



Field Retrofit Instructions



**POWER
MEASUREMENT**

Danger



This symbol indicates the presence of dangerous voltage within and outside the product enclosure that may constitute a risk of electric shock, serious injury or death to persons if proper precautions are not followed.

Caution



This symbol alerts the user to the presence of hazards that may cause minor or moderate injury to persons, damage to property or damage to the device itself, if proper precautions are not followed.

Note



This symbol directs the user's attention to important installation, operating and maintenance instructions.

Service Considerations

Servicing the ION 7700 meter should only be performed by qualified, competent personnel that have appropriate training and experience with high voltage and current devices. The meter must be serviced in accordance with all Local and National Electrical Codes.



DANGER

Failure to observe the following instructions may result in severe injury or death.

- ◆ During normal operation of the ION 7700 meter, hazardous voltages are present on its terminal strips, and throughout the connected potential transformer (PT), current transformer (CT), digital (status) input, control power and external I/O circuits. PT and CT secondary circuits are capable of generating lethal voltages and currents with their primary circuit energized. Follow standard safety precautions while performing any installation or service work (i.e. removing PT fuses, shorting CT secondaries, etc).
- ◆ The terminal strips on the meter base should not be user-accessible after installation.
- ◆ Do not use digital output devices for primary protection functions. These include applications where the devices perform energy limiting functions or provide protection of people from injury. Do not use the ION 7700 in situations where failure of the devices can cause injury or death, or cause sufficient energy to be released that can start a fire. The meter can be used for secondary protection functions.
- ◆ Do not HIPOT/Dielectric test the digital (status) inputs, digital outputs, or communications terminals. Refer to the label on the ION 7700 meter for the maximum voltage level the device can withstand.



CAUTION

Observe the following instructions, or permanent damage to the meter may occur.

- ◆ The ION 7700 meter offers a range of hardware options that affect input ratings. The ION 7700 meter's serial number label lists all equipped options. Applying current levels incompatible with the current inputs will permanently damage the meter.
- ◆ The ION 7700 meter's chassis ground must be properly connected to the switchgear earth ground for the noise and surge protection circuitry to function correctly. Failure to do so will void the warranty.
- ◆ Terminal screw torque: Barrier-type (current, voltage, and relay terminal screws: 1.35 Nm (1.00 ft-lbf) max. Captured-wire type (digital inputs/outputs, communications, power supply: 0.90 Nm (0.66 ft.lbf) max.

FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The Ringer Equivalence Number (REN) for the ION 7700 optional internal modem is 0.6. Connection to the ION 7700 internal modem should be made via an FCC Part 68 compliant telephone cord (not supplied). The ION 7700 cannot be used on a public coin phone service or party line services.

Network Compatibility Notice for the Internal Modem

The internal modem in meters equipped with this option is compatible with the telephone systems of most countries in the world, with the exception of Australia and New Zealand. Use in some countries may require modification of the internal modem's initialization strings. If problems using the modem on your phone system occur, please contact Power Measurement Technical Support

Standards Compliance

- ◆ International The 7700 ION is operable under Pollution Degree II
- ◆ Measuring inputs comply with Installation Category III
- ◆ Power Supply inputs comply with Installation Category II
- ◆ All inputs pass ANSI/IEEE C37.90-1989 surge withstand and fast transient tests
- ◆ UL listed UL 3111-1
- ◆ CSA CAN/CSA-C22.2 No.142-M1987 and CAN/SCSA-C22.2 No.1010.1-95
- ◆ LVD Registered under CB Scheme to EN61010-1:1995
- ◆ EMC EN50081-2:1994 and EN50082-2:1995
- ◆ FCC Part 15 of FCC Rules for a Class A Digital Device

Limitation of Liability

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Covered by one or more of the following patents:

U.S. Patent No's 6751562, 6745138, 6737855, 6694270, 6671654, 6671635, 6687627, 6615147, 6611922, 6611773, 6563697, 6493644, 6397155, 6186842, 6185508, 6000034, 5995911, 5828576, 5736847, 5650936, D459259, D458863, D443541, D439535, D435471, D432934, D429655, D429533, D427533.

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Before You Begin

DANGER

During normal operation of the meter, hazardous voltages are present which can cause severe injury or death. These voltages are present on the terminal strips of the device and throughout the connected potential transformer (PT), current transformer (CT), status input, relay, and control power circuits. Only qualified, properly trained personnel should perform installation and servicing.

Before performing any service on the meter:

- ◆ Familiarize yourself with the steps in this guide.
 - ◆ Read the safety precautions on the “Service Considerations” page.
 - ◆ Complete the following steps before attempting any retrofits.
1. Turn off **ALL** power to the meter.
 2. Open all PT fuses (or direct voltage input fuses).
 3. Close all CT shorting blocks.
 4. Ensure that all cables still connected to the meter are **NOT** live.

CAUTION

The components inside the meter are extremely sensitive to electrostatic discharge. To prevent damage to the unit, wear an anti-static wrist strap at all times when working inside the unit. Failure to use proper equipment during servicing will void the ION 7700 meter’s warranty.

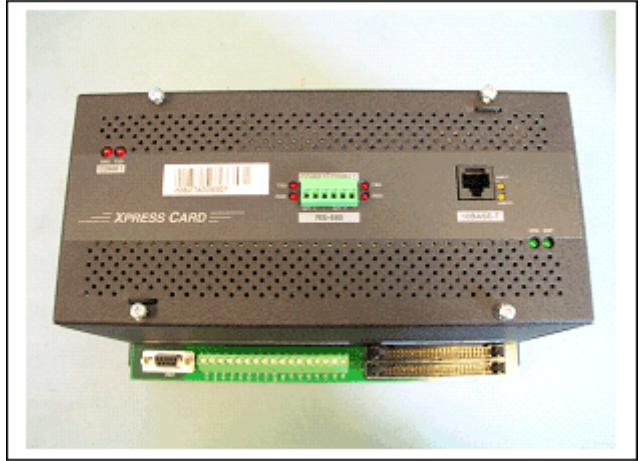
Recommended Tools

- ◆ Phillips screwdriver
- ◆ Flat-head screwdriver
- ◆ Adjustable wrench or socket wrench set
- ◆ Wire cutter
- ◆ Anti-static wrist strap or similar protection

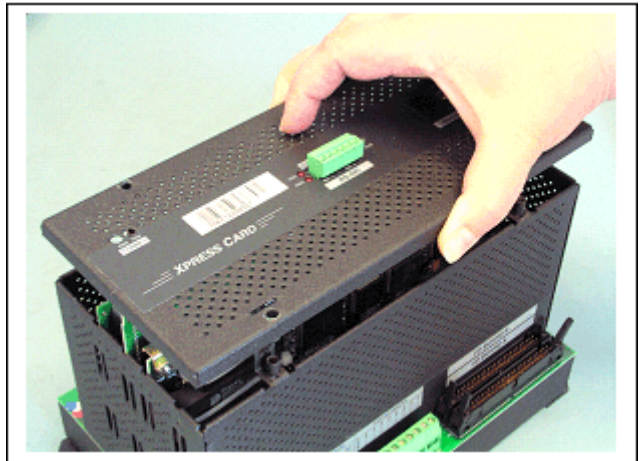
Removing and Replacing the Meter Lid (Xpress Card)

Removing the meter lid/Xpress Card

1. Using #2 Phillips screwdriver, remove the four screws from the ION 7700 meter lid. If equipped with an Xpress Card, it is mounted onto the meter lid.



2. Lift the cover straight up to unplug the Xpress card from the main board inside the meter.



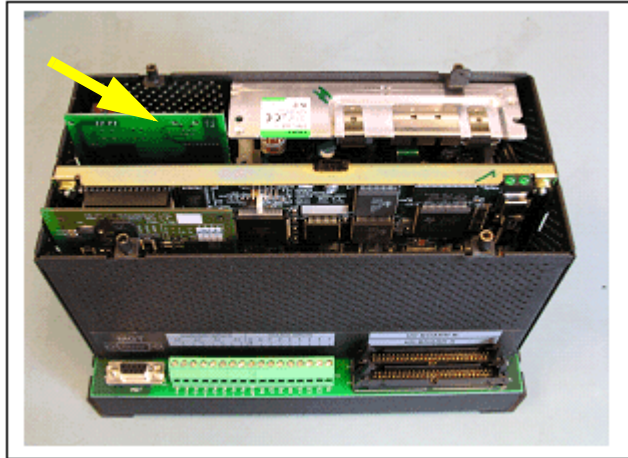
Replacing the meter lid/Xpress Card

1. Line up the Xpress Card edges with the grooves in the meter chassis. Slide down until the edges catches the slot in the main board. Press firmly to plug the card in.
2. Secure the lid onto the chassis using the four screws.

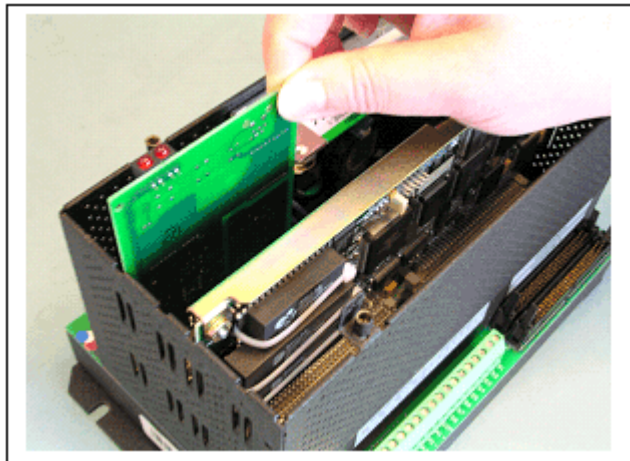
Replacing the Comm Card

These instructions apply to the standard communications card (with or without the internal modem).

1. Remove the meter lid/Xpress Card. The comm card (standard or modem) is located beside the power supply unit.



2. Grasp the comm card and pull straight up to remove it.



3. Ensuring proper orientation, slide the replacement comm card into its slot and press down to plug it in.
4. Replace the meter lid/Xpress Card.

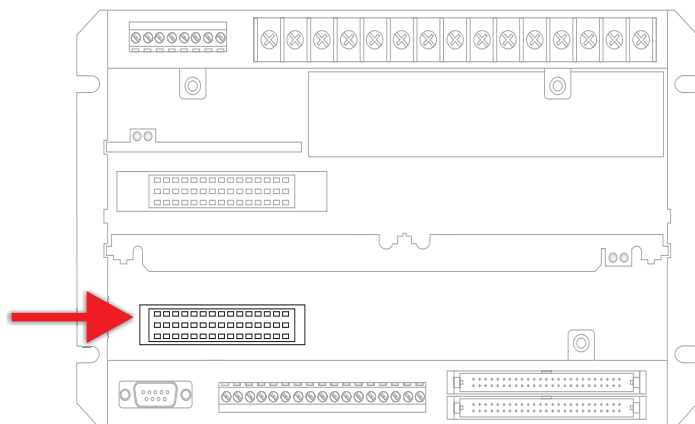
Using the RM Key

The Revenue Meter Programming Key (RMKey) is a device which plugs into the ION 7700 revenue meter and disables its security systems in order to facilitate programming. This key is typically used by utility meter shop personnel who want to program a revenue meter in-house. The RMKey can be used on revenue class ION 7700 meters (-RM, -RMANSI or -RMICAN).

The RMKey consists of a 3" x 5" circuit board with a polarized connector (to prevent improper mating). The connector protrudes from the component side.

Inserting the RMKey

1. Remove the meter lid.
2. The RMKey plugs into the same socket as the Auxiliary Analog Input Card. If your ION 7700 meter is equipped with an Analog Input Card, carefully remove it first, and set it aside on a static-protected surface.



3. Hold the RMKey by its sides, with the component side facing toward the side closest to the MGT (DB9) connector. Slide the edge of the card along the slot inside the chassis and lower the card toward the VAUX slot.
4. Line up the connector with the socket and plug the RMKey firmly into place.
5. Replace the meter lid/Xpress Card.

CAUTION

Failure to plug the Xpress Card back into the meter will result in loss of configuration data

6. Power up the ION 7700 meter and proceed with programming/configuration. Note that you cannot delete "locked" modules, even when the RMKey is inserted.

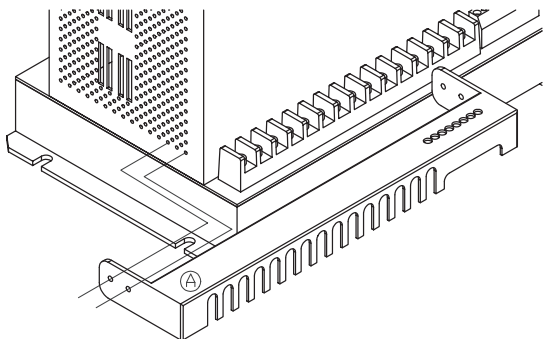
Removing the RMKey

1. Remove or disable any power source connected to the meter.
2. Unplug and remove the RMKey to re-enable all meter security systems.
3. If the meter is equipped with the Aux Card, applicable, plug it back into the meter.
4. Replace the meter lid/Xpress Card.
5. Install the lead/wire seals through the sealing tabs.

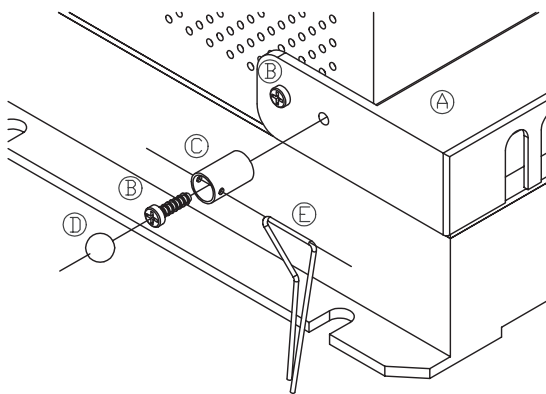
Installing the Terminal Strip Cover

The terminal strip cover provides an insulation barrier for the wiring terminals. Complete the wiring to the ION 7700 meter's terminal strip, then:

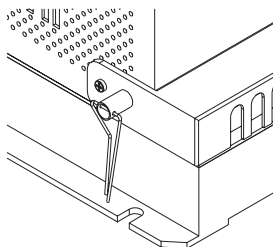
1. Place the terminal strip cover over the terminal strip, arranging the wires so they rest in the slots of the terminal strip cover. Use the mounting screws to secure the terminal strip cover to the meter's first and third vent holes.



2. If a tamperproof seal is required, use the optional sealing can assembly. Secure the sealing can (C) to the terminal cover (A) and meter chassis using the mounting screw (B). Insert the ball bearing (D), then feed the sealing wire (E) through the hole to secure the ball bearing, and seal the wire ends.



Assembled sealing kit



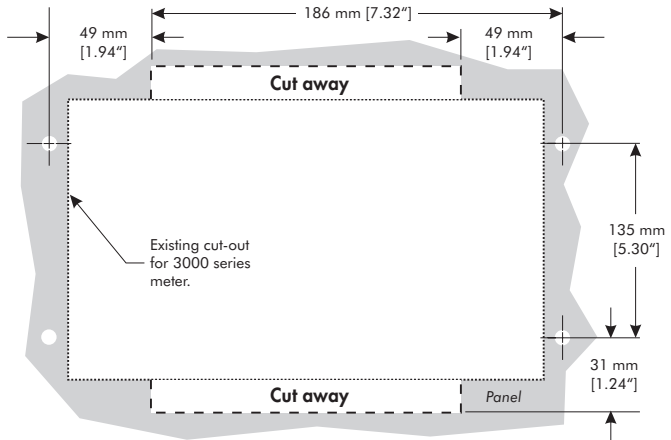
Installing the ION 7700 Adapter Plate

The ION 7700 adapter plate allows the ION 7700 meter base or MGT to be mounted onto an existing ACM 3000 series mounting hole.

Step 1: Remove the existing 3000 series meter

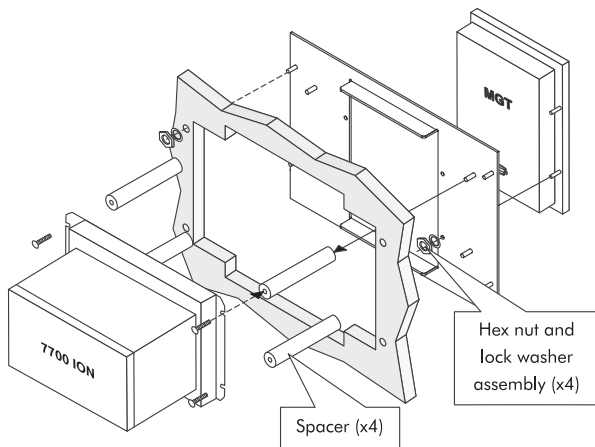
Step 2: Resize the panel cut-out

Cut away the two areas identified in the following diagram.



Step 3: Attach the adapter plate to the meter

Use the four nuts to attach the MGT to the Adapter Plate. Place the MGT and attached Adapter Plate into the mounting hole. Use the four hex nuts and lock washers to secure the plate and meter to the panel.



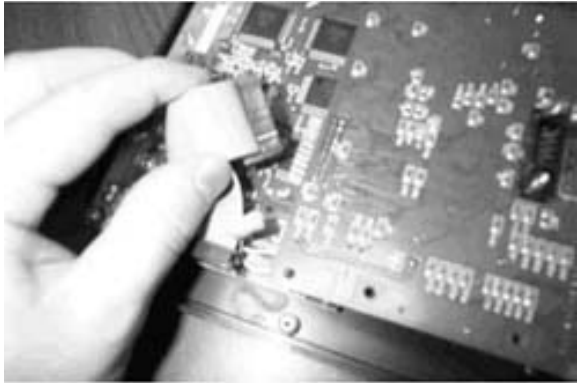
If you want to attach your 7700 ION behind the MGT, screw the four aluminum spacers to the four studs provided, then mount the 7700 ION on the spacers.

Replacing the MGT Keypad

1. Use a #1 Phillips screwdriver to remove the six screws from the back of the MGT.



2. Remove the display and backlight cables.



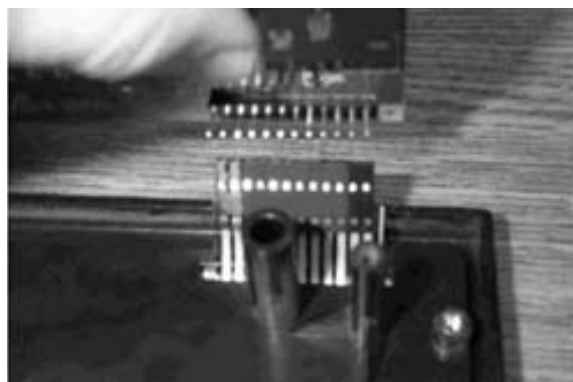
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3. Use a #2 Phillips screwdriver to remove the four MGT circuit board screws.



4. Lift up the MGT circuit board.



5. Unplug the keypad connector.



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6. Use a small flat screwdriver to pry the corner of the keypad loose.



7. Peel the keypad off the faceplate.



8. The supplied adaptor is required to connect the new keypad connector to the old style header on the MGT circuit board.



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9. Peel adhesive backing from underneath the keypad connector. This prevents the keypad from lifting up along the edge at this location.



10. Peel the remaining adhesive backing from the keypad. Be careful not to contaminate the adhesive or the LCD window with your fingers. Holding the keypad connector down with one hand, the adhesive backing can be peeled away without touching the back of the keypad.



11. Feed the new keypad connector through the slot in the faceplate.



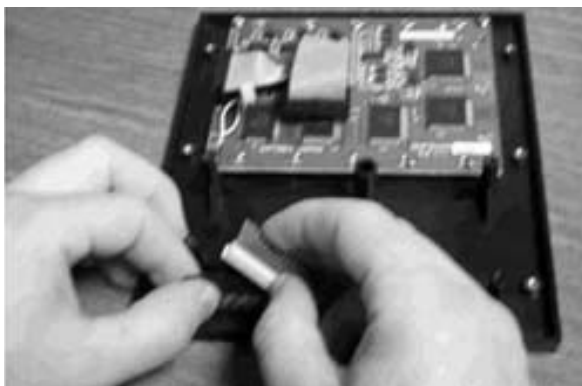
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12. Align the bottom corners of the keypad and attach to the faceplate.



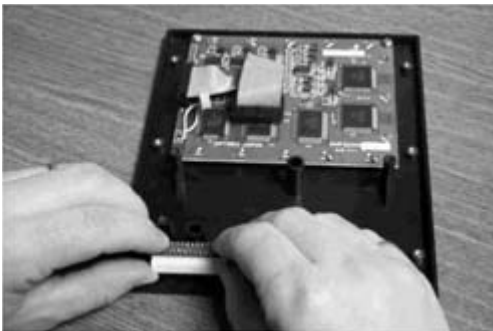
13. Align the top corners of the keypad. Apply pressure over the entire surface of the keypad to firmly attach it to the faceplate.



14. Attach the adapter to the keypad connector, as shown, with the white connector facing you. Insert the keypad tail completely inside the adapter connector.



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15. Lock the connector in place. Pull gently to make sure it is locked firmly; the adapter should not slip.



16. Attach the keypad adapter to the MGT circuit board as shown and make sure the connector is completely seated.



17. Reposition MGT circuit board onto the four standoffs.



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18. Reattach the backlight connector; this connector is keyed and can be plugged in only the correct way.



19. Reattach display connector; be careful to line up the header properly.



20. Replace the four screws to fasten the MGT circuit board to the faceplate. Replace the back cover, and fasten the six screws. Your MGT is now ready



For further assistance
please contact us at:



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