

Shark® ST40 Meter Quickstart Guide



CAUTION! Installation of the Shark® ST40 meter must be performed only by qualified personnel who follow standard safety precautions during all procedures. Those personnel should have appropriate training and experience with high voltage devices. Appropriate safety gloves, safety glasses and protective clothing are recommended.

During normal operation of the ST40 meter, dangerous voltages flow through many parts of the unit, including: Terminals and any connected CTs (Current Transformers) and PTs (Potential Transformers), all I/O Modules and their circuits. All Primary and Secondary circuits can, at times, produce lethal voltages and currents. Avoid contact with any current-carrying surfaces.

Do not use the meter or any I/O device for primary protection or in an energy-limiting capacity. The meter can only be used as secondary protection.

IMPORTANT! Refer to your meter's Installation and Operation Manual for additional safety warnings before performing installation, wiring, or maintenance of your meter. See the link to the manual, below.

NOTE: This Quickstart Guide gives basic installation, wiring, and programming instructions. For additional meter operation and programming information, refer to your meter's *Installation and Operation Manual* and the *Communicator PQA™*, *MeterManagerPQA™*, and *EnergyPQA.com™ Software User Manual* on EIG's website:

User Manual:

<https://www.electroind.com/products/st40/>

From the webpage, click Technical Documents>User Manual.

Software Manual:

<https://www.electroind.com/products/communicatorpqa-software-application-5/>

From the webpage, click Technical Documents>User Manual.

CommunicatorPQA™ Setup Software:

<https://www.electroind.com/products/communicatorpqa-software-application-5/>

From the webpage, click Download CompQA Pro. To get a Professional license for the software, email sales@electroind.com or call 516-334-0870.

All EIG's metering and software products' literature can be accessed from:

<https://www.electroind.com/all-products/>

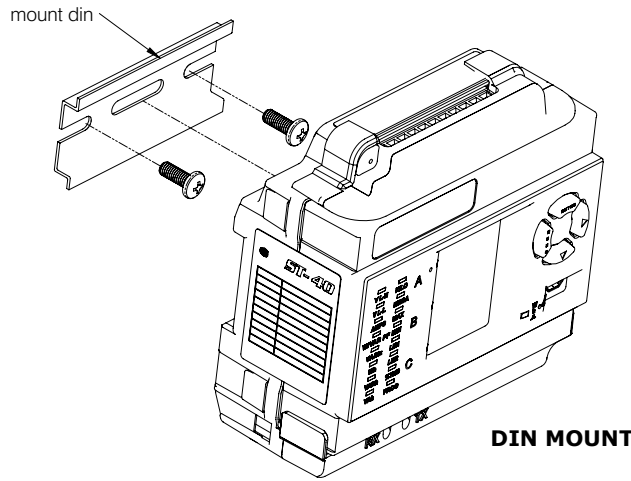
For software and metering integration, EIG's Technical Support Engineers are available on an hourly or daily basis to help with typical commissioning assistance, which includes:

- Verifying meter installation and wiring.
- Verifying proper system integration.
- Working with 3rd parties to ensure cross compatibility.
- Advising users on best practices for optimal implementation.

You can reach Technical Support from 8 a.m. to 8 p.m. EST, Monday-Friday, at 516-334-0870.

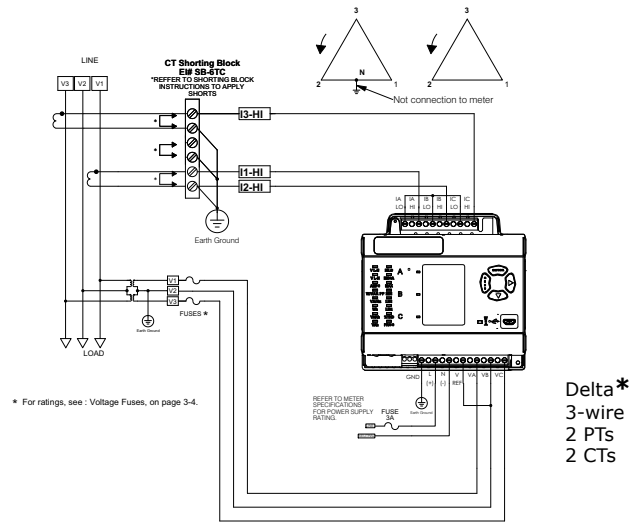
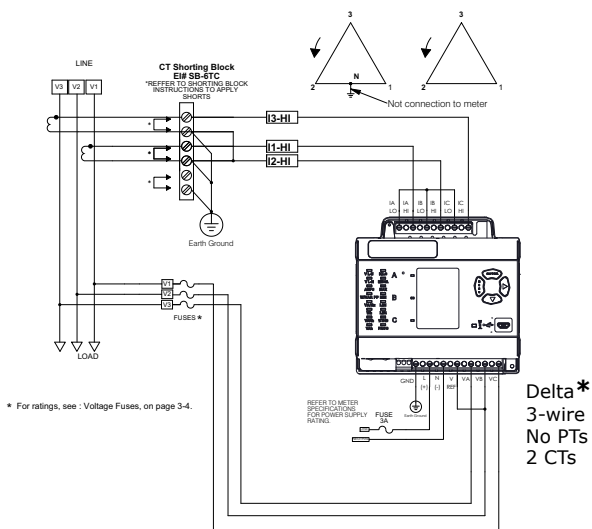
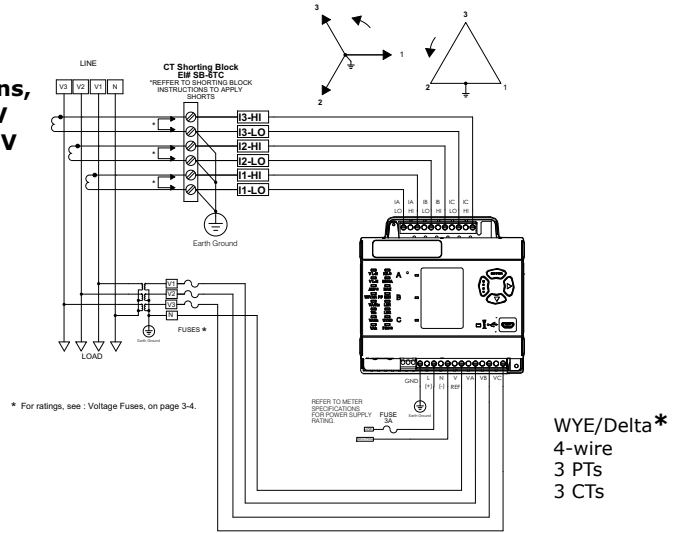
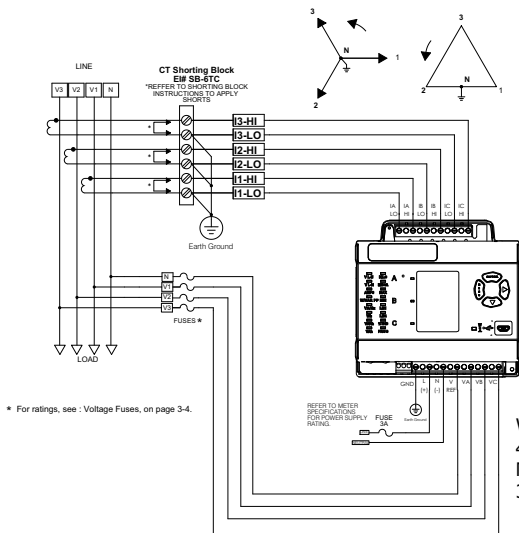
Mechanical Installation

1. Slide top groove of meter onto the DIN Rail.
2. Press gently until the meter clicks into place.
3. Use two screws to secure the meter to the DIN Rail.



Electrical Installation: Select diagram for your application; see User Manual for additional diagrams.

*** IMPORTANT!**
For Delta connections,
do not exceed 480 V
ungrounded or 240 V
corner grounded.



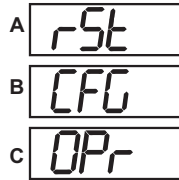
**Program Settings Using the Faceplate Buttons:
(MENU, ENTER, DOWN ARROW, RIGHT ARROW)**

See the figure on the right for the location of the faceplate buttons. See the User Manual for display details.

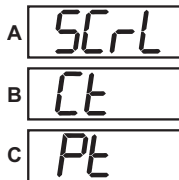


Access Configuration Mode:

1. Push the **MENU** button - you will see the display on the right; rSt will be blinking.

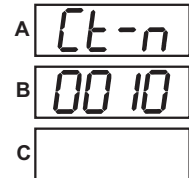


2. Press the **DOWN ARROW** once. CFG (Configuration) moves to the top of the display.

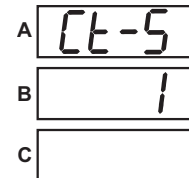


3. Press the **ENTER** button. You will see the Configuration menu, shown on the right.

4. Press the **DOWN ARROW** and then press the **ENTER** button. You will see the CT numerator setting screen (Ct-n). The current CT numerator is shown in the second line. To change the setting, press the **DOWN ARROW** until the value you want is displayed. Then press the **RIGHT ARROW** to move to the next digit. Repeat until the setting is done.

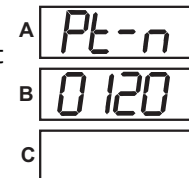


5. Press the **ENTER** button to go to the CT denominator screen (CT-d). This setting is display only - it can't be changed.

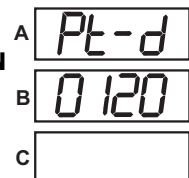


6. Press the **ENTER** button to go to the CT Scaling setting screen (CT-S). The current Scaling is shown in the second line. Press the **DOWN ARROW** to choose another value. You can choose 1, 10, or 100.

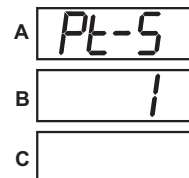
7. Press the **ENTER** button to go to the PT numerator setting screen (Pt-n). The current PT numerator is shown in the second line. To change the setting, press the **DOWN ARROW** until the value you want is displayed. Then press the **RIGHT ARROW** to move to the next digit. Repeat until the setting is done.



8. Press the **ENTER** button to go to the PT-denominator screen (Pt-d). The current PT denominator is shown in the second line. To change the setting, press the **DOWN ARROW** until the value you want is displayed. Then press the **RIGHT ARROW** to move to the next digit. Repeat until the setting is done.



9. Press the **ENTER** button to go to the PT Scaling setting screen (PT-S). The current Scaling is shown in the second line. Press the **DOWN ARROW** to choose another value. You can choose 1, 10, 100, or 1000.



NOTE: See example CT and PT Settings beginning on page QS-5.

10. Press the **ENTER** button to go to the Connection setting screen (Cnct). The current setting is shown in the second line. Press the **DOWN ARROW** to choose another value. You can choose 3 EL (element) WYE, 2 Ct del (Delta), or 2.5 EL WYE.

A Cnct
B 3 EL
C 2.5 EL WYE

11. Press the **ENTER** button to go to the meter Address setting screen (Adr). The meter's current address is shown in the second line. To change the setting, press the **DOWN ARROW** until the value you want is displayed. Then press the **RIGHT ARROW** to move to the next digit. Repeat until the setting is done. Valid addresses are from 001 through 247. If you have the Ethernet option, keep this as 1.

A Adr
B 005
C

12. Press the **ENTER** button to go to the meter Baud Rate setting screen (bAUd). The meter's current Baud Rate is shown in the second line. Press the **DOWN ARROW** to choose another Baud Rate. You can choose 9600 (choose this for RS485 connection), 19.2 (19200), 38.4 (38400) or 57.6 (57600). If you have the Ethernet option, keep this as 57.6.

A bAUd
B 57.6
C

13. Press the **ENTER** button to go to the meter Protocol setting screen (Prot). The meter's current Protocol is shown in the second and third lines. Press the **DOWN ARROW** to choose another communication Protocol. You can choose Mod rtU (Modbus RTU; choose this for RS485 or Ethernet connection), Mod ASCII (Modbus ASCII), or dnp (DNP3).

A Prot
B Mod
C rtU

14. Press the **ENTER** button to go to the Scroll setting screen (SCrL). The current setting is shown in the second line. Press the **DOWN ARROW** to choose another setting. You can choose YES (the meter readings will scroll on the display) or no (the meter readings will not scroll on the display).

A SCrL
B YES
C

15. Press the **MENU** button twice. You will see the Store Settings screen (Stor ALL?). The default setting is YES. To save the settings you've made, press the **ENTER** button. You will see the confirmation screen (Stor ALL done) and then the meter resets.

A Stor
B ALL?
C YES

NOTE: If you do not want to save your settings, press the **RIGHT ARROW**. YES changes to no. Press the **ENTER** button.

A Stor
B ALL
C done

Example CT Settings:

- 200/5 Amps: set the Ct-n value as 200, Ct-S value as 1.
 800/5Amps: set the Ct-n value as 800, Ct-S value as 1.
 2000/5 Amps: set the Ct-n value as 2000, Ct-S value as 1
 10,000/5 Amps: set the Ct-n value as 1000, Ct-S value as 10.

Example PT Settings:

- 14400/120 Volts: set the Pt-n value as 1440, Pt-d value as 120, Pt-S value as 10.
 138000/69 Volts: set the Pt-n value as 1380, Pt-d value as 69, Pt-S value as 100.
 345000/115 Volts: set the Pt-n value as 3450, Pt-d value as 115, Pt-S value as 100.
 345000/69 Volts: set the Pt-n value as 0345, Pt-d value as 69, Pt-S value as 1000.

For additional programming instructions for the faceplate buttons, see Chapter 5 in the *Shark® ST40 Meter Installation and Operation Manual*, (see page QS-1 for the download link).

In addition to faceplate programming, you can program the meter using CommunicatorPQA™ software. Use either the RS485 port or the USB port to make the physical connection to your PC. Note that your meter will have either RS485 OR Ethernet; it will always have a USB port. For Ethernet communication, connect first via the USB port and then see the ST40 User Manual for instructions on setting up Ethernet communication.

Connect through the RS485 Port:

The ST40 meter's RS485 port uses standard 2-wire, half duplex architecture. When the meter is powered up, for 10 seconds you can connect to it using the factory default settings - this is one way you can always connect to the meter. The factory default settings are:

Device Address:1

Baud Rate:9600

Protocol:Modbus RTU

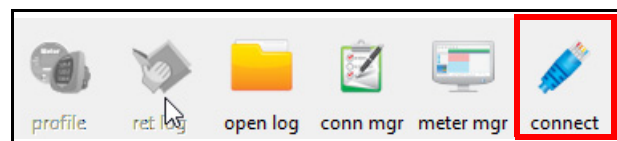
Connect through the USB Port:

The ST40 meter has a standard Micro USB port. Connect the meter to the PC, using the USB cable. The meter's connection uses a Micro USB plug.

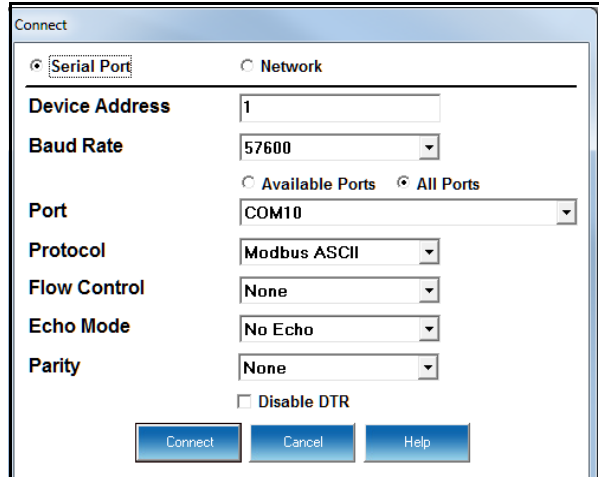
Connect to CommunicatorPQA™ Software:

Once you make a physical connection between the meter and your PC, you can connect to the software.

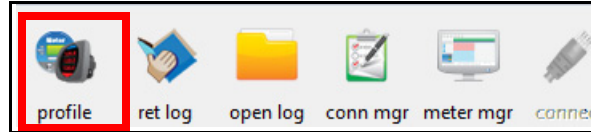
1. Open CommunicatorPQA™ software (see page QS-1 for download link).
2. Click **Connect** in the Icon Bar.



3. You will see the Connect screen. Note that the example Connect screen shows the default settings for the USB port.
 - a. Click the Serial Port button.
 - b. Enter the Device Address (can be from 1-247).
 - c. Select the Baud Rate (57600 for USB; 9600 for RS485 default setting).
 - d. Click the Available Ports button.
 - e. Select the USB or RS485 Com port.
 - f. Select Modbus ASCII (USB) or Modbus RTU (RS485) protocol.
 - g. Keep Flow Control, Echo Mode, and Parity as is shown here.
 - h. Click Connect.



4. The Device Status screen opens, displaying information about the meter. Click OK to close the Device Status screen, and then click the Profile icon in the Icon Bar.

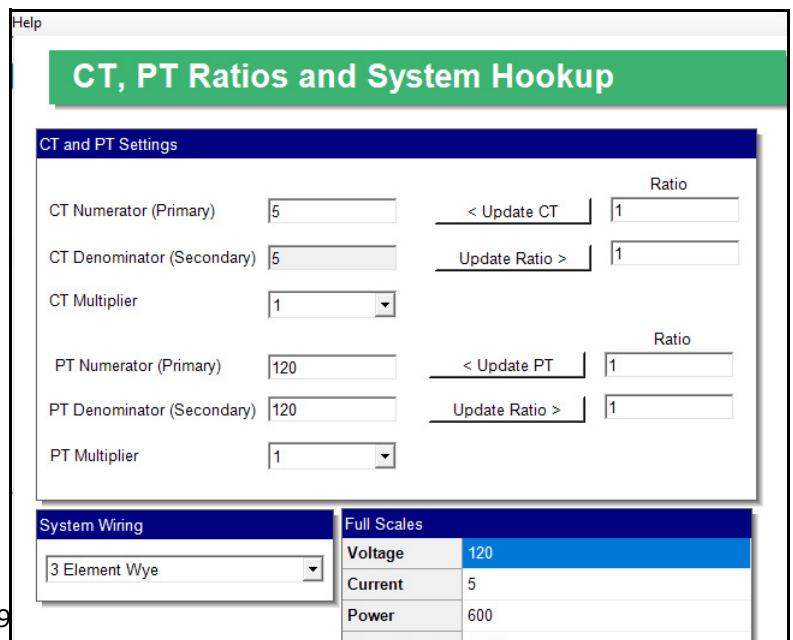


5. The meter's Device Profile screen opens, giving you access to the programmable settings for the meter.

NOTE: A few basic settings are explained here. Refer to the *CommunicatorPQA™, MeterManagerPQA, and EnergyPQA.com Software User Manual* (see page QS-1 for the download link or click Help>Contents from the top of the CommunicatorPQA™ software's Main screen.)

Program CT, PT Ratios:

1. The first Device Profile screen is the CT, PT Ratios and System Hookup. If you were on another setting screen, double-click General Settings>CT, PT Ratios and System Hookup>one of the items in the list to redisplay this screen.
2. The screen settings are:
 - a. CT Ratio, enter:
 - Primary (CT Numerator): 1 - 9999
 - Secondary (CT Denominator): 5 or 1 A
 - b. PT Ratio, enter:
 - Primary (PT Numerator): 1 - 9999
 - Secondary (PT Denominator): 1 - 9999



- c. System Wiring, select from pull-down menu:
 - 3 Element Wye; 2.5 Element Wye; 2 CT Delta
 This value must be set properly for the meter to calculate readings correctly.
- d. Use the Minimum Voltage Threshold box to enter the minimum voltage threshold, which is a percentage of the voltage full scale. This setting adjusts the pick up threshold for the voltage. You set a percentage of the PT primary (PT numerator X PT multiplier) up to 12.7 in the entry field, to configure when the meter will start reading values above 0 voltage.
- e. Total Demand Distortion (TDD Setting): This setting of the Device Profile allows you to set the maximum value for current, which is used for the TDD (Total Demand Distortion) calculation. TDD is an index used to measure harmonics. In this field enter the maximum load current for TDD. To disable TDD, enter 0 in the field.
- f. CT Reversal Phase Enables: Use this setting to enable CT reversal for any phase. This feature is useful if a CT is wired the wrong way and you do not want to (or cannot) change the wiring. This setting is only available for a three element WYE hookup. For any other hookup, this setting will be ignored.

Program Communications Setting:

- From the Device Profile screen, double-click General Settings>Communications>one of the listed ports. The settings shown here are for the meter's serial ports.
- For the USB and RS485 ports, enter:
 - Address (1-247 for Modbus); (1-65520 for DNP)
 - Protocol (Modbus RTU, Modbus ASCII, or DNP3)
 - Baud Rate (1200, 2400, 4800, 9600, 19200, 38400, or 57600)
 - Response Delay (0 - 750 in 50 ms increments)* Response Delay is the delay the meter should use before responding to queries.
 - Parity (Odd, Even, or None)*

*These are the only settings that can be changed for the USB port.

Program Meter Time:

The meter is preset to Eastern time. To change the meter time:

- From the Main screen's Title bar, click Tools>Set Device Time.
- You can either enter the time in the Time fields, or click Use PC Time to set the time using your PC's time.
- Click Send.

NOTE: The meter offers multiple Time Synchronization methods. See Chapter 30, Section 30.1.3 in the software manual (see page QS-1.)

Program Meter Name:

To enter a name/ID for the meter:

1. From the Device Profile screen, double-click General Settings>System Settings.
2. Input a new meter designation into the field. Note that it is important to name each meter individually, since the meter name is used to name the log databases when logs are downloaded.

System Settings

Meter Identification

Meter Designation 0097065128

Password

Enable password for resetting items

Enable password for configuration Change Password

Update Device **Save Profile** **Load Profile** **View**

IMPORTANT! When you have made changes to the meter's Device Profile, click Save Profile at the bottom left of the Device Profile screen, to send the new settings to the meter. The meter will reboot and then you can reconnect to it.

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