

# PowerLogic ION7550 RTU option

The PowerLogic™ ION7550 Remote Terminal Unit (RTU) option is designed for data acquisition from WAGES (water, air, gas, electricity, steam) devices, via Modbus or digital/analog signaling. The RTU also supports data manipulation (for example, scaling, signal conditioning, energy unit conversion, etc.) and interval recording.

The RTU is physically and functionally different from a standard model ION7550. A basic template that you can customize for your particular application is shipped with the RTU. For pre-configured device templates, contact Technical Support.

All RTU specifications are the same as standard ION7550 specifications, unless otherwise noted. See the ION7550 / ION7650 product datasheet for the most current information.

## In this document

◆ <b>Hazard categories and special symbols</b> .....	<b>2</b>
◆ <b>Safety precautions</b> .....	<b>3</b>
◆ <b>Installation</b> .....	<b>3</b>
◆ <b>Differences between the standard version and the RTU version</b> .....	<b>4</b>
RTU default display screens .....	5
◆ <b>Modbus mastering functionality</b> .....	<b>5</b>
Modbus mastering over TCP/IP .....	5
Multiport serial Modbus mastering .....	7

## Additional Information

- ◆ *ION7550 / ION7650 Installation Guide*
- ◆ *ION7550 / ION7650 User Guide*
- ◆ *Modbus and ION Technology technical note*
- ◆ *ION Reference*

**Schneider Electric**  
2195 Keating Cross Road  
Saanichton, BC  
Canada V8M 2A5  
Tel: 1-250-652-7100

For technical support:  
Global-PMC-Tech-support@schneider-electric.com  
(00) + 1 250 544 3010

Contact your local Schneider Electric sales representative for assistance or go to [www.schneider-electric.com](http://www.schneider-electric.com)

ION, PowerLogic, Schneider Electric and WebMeter are trademarks or registered trademarks of Schneider Electric in France, the USA and other countries. Other trademarks used are the property of their respective owners.

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.

© 2011 Schneider Electric. All rights reserved.



# Hazard categories and special symbols

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 manual 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.

<b>⚠ DANGER</b>
<b>DANGER</b> indicates an imminently hazardous situation which, if not avoided, <b>will result in death or serious injury</b> .

<b>⚠ WARNING</b>
<b>WARNING</b> indicates a potentially hazardous situation which, if not avoided, <b>can result in death or serious injury</b> .

<b>⚠ CAUTION</b>
<b>CAUTION</b> indicates a potentially hazardous situation which, if not avoided, <b>can result in minor or moderate injury</b> .

<b>CAUTION</b>
<b>CAUTION</b> used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, <b>can result in property damage</b> .

<b>📖 NOTE</b>
Provides additional information to clarify or simplify a procedure.

## 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.

# 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 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.
- Connect protective ground (earth) before turning on any power supplying this device.
- Ensure appropriate external fuses are installed and are not bypassed.
- Do not use this device for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
- Do not perform a Dielectric (Hi-Pot) or Megger test on the device.
- Replace all devices, doors and covers before turning on power to this equipment.
- This meter can only be used as a permanently installed device with permanent electrical connections including earth ground.

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

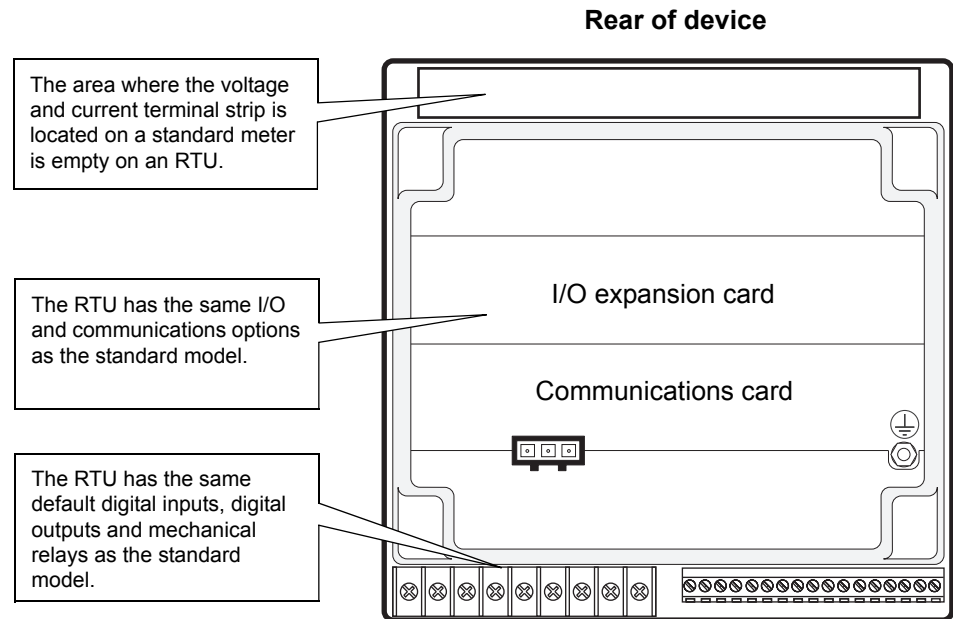
## Installation

See the *ION7550 / ION7650 Installation Guide* for instructions. Follow the instructions for mounting the device; wiring the ground, I/O, communications and power supply; powering up the device; and performing basic setup. Disregard the instructions for wiring the voltage and current inputs and any references to power or energy in the setup and viewing data instructions.

# Differences between the standard version and the RTU version

## Hardware differences

The ION7550 RTU has a different physical appearance than the standard ION7550; the 15-position terminal strip on the standard meter (I52, I51, I42, I41, I32, I31, I22, I21, I12, I11, V4, V3, V2, V1, Vref) is not present on the RTU.



The rear label clearly indicates if the device is an RTU.

## Operational differences

The ION7550 RTU does not measure any power values. Therefore, the ION7550 RTU has several operational differences from the standard model.

The following features are **not available** on an RTU:

- ◆ Power Meter module
- ◆ Revenue metering and locked modules

The following features are **different** on an RTU:

- ◆ Front panel default display screens
- ◆ Device template
- ◆ Default WebMeter™ web page
- ◆ ION module counts

## RTU default display screens

An RTU equipped with a front-panel display includes the following default screens:

- ◆ Digital Outputs
- ◆ Digital Inputs 1-8
- ◆ Digital Inputs 9-16
- ◆ Analog I/O
- ◆ Name Plate
- ◆ Events

## Modbus mastering functionality

The ION7550 RTU has the same Modbus mastering functionality as the standard model. Ethernet-enabled ION7550 RTU devices with firmware version 365 (v365) or later have the ability to Modbus master over TCP/IP protocol.



### NOTE

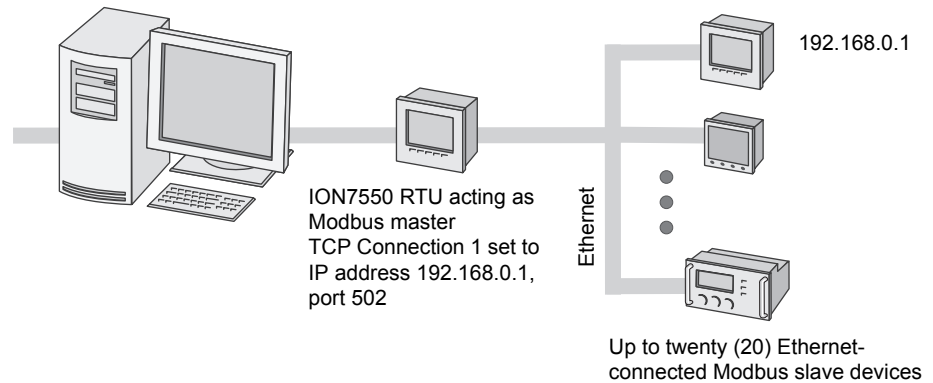
For firmware versions prior to v365, you can no longer configure serial Modbus mastering using the Setup Assistant in the latest versions of ION Setup 2.2 (build 805 or later). Use ION Setup Advanced Mode to perform the configuration or contact Technical Support. This does not apply to serial Modbus mastering in v365 or later.

## Modbus mastering over TCP/IP

With the Modbus master over TCP/IP feature, you can use the ION7550 RTU to master up to twenty (20) Ethernet-connected Modbus slave devices. The Modbus master over TCP/IP feature uses a dedicated connection that is independent of the existing available maximum eight (8) Ethernet connections.

In order to use the Modbus master over TCP/IP feature, the ION7550 RTU must have a physical Ethernet connection and have firmware v365 or later.

For more information on this feature, see the *Modbus and ION Technology* technical note.



## Configuring the device to Modbus master over TCP/IP



### NOTE

When the device is Modbus mastering over TCP/IP, it will attempt to communicate to a slave for up to 100 seconds (as per the RFC1122 standard) before moving on to the next slave device.

Use the latest version of ION Setup or the Designer component of ION Enterprise to configure Modbus master over TCP/IP.

### Using ION Setup

In ION Setup:

1. Open the Setup Assistant for your master device.
2. Select **Communications > 3rd Party Protocols**.
3. Click the **Modbus Master** tab.
4. Click **Add** to add a Modbus slave device. The **Modbus Device** dialog box appears.
5. Type the slave device's name. Select the device type of the slave device from the Device Type list. Type the unit ID of the slave device in the **Slave ID** box.
6. Select a TCP connection point from the **Connected via** list then click **Connections** to configure that connection to be used by the Modbus master device to connect to this slave device. The **Modbus Master Connections** dialog box appears.
7. Select the tab that corresponds to the connection you are configuring (for example, if you selected TCP Connection 1 from the **Connected via** list, select the **TCP 1** tab), and edit the text boxes as follows:
  - ◆ IP Address: Type the IP address of the Modbus slave device.
  - ◆ IP Port: Type 502, if not already entered.
 Click **OK** to return to the **Modbus Device** dialog box.
8. Click **OK** to add the slave device. The device appears in the list of slave devices on the **Modbus Master** tab. Repeat steps 4 to 8 to continue adding slave devices.

You can configure all of the TCP tabs at once in the **Modbus Master Connections** dialog box. However, you need to add each slave device separately by clicking **Add** and entering the slave device information in the **Modbus Device** dialog box.

See the *Modbus and ION Technology* technical note for more information.

### Using ION Enterprise

1. Open your master device in Designer.
2. Navigate to the Modbus Master Options module. Right-click on the center of the module icon to access the **ION Module Setup** dialog box. Select the TCP Connection setup register you want to edit and click **Modify** (or double-click the register). The **Modify String Register** dialog box appears. Enter the IP address of the Modbus slave device, followed by a colon (:) and the IP port (502); for example, 192.168.0.1:502. Click **OK** to return to the **ION Module Setup** dialog box. You can enter up to twenty unique IP addresses, one for each TCP Connection setup register.
3. Create a new Modbus Master Map module for each slave device. The Modbus Master Map module has two setup registers:
  - ◆ **Device Type**: Enter the name of the slave device that you want to map. This name is referenced by the Modbus Master Device module.
  - ◆ **Device Map**: This is the data you want to access from the Modbus slave device, in the form of text strings containing the parameter label, register value, data format, etc.
4. Create a new Modbus Master Device module for each slave device. Configure the following setup registers in the Modbus Master Device module:
  - ◆ **Connection**: Select the TCP connection being used to communicate with the slave device.
  - ◆ **Slave Addr**: Type the unit ID of the slave device.
  - ◆ **Device type**: Type a device type string. Ensure that this is the same as the device type entered in the Modbus Master Map module.
  - ◆ **Slave name**: Type a name for the slave device.
5. Link the module inputs and outputs as required.
6. Select **File > Send & Save** when you are finished.

See the online *ION Enterprise Help* for more information on creating, modifying and linking modules in Designer and the *ION Reference* for details of module setup and output registers.

## Multiport serial Modbus mastering

The multiport serial Modbus mastering feature is now available on the ION7550 RTU. This feature allows the device to simultaneously master loops of Modbus serial devices connected to different serial ports. For more information on configuring multiport serial Modbus mastering, see the *ION7550/ION7650 User Guide* or the *Modbus and ION Technology* technical note.