

TELETRAC NAVMAN



Qtanium 200

INSTALLATION MANUAL

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It is the Owner's sole responsibility to install and use the Qtanium 200 (the Product) in a manner that will not cause accidents, personal injury or property damage. For the purpose of this notice, "Owner", "you" and "your" means the party (including any person authorized by that party to use and/or install the Product) that has either: (a) purchased the Product; (b) leased or rented the Product from Teletrac Navman or its related companies; or (c) subscribes to Teletrac Navman' subscription service and such subscription incorporates the use of the Qtanium 200 product.

The Owner of this Product is solely responsible for observing safe driving practices. The choice, location and installation of all components of the Product is critical. If installation is not correct, the Product may not perform at its designed potential or specifications. If in doubt, consult your Teletrac Navman dealer.

The Qtanium 200 is sealed in the factory and tested for watertight integrity. Unauthorized opening of the unit will compromise the IP-67 rating, will invalidate the warranty, and may result in failure due to ingress of water or other substances.

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EMC Compliance

This device complies with Part 15 of the FCC Rules. Operation 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.

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1 Introduction

The Qtanium 200 is a weatherproof Automatic Vehicle Location (AVL) unit that is designed for reliable long-term asset tracking applications that are normally tethered to 12 or 24 volt systems but may be disconnected for periods of time. It communicates with a server and allows information about the asset to be stored and monitored.

The Qtanium 200 is a combined GPS (Global Positioning System) and communications product that contains the following:

- Internal 56 channel GPS receiver to provide accurate location data
- Internal cellular modem (HSPA or CDMA) and antenna that enables data to be transferred between the asset and the server
- On-board microprocessor for data processing and storage, and external communications
- Support for 2 Digital Inputs and 2 Digital Outputs
- Internal 5.2Ah 3.7V lithium ion back-up battery that is charged from a permanent external power supply, such as the asset's battery, through the power cable. When fully charged, the internal battery has the capacity to report up to 6 months with one event per day schedule.
- IP66 sealed enclosure

Note This installation manual is written for professional vehicle technicians.

2 Qtanium 200 Hardware

The box contains:

- Qtanium 200 with integrated wiring harness
- Mounting screws

3 Choosing a mounting location

Important The antenna must be located at least 20 cm (8") from any person to meet FCC radio frequency exposure requirements.

The installation is considered to be **permanent** because the firmware can be updated without removing the Qtanium 200 from the asset. When selecting a mounting location, consider the length of the cables and proximity to power connection points. Mount the Qtanium 200 and associated cabling in a location that does not contain moving parts or obstruct serviceable areas.

Although the Qtanium 200 has an IP-66 rating, it is recommended that you mount it in a location that will provide maximum protection from dust, water, and vibration.

The Qtanium 200 is rated -30° to 75° C but it is recommended that you choose a mounting location that minimizes exposure to extreme temperatures. Also be aware that due to the battery chemistry, battery operation will be impaired at high temperatures.

Important The Qtanium 200 contains an accelerometer that detects movement. It is critical that the Qtanium 200 is mounted securely on a rigid surface where it cannot move independently of the asset and / or vibrate off its mounting location. The final orientation of the Qtanium 200 after installation is not important.

4 Installation

This section describes the installation procedure for the Qtanium 200.

4.1 Before starting

1. Check that you have all the components needed to complete your installation.
2. Identify the best mounting location for the Qtanium 200. Make sure that the proposed location for the Qtanium 200 provides sufficient space for servicing.
3. Test the proposed locations to check which provide best performance.
4. Decide on the most suitable mounting method for your chosen location (screws / nuts and bolts / magnets).
5. On the asset, identify where you will connect:
 - To asset's chassis
 - To asset's +12/24V uninterrupted supply
 - To asset's ignition signal
6. Check that the power cable is long enough to reach between the power source and your chosen location for the Qtanium 200.

4.2 Mount the Qtanium 200

1. Disable the asset (disconnect a battery post).
2. Mount the device. Best possible location will have a clear view of the sky and will be protected from physical damage. (GPS performance will be impaired if the antenna cannot get a good view of the sky). Use 2 self-tapping screws or the 2 nuts and bolts, place the screws or bolts through the two slots along both sides of the Qtanium 200.
3. Run the Qtanium 200 power cable.

Important Ensure that any holes drilled for the installation will not weaken the structure of the asset or compromise the safety of the asset or its occupants. If in doubt, consult the manufacturer. If holes are required for cable routing, use grommets to ensure that the asset remains waterproof.

4.3 Cabling

Important Individually isolate any unused wires. Soldering is strongly recommended for all electrical connections.

It is recommend that you leave a service loop in the cable, near to the Qtanium 200, with enough slack to allow working room and strain relief.

Ensure that all cabling is:

- Tidy and secure so that it is not a hazard to the users of the asset
- Protected from heat sources and from chaffing on sharp metal edges
- Connected to manufacturer's approved points
- Run along factory harnesses
- Located where it will not be pinched and/or damaged

4.4 Required connections (power)

To connect the Qtanium 200, wire the power cable as follows:

Wire Color	Function	Description
Red	+12/24V	Connect to the positive post on the asset's battery or another suitable permanent power supply source. This connection must be fused (3 Amp).
White	Ignition	Positive input when ignition is ON or engine is running.
Black	Ground	Battery Negative or Asset chassis connection.

4.5 Optional connections

Qtanium 200 uses 22AWG leads for its I/O connections. These leads are mapped as follows:

Wire Color	Function	Description
Blue	DI-1	Digital Input 1
Orange	DI-2	Digital Input 2
Green	DO-1	Digital Output 1
Brown	DO-2	Digital Output 2
Yellow	N/A	Reserved
Green/Black	TxD	RS232 Output
Blue/Black	RxD	RS232 Input
White/Blue	N/A	Reserved
Pink	N/A	Reserved

4.5.1 Digital inputs

Qtanium 200 can support up to two Digital Inputs. Digital Inputs are protected from typical vehicle transients and can be directly connected to most vehicle level logical inputs from 4 volts, up to the vehicle power input level (typically 12 VDC). Their input impedance is approximately 10k Ω . The two inputs may be used to sense vehicle inputs such as cooling unit operation, a hidden driver “Panic” switch, taxi on-duty/off-duty meter status or many others. The Digital Inputs can be configured to detect either positive switching (Active High, Biased Low) or negative switching (Active Low, Biased High).

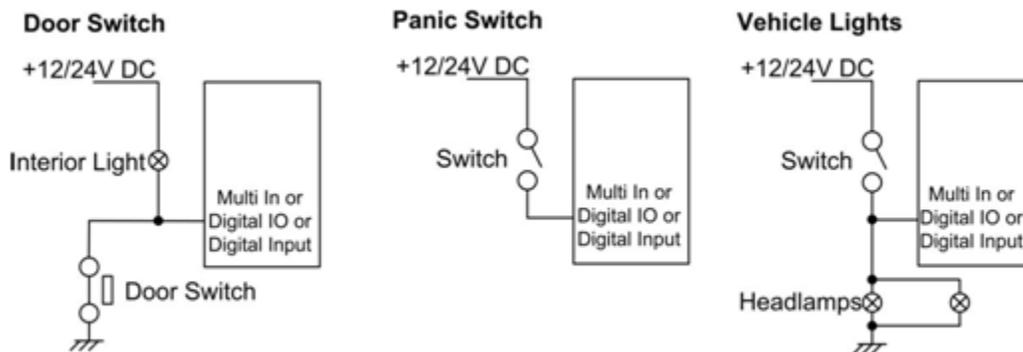
Polarity is not important but must be noted for the correct configuration to be sent to the Qtanium 200.

Positive switching configuration (biased high)

A positive switching configuration requires a sourcing input of +12/24 V. When configured for positive switching, the input state is considered ON when it becomes high.

The voltage thresholds that trigger the change in the input state are as follows:

State	Voltage
High	>4.0 V
Low	<1.0 V / Disconnected



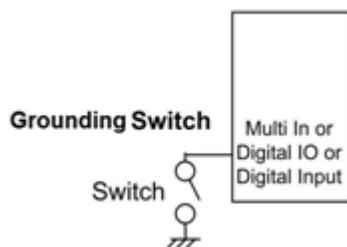
Negative switching configuration (biased low)

A negative switching configuration requires a Ground switching input; that is, either an open or closed circuit to Earth.

When configured for negative switching, the input state is considered ON when it becomes low.

The voltage thresholds that trigger the change in input state are as follows:

State	Voltage
High	>0.5 V
Low	<0.2 V / Disconnected

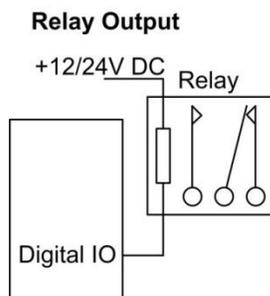


4.5.2 Digital outputs

Qtanium 200 can support up to two Digital Outputs. The Digital Outputs have an open collector transistor-type arrangement to control external relays and are controlled by the dispatcher through the OnlineAVL2 software.

A Digital Output pulls low with a maximum current of 150 mA when activated. It has an over-current tripped protection. If tripped, the output must be changed to OFF, or have a power cycle to reset the current trip.

Digital Outputs are commonly used to control a relay that prevents unauthorized starting of the asset and/or to activate an accessory or a dash-mounted light to communicate with the asset operator.



4.6 Status LEDs

Qtanium 200 is equipped with two Status LEDs, one for GPS and one for COMM (wireless network status).

The LEDs use the following blink patterns to indicate service:

LED #1/ Orange (Comm LED) Definitions

COMM LED – Orange	Condition
Off	Modem off
Slow Blinking	Comm on – searching
Fast Blinking	Network available
Alternates from Solid to Fast Blink	Registered but no inbound acknowledgement
Solid On	Registered and received inbound acknowledgement

LED #2/ Green (GPS LED) Definitions

GPS LED – Green	Condition
Off	GPS receiver off
Slow Blinking	GPS receiver on
Fast Blinking	GPS time sync
Solid On	GPS fix acquired

4.7 Test the installation with OnlineAVL2

To check that the Qtanium 200 is installed correctly and can communicate with OnlineAVL2:

1. Position the asset outside in a location that provides a good view of the sky and good cellular reception.
2. Verify/record the asset's name/number and calibrate engine hours and/or odometer in OnlineAVL2 (Device Properties).
3. Start the engine and allow up to five minutes to initiate OnlineAVL2 reporting.
4. Check that OnlineAVL2 shows an Ignition On event. If not, check wiring and fuses.
5. While the engine is running, check the Satellites column in OnlineAVL2. Five (or more) satellites are required. If the number of satellites is low, move the asset to a location that provides a good view of the sky and/or select a different location to mount the GPS antenna (internal on Qtanium 200).
6. Verify/configure sensor activity in OnlineAVL2 for any sensors connected to Digital Inputs, if applicable.

4.8 Apply the tamper-evident seal

After you have checked the installation and are satisfied that it's correct, do the following:

1. Individually isolate every unused wire.
2. Apply Tamper-Evident Seal Liquid (inspector's lacquer) to all fuse holders and the ground screw.
3. Tidy all wires with cable-ties to keep them away from any moving parts, heat sources, or sharp metal edges.
4. Reconnect any of the asset's connectors that were unplugged during the installation and replace all trim panels.

This completes the Qtanium 200 installation process.

5 Troubleshooting

Perform the following steps if the connection between the Qtanium 200 and OnlineAVL2 is not working:

1. Use OnlineAVL2 to confirm which device you are troubleshooting. Verify/match the modem (AVL ID) number from the back of the Qtanium 200 with OnlineAVL2.
2. The Qtanium 200 may have a missing wire connection/blow fuse/poor ground. Use a multi-meter to verify power, ground, and the run signal at the source and fuses. Reconnect the power cable, start the engine, ping (Query) the device from OnlineAVL2, and check OnlineAVL2 for vehicle activity.
3. The Qtanium 200 may be outside of cellular data coverage area. Check cellular data coverage maps published by the cell service provider.
4. Check SIM card status by contacting Teletrac Navman customer support.
5. The Qtanium 200 may be damaged. Replace with a spare Qtanium 200. Start the engine and check OnlineAVL2 for activity from the new device.
6. Contact Teletrac Navman customer support for assistance.

6 Hibernate mode

To hibernate the Qtanium 200, do the following:

1. With device powered, tie together Output 2 (Yellow lead) with Input 1 (Blue lead) and Input 2 (Orange lead).
2. Disconnect power from device.
3. Wait 30 seconds for LEDs to turn off.
4. Separate all wire leads. Device hibernates until power is restored.

Note For Hibernate procedure to be successful, Inputs 1 and 2 must be in their default state (bias high) and Output 2 is not used for other functionality.

7 Specifications

GENERAL	
Network Technologies	GSM/GPRS/EDGE/HSPA and CDMA 1xRTT
Data Modes	UDP packet data
Operating Voltage	12 and 24 volt vehicle systems
CELLULAR	
Data Support	GPRS, CDMA, 1xRTT or HSPA packet data
Operating Bands (MHz):	MHz (Band)
GSM/GPRS CDMA/1XRTT HSPA/UMTS	850/900/1800/1900 800/1900 800(VI)/850(V)/900(VIII)/ 1700(IV)/1900(II)/2100(I)
Transmitter Power:	
GSM/GPRS	850/900 32.5 dBm
	1800/1900 29.3 dBm
	850 24 dBm
CDMA/1xRTT	800 24 dBm
	1900 23 dBm
HSPA/UMTS	(all bands) 23 dBm
HSPA data rates	5.6 Mbps upload/7.2 Mbps download
HSPA Fallback	EDGE/GPRS/GSM quad band EDGE MCS-1MCS9 3GPP Release 6
COMPREHENSIVE I/O	
Digital Inputs	2 programmable bias
Digital Outputs	2 open collector (150mA)
Status LEDs	GPS and Cellular
ENVIRONMENTAL	
Temperature	-30° to + 75° C (connected to primary power) -40° to + 85° C (storage)
Humidity	95% R.H. @ 50° C non-condensing
Shock and Vibration	U.S. Military Standard 202G and 810F, SAEJ1455
EMC/EMI	SAEJ1113; FCC-Part 15B; Industry Canada
ELECTRICAL	
Operating Voltage	7-32 VDC (momentary) 9-32 VDC (start-up, operating)
Power Consumption	Typical 500uA @ 12V (deep sleep) Typical 13mA @ 12V (radio-active sleep) Typical 41mA @ 12V (UDP connection, GPS off)

CONNECTORS, SIM ACCESS	
SIM Access	Internal
Interface	12 wire captive harness
PHYSICAL	
Dimensions	2.15 x 4.33 x 1.59" (54 x 110 x 40.4mm)
Weight	12 oz. / 340 g (with harness)
GPS	
Location Technology	GPS; GLONASS, and QZSS capable
Enhancement Technology	SBAS: WASS, EGNOS, MSAS
Receiver Type	56 channels
Tracking Sensitivity	-162 dBm
Acquisition Sensitivity	-148 dBm
Location Accuracy	2.0m
Location Update Rate	up to 10 Hz
AGPS / Location assistance capable	
BATTERY PACK	
Battery Capacity	5.2 amp hour
Battery Voltage	3.7 volts
Battery Technology	Lithium ion
MOUNTING	
Screw Mount, Magnet Mount, Tie Wrap	
CERTIFICATIONS	
Fully certified FCC, CE, IC, PTCRB, Applicable Carriers	
KEY FEATURES	
<ul style="list-style-type: none"> • 6 months with single message cycle per day on fully charged batteries. • 5.2 Ah lithium ion rechargeable battery pack • IP66 sealed enclosure • Packet data (GPRS, CDMA 1xRTT, or HSPA) • Internal GSM and GPS antennas • Super sensitive GPS tracking • Ultra-low power save mode • 3-axis accelerometer for motion, hard backing/acceleration/cornering, and impact detection • 2 auxiliary inputs and 2 outputs • Voltage monitoring and low battery notification • 20,000 buffered messages for data logging during coverage loss 	