

Shark® 100 Meter Quickstart Guide



CAUTION! Installation of the Shark® 100 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 Shark® 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.

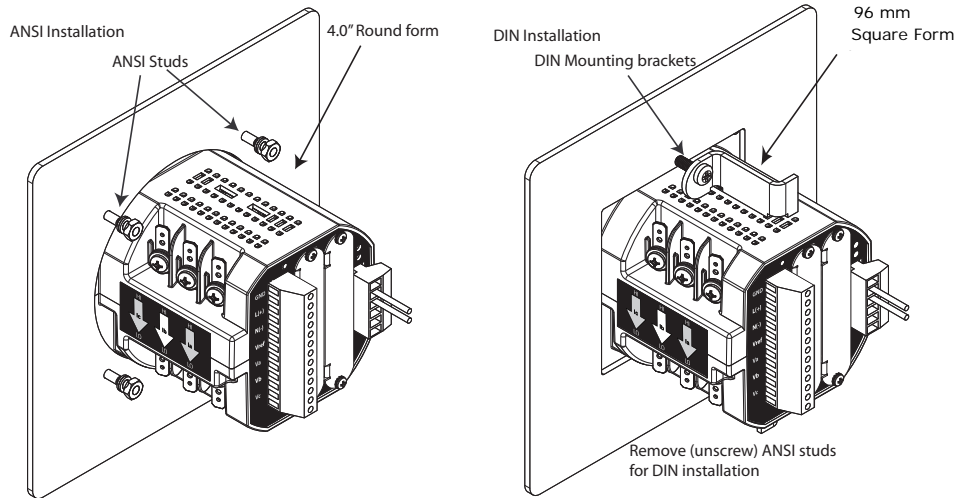
IMPORTANT! Refer to your meter's Installation and Operation Manual for additional safety warnings before performing installation, wiring, or maintenance of your meter. See the link to the manual, below.

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 *CommunicatorPQA®* and *MeterManagerPQA®* Software, *EnergyPQA.com®* AI Driven EMS User Manual

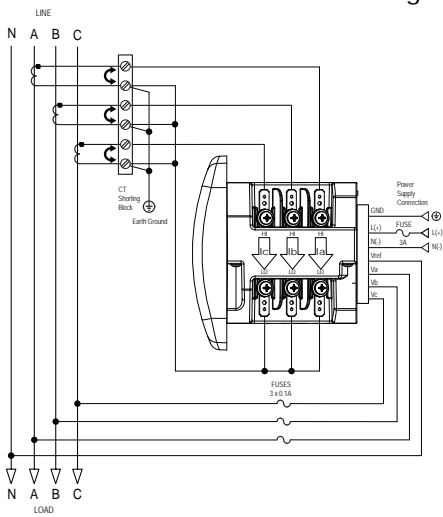
For software and metering integration, Technical Support are available to help with typical commissioning assistance, which includes:

- 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.

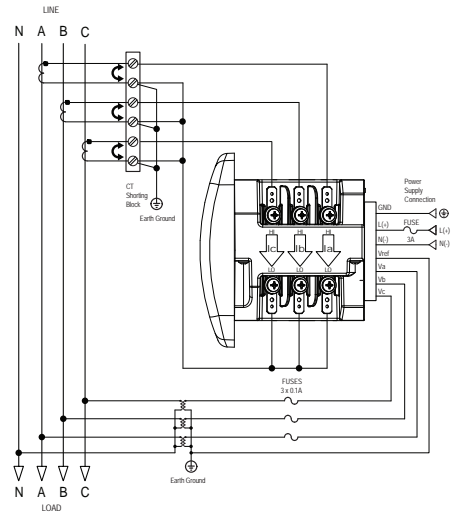
Mechanical Installation NOTE: Do not overtighten nuts. The maximum installation torque is 0.4 Newton-Meter.



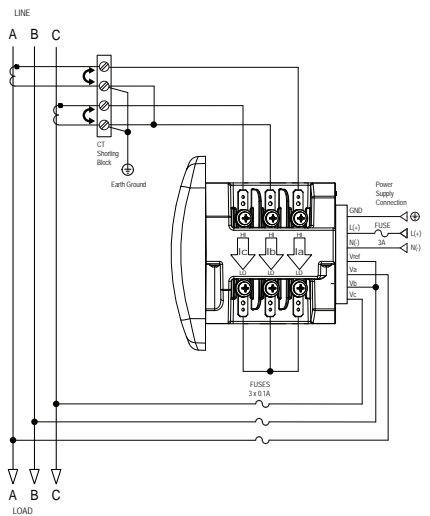
Electrical Installation: Select diagram for your application.



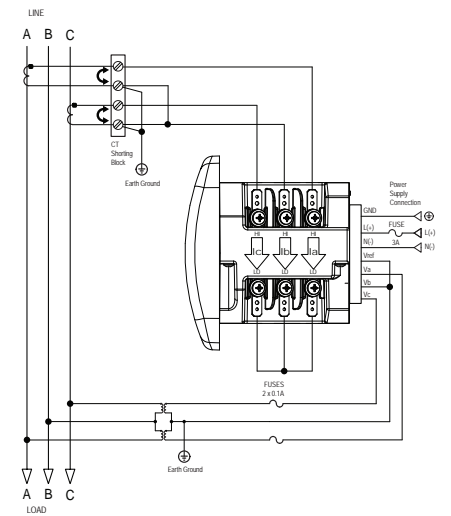
WYE direct, 3 phase, 4 wire



WYE with PTs, 3 phase, 4 wire



Delta direct, 3 phase, 3 wire

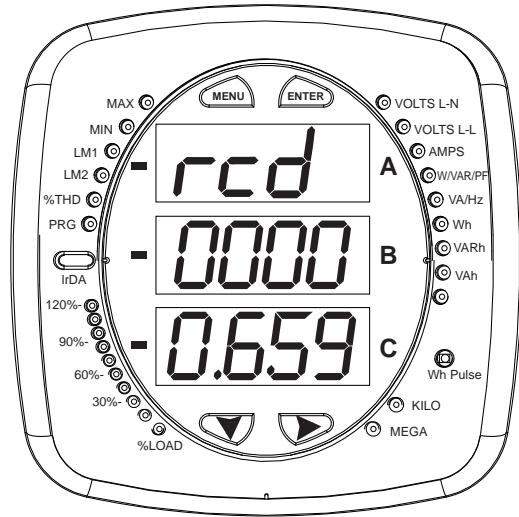


Delta with PTs, 3 phase, 3 wire

NOTE: Other wiring configurations are available. See the Shark® 100 meter User Manual (see page QS-1 for the download link).

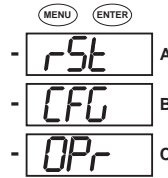
**Program Settings Using the Faceplate Buttons:
(MENU, ENTER, DOWN ARROW, RIGHT ARROW)**

See the figure on the right for the location of the faceplate buttons.



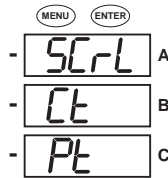
Access Configuration Mode:

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



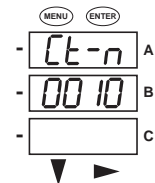
2. Press the **DOWN ARROW** once.

CFG (Configuration) moves to the top of the display.

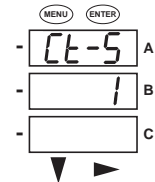


3. Press the **ENTER** button. You will see the Configuration menu, shown on the right.

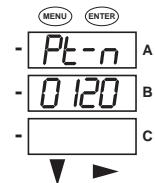
4. Press the **DOWN ARROW** and then press the **ENTER** button. You will see the CT numerator setting screen (Ct-n). The current CT numerator is shown in the second line. To change the setting, press the **DOWN ARROW** until the value you want is displayed. Then press the **RIGHT ARROW** to move to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



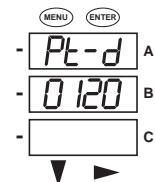
5. Press the **ENTER** button to go to the CT denominator screen (CT-d). This setting is display only - it can't be changed.



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.

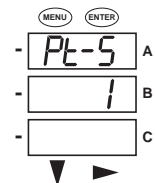


7. Press the **ENTER** button to go to the PT numerator setting screen (Pt-n). The current PT numerator is shown in the second line. To change the setting, press the **DOWN ARROW** until the value you want is displayed. Then press the **RIGHT ARROW** to move to the next digit. Repeat until the setting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



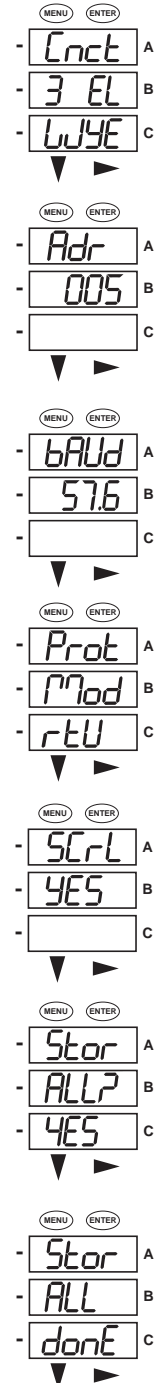
8. Press the **ENTER** button to go to the PT-denominator screen (Pt-d). The current PT denominator is shown in the second line. To change the setting, press the **DOWN ARROW** until the value you want is displayed. Then press the **RIGHT ARROW** to move to the next digit. Repeat until the setting is 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 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.
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. **IMPORTANT! If you are using the Ethernet option (INP10) do not change any settings - leave the address as 001.****
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). **IMPORTANT! If you are using the Ethernet option, do not change any settings - leave the Baud Rate as 57.6.****
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 connection), Mod ASCII (Modbus ASCII), or dnp (DNP 3.0). **IMPORTANT! If you are using the Ethernet option, do not change any settings - leave the protocol as Mod 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).
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.
- NOTE:** If you do not want to save your settings, press the **RIGHT ARROW**. YES changes to no. Press the **ENTER** button.



**The Shark® 100 meter's Ethernet communication settings are the default settings of Address 1, Baud Rate 57.6 and Protocol Mod rtU. See the *Shark® 100/100T Meter Installation and Operation Manual* (see page QS-1 for the download link) for additional configuration instructions for the Shark® 100 meter's Ethernet port

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.

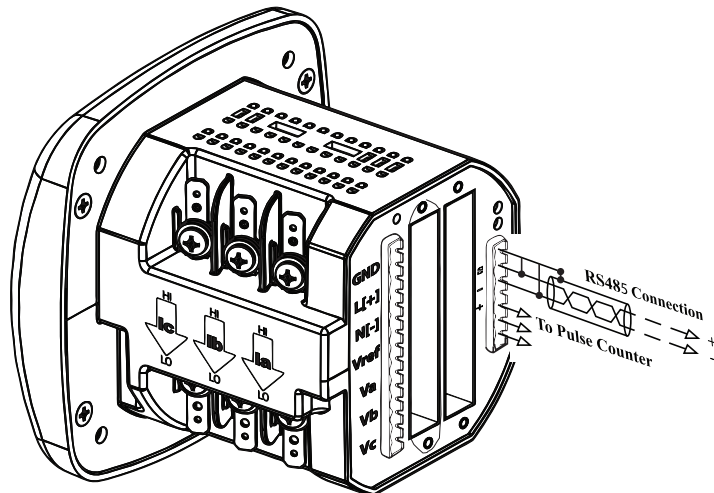
Example PT Settings:

- 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 6 in the *Shark® 100/100T Meter Installation and Operation Manual*.

Connect to the Meter through the RS485 Port:

The Shark® 100 meter has a standard RS485 port that makes connection between the meter and a laptop PC very simple. The Shark® 200 meter's RS485 port uses standard 2-wire, half duplex architecture.

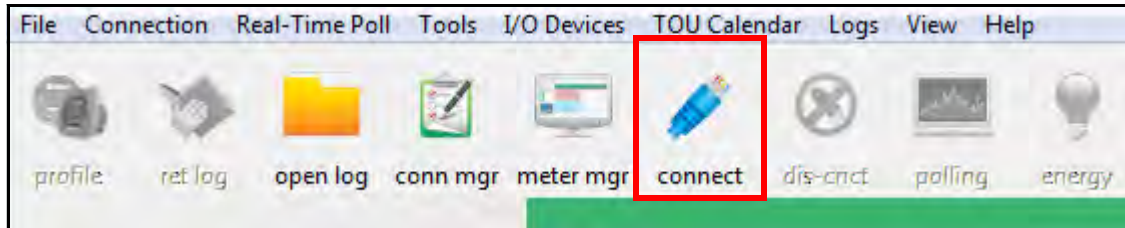


Factory Initial Default Settings: When the Shark® 100 is powered up, for 10 seconds you can connect to the meter using the Factory Default Settings (even if the Device Profile has been changed). After 10 seconds, the Device Profile reverts to the actual Device Profile in use. This is one way you can always connect to the meter. The Factory Initial Default Settings are:

- Device Address: 1
 Baud Rate: 57600
 Protocol: Modbus RTU

Follow these steps to connect to the meter via RS485:

1. Connect the meter to the PC, using an RS485 cable. EIG offers a RS485 to USB connector, which can be ordered Open CommunicatorPQA® software (see page QS-1 for the download link).
2. Click **Connect** in the Icon Bar.

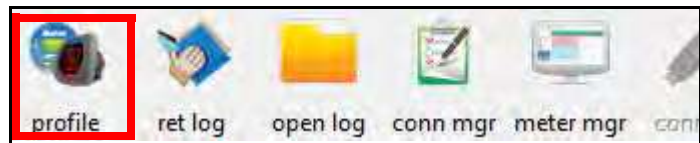


4. You will see the Connect screen. Make sure your settings match the ones shown on the right (use pull-down menus).

 A screenshot of the 'Connect' dialog box. At the top, there are radio buttons for 'Serial Port' (selected) and 'Network'. Below this, the 'Device Address' is set to '1'. The 'Baud Rate' is set to '9600'. There are radio buttons for 'Available Ports' and 'All Ports' (selected). The 'Port' is set to 'COM1'. The 'Protocol' is 'Modbus RTU', 'Flow Control' is 'None', 'Echo Mode' is 'No Echo', and 'Parity' is 'None'. There is a checkbox for 'Disable DTR' which is unchecked. At the bottom, there are three buttons: 'Connect', 'Cancel', and 'Help'.

5. Click **Connect**. The Device Status screen confirms the connection. Click OK to close the Device Status screen.

6. Click the **Profile** button on the Icon bar.



7. The Device Profile screen opens. The tabs on the top of the screen let you choose setting screens.



Program CT, PT Ratios

1. This is the first Device Profile screen. To return to this screen from another settings screen, click the Scaling tab.
2. These are the settings:
 - a. CT Numerator (enter value you want), Denominator (display only), Multiplier (1, 10, or 100), CT Fullscale (Calculated automatically)
 - b. PT Numerator (enter value you want), Denominator (enter value you want), Multiplier (1, 10, 100, or 1000), PT Fullscale (Calculated automatically)

CT, PT Ratios and System Wiring			
CT Numerator (Primary)	<input type="text" value="5"/>	< Update CT	<input type="text" value="1"/>
CT Denominator (Secondary)	<input type="text" value="5"/>	Update Ratio >	<input type="text" value="1"/>
CT Multiplier	<input type="text" value="1"/>		
CT Fullscale	5.000 amps		
PT Numerator (Primary)	<input type="text" value="120"/>	< Update PT	<input type="text" value="1"/>
PT Denominator (Secondary)	<input type="text" value="120"/>	Update Ratio >	<input type="text" value="1"/>
PT Multiplier	<input type="text" value="1"/>		
PT Fullscale	120.0 volts		
System Wiring	<input type="text" value="3 element wye"/>		
Phases Displayed	<input type="text" value="ABC"/>		

NOTE: Voltage Full Scale = PT Numerator x PT Multiplier

Current Full Scale = CT Numerator x CT Multiplier

IMPORTANT! Specify Primary and Secondary Voltage in Full Scale (NOT Ratios).

NOTE: You can also enter the Ratios for CT/PT Numerator and Denominator and click the Update CT/ Update PT buttons to let the software calculate the Numerator, Denominator, and Multiplier for you. You can then empty the Ratio fields and click the Update Ratio buttons to confirm the calculated settings: you will see the same ratios you initially entered.

See Chapter 9 in the software manual for additional screen settings instructions (see page QS-1; alternatively, you can click Help>Contents from the CommunicatorPQA® software's Main screen).

Program Communications:

1. Click the Communication tab.
2. The settings shown on the screen are the default settings for the meter's IrDA (COM1 and RS485 (COM2) ports. You can change the settings, if necessary for your application. To revert to the default RS485 port settings, click Set COM2 to default.

Communication Settings	
COM1 (IrDA)	
Response Delay (msec)	<input type="text" value="0"/>
COM2 (RS485)	
Address	<input type="text" value="1"/>
Protocol	<input type="text" value="Modbus RTU"/>
Baud Rate	<input type="text" value="57600"/>
Response Delay (msec)	<input type="text" value="0"/>
<input type="button" value="Set COM2 to default"/>	

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

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

Program Meter Name:

To enter a name/ID for the meter:

1. From the Device Profile screen, click the Settings tab.
2. Input a new meter designation into the Device Designation 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. See Chapter 9 in the software manual for an explanation of the other settings in this screen.

IMPORTANT! When you have made changes to the meter's Device Profile, click Load Profile at the bottom of the Device Profile screen to send the new settings to the meter. The meter will reboot and then you can reconnect to it. Note that you can also click Save Profile to save your changes without sending them to the meter.

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