Delta-Q Technologies

Manual for Use of
QuiQ Programmer with Charge Tracking

delta-q
TECHNOLOGIES

Delta-Q Technologies Manual for Use of QuiQ Programmer CT Kit is a product of **Delta-Q Technologies Corp.**

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QuiQ Programmer CT Kit

The QuiQ Programmer with Charge Tracking Kit (QuiQ Programmer CT Kit for short) is used for connecting your PC to a **QuiQ charger.** The kit is designed to**:**

- Save, maintain, and view the charger's charge history

- Add and delete charger algorithms

- Set the default algorithm

- Monitor battery performance and battery life

- Program charger software

- Send charge events to the Delta-Q Online Charge Tracking database

- Help analyze the performance of the charging system

This guide has three sections:

- QuiQ Programmer CT Kit

- Getting Started with QuiQ Programmer CT

- Using QuiQ Programmer CT

Kit Contents

QuiQ USB Interface Module
Part no. 480–0033
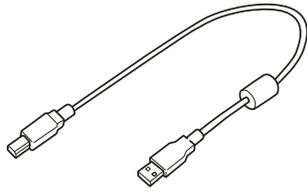
USB cable
Part no. 475–0072
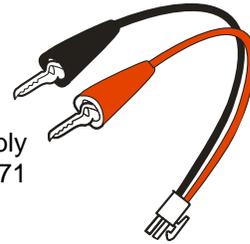
Wire Assembly
Part no. 475–0071
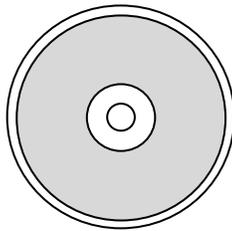
QuiQ Programmer CT CD (Part no. 490-0048)

Who Should Use This Kit?

Use this kit if you have a Delta-Q Technologies QuiQ charger and are responsible for any of the following:

- Maintenance and repair of a product containing a QuiQ Charger

- Maintenance and repair of battery systems charged by a QuiQ Charger

- Quality assurance of a product containing a QuiQ Charger

- Product development of a product containing a QuiQ Charger

QuiQ Programmer CT Permission Entitlement Levels

QuiQ Programmer CT has multiple data access and output displays; access to these depends on the **permission entitlement level** you have. To access the entire QuiQ Programmer CT functionality, you must have Technician level permission assigned to you by a Delta-Q

authorized software distributor. The authorized software distributor would send you an **Enable Sequence.** Once this **Enable Sequence** has been registered to your **QuiQ Programmer CT**, it will grant you Technician level access. See **Section 2:** Registering Enable Sequence

 for the registration process.

Table 1 describes the permission entitlement levels and QuiQ Programmer CT output features available for each level.

Permission Entitlement Level	Password Protected	Available Output View	Export Events to CSV
User	No	Charger Status View, Charge Summary of the connected Charger	No
Technician	Yes	Charger Status View, all Charge Events from currently connected charger and chargers previously connected to QuiQ Programmer CT	Yes

Table 1. Permission Entitlement Levels for QuiQ Programmer CT

See **Appendix 1. Permission Entitlement Levels for QuiQ Programmer CT Features** for a complete list of QuiQ Programmer CT features and permission entitlement levels.

Charge Tracking Requirements for Charger

To use the Charge Tracking features provided by QuiQ Programmer CT, the QuiQ charger must have version 3.0 or later software. Only newer generations of QuiQ Chargers (those with serial number beginning with "DQCM" or newer) have enough memory to hold version 3.0 or later software. If a QuiQ charger has version 3.0 or later software, then the Charge Tracking functionality is available via the QuiQ Programmer CT application. If a newer generation QuiQ charger only has software version 1.X , contact Delta-Q for upgrade information.

If version 3.0 or later software is attempted to be programmed into an older generation charger, the QuiQ Programmer CT application will prompt the user that the charger does not have enough space available for software programming. In that case, the QuiQ Programmer CT application may still be used to program other version 1 software versions and also to program algorithms to the charger.

Charge Tracking

During the operation of a QuiQ Charger, two types of events are stored in the internal memory of the charger. The two types of events are:

- **Charge Events**

- **System Events**

Collectively, these two types of events are referred to as charge tracking data. When the QuiQ Programmer CT connects to a charger, the PC application may retrieve the charge tracking data stored in the charger into the application internal database.

Charge Event

The charger software monitors over 40 charger and battery functions during a charge cycle. A charge cycle is initiated when a charger is connected to an AC source and begins battery charging. A charge cycle is complete when:

- The charge algorithm indicates that the charge is completed

- An error occurs, for example when there is a charge timeout due to faulty battery performance

- AC power to the charger is interrupted

- DC output to the battery is shorted or opened

When a charge cycle is completed, a Charge Event is logged in the charger. That Charge Event contains data such as number and type of faults, total ampere hours (Ahr), etc, and also serves as a data point of that charge cycle. See **Appendix 2. Charge Event Output** for a complete list of Charge Event Output and their descriptions. With the QuiQ Programmer CT PC application, you may retrieve these Charge Events from your chargers and store them in the QuiQ Programmer CT internal database.

System Event

A System Event is a record of charger and battery settings that are determined by the operator of the application or personnel responsible for the charger or battery environment. A new System Event is generated when the following occur:

- Battery Tapping—changing a default algorithm by tapping the output lead to a battery post
- Set Algorithm—changing a default algorithm using QuiQ Programmer CT

See Appendix 3 for a list of System Event Output and their descriptions.

Event Storage Capacity of Charger

As Charge and System Events are created in the charger, the charger stores them for later retrieval by the QuiQ Programmer CT application. A total of 64 Charge Events and 64 System Events can be stored.

After capacity is reached in either part, Charge Tracking saves new events by overwriting earliest ones.

NOTE: Due to the architecture, charge event records are erased in blocks of 8's and system event records in blocks of 32.

If you want to maintain a complete database of all events, frequently connect the charger to your QuiQ Programmer CT and download the events to the QuiQ Programmer CT internal database.

Delta-Q Online Database

Delta-Q Technologies maintains an online database for all QuiQ Programmer CT users to upload their Charge Events to Delta-Q. It is advantageous to upload Charge Events periodically since:

- It enables staff at Delta-Q to have access to these Charge Events as quickly as possible. This information will assist Delta-Q in diagnosing and improving charging performance.

- Once the Charge Events have been uploaded, the operator may clear all the Charge Events from the QuiQ Programmer CT's internal database, freeing up space and improving performance of the tool. Note that the function to clear the database is not available with User Permission.

Before the first transmission of data, a prompt will be displayed confirming that data is about to be sent to Delta-Q and asking for your agreement to the following statement. This message will not be subsequently displayed after you clicked the **Submit** button. If the disclaimer has been rejected, no data will be transmitted to the Online Database.

> *"Delta-Q may collect and use this information as part of its support services and to improve its products."*

The QuiQ Programmer CT user interface

The QuiQ Programmer CT User Interface is shown in the following figure:
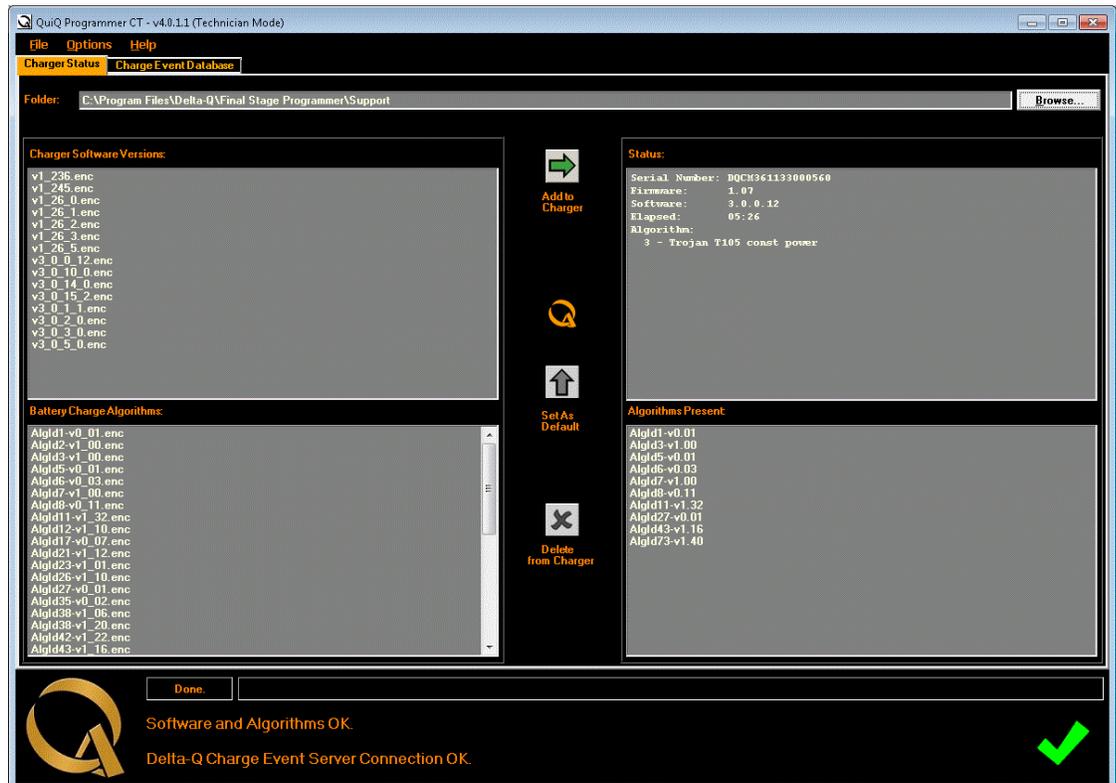
QuiQ Programmer CT's User Interface with either User or Technician permission has two tab views. They are:

- **Charger Status**

- **Charge Event Database**

QuiQ Programmer CT Tab Options

Charger Status tab

Charger Status describes the connected charger's settings, and it includes the following:

- Serial number

- Firmware version

- Software version

- Default algorithm ID

- Elapsed time of the current charger's connection

The Charger Status tab has buttons to add, delete and set charger algorithms and software.
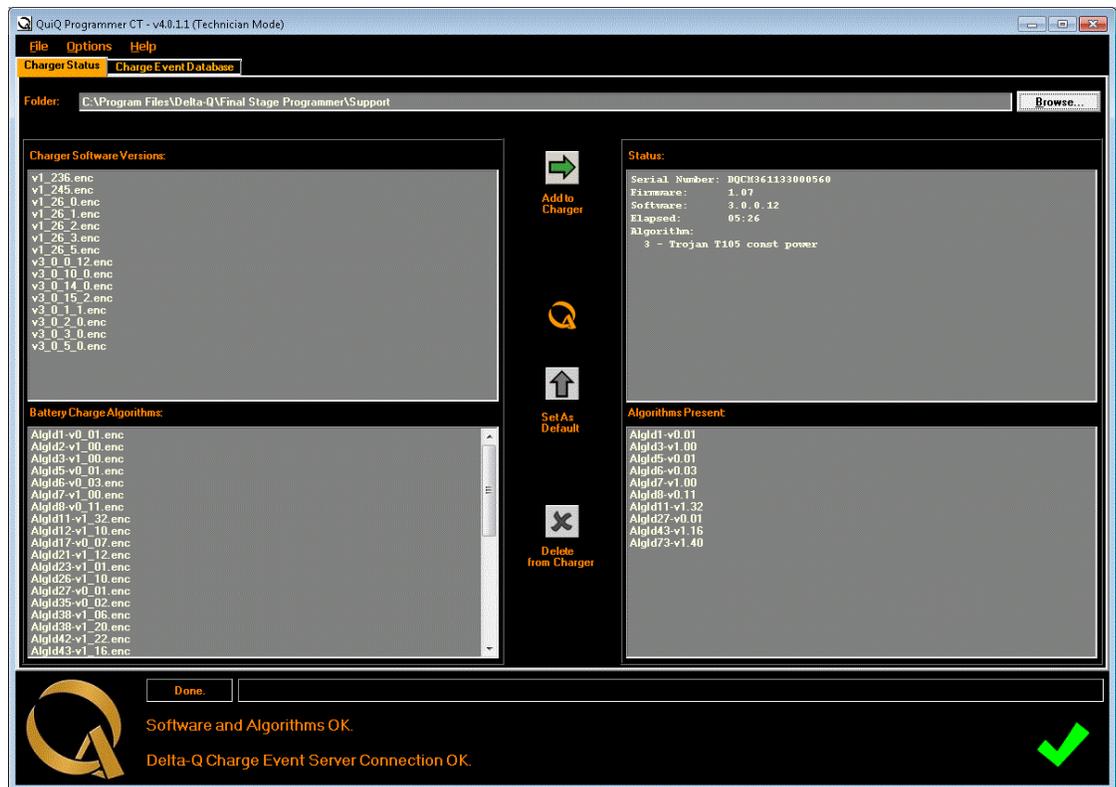
QuiQ Programmer CT Charger Status display

Charge Event Database Tab

If launched with User Permission, the QuiQ Programmer CT's Charge Event Database tab shows a summary of the connected charger's cumulative data via the Charge Summary Dialog. When launched with Technician Permission, the QuiQ Programmer CT's Charge Event Database tab displays a list of charge events and system events from the currently connected charger as well as any previously connected chargers and any imported database records.

Technician Permission and the Charge Event Database Tab

When the QuiQ Programmer CT is launched with Technician Permission, the Charge Event Database tab shows the Charge Events and System Events in separate tables similar to a spreadsheet. Data is arranged in columns, each with an identifying heading.
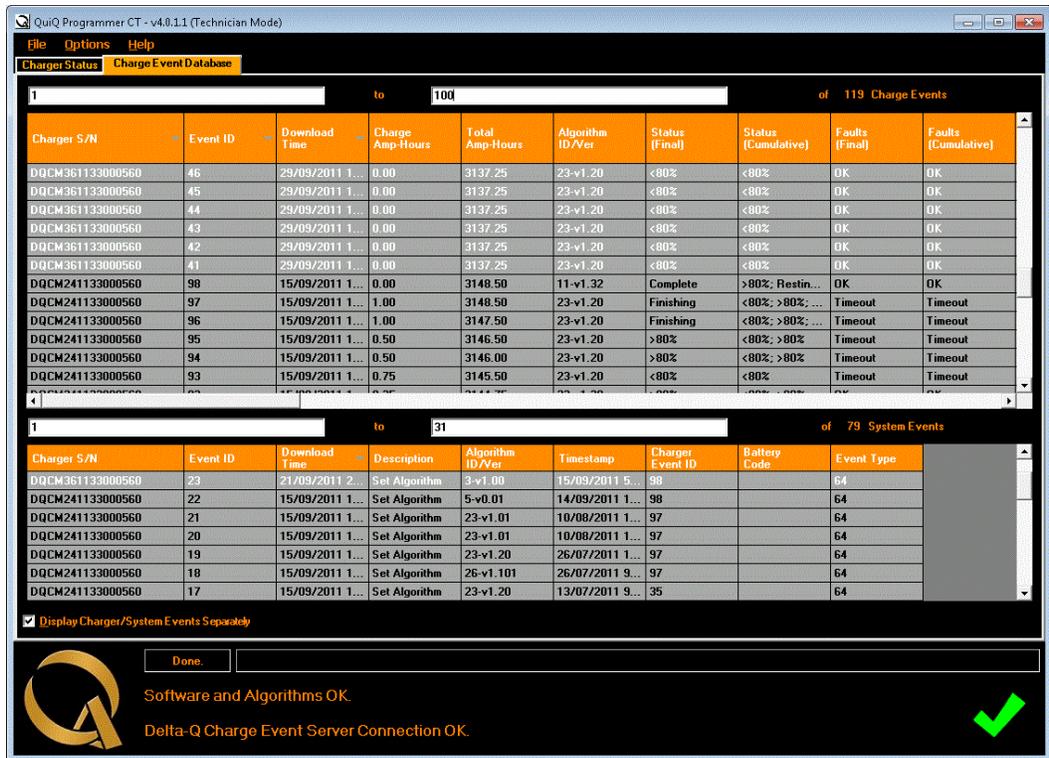
Charge Event Database Display with Technician Permission

By default Charge Event and System Event data is sorted in descending order (the most recent charge cycle is listed in the first row of a column) according to Download Time and Event ID. Depending on the data, each column can be sorted according to one of the following:

- Time—ascending or descending chronological order

- Ascending or descending values

- Alphabetically—A to Z, or Z to A

See **Section 3: Displaying Charge/System Events**.

Double clicking on a row in the Charge Event data grid brings up a Charge Summary Dialog. The Charge Summary Dialog displays the cumulative information from the latest charge event of the charger in that row.
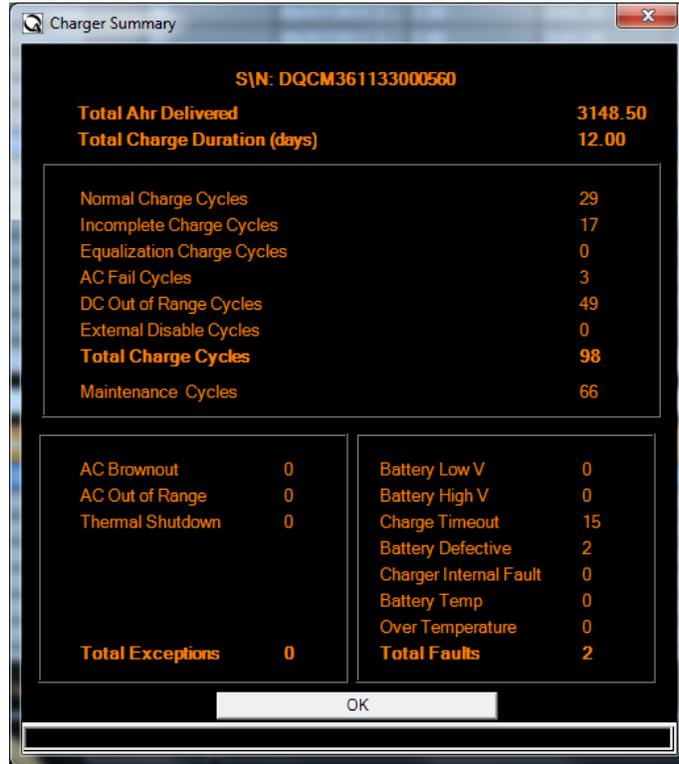
Charger Summary Dialog

User Permission and the Charge Event Database Tab

When the QuiQ Programmer CT is launched with User Permission, the Charge Event Database tab shows a button that displays the Charge Summary Dialog. With User Permission, the operator only has access to the latest cumulative charge event in the connected charger. To access historical charge events or events from other chargers, QuiQ Programmer CT must be launched with Technician Permission.
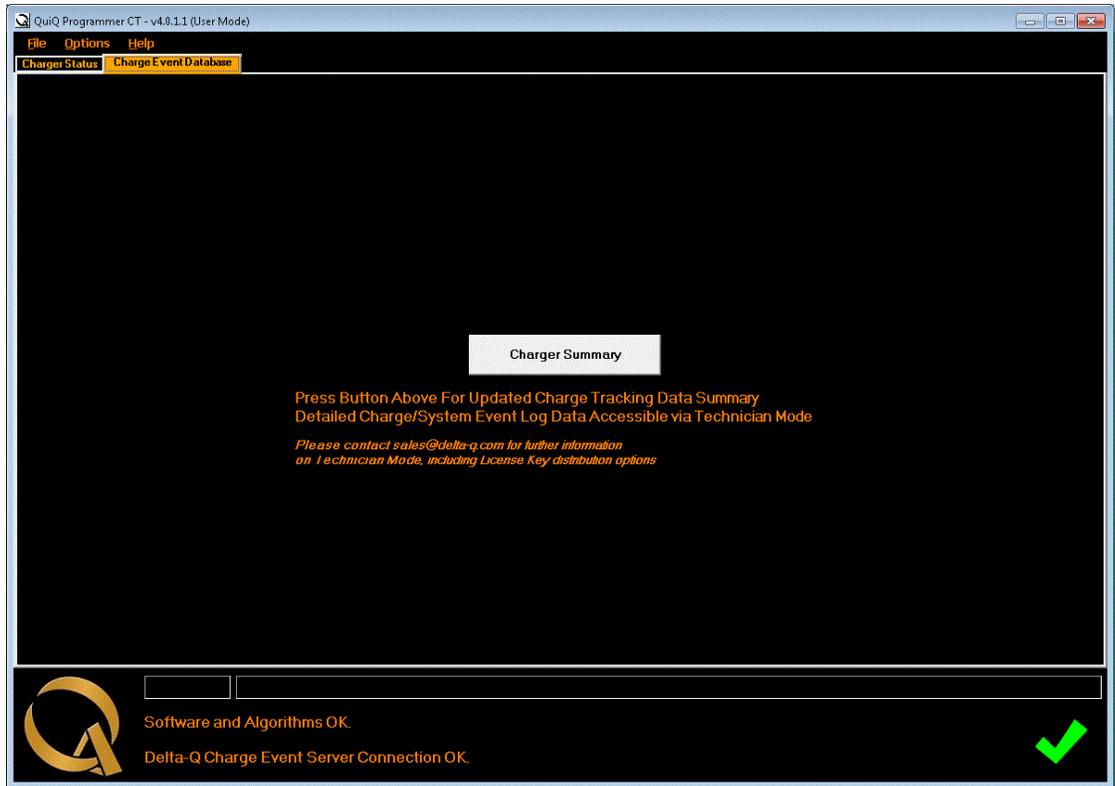
Charge Event Database Display with User Permission

Saving and Exporting Charge and System Events

The QuiQ Programmer CT may be used to download charge and system events from the Charger. Once downloaded, QuiQ Programmer CT stores these events in an internal database. This internal database can be exported and saved as a file for archiving purposes. It can also be saved as a comma-separated-value (CSV**)** text file. This CSV file is human-readable and can be imported into spreadsheet programs such as Microsoft Excel.

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Getting Started with QuiQ Programmer CT

WARNING
To prevent injury from electric shock: • Make connections according to the instructions in this document. • Do not use any electrical cables that are frayed, worn or defective. • Keep all connection components and equipment away from dampness and water. • Do not touch connection components while connections are in place and QuiQ Programmer CT is operating. • Do not attempt to open the QuiQ charger housing or insert objects into the charger housing assembly. • Do not touch any connections while AC is connected and for 40 seconds after. • Always remove the connections to the battery before connecting the QuiQ USB Dongle.

Installing QuiQ Programmer CT

Hardware requirements

- x86 compatible Pentium class PC (P3, 1 GHz) or better; a minimum of 512 MB of RAM for Windows 2000 and Windows XP; a minimum of 1 GB of RAM for Windows Vista and Window 7

- a minimum of 5 GB of hard drive free space

Software requirements

PC with one of the following operating systems is required:

- Microsoft Windows XP, service pack 2 or later; Home or Professional version; 32-bit or 64-bit

- Microsoft Windows Vista; any version; 32-bit or 64-bit

- Microsoft Windows 7: any version; 32-bit or 64-bit

Installing QuiQ Programmer CT on PC

The QuiQ Programmer CT application is on the QuiQ Programmer CT installation CD.

To install QuiQ Programmer CT:

1. Insert the QuiQ Programmer CT installation CD into the CD or DVD drive of your PC. If the setup application does not launch the QuiQ Programmer CT installer automatically (this will depend on your computer's security settings and configuration), do the following:

   - Click Start (an icon in Vista and Windows 7) on the taskbar,

   - Click My Computer (Computer in Vista and Windows 7),

   - Double click the drive labeled QuiQ Programmer CT,

   - Double click Setup.exe to launch the installer. Windows Explorer can also be used to navigate to Setup.exe.

   Note: In Windows 7, Setup.exe may need to be launched with administrator privileges in order to install the application.   To do that, right-click on Setup.exe and select "Run As Administrator".

2. Follow the instructions on the screen to complete the software installation.

3. Close the installation dialog box after successfully completing installation.

Registering Permission Entitlement level

A password is not required to start QuiQ Programmer CT with User Permission. User Permission is the application's default startup permission level. Access to Technician permission level requires permission that is assigned by the vendor. If Technician permission has been assigned, a password and an Enable Sequence will be provided by the vendor. After the Enable Sequence is registered with the QuiQ Programmer CT application, a password dialog box will appear whenever the application is started. Entering the password will allow the viewing of outputs assigned to that permission entitlement level.

Registering Enable Sequence

To register an Enable Sequence:

1. Open the document containing the Password and Enable Sequence assigned; use the **Copy** command to copy the Enable Sequence.

2. Start QuiQ Programmer CT.

3. On the menu bar, click **Help/Register Technician Mode**.

4. In the Register QuiQ Charge Tracking Application dialog box, paste in the text box the Enable Sequence text assigned.
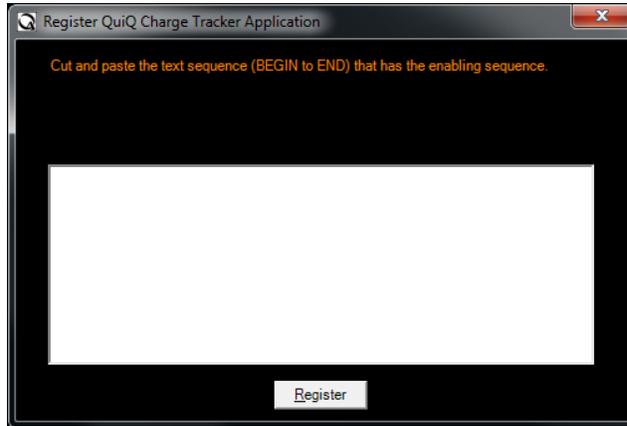
5. Click Register**.** A message will appear if registration was successful.

6. If an error message appears, copy the Enable Sequence again and paste it in the text box in the Register QuiQ Charge Tracker Application dialog box; if the error persists, see an IT Administrator.

7. Exit and restart the QuiQ Programmer CT.

Entering a password:

Enable Sequence must be registered before a password can be used.

Every time QuiQ Programmer CT is started, a Password dialog box will appear. Enter the password to allow access to that permission entitlement level.

NOTE: Passwords are time-limited. The limit is specified in the Enable Sequence.

Connecting to a Charger

The QuiQ Programmer CT application must be installed on that PC before connecting it to a QuiQ charger.

To connect a PC to a QuiQ charger:

1. Exit QuiQ Programmer CT if it is running

2. Connect the Wire Assembly to the QuiQ USB Interface Module.

3. Connect the USB cable upstream end to an open USB port on the PC.

Upon connection, Windows will detect the QuiQ USB Interface Module and install drivers for it. If Windows does not detect the QuiQ Module you will need to reinstall QuiQ Programmer CT. See section Installing QuiQ Programmer CT Software and Drivers.

1. Connect the Wire Assembly black alligator clip to the "B-" connection point on the charger's DC output cable (or inline connector).

2. Connect the Wire Assembly red alligator clip to the "B+" connection point on the charger's DC output cable (or inline connector).

3. Connect AC power to the QuiQ charger.

A. QuiQ charger
B. Charger B+ connection
C. Charger B- connection
D. QuiQ USB Interface Module
E. Dongle negative wire
F. Dongle positive wire
G. USB 2.0 cable

Connect to AC

Connect to a PC

Wire connections for QuiQ Programmer CT setup
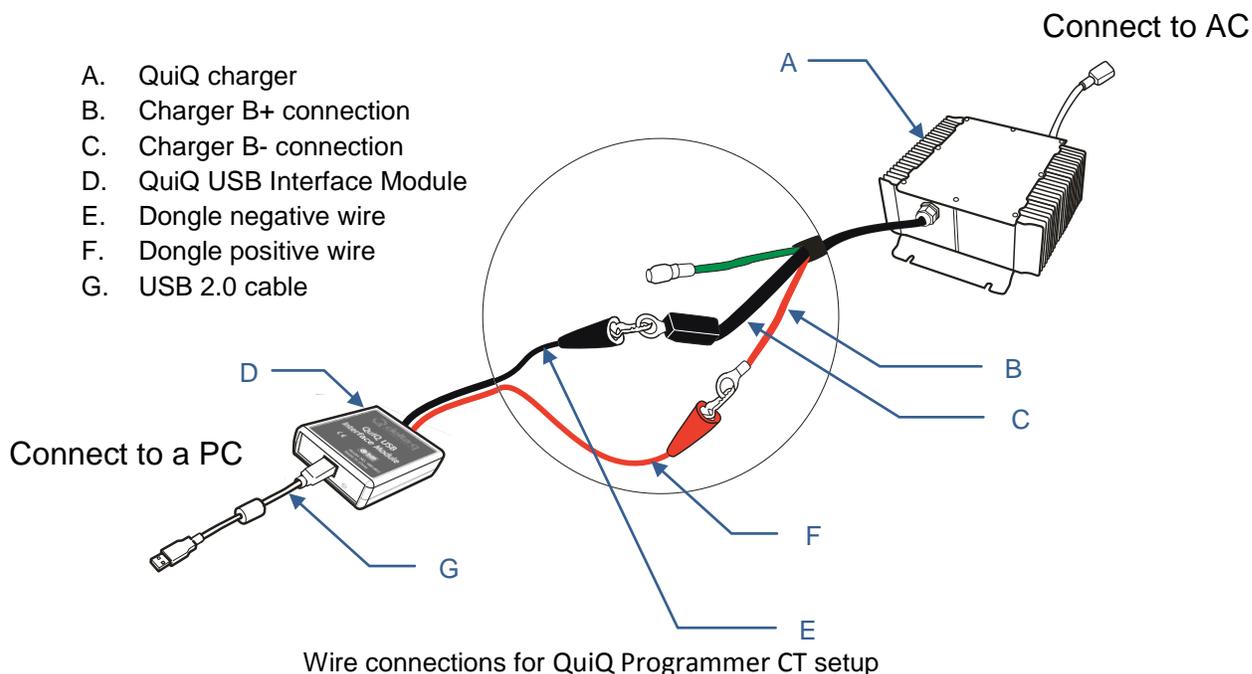
Note: Exact Charger output cable configuration may not match figure above

SAFETY TIP: Avoid touching the connections while AC is present to the charger, and for 40 seconds after AC has been removed.

Using QuiQ Programmer CT

Starting QuiQ Programmer CT

To start QuiQ Programmer CT:

1. Click the **Start button** on the taskbar; click **All Programs**; in the **All Programs** menu, select **QuiQ Programmer CT**; on the submenu, click **QuiQ Programmer CT**.

If **Windows Vista** is the operating system, a user access control dialog may appear before the application starts. Click **Continue** to start **QuiQ Programmer**.

If **Windows 7** is the operating system, a user access control dialog may appear before the application starts. Click **Yes** to start **QuiQ Programmer**.
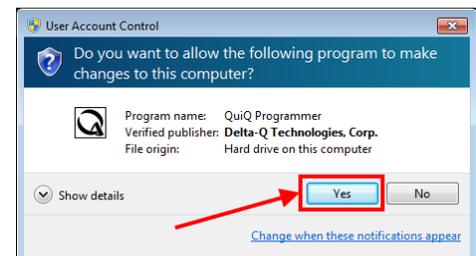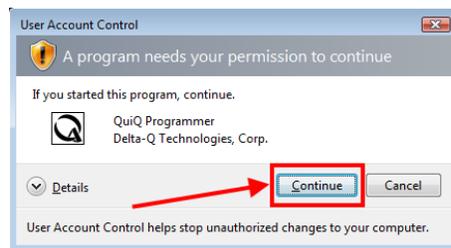
2. The **Please enter a valid password** dialog box will appear if **QuiQ Programmer CT** has been enabled by any of the users for Technician permissions. Otherwise**, QuiQ Programmer CT** will start without this dialog box.

3. If **Technician** permissions have not been assigned, a password will not exist. Click **Cancel** if the **Please enter a valid password** dialog box appears.

> **NOTE:** If **Technician** permission does exist but it is desired to start **QuiQ Programmer CT** in User permission level, click **Cancel** in the **Please enter a valid password** dialog box.

4.

If **Cancel** was clicked**, or Technician Permissions** have not been registered, the **COM Settings** dialog box appears. Note that because the QuiQ Programmer CT is being launched with **User Permissions**, a simplified COM Settings dialog without connection settings is displayed.	If a **Technician** password was entered and **Technician Permissions** set, then a **COM Settings** dialog with connection settings (such as baud rate, data bits, parity, stop bits, and Single Wire Link) is displayed.
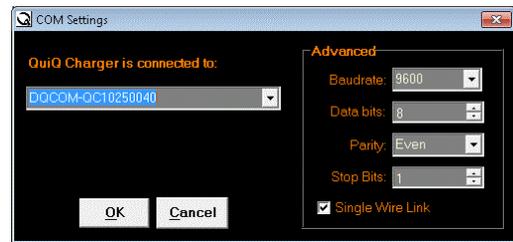
NOTE: The advanced serial port settings available with technician permissions are for future use only and should not be altered, the QuiQ Charger only works with the serial port settings as they are defined in the example shown above.

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5. Click **OK**. The **COM Settings** dialog box will close and the **QuiQ Programmer CT** user interface (**UI**) will appear.
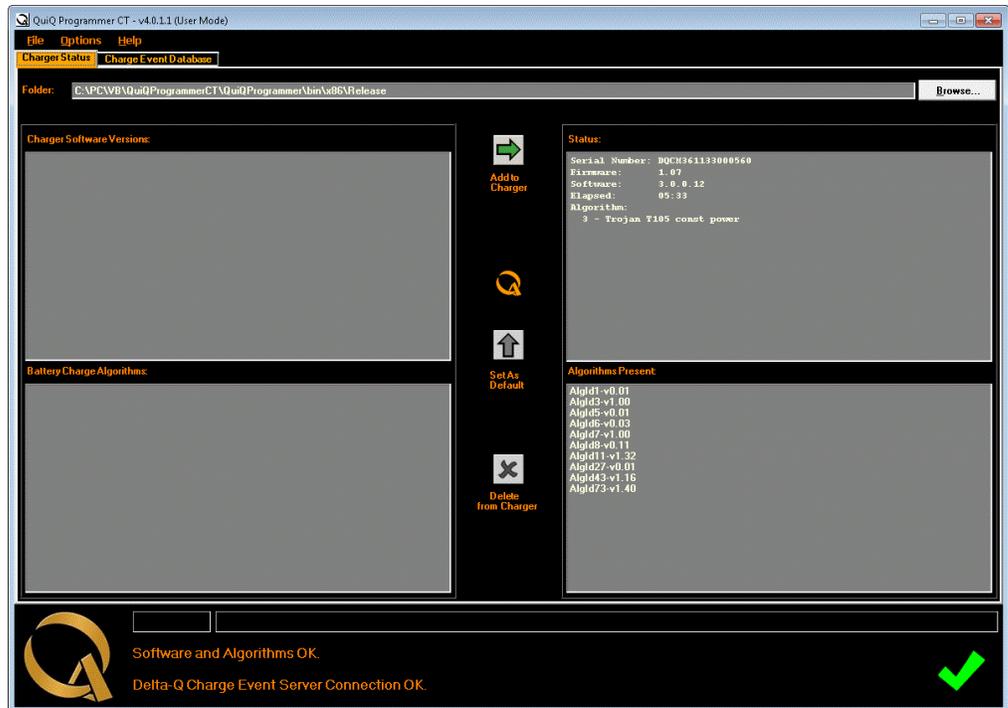
If the charger is connected to the **QuiQ Programmer CT** and functioning properly, the **Status** area indicates **Software and Algorithm OK** and there is a green check mark.

If the QuiQ charger is not powered, or the QuiQ USB Interface Module is not connected to the charger, the **Status** area indicates **No Connection.**

Check and confirm that:

- there is power to the QuiQ charger, and

- the **QuiQ USB Interface Module** is properly connected to the charger.

The QuiQ Programmer CT maintains a connection to the Delta-Q Online Database for uploading Charge Events. If a connection to the Delta-Q Online Database is made, the **Status** area indicates **Delta Q Charger Event Server Connection OK**.

If a connection to the Delta-Q Online Database is broken, the **Status** area indicates **No connection to Delta-Q Charge Event Server**.

Displaying Charge/System Events

The Charge Tracking Data provided by the QuiQ Programmer CT varies with User permissions or Technician permissions.

With User Permission, to view Charge Tracking Data:

1. Start the QuiQ Programmer CT with a QuiQ Charger connected,

2. Click to select and view the Charge Event Database tab.

3. The Charge Summary Dialog should appear. It shows the cumulative summary data for the connected charger.

4. Click on the 'OK' button to close the Charge Summary Dialog.

5. To view the Charge Summary Dialog again, click on the 'View Charge Summary' button.

With Technician permissions, to view Charge Tracking Data:

1. Start the QuiQ Programmer CT with a QuiQ Charger connected,

2. Click to select and view the Charge Event Database tab.
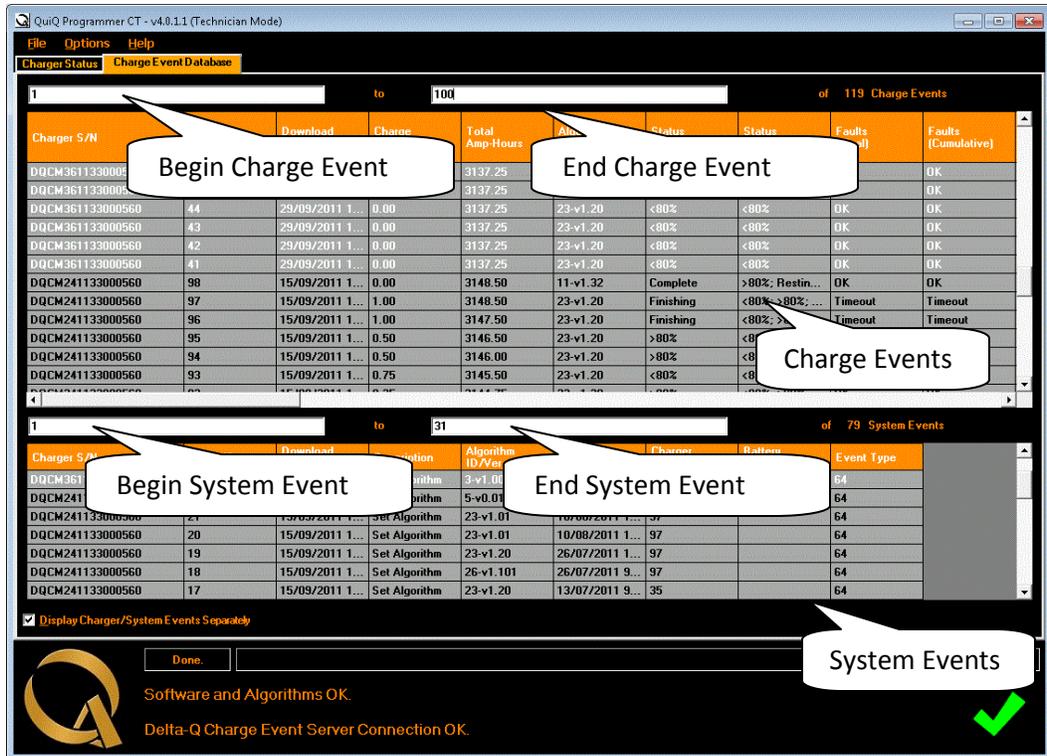
3. The Charge Event Database tab shows the Charge Event data table and the System Event data table. The **Charge Event Data Table** shows the Charge Events in both the connected charger (which are displayed in white font) and historical charge events (which are displayed in black font) that the PC application has been connected to. The **System Event Data Table** shows the System Events in both the connected charger (which are displayed in white font) and historical system events (which are displayed in black font) that the PC application has been connected to.

4. On an older PC, the time required to prepare the display for a large number of events (100+) may be excessive. Therefore, the Charge Event table and the System Event table only display a limited number of events at a time. To change the view range of the Charge Event table, change the number in the **Begin Charge Event** and **End Charge Event** text field and press the "**Enter**" key. Doing so will cause the Charge Event table to redraw itself according to the new range. Likewise, to change the view range of the System Event table, change the number in the **Begin System Event** and **End System Event** text field and press the "**Enter**". Doing so will cause the System Event table to redraw itself according to the new range. Note: the view ranges of both tables are not saved and need to be specified every time QuiQ Programmer CT is restarted. Upon startup, the view ranges of both tables are from 1 to 31.

5. To display the Charge Event and System Event simultaneously:

   - Clear the **Display Charger/System Events Separately** check box in the QuiQ Programmer CT window that appears after starting the application.

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6. To display the Charge Event and System Event in separate windows

    - select the **Display Charger/System Events Separately** check box.
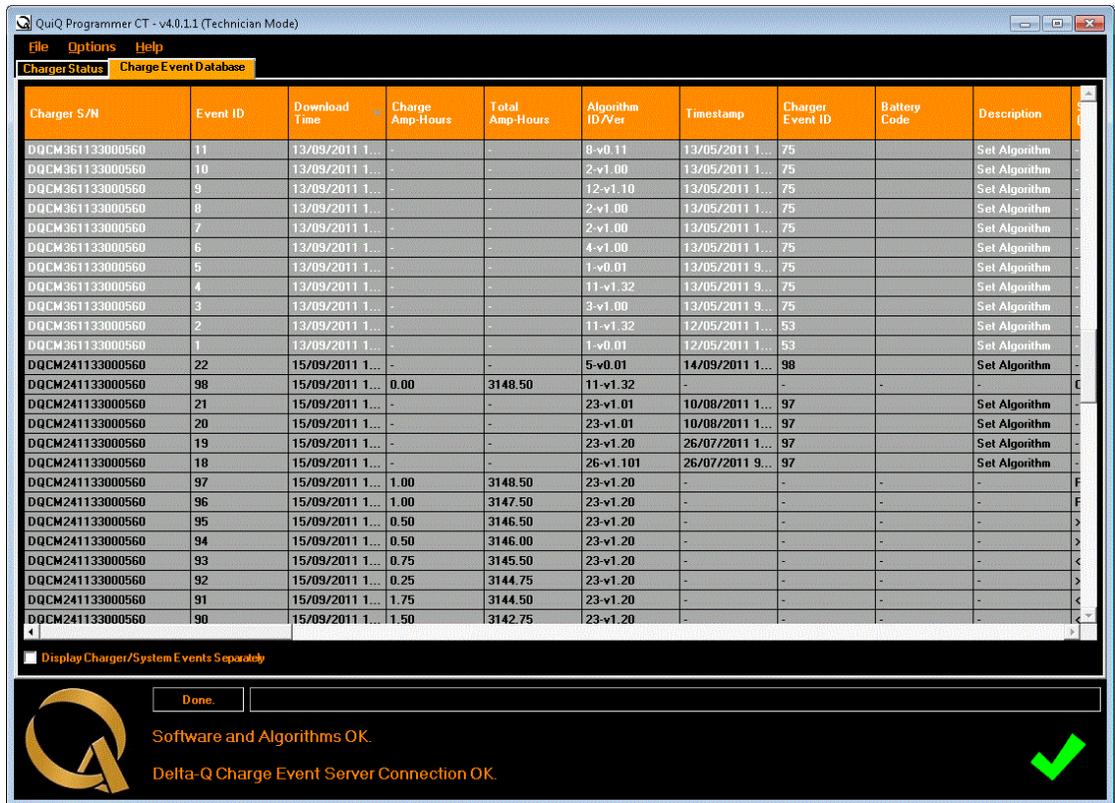
Sorting data

The Charge Event table, System Event table, and the combined table can be sorted according to time of occurrence, ascending or descending values, or alphabetically, depending on the data stored in the sorted column. When data in one column is sorted, all columns will be sorted correspondingly.

To sort data in a column:

- Click on the column header cell.

To change the sort direction in a column:

- Click on the column header cell again. The arrow icon should change direction from down to up and vice versa.

Data in one column can be sorted and compared with data in one or two other specific columns. To compare data in two columns:

1. Sort the data in a column by clicking on the column heading.

2. Press and hold the **CTRL** key; click on the heading of the second column; rows with corresponding values in the selected columns will re-sort.

To compare data in three columns:

1. Sort the data in a column by clicking on the column heading.

2. Press and hold the **CTRL** key; click on the heading of the second column.

3. Press and hold the **CTRL** key; click on the heading of the third column; rows with corresponding values in the selected columns will re-sort.

> **NOTE:** changing the sort order will put a different set of Charge and System events into the view range.

Managing Charge Events and System Events

With QuiQ Programmer CT Charge Events and System Events stored in the internal charge tracking database can be easily managed.

File menu commands

The **File** menu has commands for the following features:

- Uploading charge events to the Delta-Q Online Database,

- Clearing the internal database of events (Technician permission only),

- Importing events from a database file (Technician permission only),

- Exporting database files for archiving (Technician permission only),

- Retrieving charge events and system events from the charger to the internal database,

- Saving CSV files from databases (Technician permission only).

Uploading Charge Events to Delta-Q Database

Delta-Q Technologies maintains an online database for storing all charge events from chargers connected to a QuiQ Programmer CT PC application. To upload all charge events, click **File**/**Delta-Q DB**/**Upload to Delta-Q DB.** This will trigger all the charge events to be sent to the central database at Delta-Q Technologies.
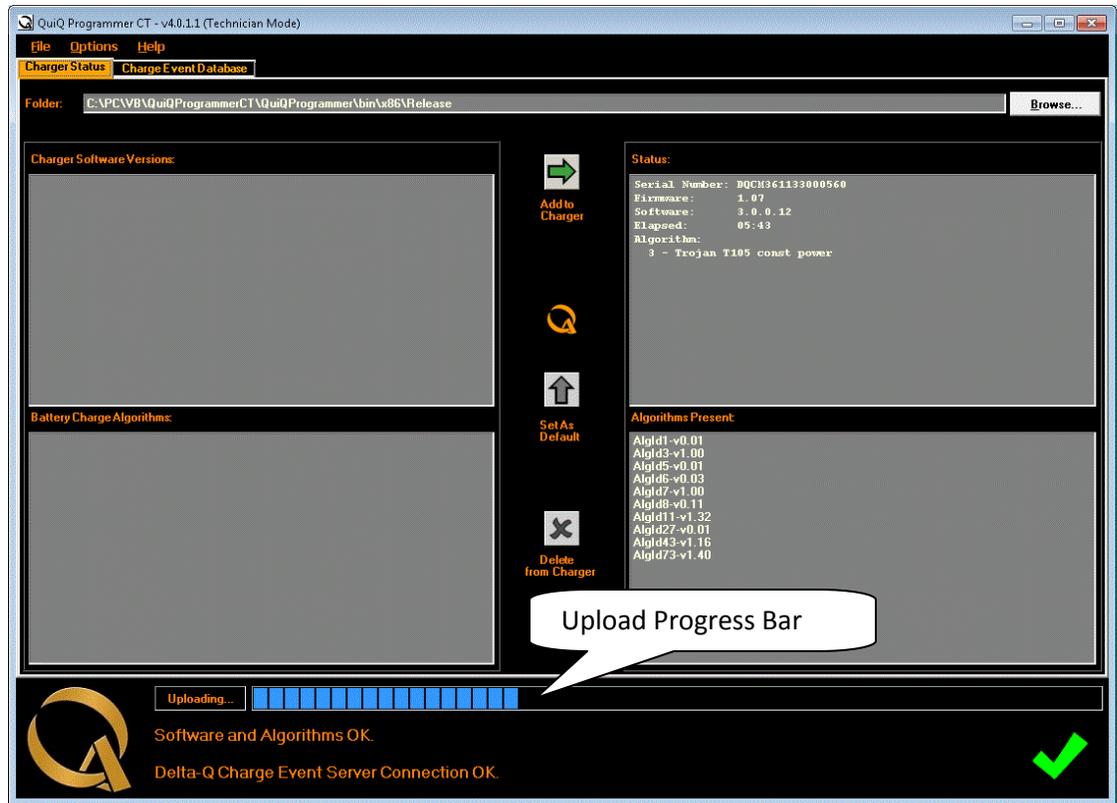
Uploading charge events to Delta-Q Online Database has the following advantages:

- It enables staff at Delta-Q to have access to these Charge Events as quickly as possible. This information may be useful for understanding the performance of these chargers in the field and trouble shoot them.

- Once the Charge Events have been uploaded, the operator may clear all the Charge Events from the QuiQ Programmer CT's internal database, freeing up space and improving performance of the tool. Note that the function to clear the database is not available with User Permission.

Deleting PC database events (Technician Permission Only)

To delete all events from the PC database:

- Click **File**/**Clear**/**All**; the **Clear Entire Database Request** dialogue box appears; click **No** to delete all database entries without saving; click **Yes** to save the database before deleting.

This operation will not affect events stored in a charger's database or in the Delta-Q online database.

To delete events of a charger from the internal database events:

1. Click **File/Clear/Charger Records**; the **Delete Records from the Database for Selected Serial Numbers** dialogue box appears.
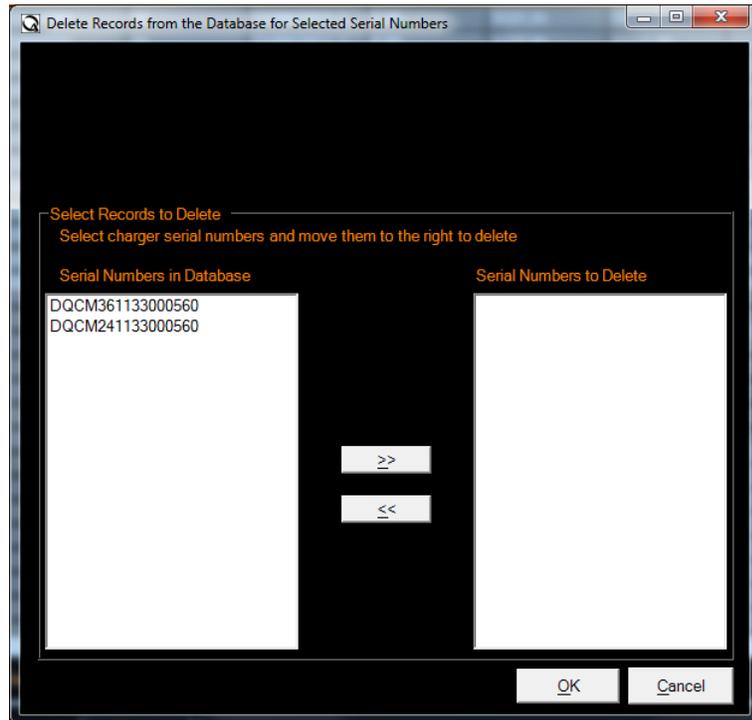
2. Select from the left list, the records you want to delete;

3. Click the **Add** "">>"" button to move selected records to the right-side list pane.

4. Click **OK** to delete the selected items.

Importing events (Technician Permission only)

To import all events from a previously saved database into the QuiQ Programmer CT internal database:

1. Click **File/Import from DB File/All;** an **Open** dialogue box appears.

2. In the left navigation bar, select the serial numbers of the chargers containing the **System Events** and **Charge Events** you want to import.

3. Click **Open**.

Note: Events already present in the PC database will not be duplicated with this operation.

To import events into the internal database from specific chargers stored in an external database:

1. Click **File/Import from DB File/Charger Records;** an **Import Records into the Database for Selected Serial Numbers** dialogue box appears.
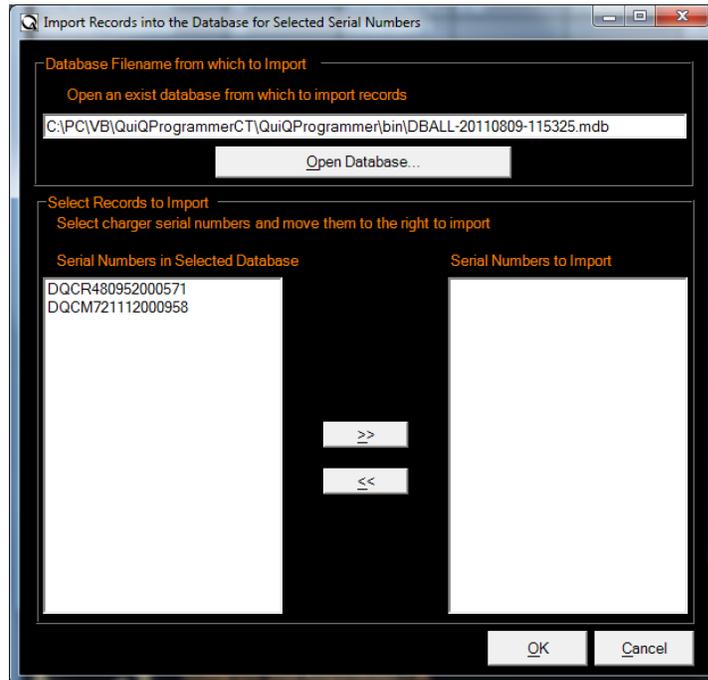
2. Click **Open Database**; navigate to the database file you want to import; choose the charger with events you want to import; click **OK**. The selected serial numbers will appear in the left pane of the **Import Records into the Database for Selected Serial Numbers** dialogue box.

3. In the left navigation bar, select the **Serial Numbers** of chargers with events you want to import.

4. Click the **Add** "**>>**" button. This will move selected records to the right-side list pane.

5. Click **OK**.

Exporting events (Technician Permission only)

Records can be exported to an external database file for archiving purposes. These records can only be used by importing to the QuiQ Programmer CT application in the same PC or the QuiQ Programmer CT Application In a different PC.

To export all events from the PC database:

1. Click **File/Export to DB File/All…**; a **Save As** dialogue box appears with a default time-stamp-derived filename in the **File name** text box (the export destination); If you want to export to a folder other than the one indicated, navigate to the folder where you want to save the file; choose the folder; click **OK**; You can also change the name in the text box by typing the path of the destination folder.

2. Click **Save**.

To export events from specific chargers from the PC database:

1. Click **File/Export to DB File/Charger Records…;** an **Export Records from the Database for Selected Serial Numbers** dialogue box appears with a default folder indicated in the **Create a filename of the database to save the records** pane near the top of the dialogue box.
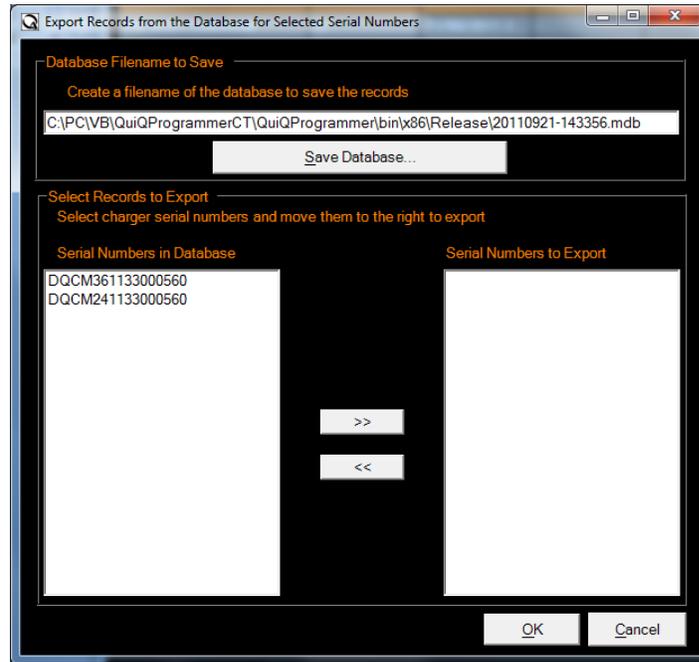
2. In the left-side pane, select the serial numbers of all the chargers containing the **Charge Events** and **System Events** you want to export.

3. Click the **Add** "**>>**" button. This will move selected records to the right-side pane.

4. If you want to export to a folder other than the one selected, click **Save Database** to open the **Save As** dialog box; enter the filename to export; choose the destination folder; Click **Save**.

5. Click **OK**.

Receive Charger Data

Events will be received automatically when **QuiQ Programmer CT** is connected to a QuiQ Charger, however you can choose to download events manually at anytime.

To receive events from a charger to a PC manually:

Click **File/Receive Charger Data**; there is a brief delay while the events are downloaded to the PC; the data tables are now updated with the most recent events.
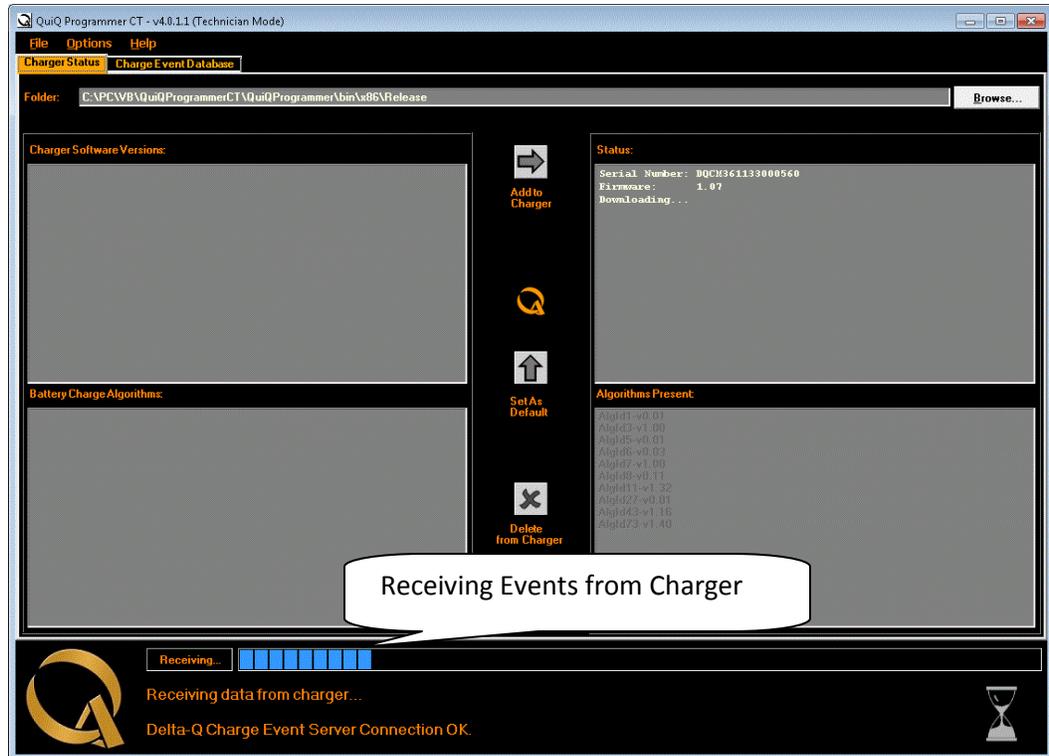
Saving CSV files (Technician Permission only)

This feature allows data for all chargers in a database to be exported to a **comma-separated-value (CSV)** text file. This is a human-readable file that can be imported into spreadsheet applications such as **Microsoft Excel**.

To export a CSV file:

1. Click **File**; click **Save As CSV**; the **Generate a CSV file from a database** dialog box appears.
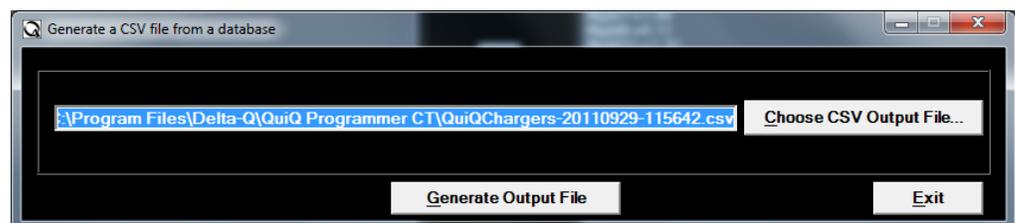
2. Click **Choose CSV Output File**; this opens a file dialog box.

3. Navigate to the CSV file that you want to contain the exported data; select the file; click **Open**; the **Open File** dialog box closes and an output filename appears in the **Choose output filename** text box;

4. Click **Generate Output File**.

5. Click **Exit**.

Options

The **Options** menu contains commands for configuring the behavior of QuiQ Programmer CT application. Two types of behaviors are available for setting:

- Getting Charge Events

- Uploading Charge Events to DQ

Getting Charge Events …

The **Getting Charge Events** command controls whether events are received automatically or manually. When set to receive **automatically**, events are downloaded automatically when a connection to the charger is first detected, as well as any subsequent changes to the charge events and system events in the charger.   When set to receive manually, events are downloaded from a connected charger only when you select **File/Receive Charger Events** from the menu.

To select **Automatically** or **Manually**:

1. Click **Options**/**Getting Charge Events**.

2. Select the **Automatically** or **Manually**.

Uploading Charge Events to DQ …

The **Uploading Charge Events to DQ** command controls whether charge events are uploaded to the Delta-Q Online Database automatically or manually. When set to upload **automatically**, charge events are uploaded when received from a connected charger.   When set to upload manually, events are only uploaded from a connected charger when you select **File/DeltaQ DB/Upload to DeltaQ DB** from the menu.

To select **Automatically** or **Manually**:

1. Click **Options**/**Uploading Charge Events to DQ**.

2. Select the **Automatically** or **Manually**.

Help Menu

The **Help** menu contains commands to display license information and to register a license for the QuiQ Programmer CT application.

About

Click on **Help/About**; an **About QuiQ Programmer CT** dialog box will appear. The dialog box contains:

- the name of the application

- the version

- copyright information

- registration information

- a Register command button (see **Section 2: Registering Permission Entitlement Level**)

Register for Technician Permission…

Click on **Help/Register Technician Mode.** Doing so will the Register QuiQ Charge Tracker application dialog.
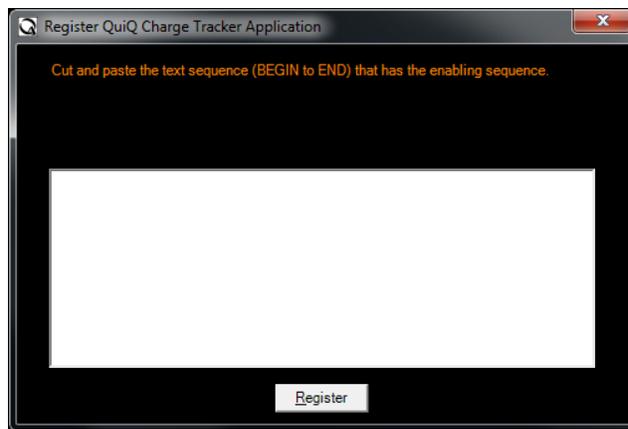
For more information about registering a permission entitlement level, (see **Section 2: Registering Permission Entitlement Level**).

Appendixes

Appendix 1. Permission Entitlement Levels for QuiQ Programmer CT Features

Charge Event	User	Technician
Display of latest cumulative totals from a connected charger	✓	✓
Display of latest events from a connected charger	✗	✓
Display of past events from a connected charger	✗	✓
Display of events from previously connected chargers	✗	✓
Events from previously connected chargers saved in a permanent database	✗	✓
System Event		
Display of events from a connected charger	✗	✓
Display of events from previously connected chargers	✗	✓
Events from previously connected chargers saved in a permanent database	✗	✓

✓   This permission entitlement level allows access to the feature.

✗   This permission entitlement level does not allow access to the feature.

Appendix 2. Charge Event Output

Charge Event Column	Description	Note
Charger S/N (serial number)	The serial number of the charger.	Some chargers may not have their serial number recorded in charger memory.
Event ID	An integer (1-65534) identifying this charge event on this specific charger	The event ID is only unique to the specific charger
Download Time	Time the event was first received from a charger by the PC application	
Charge Amp Hours	The amount of charge delivered by the charger to the battery in Amp Hours for this charge event.	In the GUI and in exported CSV files, this is amp-hours. In the database, this is an unsigned "Q2" integer.
Total Amp Hours	The lifetime amount of charge delivered by the charger to batteries so far in Amp Hours.	In the GUI and in exported CSV files, this is amp-hours. In the database, this is an unsigned "Q2" integer stored in two 16 bit words
Algorithm ID/Ver	An integer (1-999) that gives the ID and a value that gives the version (Major.Minor) of the algorithm used during this charge event.	i.e 912-v1.07 912 is the Algo ID, 1 is the major version 07 is the minor version

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Charge Event Column	Description	Note
Status Final	An 8-bit bitmask identifying the final charge status when the charge event terminated. Possible values of this field are: • Less than 80% • Greater than 80% • Resting • Finishing • Equalization • Complete • Inactive • Power supply mode	This field is displayed as text in the GUI and CSV output files.
Status Cumulative	An 8-bit bitmask of all charge status events triggered during the charge event. This field may indicate a combination of any of the following status values: • Less than 80% • Greater than 80% • Resting • Finishing • Equalization • Complete • Inactive • Power supply mode	This field is displayed as text in the GUI and CSV output files.
Faults Final	An 8-bit bitmask identifying the charge faults present when the charge event terminated. • Low Battery Voltage • High Battery Voltage • Charge Timeout • Over Temperature • Battery Defective • QuiQ Fault (charger fault) • Battery Temperature	This field is displayed as text in the GUI and CSV output files.

Charge Event Column	Description	Note
Faults Cumulative	An 8-bit bitmask of all charge fault events triggered during the charge event. This field may indicate a combination of any of the following fault values: • Low Battery Voltage • High Battery Voltage • Charge Timeout • Over Temperature • Battery Defective • QuiQ Fault (charger fault) • Battery Temperature	This field is displayed as text in the GUI and CSV output files.
Exceptions Final	An 8-bit bitmask of exception events present when the charge event is terminated. Possible value of this field are: • AC brownout • AC out of range • Under temperature • Thermal cutback • Thermal shutdown • Unhandled (Unexpected Exception) • Maintenance Cycle	This field is displayed as text in the GUI and CSV output files.
Exceptions Cumulative	An 8-bit bitmask of all charge exception events triggered during the charge event. This field may indicate a combination of any of the following exception values: • AC brownout • AC out of range • Under temperature • Thermal cutback • Thermal shutdown • Unhandled (Unexpected Exception) • Maintenance Cycle	This field is displayed as text in the GUI and CSV output files.
Termination Reason	An integer (1-4) indicating the reason the charge event ended. 1. Terminate (Normal Charge Cycles, Equalization Cycles, and Incomplete Cycles) 2. Externally Terminated. 3. AC Fail 4. DC Out of Range	This field is displayed as text in the GUI and CSV output files.

Charge Event Column	Description	Note
Battery Voltage Final	The battery voltage at the end of the charge event.	In the GUI and in exported CSV files, this is a voltage. In the database, this is a per-cell value represented in an unsigned "Q10" integer.
Internal Temperature final	The temperature inside the QuiQ charger at the end of the charge event.	In the GUI and in exported CSV files, this is a temperature in degrees C. In the database, this is a signed "Q5" integer.
Battery Temperature Final	The battery temperature as measured by a thermistor on the battery terminal at the end of a charge event. This field is 32769 "Open" if the sensor line was not connected. This field is 32768 "Enabled" if the sensor line has been connected to a ground potential.	In the GUI and in exported CSV files, this is a temperature in degrees C or "Open" or "Enabled". In the database, this is a signed "Q5" integer.
Charge Duration (Hours)	The duration of the charge event in hours	In the GUI this time is given in fractional hours; the CSV export file has this time as fractional days; the database has this in seconds.
Total Charge Duration (Days)	The total duration over the life of the charger during which it was processing charge events.	In the GUI and in exported CSV files, this is amp-hours. In the database, this is an unsigned "Q2" integer.
Total Charges (All)	The total number of charge events for the specific charger.	
Total Complete Charges	The total number of completed charge events for the specific charger.	

Charge Event Column	Description	Note
Total Complete Equalization Charges	The total number of equalization charges completed for the specific charger.	
Total Algorithm Disable	The total number of charge events terminated by the charge algorithm for the specific charger. The charge cycle may have completed or failed, the final status and fault fields should be checked.	
Total AC Fail	The total number of charge events terminated because of loss of AC power for the specific charger.	
Total External Disable	The total number of charge events terminated by the external charge enable signal for the specific charger.	
Total DC Out of Range	The total number of charge events terminated because the DC voltage was out of range (DC too low) for the specific charger.	
Total Maintenance Cycles	The total number of maintenance cycles for the specific charger. Maintenance cycles are charge cycles that follow a previous charge cycle without any loss of AC power between the cycles.	
Total AC Brownout	The total number of AC brownout events for the specific charger. An AC brownout occurs when AC voltage is between 85V to 105V.	This count saturates at 255.
Total AC Out of Range	The total number of AC out of range events for the specific charger. An AC out of range occurs when AC voltage is less than 80V.	This count saturates at 255.
Total Under Temperature	The total number of Under Temperature events for the specific charger.	This count saturates at 255.
Total Low Battery Voltage	The total number of low battery voltage fault events for the specific charger.	
Total High Battery Voltage	The total number of high battery voltage fault events for the specific charger.	This count saturates at 255.

Charge Event Column	Description	Note
Total Charge Timeout	The total number of charge timeout fault events for the specific charger.	This count saturates at 255.
Total Over temperature	The total number of over temperature fault events for the specific charger. Over temperature fault occurs when temperature is above 83 degree C.	This count saturates at 255.
Total Battery Defective	The total number of battery defective fault events for the specific charger.	This count saturates at 255.
Total QuiQ Internal	The total number of QuiQ internal fault events for the specific charger. QuiQ internal fault occurs when the charger is unable to switch internal relay.	This count saturates at 255.
Total Battery Temperature	The total number of battery temperature out of range fault events for the specific charger.	This count saturates at 255.
Event Type	An Integer (1-65534) that identifies the data format for this charge event. Currently, there is only one charge event type (#1)	

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Appendix 3. System Event output

System Event Output	Description	Note
Charger serial number	The serial number of the charger	
Event ID	An integer (1-65534) identifying this System Event	
Download time	Time the event was downloaded to the PC database	
Description	The type of System Event: tapping, set algorithm	
Algorithm ID	An integer (1-65535) that gives the ID of the algorithm set to default during this charge (system) event.	
Timestamp	Time that the event occurred.	
Charger Event ID	The most recent Charge Event number when this System Event occurred.	
Battery Code	Operator specified identifier for the battery.	
Event Type	Numeric value specific to the event 32: tapping system event 64: setting algorithm system event	