

Shark® 270 Meter Option Card Kit Quickstart Guide

The Shark® 270 meter has slots for up to two Option cards. Many times, the cards are ordered at the time of meter purchase and are installed at the factory. Option card kits also can be ordered separately; this guide explains the installation procedure for the kits. See the *Shark® 270 Meter Installation and Operation Manual*, for more details about the Option cards.



WARNING! FOR SAFETY, THE METER MUST BE REMOVED FROM BOTH THE SOCKET (IF APPLICABLE) AND FROM POWER, BEFORE ATTEMPTING TO PERFORM ANY OPERATION ON IT.

The Option card kits contain the Option card and a communication cable. The cards are installed in the back of the meter. **Socket meter instructions follow; see QS-3 for switchboard case meter instructions.**

The only tools you need to install an Option card in the **socket meter** are:

- #1 Phillips screwdriver for steps 4, 8 and 20.
- 8 mm Flat blade torque screwdriver set to 30 in-lbs for steps 5 and 19.

Follow these instructions to install an Option card in the socket meter:

1. Power down the meter:

- If the meter is remote powered, disconnect the meter from remote power; short all current transformers' secondary windings to protective earth.
- If the meter is blade powered, if possible remove power to the meter. If power cannot be removed from the meter, disconnect the load side of the meter.

2. Remove the meter from the socket.

3. Place the meter, blade side down, on a clean, smooth surface. Remove the clear cover by holding the base with one hand, rotating the cover counter-clockwise with your other hand, and then lifting off the cover.

4. Unscrew the 4 screws securing the half covers and remove the two halves (picture 1).

5. Turn the meter on its base.

- a. Loosen by only a couple of turns the two captive screws (pivot point) - one facing you and one on the far side, located closest to the meter power plug (picture 2, **a** and **b**).
- b. Completely unscrew the remaining 4 captive screws (2 captive screws if the meter has the 45S base).

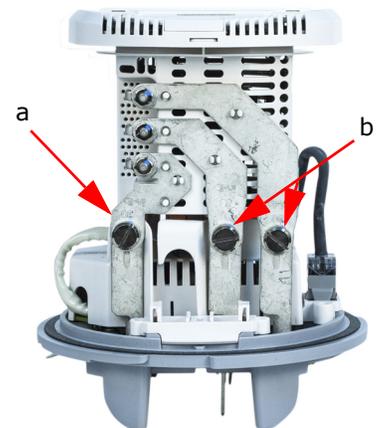
6. Hold the meter face securely with one hand; with your other hand, move the base of the meter to the right, so that the rear of the meter is accessible (picture 3).



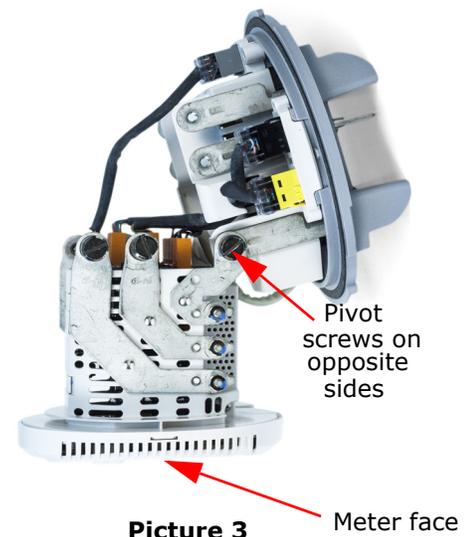
CAUTION! HOLD THE METER FACE IN YOUR HAND TO AVOID DAMAGING THE GLASS.



Picture 1

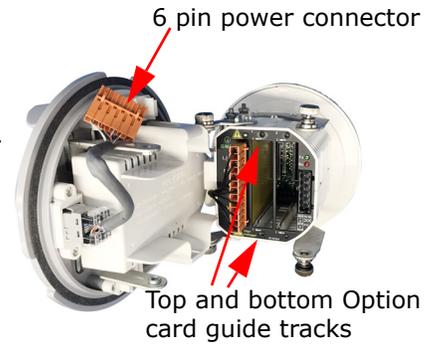


Picture 2

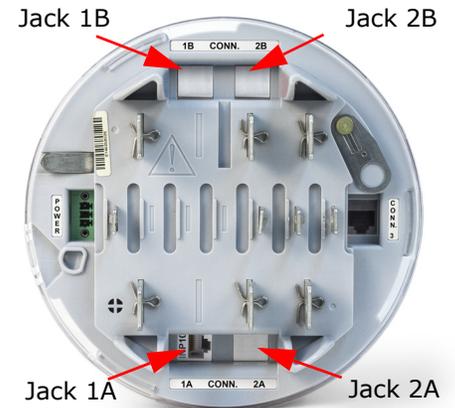


Picture 3

7. Place the meter on its side, on a clean, flat surface, and remove the 6 pin RS485/KYZ port connector on the right side of the meter's rear panel (picture 4).
8. There will be a cover over any empty Option card slot. Remove the slot cover and save the two screws.
9. Insert the Option card into the slot: there is a plastic "track" on the top and bottom of the slot that the Option card fits into.
10. Align the Option card with the card tracks, slide the card inside the tracks, and insert the card into the slot. You will hear a click when the card is fully inserted. Be careful - it is easy to miss the guide track.
11. Securely re-fasten the screws at the top and bottom of the card.



Picture 4

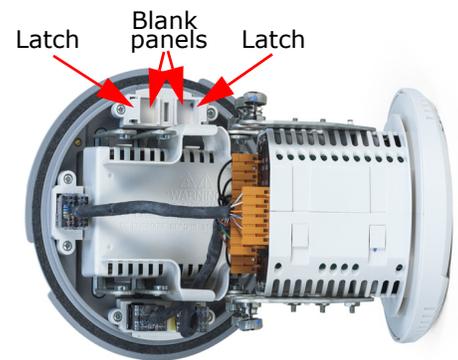


Picture 5

CAUTIONS!

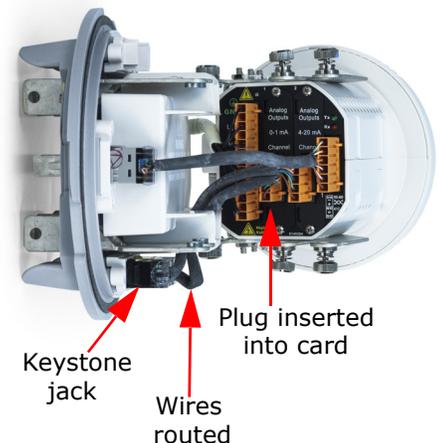
- Make sure the Option card is inserted properly into the track to avoid damaging the card's components.
- For proper card fit, and to avoid damaging the unit, insert components in the following order:
 - a. Option card 1
 - b. Option card 2
 - c. Connector to card 1
 - d. Connector to card 2
 - e. Communication connection for Port 2 (RS485/KYZ port)

12. Rotate the entire meter so that it rests on its base. On the base, locate the port opening where the keystone jack will be placed. The location of the jacks is shown in picture 5, and the jack connections are shown in the table below.



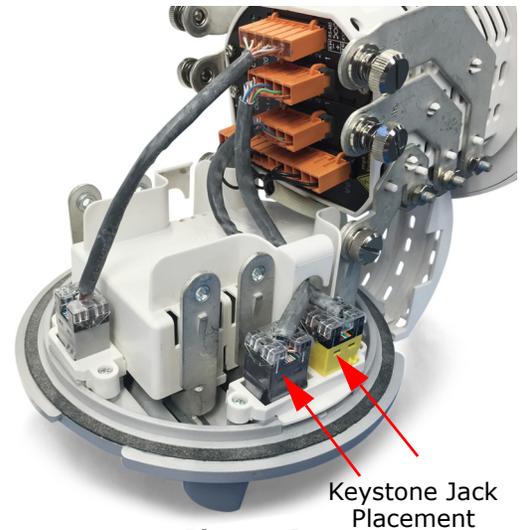
Picture 6

Socket Form Connector Table			
Option Card	Color	Slot 1	Slot 2
R01S	Purple	1A	2A
	Orange	1B	2B
P01S	Blue	1A	2A
	Red	1B	2B
1mAOS	Yellow	1A	2A
20mAOS	Black	1A	2A
RS1S	Ivory	1A	2A
INP100S	White	1A	2A
INP300S	Green	1A	2A



Picture 7

13. When the jack is not being used, there is a blank panel inside it. Remove the blank panel by pressing on the latch (picture 6).
14. Insert the keystone jack where the blank panel had been, with its latch facing the same direction (see picture 6), making sure it locks into place. Route the wires as shown and insert the plug into the card (picture 7). A properly latched keystone jack should stand straight up, perpendicular to the base, and there shouldn't be a large gap visible between the jack and the port opening (picture 8).
15. Before closing the meter, make sure that:
 - a. All connectors on the back of the meter are fully inserted.
 - b. All connectors on the base of the meter are properly attached.
 - c. All the contact surfaces that will be engaged by the captive screws are clean.
 - d. All wires are routed as shown in pictures 7 and 8.



Picture 8

16. Rotate the meter so the captive screws align with the blade tabs.
17. Make sure that no wires are restricted or crimped. If a port is not connected to a card, make sure the cable and keystone jack coming from the unused port are securely positioned under the meter's backplate, by the cards, and do not interfere with any wiring or hardware, or prevent the meter from being closed.
19. Finger tighten all captive screws and then torque all captive screws to 30 In-Lb.
20. Attach both half covers and secure with the 4 screws previously removed.
21. Place the clear cover over the meter with the optical port positioned approximately 1" counterclockwise from the LED's on the meter face: then the cover will slide over the lip on the base.
22. Rotate the clear cover clockwise to secure; the optical port must align with the LEDs on the meter face.

To install cards in the switchboard case meter:

You will need the tools listed on page QS-1, plus: #2 Phillips power torque screwdriver set to 6 In-Lbs.

1. Lift the latch and remove the switchboard case's front bezel (picture 9).
2. Remove the paddle board by pulling the paddle board lever to the right and then pulling out the paddle board (picture 10).

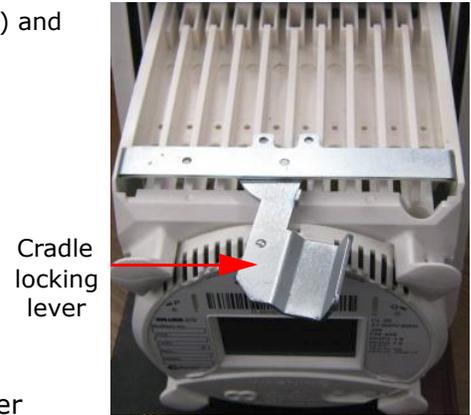


Picture 9



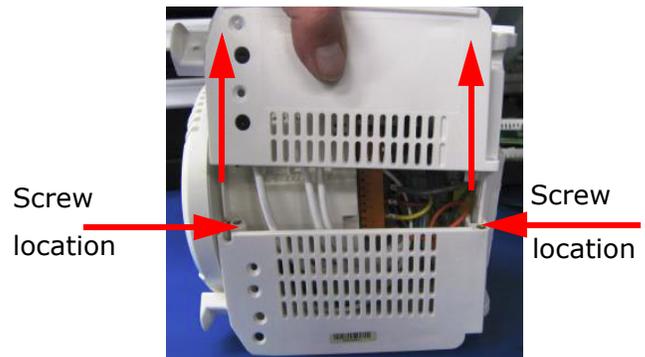
Picture 10

3. Unlock the meter cradle by pulling the silver lever to the right (picture **11**) and pull the meter cradle out of the case.



Picture 11

4. Unscrew the top and bottom cradle halves using a #2 Phillips power torque driver, and separate the two halves (picture **12**).

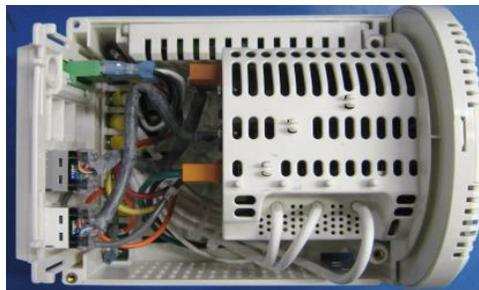


Picture 12

5. Lift the meter out of the bottom cradle (picture **13**).

Meter in Bottom Cradle, Seen from Top

Lift Meter from Bottom Cradle

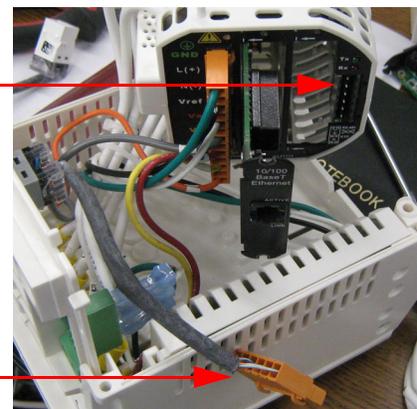


Picture 13

6. Remove the 6 pin RS485/KYZ port connector on the right side of the meter's rear panel (picture **14**).

RS485/KYZ port

RS485/KYZ port connector unplugged



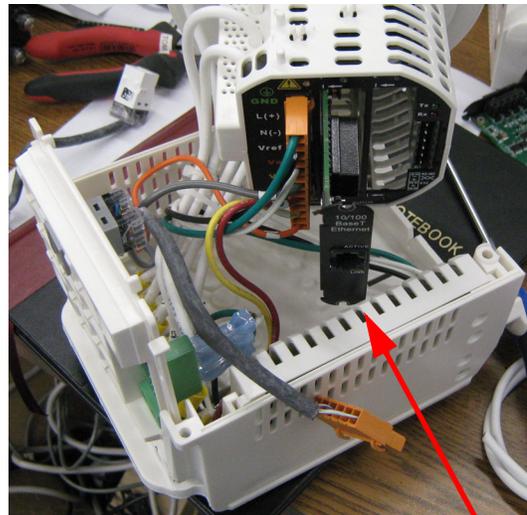
Picture 14

7. Remove the #1 slot cover and save the two screws. Insert the new card in the #1 slot (or do the same for the #2 slot if the #1 slot is occupied) (picture 15).

NOTE: There is a plastic guide track on the top and bottom of the slot, which the Option card fits into. Carefully insert the card into this track - it is easy to miss it. You will hear a click when the card is fully inserted. Page QS-6 gives details on Option card connections.

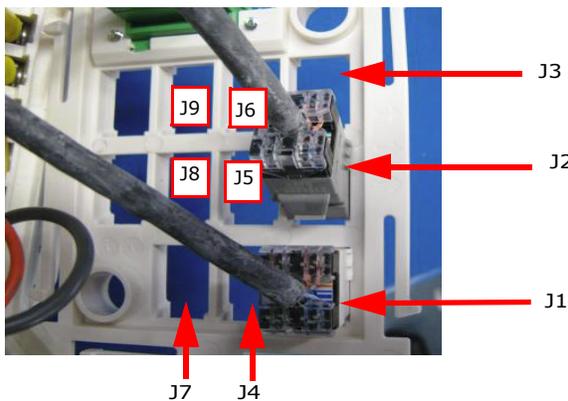
CAUTIONS!

- Make sure the Option card is inserted properly into the track to avoid damaging the card's components.
 - For proper card fit, and to avoid damaging the unit, insert components in the following order:
 - a. Option card 1
 - b. Option card 2
 - c. Connector to Card #1
 - d. Connector to Card #2
 - e. Communication connection for Port 2 (RS485/KYZ port)
8. Securely re-fasten the screws at the top and bottom of the card.
9. From the meter side of the base, route the wires and insert the connector into the card (picture 16).

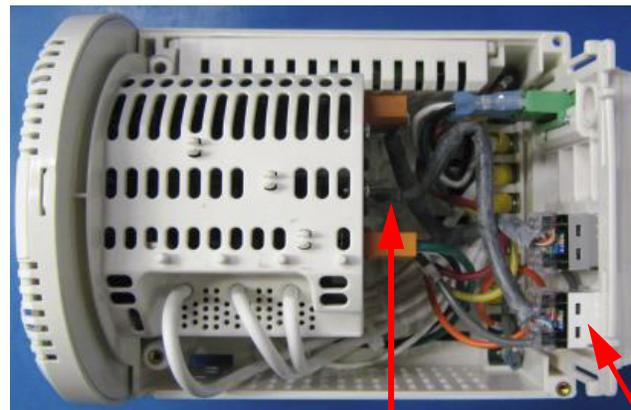


Picture 15

Card being inserted into meter



Detail of cradle grid with Keystone Jack (J) location



Connector inserted into card

Keystone Jack inserted in cradle grid

Picture 16

10. Switchboard case Keystone Jack placements for the Option cards are shown in the table on the next page.

Switchboard Case Connector Table			
Option Card	Color	Slot 1	Slot 2
RO1S	Orange	J4	J6
	Purple	J7	J9
PO1S	Red	J4	J6
	Blue	J7	J9
1mAOS	Yellow	J5	J8
20mAOS	Black	J5	J8
RS1S	Ivory	J7	J9
INP100S	White	J1	J3
INP300S	Green	J1	J3
RS485/KYZ	Gray	J2 - Always Installed (Standard)	

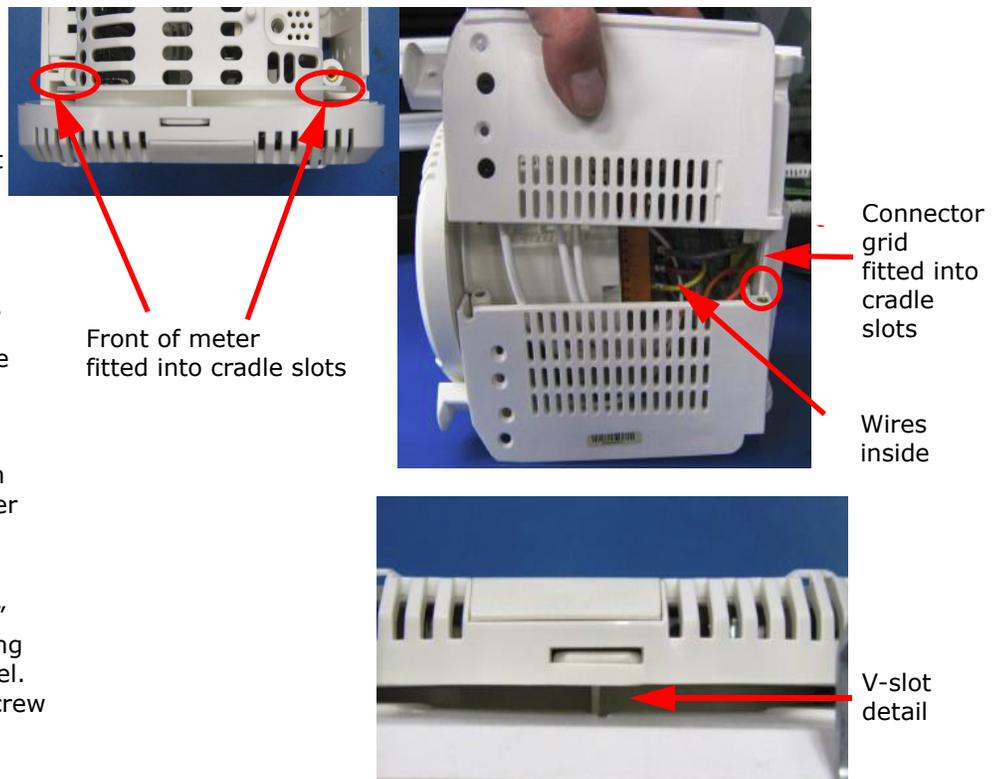
11. Before closing up the meter, verify that all I/O card connectors are fully seated and all Keystone jacks are properly inserted into the cradle grid.

12. Rotate the meter so that it is replaced inside the cradle.

13. Verify that no wires are restricted or crimped and then lower the cradle top on to the cradle bottom, making sure that the meter and connector grid remain in the cradle slots and that the tab on the top of the metering unit aligns into the V slot in the cradle (picture 17).

14. Secure the top cradle half to the bottom cradle half with the two screws previously removed - one in the back corner and one in the front corner. Tighten with a #2 Phillips power torque driver set to 6 In-Lbs.

NOTE: The front corner screw is installed at the bottom of a "tunnel" hole. With the screw threads pointing down, drop the screw into the tunnel. Before tightening, check that the screw is oriented correctly.



Picture 17

15. Flip the cradle up-side down and secure the bottom cradle half to the top with the two screws previously removed - one in the back corner and one in the front corner. Tighten the screws with a #2 Phillips power torque driver set to 6 In-Lbs.

16. Return the cradle to an upright position and inspect all four sides for fit, making sure seams are closed tightly and that the metering unit is in the middle of the four cradle standoffs (picture 18).



Meter stand-offs (4)

Picture 18

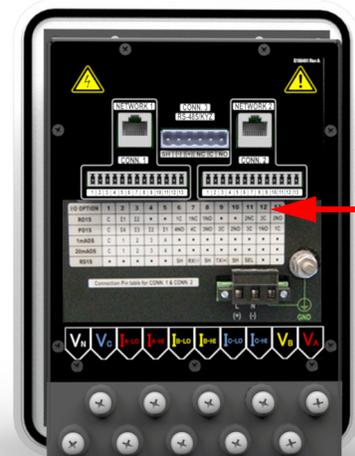
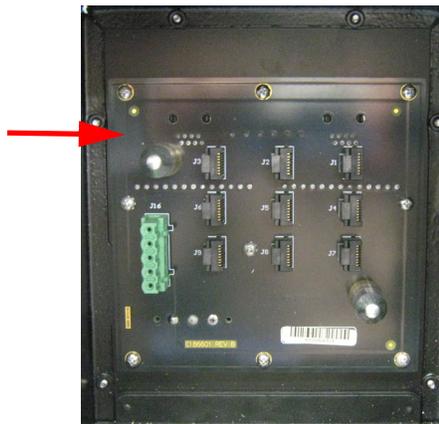
17. Make sure the cradle locking tab is in the open position and push the cradle into the switchboard case as far as possible (picture 19).



Picture 19

18. When the cradle is inserted into the metal switchboard case, the Option card jacks match up with the connectors on the inside back of the switchboard case. Then you can make your connections from the back of the case, using the pin connection label (picture 20).

Inside back of switchboard case, showing connectors



Pin connections are shown for the I/O cards

Picture 20

19. Lock the cradle into the switchboard case by sliding the cradle locking tab into the locked position (picture 21).

Tab in locked position



Picture 21

20. Re-insert the paddle board between the bottom of the cradle and the switchboard case, and continue to push the paddle board inward until it is fully inserted. Note that some effort will be needed to fully insert the paddle board (picture 22).



Picture 22

21. Re-install the assembly: On the inside of the upper lip, there are two self-locating tabs that will guide the bezel into proper position (picture 23).

Self-locating tabs (2)



Picture 23

22. Once the bezel hangs freely, push the bottom of the bezel firmly against the case, and then press the latch until it snaps into place (picture 24).



CAUTION! FOR PROPER OPERATION, RESET ALL PARAMETERS IN THE UNIT AFTER HARDWARE MODIFICATION.

The Shark® 270 meter auto-detects any Option cards installed in it. You must perform configuration of the Option cards using CommunicatorPQA™ software. Refer to the *CommunicatorPQA™*, *MeterManagerPQA™*, and *EnergyPQA.com™ Software User Manual*.

See the *Shark® 270 Meter Installation and Operation Manual* for more detailed instructions on the I/O Option cards and installation for the socket form and switchboard case meter.

The manuals can be found on EIG's website:
<https://electroind.com/>

Press the latch



Picture 24

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