

PowerLogic® ION7550 / ION7650 Hardware Lockable Meter

This document provides an overview of ION7550 and ION7650 hardware lockable meters.

 **NOTE**

Industry Canada approval for Delta mode sealing of ION7550 / ION7650 meters is not yet available. Contact Schneider Electric for more information.

In This Document

◆ ION7550 and ION7650 Hardware Lockable Meters	2
Meter Ordering Options	2
Security Features	2
Anti-Tamper Seals	3
Password Protected Min/Max Register Resets	4
Hardware-based Security	4
Configuring the Hardware Lockable Meter	4
Before Disassembling the Meter	4
Disabling/Re-enabling the Hardware-based Security	5
CT & PT Selection	6

Additional Information

- ◆ ION7550 and ION7650 product datasheets
- ◆ Your meter’s technical documentation
- ◆ *ION Reference*

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ION7550 and ION7650 Hardware Lockable Meters

The fundamental functions of a revenue meter are to provide measurements that are within industry-accepted limits for accuracy over a defined range of operating conditions and to provide adequate protection against unauthorized alteration of these measured quantities. International and national standards define industry-accepted accuracy limits. National and utility-based standards regulate protection against unauthorized alteration of measured quantities.

Meter Ordering Options

ION7550 and ION7650 meters ordered with security ordering options 1, 3, 4 and 6 can be used for revenue metering. Each option has different security features. See the table below for more details.

Security Ordering Option	Security Features	Certification Achievement	Current Inputs Ordering Option	Hardware Lock
0	<ul style="list-style-type: none"> ◆ Password protected ◆ Anti-tamper sealing bars 	<ul style="list-style-type: none"> ◆ ANSI C12.20 Class 0.2, Current Class 2, 10 or 20 	C, E	Not available
1	<ul style="list-style-type: none"> ◆ Password protected ◆ Anti-tamper sealing bars ◆ Hardware lockable 	<ul style="list-style-type: none"> ◆ ANSI C12.20 Class 0.2, Current Class 2, 10 or 20 	C, E	Enabled
3 ¹	<ul style="list-style-type: none"> ◆ Password protected ◆ Anti-tamper sealing bars ◆ Hardware lockable ◆ RMICAN certified firmware and frameworks 	<ul style="list-style-type: none"> ◆ Canadian Revenue Metering Standards certified ◆ ANSI C12.20 Class 0.2, Current Class 2, 10 or 20 	C, E	Enabled
4 ¹	<ul style="list-style-type: none"> ◆ Password protected ◆ Anti-tamper sealing bars ◆ Hardware lockable ◆ RMICAN certified firmware and frameworks ◆ Unit comes sealed, with anti-tamper clips installed 	<ul style="list-style-type: none"> ◆ Canadian Revenue Metering Standards certified ◆ ANSI C12.20 Class 0.2, Current Class 2, 10 or 20 	C, E	Enabled
6	<ul style="list-style-type: none"> ◆ Password protected ◆ Anti-tamper sealing bars ◆ Security lock enabled ◆ Voltage, current and I/O terminal strip covers² 	<ul style="list-style-type: none"> ◆ OFGEM approved ◆ IEC 62053-22: 2003 Class 0.2, Nominal Currents 1, 2, 5 or 10 	C, E	Enabled

¹ Only for delivery to Canada.

² For more information, see the *ION7550 / ION7650 Terminal Strip Covers* product option document.

Security Features

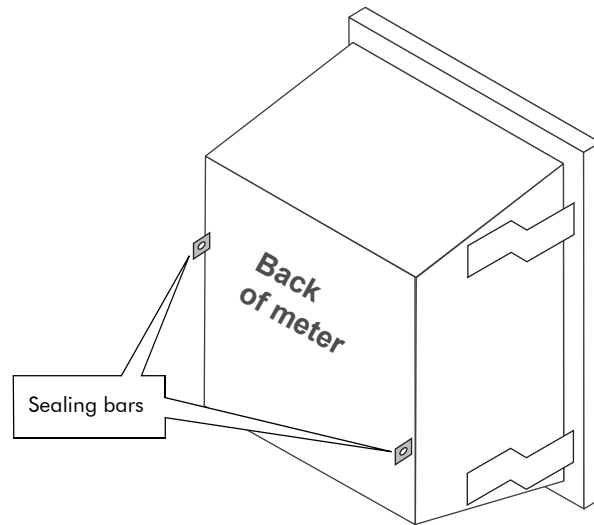
To meet government regulations and utility security requirements, the meter incorporates three types of security systems:

- ◆ traditional anti-tamper mechanical seals on the meter
- ◆ a password-based security system that permits password protected minimum/maximum resets (for example, Sliding Window Demand reset)

- ◆ a hardware-based security system that prevents modification of revenue quantities after the meter is sealed

Anti-Tamper Seals

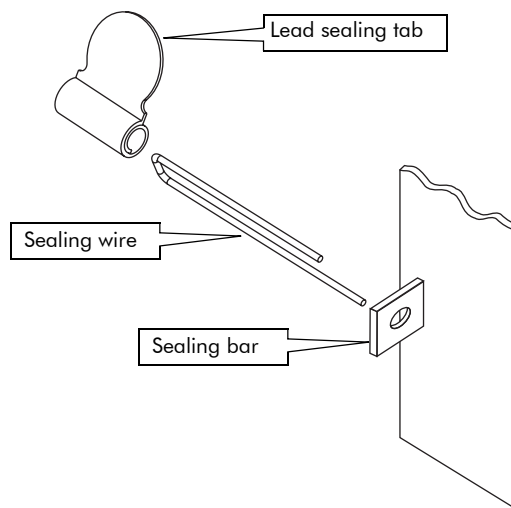
The meter incorporates sealing bars through which traditional lead/wire seals can be inserted.



When utilized, these lead/wire seals effectively prevent unauthorized personnel from gaining access to internal meter components.

These seals are provided with the meter, and are installed as follows:

1. Install the sealing wire through the sealing bar on the back of the meter.



2. Twist the wire and crimp the lead-sealing tab on to the wire.

Password Protected Min/Max Register Resets

The meter front panel incorporates a password that must be entered in order to reset any of the minimum/maximum register values. The password must therefore be used to reset peak demand register values.

Hardware-based Security

The meter is equipped with a comprehensive security system that provides protection against unauthorized alteration or tampering of revenue-related quantities. This security system locks all revenue-related ION modules, ION links and ION setup-registers. Basic meter configuration parameters including volts mode (service-type), PT ratio, and CT ratio are locked. These locks are automatically enabled (at the factory) for all sealed meters. Typical values that are protected include:

- ◆ kWh, kVARh, kVAh delivered, received, del-rec, del+rec
- ◆ kW, kVAR, kVA Thermal and Sliding Window demand min and max values
- ◆ Digital Outputs controlling the energy pulsing applications
- ◆ All Power system settings, including PT and CT ratios

For a complete list of all the locked modules that apply to specific firmware versions of the ION7550 and ION7650 meters consult Technical Support.

A two-pin jumper block is used to enable and disable the hardware security as described in the next section.

Configuring the Hardware Lockable Meter

When enabled, the meter security system prevents unauthorized alteration of revenue-related quantities. By default, all hardware lockable meters are shipped from the factory with the security system enabled. You can temporarily disable the security to configure your meter. This is done by removing the meter's COM card, and repositioning a jumper on the card.

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. Installation and servicing should be performed only by qualified, properly trained personnel.

Before Disassembling the Meter

Before attempting to remove the COM card from the meter, ensure that the device is protected against static-electric discharge.

CAUTION

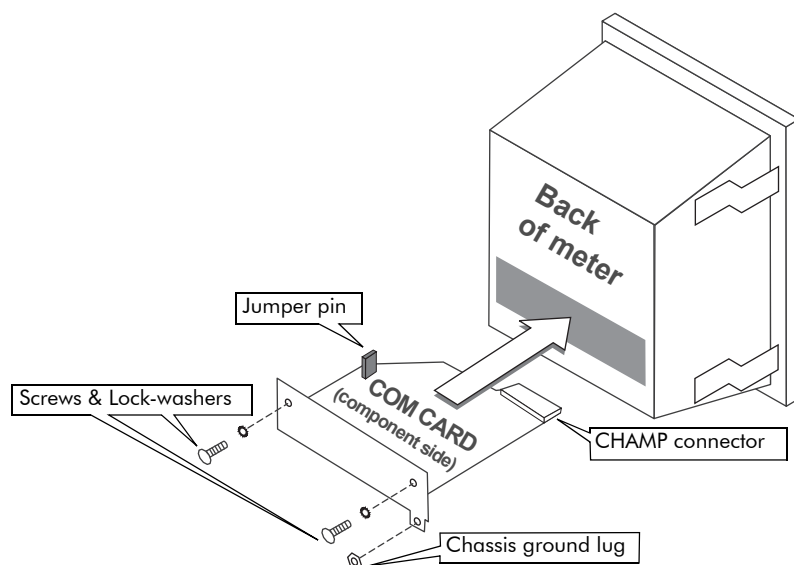
The components inside the meter are extremely sensitive to electro-static discharge. To prevent damage to the unit, wear an anti-static wrist strap at all times when working inside the unit. Failure to use proper equipment during servicing will void the meter's warranty.

1. Open all PT fuses (or direct voltage input fuses) and close all CT shorting blocks.
2. Turn off all power to the meter and disconnect the Line and Neutral (or DC power) wires from the Supply Power inputs to the unit.
3. Disconnect all other wiring (or power off all other circuits) that may present potentially hazardous voltage levels to the unit, such as connections to the relay outputs.
4. Ensure that all cables still connected to the meter are **NOT** live.

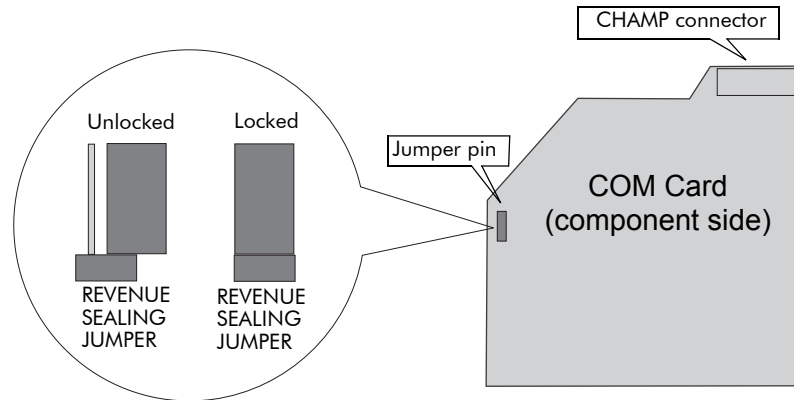
Disabling/Re-enabling the Hardware-based Security

To configure the hardware lockable meter you need to reposition the revenue jumper. This disables the hardware-based security.

1. Unplug all communications connections to the meter's COM card.
2. Remove the anti-tamper wire seal from the COM card sealing tab on the rear of the meter.
3. Remove the two screws and washers that secure the COM card to the meter.
4. Carefully slide the COM card out of the device. Pull the card out, straight back, using both hands. The card is attached to the meter with a CHAMP connector. This connector should be firm but should not require excessive force to unplug.
5. Locate the jumper pin labeled "Revenue Sealing Jumper" on the communications card.



6. Move the jumper on to one pin only to disable the hardware-based security.



7. Slide the COM card back into the device, making sure that the CHAMP connector fits tightly.
8. Apply control power to the meter.
9. Configure the meter as necessary (e.g. Volts mode, PT and CT ratios, Pulse outputs).
10. Remove control power from the meter.
11. Slide the COM card out again and move the jumper fully onto both pins to re-enable the hardware-based security.
12. Slide the COM card back into the device, making sure that the CHAMP connector fits tightly.
13. Replace the two screws and washers on the COM card.
14. Re-apply the anti-tamper seal.

CT & PT Selection

Consult your local Revenue Metering authorities to obtain standards for CT and PT selection for revenue metering applications in your region.