

PowerLogic ION7550 / ION7650 display retrofit instructions

This document provides instructions for replacing the front panel LCD display module in PowerLogic™ ION7550 / ION7650 devices.

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Additional information

- ◆ *ION7550 / ION7650 installation guide*
- ◆ *ION7550 / ION7650 user guide*
- ◆ *ION7550 / ION7650 revenue meter product option document*

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Safety information

Important information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.

Please note

Electrical equipment should be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Safety precautions

Installation, wiring, testing and service must be performed in accordance with all local and national electrical codes.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA, CSA Z462 or applicable local standards.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Turn off all power supplying this device and the equipment in which it is installed before working on the device or equipment.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Ensure the device has been unpowered for at least 10 minutes prior to disassembly.
- Replace all devices, doors and covers before turning on power to this equipment.
- Never short the secondary of a Potential Transformer (PT).
- Never open circuit a Current Transformer (CT); use the shorting block to short circuit the leads of the CT before removing the connection from the device.
- Connect protective ground (earth) before turning on any power supplying this device.

Failure to follow these instructions will result in death or serious injury.

Retrofit overview

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Ensure your work area is clear of metal fragments and debris that could create a short circuit inside the meter.
- Ensure that your hands are free of any oils and contaminants that could damage the meter's board components.

Failure to follow these instructions will result in death or serious injury.

The components inside the device are extremely sensitive to electrostatic discharge.

NOTICE

ELECTROSTATIC DISCHARGE

Always wear an anti-static wrist strap and use an anti-static workbench or mat when working with the device's inner components.

Failure to follow these instructions can result in damage to the device.



NOTE

The illustrations within this document are representative and are intended for reference only. Your device may appear different than shown.

Recommended tools

- ◆ #1 Phillips manual (not electric) screwdriver (with minimum 5 inch/127 mm shaft length)
- ◆ Small flathead screwdriver
- ◆ Pliers
- ◆ Small adjustable wrench
- ◆ Anti-static wrist strap and anti-static workbench or mat
- ◆ Voltage sensing device

Confirm the new display is compatible with your device

This replacement LCD display works on older-generation ION7550 / ION7650 devices only, not on newer devices with a different electronic interface.

To determine if this display is compatible with your device, find the serial number of your device by doing one of the following:

- ◆ Accessing the Setup Assistant for your device in ION Setup, then clicking the Basic Setup screen and selecting the Nameplate tab;
- ◆ Navigating to the Nameplate screen on the front panel, or
- ◆ Looking at the label on the top of your device.

After noting the serial number, refer to the sample serial number below:

PJ-0807A267-01

- ◆ If your device's serial number ends in -01 or -02, this display will work with your device.
- ◆ If your device's serial number ends in -03 or higher, then this display will **not** work with your device.



NOTE

Contact Technical Support regarding replacing the display on devices with serial numbers that end with -03 or higher.

Performing the retrofit on a hardware-locked device

The procedure for performing the retrofit on a hardware-locked device is slightly different than performing the procedure on a non-hardware-locked device.

1. You must disable the hardware-lock by moving a jumper on the device's communications card (as noted in "Step 4a: Reinstalling the communications card" on page 15) in order to configure the display contrast later in the procedure.
2. You must temporarily apply control power, set the display contrast, and remove control power as described in "Hardware-locked device: Adjusting the display contrast and reinstalling the device" on page 18.
3. You must re-enable the hardware-lock by resetting the jumper on the communications card.

See the *PowerLogic ION7550 / ION7650 revenue meter* product option document for detailed instructions on disabling and re-enabling the hardware-lock feature.

Before you begin

1. Familiarize yourself with the contents of this document, in particular the “Safety precautions” on page 3.
2. Make sure you have all tools and parts required for your retrofit, including an anti-static wrist strap and an anti-static workbench or mat.
3. Ensure all important data from the device (for example, revenue values) has been retrieved.
4. Employ an anti-static wrist strap and anti-static workbench or mat.
5. Turn off ALL power to the device, including high voltage, digital inputs and relay connections. Ensure the device has been unpowered for at least 10 minutes prior to disassembly.
6. Use a properly rated voltage sensing device to confirm power is OFF.
7. Open all PT fuses (or direct voltage input fuses).
8. Close all CT shorting blocks.
9. Ensure that all cables still connected to the device are NOT live.
10. Uninstall the device and remove any anti-tamper sealing (if applicable).

Removing metering seals to perform a retrofit may render your device non-compliant for billing purposes.

NOTICE

LOSS OF COMPLIANCE

Ensure that you re-certify your meter with the appropriate revenue metering authorities after re-enabling the hardware-based security.

Failure to follow these instructions may render your device non-compliant for billing purposes.

Disassembly steps

When disassembling the device, it is recommended that you take note of the original location of all parts and screws to aid in reassembly.

The components inside the device are extremely sensitive to electrostatic discharge.

NOTICE

EQUIPMENT DAMAGE

Always wear an anti-static wrist strap and use an anti-static workbench or mat when working on the device's inner components.

Failure to follow these instructions can result in damage to equipment.

Step 1: Removing the communications card and ground nut

When the auxiliary battery is in use, removing the communications card from the meter can cause up to 10 minutes worth of time and data loss.

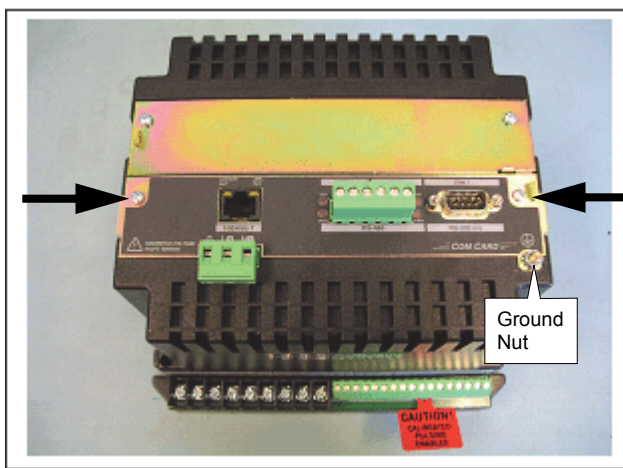
NOTICE

DATA LOSS

Ensure all important data from the device has been retrieved before removing the communications card.

Failure to follow these instructions can result in permanent data loss.

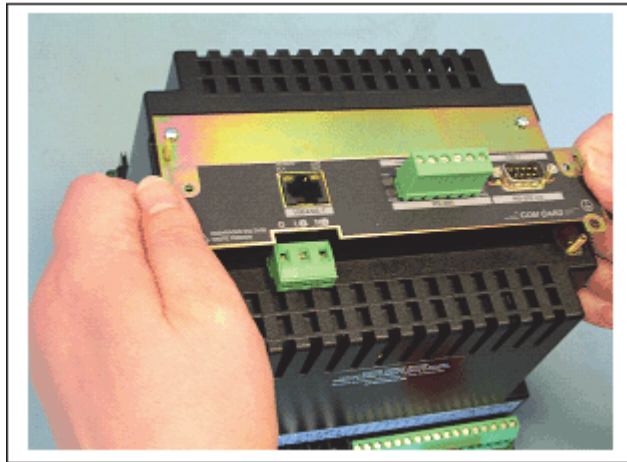
1. Unplug all wires connected to the communications card.
2. Remove the two screws from the communications card on the back of the device, using a Phillips #1 manual (not electric) screwdriver (see arrows below). Remove the ground nut using a small adjustable wrench.



3. Remove the communications card by grasping it with your hands on both sides of its backplate (see below) and carefully pulling it out of the socket, away from the chassis.

**TIP**

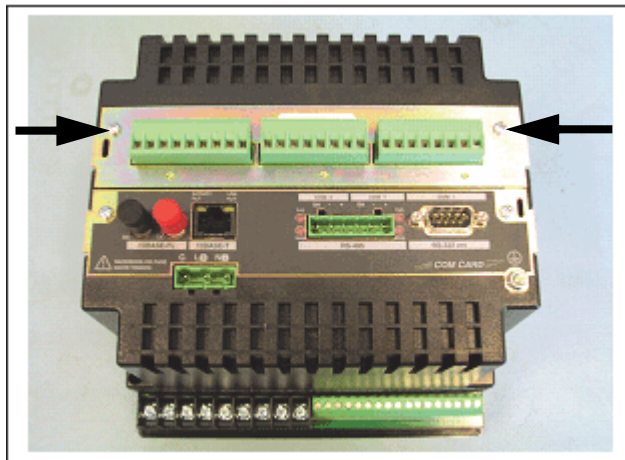
If the card sticks in the device, wedge the tip of a flathead screwdriver between the card's backplate and the device chassis and gently pry the card loose.



Step 2: Removing the I/O card (or faceplate)

If the device does not have an I/O card installed, remove the blank faceplate on the back of the device instead, then go to "Step 3: Removing the back cover housing and boards" on page 9. If the device has an I/O card, complete the following steps:

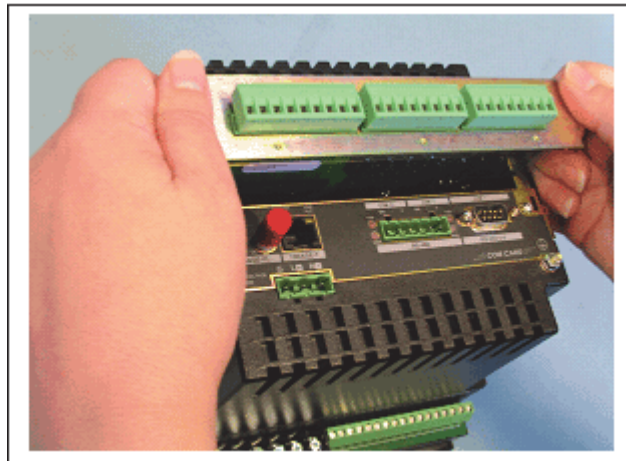
1. Unplug all wires connected to the I/O card.
2. Remove the two screws from the I/O card on the back of the device (see arrows below).



3. Remove the I/O card by grasping it with your hands on both sides of its backplate (see below) and carefully pulling it out of the socket, away from the chassis.

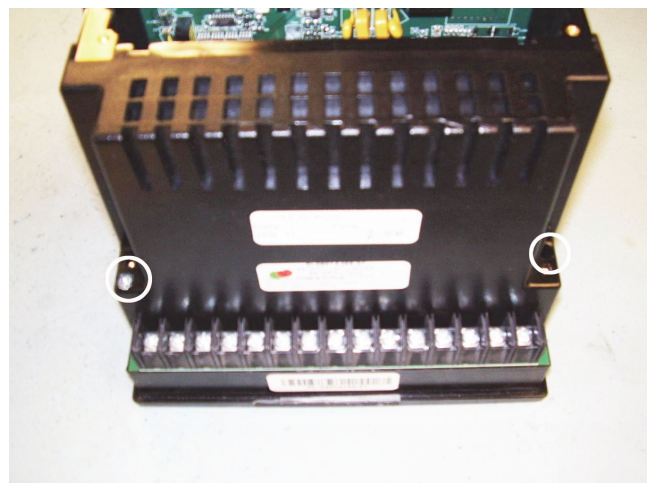
**TIP**

If the card sticks in the device, wedge the tip of a flathead screwdriver between the card's backplate and the device chassis, and gently pry the card loose.

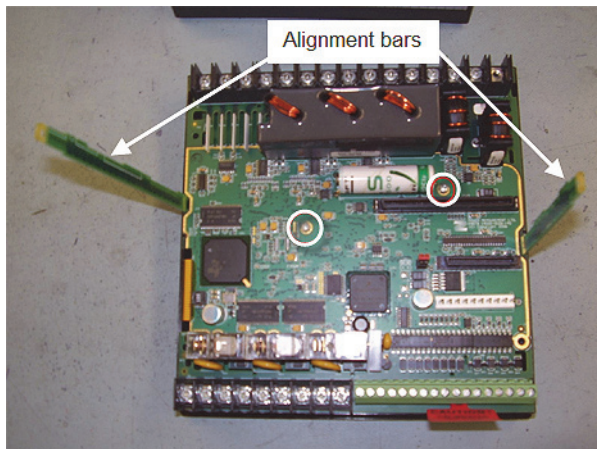


Step 3: Removing the back cover housing and boards

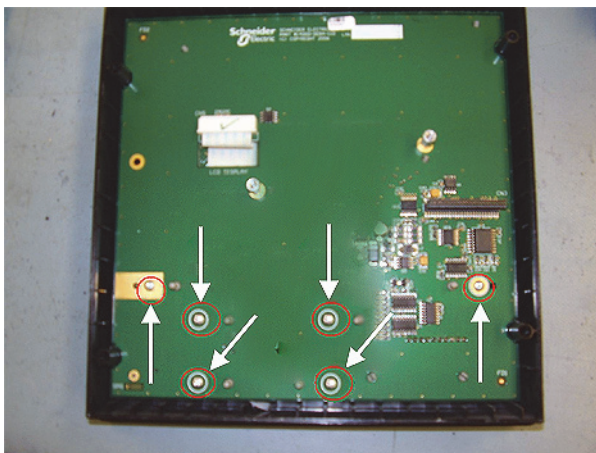
1. Remove the four cover screws (see below), then remove the back cover housing.



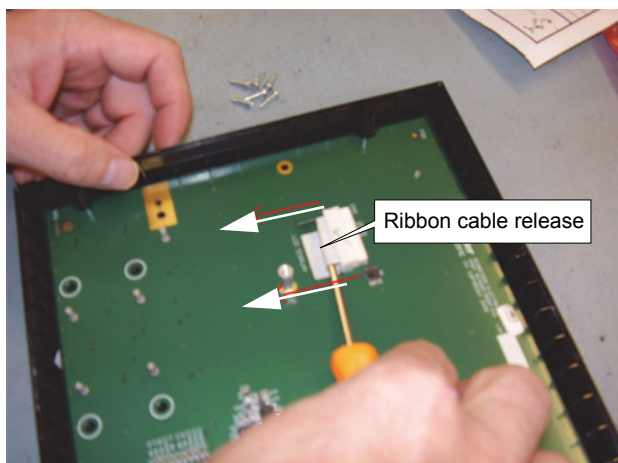
2. Remove the two screws on the CPU board (see circles below). Carefully lift out the CPU board, then remove the alignment bars.



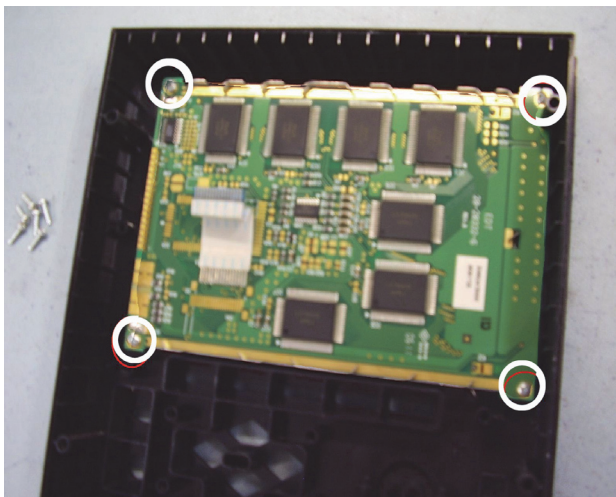
3. Remove the six screws on the display board (see arrows below).



4. Unlock the ribbon cable from the white connector by sliding the release collar in the direction shown below. If necessary, use a small flathead screwdriver to release the collar (see below). Gently pull the ribbon cable from the connector housing by applying pressure in the direction indicated below, then remove the display board.



5. After the display board has been removed, the back of the display module can be accessed. Remove the four screws (see below) and the display module.



Reassembly steps

The components inside the device are extremely sensitive to electrostatic discharge. They can be damaged if misaligned or overtightened.

NOTICE

EQUIPMENT DAMAGE

- Always wear an anti-static wrist strap and use an anti-static workbench or mat when working on the device's inner components.
- Properly orient the components and connectors when reinstalling them in the meter.
- Do not use excessive force when reinstalling the circuit boards or components.
- Tighten screws as directed to prevent stripping.

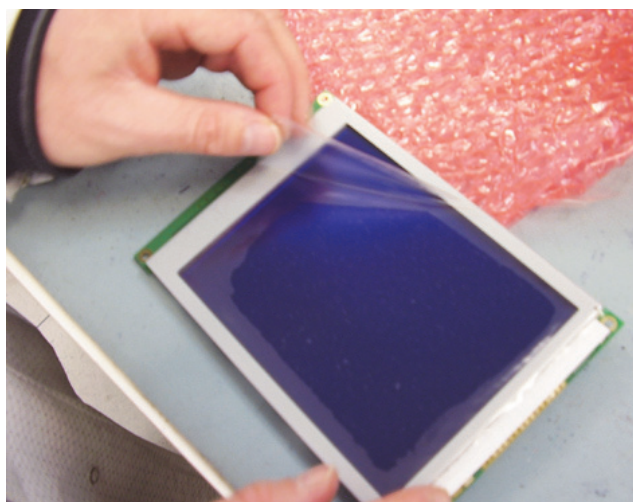
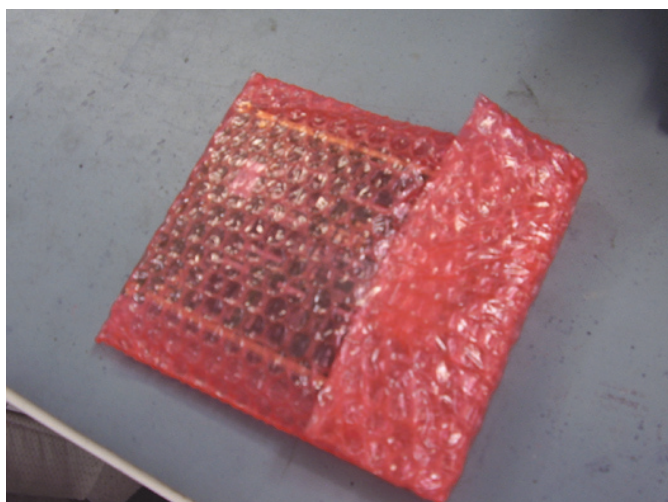
Failure to follow these instructions can result in damage to equipment.

Recommended practice

- ◆ When reassembling, use a #1 Phillips manual (not electric) screwdriver.
- ◆ Insert all screws loosely, then, as a second step, tighten each screw an additional 1/8 of a turn once it makes contact with the circuit board.
- ◆ Do not overtighten the screws. This applies to all self-tapping screws installed in plastic.

Step 1: Unpacking and inspecting the new display

Remove the new display module (LCD) from its packaging. Remove the screen protector and inspect the unit for any damage.



Step 2: Installing the new display

During reassembly, use care to ensure that no screws or other parts fall into the device. Do not continue reassembly until all four display screws are replaced in their original locations on the display.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Replace all screws removed during disassembly of the meter.
- Ensure all screws are replaced into their original locations.
- Ensure that no metal parts or metal fragments fall into the device.

Failure to follow these instructions will result in death or serious injury.

1. Insert the new display module onto the plastic bezel.
2. Insert all four screws loosely then tighten. Do not overtighten the screws.
3. Insert the display board, feeding the ribbon cable through the slot on the display board and into the collar. Tighten the collar. Make sure the connector is correctly connected and the ribbon cable release collar is locked once the ribbon is reinserted. Insert all six screws loosely then tighten. Do not overtighten the screws.
4. Reinsert the alignment bars.

NOTICE

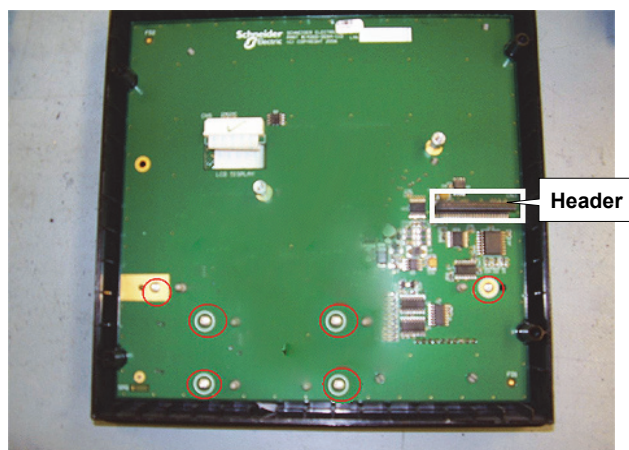
EQUIPMENT DAMAGE

- Properly orient the components and connectors when reinstalling them in the device.
- Do not use excessive force when reinstalling the circuit boards or components.

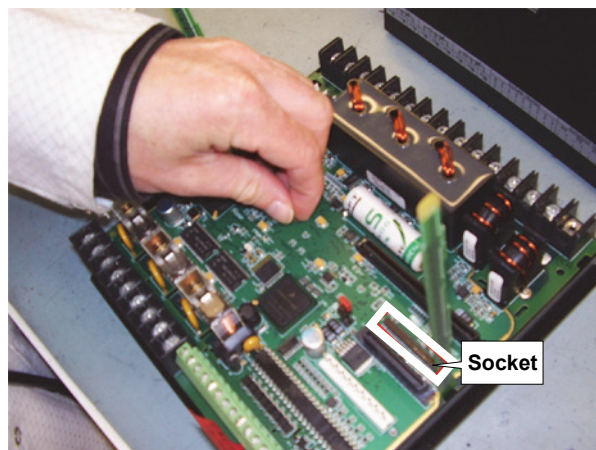
Failure to follow these instructions can result in damage to equipment.

5. Align the CPU board and carefully fit the header pins on the display board into the socket on the CPU board (see below). The components inside the meter, such as the pins on the display board, can be damaged if misaligned or overtightened.

Display board



CPU board



Step 3: Replacing the back cover housing

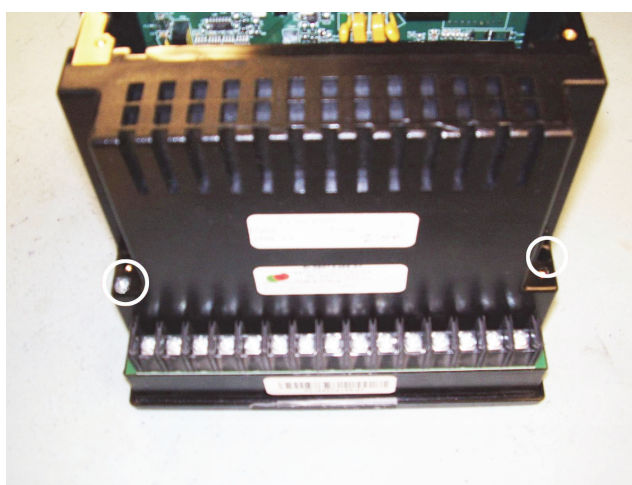
NOTICE

EQUIPMENT DAMAGE

- Properly orient the components and connectors when reinstalling them in the device.
- Do not use excessive force when reinstalling the circuit boards or components.

Failure to follow these instructions can result in damage to equipment.

1. Replace the back cover housing, ensuring the alignment bars are correctly lined up.
2. Ensure the power supply connector in the back cover housing fits securely into the connector on the CPU board.
3. Insert all four screws then tighten.



Step 4: Reinstalling the cards (or faceplate)

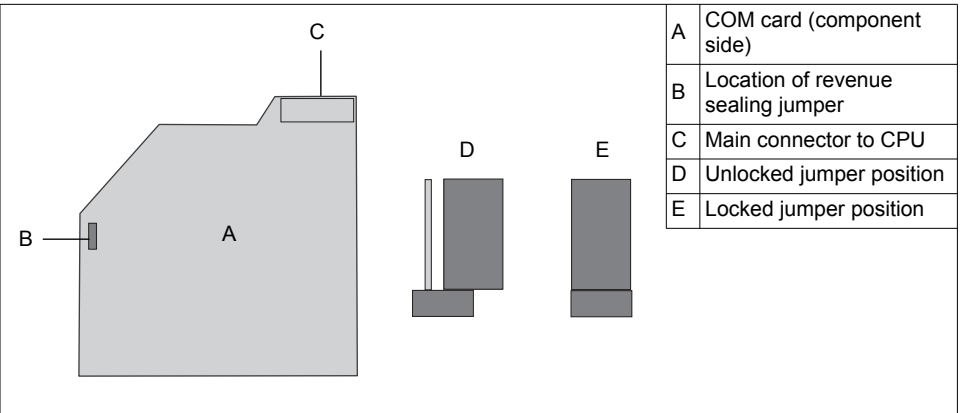
Insert the communications card first, then insert the I/O card (or faceplate) before reinserting the screws.

Step 4a: Reinstalling the communications card

Preliminary step for hardware-locked devices

If performing the retrofit on a hardware-locked device, you need to disable the hardware-lock.

1. Locate the jumper pin labeled “Revenue Sealing Jumper” on the COM card. The label is printed on the COM card circuit board next to the jumper pin.
2. Move the jumper onto one pin only to disable the hardware-based security. You can move the jumper to either pin as long as it is only on one pin.



You must disable the hardware-lock in order to perform the configuration steps in “Adjusting the display contrast and reinstalling the device” on page 17. See the *PowerLogic ION7550 / ION7650 revenue meter* product option document for more information.

Reinstalling the communications card

1. Insert the communications card by sliding the edges of the circuit board down the slots along each side of the chassis.
2. Align the main connector of the CPU with the socket and press the card firmly into place. The socket and the connector are polarized, so the pins in the connector will not fit into the socket if the card is not oriented correctly.
3. Ensure the header connector on the main board fits securely into the receptacle connector on the communications card. The communications card is securely inserted into the socket when the backplate of the card meets the chassis of the device. Visually confirm that the header has not been damaged, and that the battery connector is correctly attached.

NOTE

Before inserting the screws for the communications card, install the I/O card (or faceplate).

Step 4b: Reinstalling the I/O card (or faceplate)

If the device does not have an I/O card, install the blank faceplate on the back of the device instead, then go to “Adjusting the display contrast and reinstalling the device” on page 17. If the device has an I/O card, complete the following steps:

1. Insert the I/O card by sliding the edges of the circuit board down the slots along each side of the chassis.
2. Carefully align the connector with the socket and press the card firmly into place. The socket and the connector are polarized, so the pins in the connector will not fit into the socket if the card is not oriented correctly. The I/O card is securely inserted into the socket when the backplate of the card meets the chassis of the device.
3. Once both cards (or card and faceplate) are inserted, replace all four screws loosely, then tighten.
4. Ensure the ground wire is connected to the device protective ground terminal (for example, ground nut/lug/post, etc.).

Adjusting the display contrast and reinstalling the device

The new display has different contrast settings, and will be difficult or impossible to read until you reset the contrast. Also, disassembling the device may have caused the device to lose time so you need to reset the device clock.

The steps for adjusting the display contrast, reinstalling the device, and adjust the device clock differ, depending on whether you are performing the retrofit on a:

- ◆ Non-hardware-locked device: re-install the meter then adjust the display contrast and reset the device clock. See “Non-hardware-locked device: Reinstalling the device and adjusting the display contrast” on page 17, or
- ◆ Hardware-locked device: apply control power, adjust the display contrast, remove control power, re-enable the hardware-lock and re-certify the meter (if applicable), re-install the device and reset the device clock. See “Hardware-locked device: Adjusting the display contrast and reinstalling the device” on page 18.

Non-hardware-locked device: Reinstalling the device and adjusting the display contrast

Step 1: Reinstalling the device

See the *ION7550 / ION7650 Installation Guide* for instructions on rewiring the communications and I/O cards, as required, and reinstalling the device.

Step 2: Adjusting the display contrast

On the front panel, press and hold the **Prog** and **Up** buttons at the same time, then release both buttons when the display reaches a contrast value of 0 (zero).

The change in the display contrast may take up to 10 seconds to become noticeable; continue to hold the **Prog** and **Up** buttons until adjusted.

Step 3: Resetting the device clock

After reinstalling and repowering the device, reset the internal clock of the device to the correct time and date. From the front panel, press the **Prog** button and select **Time Setup**, or use ION Setup or the Designer component of ION Enterprise.

Hardware-locked device: Adjusting the display contrast and reinstalling the device

Step 1: Applying temporary control power and adjusting the display contrast

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Verify the control power source meets the specifications for your meter's power supply option.
- Make sure protective ground (earth) is connected before turning on power to the meter.
- Turn off all power supplying this device and the equipment in which it is installed before working on the device or equipment.
- Always use a properly rated voltage sensing device to confirm that all power is off.

Failure to follow these instructions will result in death or serious injury.

1. Ensure the ground wire is connected to the device protective ground terminal (for example, ground nut/lug/post, etc.).
2. Connect and apply control power to the meter.
3. Adjust the display contrast: press and hold the **Prog** and **Up** buttons on the front panel at the same time, then release both buttons when the display contrast reaches 0 (zero).

The change in the display contrast may take up to 10 seconds to become noticeable; continue to hold the **Prog** and **Up** buttons until adjusted.

4. Remove control power from the meter.
5. Use a properly rated voltage sensing device to confirm power is OFF.

Step 2: Re-enabling the hardware-lock

Re-enable the hardware-lock by moving the jumper on the communications card to a locked position. See the "Re-enabling the hardware-based security" section in the *PowerLogic ION7550 / ION7650 revenue meter* product option document for detailed instructions

Step 3: Re-certifying the device (if applicable)

Removing metering seals to perform a retrofit may have rendered your device non-compliant for billing purposes.

NOTICE

LOSS OF COMPLIANCE

Ensure that you re-certify your meter with the appropriate revenue metering authorities after re-enabling the hardware-based security.

Failure to follow these instructions may render your device non-compliant for billing purposes.

Step 4: Reinstalling the device

See the *ION7550 / ION7650 Installation Guide* for instructions on rewiring the communications and I/O cards, as required, and reinstalling the device.

Step 5: Resetting the device clock

After reinstalling and repowering the device, reset the internal clock of the device to the correct time and date. From the front panel, press the **Prog** button and select **Time Setup**, or use ION Setup or the Designer component of ION Enterprise.