Shark® 270 Switchboard Meter Quickstart Guide

Hardware Installation:

Front Dimensions

Back Dimensions

Side Dimensions

Cutout Dimensions
To install the meter:

The switchboard case meter fits into a standard panel cutout (see cut-out dimensions on previous page). The installation procedure you use depends on whether you are replacing an existing installation or performing a new installation. The hardware (mounting clips and screws; studs, washers, and nuts) are in plastic bags shipped with the meter.

For Retrofit to existing GE S1 case installations, follow the procedure, below.

For new installations, follow the procedure on the next page.

**FOR EXISTING/RETROFIT INSTALLATIONS:**

**TOOLS NEEDED**

#2 PHILIPS SCREWDRIVER

**RETROFIT HARDWARE**

1. LOCATE UNIT TO BE CHANGED.

2. REMOVE 4 SCREWS HOLDING CASE TO PANEL.

3. INSERT AND INSTALL SHARK 270 SWB3 UNIT INTO PANEL CUT OUT USING INCLUDED MOUNTING CLIPS.

4. INSERT MOUNTING CLIPS INTO SIDE SLOTS.

REST METER ON CUTOUT WHILE MOUNTING.
**FOR NEW INSTALLATIONS:**

1. SCREW INCLUDED STUDS INTO ALL FOUR LOCATIONS.

2. TIGHTEN THE STUD FINGER TIGHT OR USE NEEDLE NOSE PLIERS PLACED CLOSE TO THE NECK OF THE STUD*

*THIS IS IMPORTANT, SO THAT THE NEEDLE NOSE PLIERS WILL ONLY DEFORM THE ENDING THREADS, WHICH WILL BE IN THE PANEL, RATHER THAN THE THREADS NEEDED FOR THE LOCKING NUT.

3. INSTALL FLAT WASHER, SPLIT WASHER, AND NUT FROM BAG.

**NOTE:** Alternatively, you can use the mounting brackets for new installations.
**Electrical Installation:**

**NOTE:** Following are some of the possible wiring configurations. See the Installation and Operation Manual on the enclosed CD for additional configurations.

**FORM: SWB3 (TRANSFORMER RATED)**
- SERVICE: WYE / DELTA, 4WIRE
- NO PTs, 3 CTs

*Refer to shorting block instructions to apply shorts*

*For ratings, see: Voltage Fuses, on page 9-4 of the meter's Installation and Operation Manual.*

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**CLOSEUP OF VOLTAGE AND CURRENT INPUTS**
Earth Ground

Ib-Hi

CONN.2-

GND

SH (  ) (+) NC C NO

(+)   (-)

RS-485/KYZ

CONN.3

CONN.1

1   2   3   4   5   6   7   8   9 10  11  12  13  1   2   3   4   5   6   7   8   9 10  11  12  13

L     N

NETWORK 2

NETWORK 1

Ic-Hi

Ia-Hi

Va

Vb

Ic-Lo

Ib-Lo

Ia-Lo

Vc

Vn

NO PTs, 2 CTs

SERVICE:  DELTA, 3 WIRE

FORM: SWB3  (TRANSFORMER RATED)

* REFER TO SHORTING BLOCK

INSTRUCTIONS TO APPLY

SHORTS

* *

* For ratings, see : Voltage Fuses, on page 9-4

of the meter’s Installation and Operation Manual.

Earth Ground

Earth Ground

Earth Ground

* For ratings, see : Voltage Fuses, on page 9-4

of the meter’s Installation and Operation Manual.

FUSE

3A

LINE

LOAD

REFER TO METER

SPECIFICATIONS

FOR POWER SUPPLY

RATING.

FUSES

LINE

NEUTRAL

REFER TO METER

SPECIFICATIONS

FOR POWER SUPPLY

RATING.
Testing:
Open the switchboard cover (you may have to break the seal).
The Shark® 270 meter has two infrared light ports for pulse-based accuracy testing.

- The port labeled "P" produces Wh pulse outputs.
- The port labeled "Q" produces VARh pulse outputs.
- The associated constant values are Kh and Kt.

1. To enter Test Mode, remove the clear cover by turning it counterclockwise, and press the Test button, located under the cover.

2. The test pulses are fixed as shown in the table below.

<table>
<thead>
<tr>
<th>Test Pulse</th>
<th>Wye</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Class 2</td>
<td>Class 20</td>
</tr>
<tr>
<td>1 - Wh pulse (P light port)</td>
<td>0.18</td>
<td>1.8</td>
</tr>
<tr>
<td>2 - VARh pulse (Q light port)</td>
<td>0.18</td>
<td>1.8</td>
</tr>
</tbody>
</table>

They are also shown on the meter's label, under the form type.

4. When you press the Test button, you first see the Test Mode Configuration LCD display screen. This screen lets you enable (ON) or disable (OFF) CT/PT and TLC compensation during testing. Click the Reset button to change ON to OFF, or vice versa; click the Test button to move to the next setting. When you have finished making your settings, click the Reset button to change NO to YES next to DONE.

5. Press the Test button again to begin testing. There are four Test Mode screens, which display accumulated real, reactive and apparent energy as well as Block Demand for real power. Advance through the Test Mode screens by pressing the Test button.

6. The table below shows the available screens, the data displayed on them, and the pulse source for each screen. Sample screens are shown on the right.

<table>
<thead>
<tr>
<th>Screen</th>
<th>Parameters</th>
<th>Pulse 1 Source</th>
<th>Pulse 2 Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wh (Q1+Q4), VARh (Q1+Q2), VARh (Q3+Q4), VAh</td>
<td>Wh (Q1+Q4)</td>
<td>VARh (Q1+Q2) or (Q3+Q4)</td>
</tr>
<tr>
<td>2</td>
<td>Wh (Q2+Q3), VARh (Q1+Q2), VARh (Q3+Q4), VAh</td>
<td>Wh (Q2+Q3)</td>
<td>VARh (Q1+Q2) or (Q3+Q4)</td>
</tr>
<tr>
<td>3</td>
<td>W (Q1+Q4)Demand, VAR (Q1+Q2) Demand, VAR (Q3+Q4) Demand, VA Demand</td>
<td>Wh (Q1+Q4)</td>
<td>VARh (Q1+Q2) or (Q3+Q4)</td>
</tr>
<tr>
<td>4</td>
<td>W (Q2+Q3) Demand, VAR (Q1+Q2) Demand, VAR (Q3+Q4) Demand, VA Demand</td>
<td>Wh (Q2+Q3)</td>
<td>VARh (Q1+Q2) or (Q3+Q4)</td>
</tr>
</tbody>
</table>
7. Use a comparator to compare the test pulses to the Energy standard to test the meter accuracy.

8. To exit Test Mode, press the Test Mode Button for more than three seconds. The meter returns to Normal Mode. Replace the switchboard cover and seal, if applicable.

**Meter Communication Connection**

To program the meter, you need to connect to it via the Communicator EXT™ application. Depending on your meter configuration, you will connect through one of these ports: RS485 serial, RJ45 Ethernet, or Optical port.

![Diagram of Rear of Switchboard Case](image1)

**Accessing the Communication Ports**

**RS485 Serial Port**

Use an RS485 cable to connect between the meter and the PC on which you are running Communicator EXT™ software. You can use EIG’s RS485 to USB cable E205301: https://electroind.com/product/rs485-to-usb-communication-converter/

**RJ45 Ethernet Port**

Use an Ethernet cable to connect between the meter and the PC on which you are running Communicator EXT™ software. You can use EIG’s RS485 to USB cable E159343: https://electroind.com/product/rj45-to-usb-communication-converter/

**Optical Port**

Use an Optical port reader to communicate between the meter and the PC on which you are running Communicator EXT™ software. You can use EIG’s Optical port to USB or RS485 cable, A9U or A7Z: https://electroind.com/product/ansi-optical-probe/
Programming the Meter through Communicator EXTTM 4.0 Software

1. Download the Communicator EXTTM 4.0 software from the product Cd or from the EIG website: https://electroind.com/product-info/communicator-ext-software-application/

2. Install and then open the application.

3. From the Communicator EXTTM software’s Main screen, click the Connect icon in the Icon Bar.

   - If you are connecting through a serial port (RS485 or Optical port):
     a. Click the Serial Port button.
     b. Enter device address.
     c. Select baud rate (default for both ports is 57600), communication port you are using, protocol (default for RS485 is Modbus RTU and for the Optical port is Modbus ASCII), and parity (for RS485 - the default is None). You can leave the other fields as they are.
     d. Click Connect.

   - If you are connecting through an Ethernet port, you must change your PC’s Ethernet Adapter’s properties before you can connect:
     a. Locate your Ethernet Adapter (Control Panel>Network and Internet>Network Connections).
     b. Double-click on the connection you want to use.
     c. Click the Properties button.
d. Click on Internet Protocol Version 4 (TCP/IPv4) and click the Properties button.

e. Click Use the following IP address and enter 10.0.0. - the last number can be anything from 2 to 254 - in the IP address and 255.255.255.0 in the Subnet Mask.

f. Click OK.

g. Close the Ethernet Adapter and Properties windows.
h. Click the Network button.
i. Enter device address.
j. Enter the meter’s default IP address: **10.0.0.2**
k. Enter the meter’s IP address Network port (the default is 502).
l. Network protocol is Modbus TCP.
m. Click Connect.
**NOTE:** You can change the meter’s IP address once you are connected. See the instructions for Communications settings, beginning on page QS-10.

4. The Device Status screen opens, displaying information about the meter.

5. Click OK to close the Device Status screen, and then click the Profile icon in the Icon Bar.

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

**Program CT, PT Ratios**

1. Click General Settings>CT, PT Ratios and System Hookup from the left side of the Device Profile screen.
   a. Enter CT Ratios Primary (1-65535). The Secondary is display only.
   b. Enter PT Ratios Primary (1-99999999) and Secondary (1-65535) voltage.

   **Example CT Setting:**
   200/5 Amps: set the Primary current value as 200.00.

   **Example PT Settings:**
   14400/120 Volts: set the Primary voltage value as 14400.00; set the Secondary voltage as 120.00.
Program Communications Setting

1. Click General Settings>Communications from the left side of the Device Profile screen.

2. The settings shown here for the Optical port (Com 1) and the RS485 port (Com 2) are the default settings. Change the settings if necessary for your system.

3. The DNP settings for voltage, current, and power are used for DNP protocol communication. Select whether you want to return the values in voltage, current, and power values in Primary or Secondary.

Program Meter Time

The meter is preset to United States 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 match the meter time with the PC time.

3. Click Send.

**NOTE:** The meter offers multiple Time Synchronization methods. See Chapter 26, Section 26.1.2 in the software manual (click Help>Contents from the Main screen to open the manual) for instructions on setting up Time Sync for the meter.

Program Meter Name

The meter’s name is used in database files and report titles. To give the meter a unique name:

1. From the meter’s Device Profile screen, click General Settings>System Settings.
2. Enter a name for the meter in the Meter Designation field.

3. Click OK.

**IMPORTANT!** When you have made changes to the meter’s Device Profile, click Update Device at the top of the Device Profile screen, to send the new settings to the meter. The meter will reboot and then you can reconnect to it. If you changed the IP address, make sure to use the new address in the Network Connect screen. You may also need to reset the Ethernet Adapter to match the new IP address. Follow the steps outlined on pages QS-7 - QS-8.

**NOTE:** For additional meter operation and programming information, refer to the *Shark® 270 Meter Installation and Operation Manual* and the *Communicator EXT™ 4.0 and MeterManager EXT Software User Manual* on the Shark® Series CD and EIG’s website: [https://electroind.com/](https://electroind.com/). You can also view the software manual by clicking the Help button on a settings screen, or by selecting Help>Contents from the top of the Communicator EXT™ software’s Main screen.

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