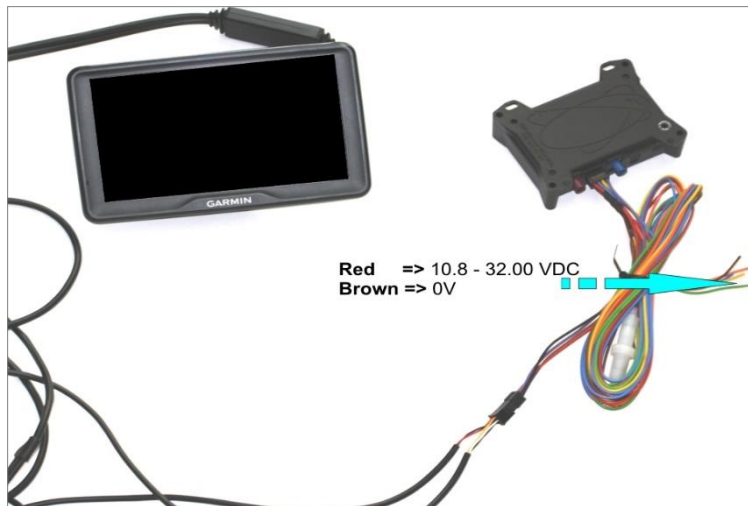


Figure 3: Interlink the devices with the help of cables and apply power

1.3 FOX3-2G/3G/4G device configuration setup for GpsGate server

1.3.1 Basic device configuration settings

Follow these steps to configure the device and connect to a remote server (e.g. GpsGate server):

Services	Device settings via PFAL commands	Notices
GPRS	\$PFAL,Cnf.Set,GPRS.APN= internet.t-d1.de	Enter the APN of your SIM card provider
	\$PFAL,Cnf.Set,GPRS.QOS= 3,4,3,0,0	Check this settings with your SIM card provide
	\$PFAL,Cnf.Set,GPRS.QOSMIN= 0,0,0,0,0	Check this settings with your SIM card provide
	\$PFAL,Cnf.Set,PPP.USERNAME= t-d1	Enter the username of your SIM card provider
	\$PFAL,Cnf.Set,PPP.PASSWORD= gps	Enter the password of your SIM card provider
	\$PFAL,Cnf.Set,GPRS.AUTOSTART= 1	Set GPRS to start automatically
TCP IP	\$PFAL,Cnf.Set,TCP.CLIENT.CONNECT= 1,94.236.122.179,2222	Enter the IP of the remote server. E.g. GpsGate = 94.236.122.179 (enter your GpsGate Server Public IP Address found on SiteAdmin/Devices); Port = 2222
SIM	\$PFAL,Cnf.Set,DEVICE.PIN= 1111	Enter the PIN of the inserted SIM card
Other	\$PFAL,Cnf.Set,TCP.CLIENT.LOGIN= 2,1	Configure to send login data to the remote server on connect. This setting is very important when using GpsGate server. Otherwise no connection to the server will be done.
	\$PFAL,Cnf.Set,DEVICE.SERIAL0.FORCEON= on	Sets the first serial port into the Active mode. To keep the serial communication link between the Garmin® PND and FOX3-2G/3G/4G permanently active, the first serial interface on FOX3-2G/3G/4G should be set into the active mode.

1.3.2 Enable communication between your Garmin® PND, FOX3-2G/3G/4G and GpsGate server

Follow these steps to configure the device to receive the data from the Garmin® device and forward this data to a remote server (e.g. GpsGate server) and vice-versa:

	CONFIGURATION	DESCRIPTION
Store in device	\$PFAL,MSG.Mode.TCP=60,D=1	Sets the TCP channel in FOX3/-3G into pass through data mode. The data incl. PFAL commands being sent from your remote server to the FOX3/-3G, are passed through the first serial port to your Garmin® device. In the Pass through data mode the FOX3/-3G device will not proceed any PFAL command received from the remote server. PFAL commands are also
	\$PFAL,Cnf.Set,DEVICE.SERIAL0.BAUDRATE=9600	Sets up the serial port baud rate to 9600bps. Garmin® devices operate at a fixed bps of 9600 and to communicate with each other they must have the same baud rate.
	\$PFAL,Cnf.Set,DEVICE.COMM.BINEVENT=10,"0x10,0x03",i	All messages send out from the Garmin® device start with a hexadecimal 10 start-of-message character, and are terminated by a checksum byte followed by hexadecimal 10 and 03 characters. This configuration is needed to generate events on the serial port when receiving such messages from Garmin® device. 0x10 = Data Link Escape and 0x03 = End of Text. The letter "i" means that both characters (0x10 and 0x03) are included in the messages when it is sent to the remote server.
	\$PFAL,MSG.Mode.Serial0=60,B	Set up the first serial port into binary event. No other data is sent to the Garmin® device, except the messages received from the remote server.
	\$PFAL,Cnf.Set,AL5=Sys.eSerialdata0:TCP.Client.Send,4000,"gg.garmin=&(Serialdata0)"	This alarm (AL5) sends the messages received on the first serial port from the Garmin® device to the remote server on "Sys.eSerialdata0 " event. The message identifier "gg.garmin=" is only supported with GpsGate server. That's mean, Garmin® messages are identified on the GpsGate server by "gg.garmin=" identifier. The remote server will receive the data as below e.g.
Data received on remote server	\$gg.garmin=[0x10][0xA1][0x1E][0x00]/S[0xB8]1[0x01][0x00][0x00][0x00]0[0x00]2[0x00][0x00][0x00]S[0x10][0x03]*82[0x0D][0x0A]	

Please note that, when the TCP interface is set into the **Pass through** data mode, the FOX3/FOX3-3G device will not execute and respond on PFAL commands received over TCP from the remote server until the device is reset into the **Command** mode again with "PFAL,MSG.Mode.TCP=60,C" which can be sent via SMS or through second serial port.

1.4 GpsGate Server Configuration

GpsGate Server supports **Chat** and **Dispatch** on Garmin fleet-ready Navigators. If you plan to use GpsGate as server application with a Lantronix device and your Garmin® device refer to the link below:

<http://gpsgate.com/garmin>

If you can not find the required information or if you need help contact GpsGate support over email at

support@gpsgate.com

1.5 Developer references for integration of Garmin FMI protocol on your server

If you plan to integrate Garmin® FMI protocols on your server, refer to the link below:

<http://developer.garmin.com/fleet-management/overview/>

If you can not find the required information or if you need help contact Garmin developers using their online form:

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