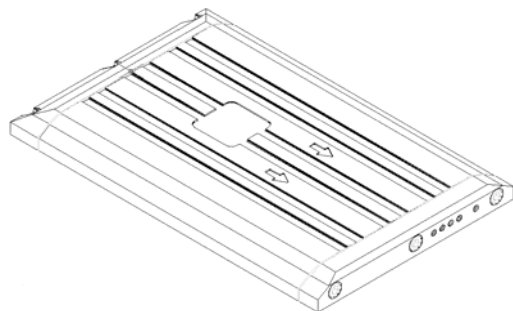


QTT NC-100™ Portable Traffic Analyzer™ and QTT NC-200™ Portable Traffic Analyzer™

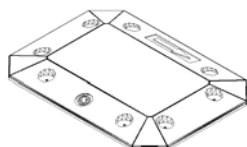


OPERATIONS MANUAL

This manual is provided for reference purposes and as a quick guide for users that are somewhat familiar with the equipment. If you are a first time user or have not yet installed the necessary Highway Data Management (HDM) Software on your computer, please do so at this time. Follow the instructions on the CD provided for installation of HDM 9.x and refer to the electronic manual included on the CD for detailed information and procedures.

1.0 INTRODUCTION

QTT Traffic Analyzer models QTT NC-100™ Portable Traffic Analyzer and QTT NC-200™ Portable Traffic Analyzer



are self-contained vehicle detectors that require no external sensors. QTT Traffic Analyzers are installed under a QTT protective cover in the center of the traffic lane so that motor vehicles pass over the counter. No physical contact by a vehicle is necessary. QTT Traffic Analyzers use Vehicle Magnetic Imaging (VMI) to detect vehicles as they move through the earth's magnetic field. Every motor vehicle has parts that are constructed from iron. When a vehicle passes over the QTT Traffic Analyzer, the iron parts interfere with the earth's magnetic field. This disturbance creates electrical signal changes in the QTT Traffic Analyzer sensors. As a result, the QTT Traffic Analyzer can determine vehicle presence, count each vehicle, measure vehicle speed, and record vehicle length. The QTT Traffic Analyzer Model QTT NC-200™ Portable Traffic Analyzer also reports road surface temperature.

2.0 BATTERY CHARGING AND CARE

The maximum length of a traffic study primarily depends upon battery capacity, battery charge, and density of vehicles. The QTT NC-200™ Portable Traffic Analyzer is designed to classify 300,000 vehicles over a period of three weeks, whichever occurs first. The QTT Traffic Analyzer battery pack consists of three Lithium Ion rechargeable batteries. Use the QTT HDM 9.0 software to determine the charge of the batteries. If you are uncertain of the battery charge, you should recharge the QTT Traffic Analyzer until the battery charger LED displays green.



During operation, the QTT Traffic Analyzer may shut down if the battery charge drops below the preset minimum battery voltage level. When the battery voltage drops to this shutdown point, the unit should be recharged as soon as possible to assure recovery of any recorded data. To charge the batteries, first insert the charging plug into the QTT Traffic Analyzer connector pins. Next, insert the wall charger transformer into the 115 vac (220 vac in some countries) outlet. The QTT Traffic Analyzer will then begin charging.

IMPORTANT: NEVER plug the charger into the wall socket prior to inserting the connector into the QTT Traffic Analyzer and always disconnect from the wall outlet prior to removing the connection from the QTT Traffic Analyzer.

CAUTION: Do not use a charger intended for a QTT NC-47™ Portable Traffic Analyzer or a QTT NC-97™ Portable Traffic Analyzer with either the QTT NC-100™ Portable Traffic Analyzer or the QTT NC-200™ Portable Traffic Analyzer. Use only the charger provided with your QTT NC-100/200™ Portable Traffic Analyzer. Other chargers should not fit.

3.0 COMMUNICATION WITH THE QTT TRAFFIC ANALYZER

The QTT NC-100/200™ Portable Traffic Analyzer Communications Interface Adapter (hereinafter referred to as the "Interface Adaptor") and Highway Data Management (HDM) software (REV 9.0) are required for communication between the QTT NC-100/200™ Portable Traffic Analyzer and the computer. This interface adapter allows programming of the QTT Traffic Analyzer and retrieval of recorded data. The interface adapter plugs into the serial port of your computer and the pin sockets on the QTT NC-100/200™ Portable Traffic Analyzer. If you do not have a

serial port on your computer, QTT can provide you with an adaptor for your USB port. Contact QTT Sales for pricing. A green and a red LED are visible on the interface adapter. The green LED is lit when the QTT NC-100/200™ Portable Traffic Analyzer is writing to the PC and the red LED is lit when the PC is writing to the QTT NC-100/200™ Portable Traffic Analyzer.

To communicate with the QTT Traffic Analyzer, first locate the QTT NC-100/200™ Portable Traffic Analyzer Communications Interface Adaptor and cables. Connect the Interface Adapter to the serial port on your PC. Connect the other end to the QTT NC-100/200™ Portable Traffic Analyzer. The QTT NC-100/200™ Portable Traffic Analyzer pins are configured such that there is only one way that you can plug the Interface Adapter into the pins receptacles.

4.0 FRAME MODE AND SEQUENTIAL MODE

The QTT NC-100/200™ Portable Traffic Analyzer presents all data through HDM 9.0 in frame (or binned) mode.

5.0 TIME TO START (COLD START)

"Cold Start" is the time, after placement on the highway, before the QTT Traffic Analyzer is ready to begin traffic counting. The QTT Traffic Analyzer should be installed at least 30 minutes before the scheduled start time you have programmed. This buffer time allows the counter to automatically realign the magnetic sensors to ignore any metal object in close proximity. A counter programmed to start counting at 12:00 P.M. should be installed by 11:30 A.M.

6.0 PROGRAMMING THE QTT Traffic Analyzer

Run the HDM 9.0 Program and select "Histar" from the main menu and "Program" from its the sub-menu. Complete all information relevant to your study on the Hi-Star Setup dialog or select a predefined configuration by opening the appropriate *.hps file. When you have specified your study parameters, Select "Program" from the menu and the device type (e.g., NC200) from the sub-menu and a new screen will appear. Click on the "Program" button and follow the instructions on the pop-up menus and your device will be programmed. Click on "Done" when you are done programming the QTT Traffic Analyzer.

Refer to the HDM 9.0 manual for further instructions.

7.0 INSTALLATION

The QTT Traffic Analyzer should be installed in the center of the traffic lane with the arrow on the counter pointing in the direction of traffic flow. If the QTT Traffic Analyzer is mounted in the reverse direction it may count traffic but all

other data will not be accurate. In free flowing traffic areas, the counter may be installed at any desired location where traffic is channeled to pass over the counter. Try not to mount the counter near curves or on wide traffic lanes where vehicles may miss the counter. Metal bridges should be avoided, as the counter may not be able to neutralize the magnetic effect from the metal construction. If bridge measurements are necessary, place the QTT Traffic Analyzer before or after the bridge. On some bridges, ramps, and overpasses the effect may be negligible. Only a trial test can positively determine an acceptable location. Always try to position the QTT Traffic Analyzer where vehicles are moving freely for best accuracy and results. A reusable natural rubber Protective Cover is screwed (never nailed) to the roadway surface over the QTT Traffic Analyzer to hold the unit in place. The QTT Traffic Analyzer can also be installed on gravel and unimproved roads, but 8 screws are recommended.

IMPORTANT: When installing or retrieving any QTT Traffic Analyzers, be sure to wear proper safety attire; reflective vests, safety goggles, hard hats, etc. Do not enter traffic areas unless traffic has been stopped or safely diverted by qualified traffic control personnel.

Customers may procure their own hardware (washers, self tapping masonry screws, masonry drill bit and nut driver) or purchase Asphalt installation kits or Concrete installation kits from Nu-Metrics.

The Asphalt installation kit [NMI Part# 70002031] consists of:

1. 500 flat washers, that fit the fastener holes of the cover
2. 500 ¼" x 3 ¼" hex washer head self tapping masonry screws
3. 5 3/16" x 6" masonry hammer drill bits
4. 1 3/8" magnetic nut driver with ¼" shank

The Concrete installation kit [NMI Part# 70002030] consists of:

1. 500 flat washers, that fit the fastener holes of the cover
2. 500 ¼" x 1 ¾" hex washer head self tapping masonry screws
3. 5 3/16" x 6" masonry hammer drill bits
4. 1 3/8" magnetic nut driver with ¼" shank

The customer can use a hammer drill equipped with a standard Jacob chuck to install the cover with either kit.

The customer may also opt to use the recommended Hilti hammer drill with its drill/screw setting facilities.

STEP 1 – PLACEMENT:

Place the QTT Traffic Analyzer in the center of the traffic flow lane aligned as closely as possible to the flow of traffic. If the QTT Traffic Analyzer is skewed, its accuracy will diminish. Select a location that is level and smooth. Position the Protective Cover over the unit so that the bottom of both cover and unit are flush with the road surface. Ensure that the arrow on the cover is pointing the same way as the arrow on the QTT Traffic Analyzer (with the flow of traffic).

STEP 2 – SCREW INSTALLATION:

IMPORTANT: NEVER INSTALL THE QTT NC-100/200™ PORTABLE TRAFFIC ANALYZER USING NAILS. ALWAYS USE THE SCREW INSTALLATION.

Place one (1) new washer on each of the four (4) new screws to be used. If installed in high traffic volume area, or if the aggregate is soft, you may wish to use 8 new washers and new screws.

Use the recommended screw sizes for Asphalt and Concrete.

Pre-drill the holes where the screws will be placed taking care to carefully align the cover with your chalk line. (Drill a minimum of 1/2" deeper than the length of the screw). Insert the screws into the pre-drilled holes and tighten (do not over-tighten). Hilti Screw Hammer/Driver with adapter is recommended (QTT Part No. HI 3070) for fast and easy installation.

If for any reason the cover appears to be out of alignment with the flow of traffic, remove the screws and start the installation again. It is much easier to correct a potential alignment problem immediately than to have to repeat the entire study process. Poor alignment may have a major impact on the study results such that a second study may be required to produce usable results.

STEP 3 - INSTALLATION COMPLETE:

The QTT Traffic Analyzer is correctly installed when it has been screwed down in its cover with all directions of traffic flow consistent and aligned.

STEP 4 – REMOVAL:

Reverse the drill or hammer/drill and remove the screws from the Protective Cover.

STEP 5 - REUSE COVER:

Keep the Protective Cover for your next study. The cover is designed to support a number of installations. Remove screws from cover before reuse. **Do not reuse screws.**

STEP 6 - DOWNLOAD STUDY:

Retrieve the QTT Traffic Analyzer and return for downloading the data from the study.

8.0 DOWNLOADING DATA - READING A QTT TRAFFIC ANALYZER

After the study is complete and the QTT Traffic Analyzer has been removed from the highway, transfer the data to your PC. Use the HDM 9.0 software to read the QTT Traffic Analyzer and collect the results of your study. If the QTT NC-100/200™ Portable Traffic Analyzer battery is too low to read, recharge the battery before reading. Review your traffic study and print any of the various reports or graphs available. See the HDM 9.0 User Manual for details and read options.

9.0 QTT TRAFFIC ANALYZER MAINTENANCE

Other than care of the electrical connector pins and battery recharging, very little maintenance is required. The QTT Traffic Analyzer housing may be cleaned with soap and water. For removal of tar, Tapecoat, or road film, consult a qualified customer service representative. DO NOT soak or wipe with solvents such as paint thinner, turpentine, kerosene etc. To prevent damage to the housing, follow the recommended Installation and Removal procedures (refer to HDM 9.0 manual for details). The electrical pins used in the QTT Traffic Analyzer are designed to withstand extreme environmental conditions. Since they are open sockets, occasional cleaning may be required using tap water and a small brush to wash away any dirt that may have lodged in the cavities. DO NOT force any sharp objects into the sockets since this may damage the pin retention ring.

QTT Traffic Analyzers should never be stored in a metal area or container that would allow contact with the electrical connector pins. This could result in the unintentional shorting of the power ON pin, which may deplete the battery or interrupt a planned study.

10.0 ERROR MESSAGES & TROUBLESHOOTING

Refer to the electronic manual provided on the HDM CD for detailed information.

11.0 LIMITED PRODUCT WARRANTY

General Coverage: QTT equipment and instruments (but not computer products covered by other manufacturers' warranty) are warranted to the owner for a period of one year from date of original purchase against defects in manufacture. This limited warranty is given by Quixote Transportation Technologies, Incorporated and not by any distributor, dealer, agent, or representative from whom the equipment may have been purchased.

What QTT will do: If the equipment develops a defect in manufacture within the one year period, it will be repaired or replaced at our option, providing you supply proof of purchase, date of purchase, and cover all cost of shipping. QTT return policy is 25% restocking fee if returned within 30 days in original condition and original shipping containers. No product will be accepted for exchange or refund after 30 calendar days from the date of invoice.

The Limited Warranty Does Not Cover: QTT will not repair defects related to servicing not performed by QTT Inc. or a QTT authorized Service Center. QTT will not provide any warranty if your instrument shows evidence that it has been disassembled, tampered with, damaged, misused, abused, or altered. QTT will not provide any warranty and is not responsible for damages or personal loss due to improper installation or operation.

12.0 LIMITED WARRANTY ON MEDIA

QTT warrants the disk(s) or CD(s) on which the software is recorded to be free from defects in materials or faulty workmanship under normal use for a period of ninety (90) days from the date of invoice as evidenced by a copy of the sales invoice. QTT will, at its option, replace or repair any defective disk(s) or CD(s) at no charge to you, provided you return the faulty disk(s) or CD(s) with a copy of the original sales invoice to your authorized distributor or to QTT. QTT or any distributor, dealer, agent, or employee shall have no responsibility to replace or refund the purchase price of a disk(s) or CD(s) damaged by accident, abuse, or misapplication.

13.0 DISCLAIMER OF WARRANTY ON SOFTWARE

Except for the limited warranty contained herein, all QTT software (but not software covered by other manufacturers warranty) is provided "as is" without warranty of any kind, and QTT expressly disclaims all implied warranties, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. QTT does not warrant, guarantee, or make any representations regarding the use or the results of the use of the software or any accompanying written or electronic materials in terms of their correctness, accuracy, reliability, or otherwise. The user assumes the entire risk as to the

results and performance of the software and written or electronic material. QTT does not warrant that the software will work correctly in a multi-user or network environment. If the software is defective, the user, and not QTT or its dealers, distributors, agents, or employees, assumes the entire cost of all necessary servicing, repair, or correction. Some states do not allow the exclusion of implied warranties, so the above exclusion may not apply.

14.0 LIMITATION OF LIABILITY

In no event will QTT or its developers, directors, officers, distributors, dealers, representative, employees or affiliates be liable to the user for any consequential, incidental or indirect damages (including damages for loss of business profits, business interruption, loss of business information, and the like) arising out of the use of or inability to use the equipment, software, hardware or accompanying written or electronic materials, even if QTT or an authorized QTT representative has been advised of the possibility of such damages. Because some states do not allow the exclusion or limitation of incidental or consequential damages, the above limitations may not apply to you.

15.0 SERVICE OF YOUR EQUIPMENT

If your equipment should ever need servicing, you must contact QTT sales and service department to acquire a Return Merchandise Acceptance (RMA) number to be included with your shipment. Please provide a description of the failure or discrepancy, your name and phone number, complete return address, and desired method of return shipment with any items returned. Send it (freight prepaid) to the distributor or if there is no distributor for your area, ship to:

QTT Service Center.
Service Dept. Phone: 724-438-8750
Fax Number: 724-438-8769
World Wide Web: <http://www.qttinc.com>
Email: sales@qttinc.com

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