

GNX-10 Installation Guide

(For Professional Installers Only)



GNX-10 Installation Guide

PLEASE READ!

FCC Compliance

This device complies with part 15 of the FCC rules Operation and is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC RF Exposure Information

Warning: To satisfy the FCC RF exposure requirements, a minimum separation distance of 20 cm must be maintained between the antenna and the operator. The antenna supplied with this device must be used for installation and operation. Substitution of other antennas must be approved by the manufacturer for compliance to radiation safety limits where the antenna gain, including any cable loss, must not exceed 3 dBi.

Cautions: All persons must be at least 20 cm from the transmitting antenna to meet FCC RF exposure limits.

Hardware Overview

Feature Highlights

10 Base-T Wired Ethernet port

- Network connection in the field via laptop computer, PDA, 802.11 or other Ethernet compatible equipments
- Dual stacked protocol to automatically accommodate dynamic wireless network IP assignment.

On-Board Storage of over 200 user configurable landmarks and over 20 true zones (with user configurable vertices) for direct alert or exceptional reporting.

2 or more months of on-board storage of vehicle operating information

On-Board Low Power Motion Detector

- Enables services requiring long duration battery based operation
- Extended location coverage using on board accelerometers

Dual Processors with Power Management Design

- Enables services requiring low power standby active operation such as battery powered security monitor operation

50 MIPS Main CPU Processing Capability

- Ample process throughput allows full speed Ethernet connection
- Full speed processing of customized user on-board applications

TCPIP, TFTP, NAT Routing Functions

- Facilitates DHCP, network assigned transfer for the Ethernet equipment
- Facilitates easy network connection
- Flat data file format for server-less connection or direct enterprise server connection

Data encryption and compression

- Secure over-the-air data transfer with reduced airtime expense

GNX-10 Specifications

Location Technology: GPS L1 C/A code

Accuracy: 5 meter CEP

Wireless Networks:

- GSM/GPRS (850/1900)
- CDMA 1xRTT (800/1900)
- 802.11 through Ethernet Port

Size: 5.15" x 4.15" x 0.95"

Weight: 0.5 lbs

Power Input: 8 – 30 Vdc

Power Consumption:

- Full operating mode: 140 mA @ 12 Volt
- Low power active mode: < 10 mA @ 12 Volt

Environmental:

- Operational Temp: -20° C to +60° C
- Functional Temp: -20° C to +70° C
- Storage Temp: -40° C to +85° C
- Humidity: 5% to 95% non condensing
- Shock and Vibration: SAE J1455
- EMC/EMI: SAE J 1113

Processing capability:

- 50 Mips equiv at full power

Storage capacity:

- Flash Memory: 1M – 8M Bytes
- NVSRAM: 512k – 4M Bytes

Low power sensing mode:

- All external input ports
- On board temperature sensor
- On board accelerometer
- Vehicle battery voltage monitor

List of Input/Output

- 1 10Base-T Ethernet Port (full NAT router)
- 1 Serial Interface (AT, PPP, custom)
- 1 Analog input port (0 to supply voltage)
- 2 Discrete vehicle voltage input sensor ports
- 2 Discrete ground sensor ports
- 2 Relay control output port
- 1 Switched 12v output port

On Board Sensors

- Temperature sensor and Voltage sensor
- 2 axis accelerometer ($\pm 1.5g$ 50-900Hz)

Communication protocols:

- IP, ICMP, UDP, TCP, DNS, DHCP, PPP, TFTP, SMTP, Telnet, and others



PRE-INSTALLATION PROCEDURES

1. VERIFY INSTALLATION CONTENTS

You must have the proper tools before installing the GNX-10 device. Please ask your manufacturer if they provide a full installation kit.

Tools

- Standard crimping tool (not included)
- Digital voltmeter
- Wire cutting tool
- Insulation tape
- Silicone Sealant (for roof mount antennas only)
- Optional flathead and Philips screwdrivers
- Optional butane soldering tool
- Optional power drill to create ½ inch hole (for roof mount antennas only)

GNX-10 Installation Contents



- Antenna
- Wiring harnesses
- Optional Ethernet adapter

Wiring Harness Key



Red: Connect to 12V Constant
White: Connect to Vehicle's True Ignition
Black: Connect to Ground

Optional Installation Contents

- Self-tapping screws
- Fuse packs

- Butt Connectors
- Tie Wraps
- Star Washers

2. VERIFY VEHICLE DETAILS

Note all important vehicle details, including vehicle #, VIN #, vehicle model and year in the VEHICLE ADMINISTRATION WORKSHEET. (See Vehicle Administration Worksheet towards end).

3. INSPECT VEHICLE FOR DAMAGE

Before installing, do a thorough inspection of the interior and exterior of the vehicle, noting any obvious vehicle damage. Mark damage here:

Exterior Damage

Dents _____
Windshield cracks _____
Chips _____
Broken side mirrors _____
Other: _____

Interior Damage

Headliner rip _____
Broken door handles _____
Torn seats _____
Other: _____

REPORT DAMAGE TO VEHICLE MANAGER/ OWNER!

4. VERIFY VEHICLE OPERATION

Verify normal vehicle operation before proceeding with installation. Perform basic checks on vehicle's engine, electrical, and lighting system.

5. VERIFY POWER SOURCES / CONNECTION POINTS

Power sources must be properly identified before installation.

Identify Constant Power Source. *With ANY vehicle, remove any covering around the steering column and use a [digital voltmeter](#) to identify wiring and voltage.*

General guideline for Ford and GM vehicles:

White	Stop Light Switch
Green	R.R. Lamp
Yellow	L.R. Lamp
Purple	Turn Signal Flasher
Brown	Flasher
Dark Blue	L.F. Lamp
Light Blue	R.F. Lamp
Black	Horn
Orange	Ignition Switch
Dark Green	Ground
Tan	Ground
Red	battery 12 V

Again, always check vehicle specifications and test with a digital voltmeter before installations!

PERFORMING THE INSTALLATION

1. Connect Wiring Harness and Secure Device



Connect wiring harness to device. Place device into an acceptable location and secure using [self-tapping screws](#) and 2 or more [tie wraps](#). It is preferable to secure device in a hidden, secure location away from moving parts.

Suggested locations:

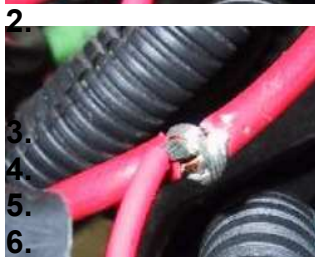
- Underneath steering column
- Underneath passenger side dash
- Behind radio
- Behind glove box
- Discrete trunk locations

2. Poke and Wrap

After finding all relevant wiring sources, strip wiring insulation accordingly to expose wires, and connect wiring using a standard 'poke and wrap' method.



Poke. Use [butane soldering iron](#) or [wire cutting tool](#) to expose wires. "Poke" wires from wiring harness through vehicle wiring. See *Wiring Key*.



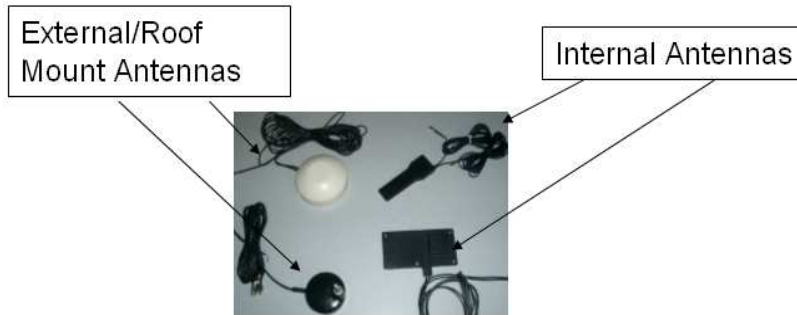
Wrap. Wrap wires neatly around vehicles wires.



Secure. Place [insulation tape](#) around exposed wires. Use optional [tie wrap](#) for added security.

Run Wiring Harness to proper Antenna Location

Antenna types:

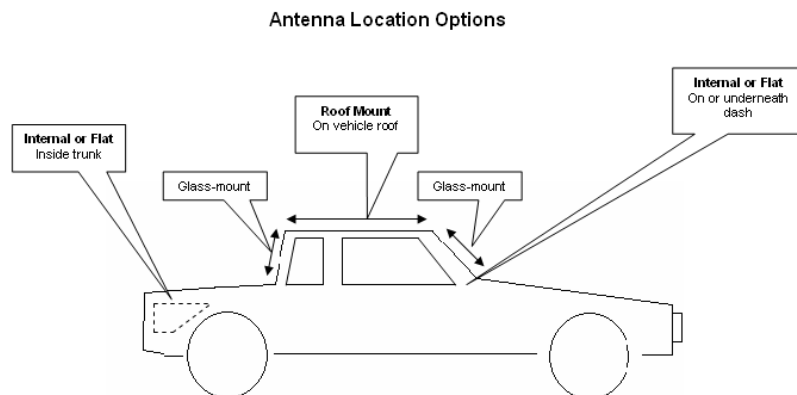


Connect wiring to GNX-10 device.

- **If device is installed towards front of vehicle** (i.e.-beneath steering column or dash) run wiring harness through vehicle head liner so that wires are not exposed or easily tampered with.
- **If device is installed towards rear of vehicle**, place wires discretely under trunk carpeting. Alternatively, antenna may be mounted discretely close to the rear windshield.

Please note that the antenna should have a relatively clear view of the sky.
Please see diagram below for acceptable locations.

Antenna Locations	
Antenna Type	Acceptable Locations
Internal/Flat	Under carpet in rear trunk or front side dash (above or below dash panel).
Roof Mount	Roof/top of vehicle
Glass Mount	Rear windshield or front windshield.



4. Install Antenna

Use standard 2-way radio antenna installation method for internal or glass mount antenna options. For externally mounted roof mount antennas, please use these guidelines:

- Remove head liner where installation will take place.
- Drill ½ inch hole where roof mount antenna will be mounted.
- Remove any filings/shavings where antenna will be mounted.

- Route antenna wiring through vehicle head liner to area where antenna will be mounted.
- Apply silicone sealant around exterior antenna area. Secure antenna accordingly.

5. Test Equipment for Functionality

Any GREEN light indicates that the device is functioning properly. Any RED light indicates a malfunction. Please see key below for details.

GREEN	DESCRIPTION
OFF	Power Down Mode
FLASH	Low Power Mode
SLOW	Full power; Ignition OFF
FAST	Full Power, Ignition ON

RED	DESCRIPTION
OFF	No faults detected
1-1	License Key Expired
2-1	GSM Module Fault
2-2	No SIM Inserted
2-3	No GSM Signal
2-4	Network not found
3-1	GPS Module Fault
	GPS Antenna OPEN/
3-2	SHORT
3-3	GPS No Track (0 sats)
3-4	GPS No Fix (<3 sats)
3-5	GPS No Time

6. Install any Optional Equipment

Install any optional equipment, such as the Ethernet cable adapter. Plug Ethernet cable into laptop and test Internet connectivity.