



Setup and Operation Guide

Integra INT-1221/1222

Ethernet Option Module

Warnings ⚡ ⚠ Caution: Risk of Electric Shock

- During normal operation, voltages hazardous to life may be present at some of the terminals of this unit.
- At voltages below that specified in the Range of Use the meter may shut down. However, voltages hazardous to life may still be present at some of the terminals of this unit.
- Installation and servicing should be performed only by qualified, properly trained personnel abiding by local regulations.
- Ensure all supplies are de-energised before attempting connection or other procedures.
- Terminals should not be user accessible after installation and external installation provisions must be sufficient to prevent hazards under fault conditions.
- This unit is not intended to function as part of a system providing the sole means of fault protection - good engineering practice dictates that any critical function be protected by at least two independent and diverse means.
- The unit does not have internal fuses therefore external fuses must be used for protection and safety under fault conditions.
- Never open-circuit the secondary winding of an energized current transformer.
- This product should only be operated with the CT secondary connections earthed.
- If this equipment is used in a manner not specified by the manufacturer, protection provided by the equipment may be impaired

1 Introduction

This document provides operating, maintenance and installation instructions for the INT 1221/1222 Ethernet option module. Each option module is sold separately and is installed by the user, following the details below.

The INT 1221/1222 unit measures and displays the characteristics of Single Phase Two Wire (1P2W), Three Phase Three Wire (3P3W) and Three Phase Four Wire (3P4W) networks. The measuring parameters include voltage (V), current (A), frequency (Hz), power (kW/KVA/KVAr), power factor (PF), imported, exported and total energy (kWh/kVArh). The unit also measures maximum demand current and power, this is measured over pre-set periods of up to 60 minutes.

The module supports both Modbus TCP/IP and BACnet IP protocols without any hardware changes. The meter will respond with the protocol used to query values.

2 Safety

The unit is designed in accordance with BS EN 61010-1:2001 (IEC 61010-1:2001) – Permanently connected use, Normal condition. Installation category III, pollution degree 2, double Insulation. Measurement Category III.

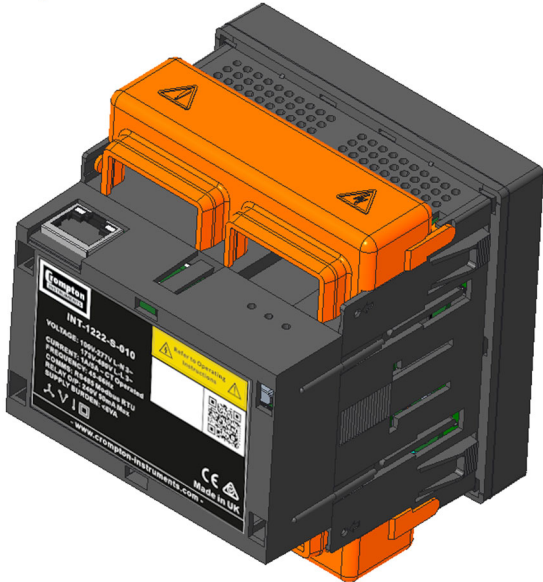
3 Maintenance

In normal use, no maintenance is needed. As appropriate for service conditions, isolate from electrical power, inspect the unit,

and remove any dust or other foreign material present. Periodically check all connections for freedom from corrosion and screw tightness, particularly if vibration is present.

WARNING.

It is essential that the primary current is isolated BEFORE connecting or disconnecting the secondary current connections. The unit is intended for panel mounting. Avoid mounting the unit where there is excessive vibration; in excessive direct sunlight; or outside a reasonably stable ambient temperature.



4 Specification

4.1 Ethernet

The Ethernet modules supports dynamic IP addressing from a DHCP server. The IP address can also be fixed using the web server pages.

|                     |              |
|---------------------|--------------|
| Physical Connection | RJ45         |
| Standard            | IEEE 802.3   |
| Cable               | CAT5 or CAT6 |
| Network             | 10/100Base-T |

4.2 Modbus TCP/IP Protocol

The Ethernet option module acts as a slave device and may be queried by a Modbus® Master device. All messages sent to the device must conform to the Modbus® TCP protocol in Modbus RTU format.

4.3 BACnet IP Protocol

The BACnet IP product acts a server client and responds to messages from a BACnet/IP client. All messages must conform to the BACnet IP protocol to the ASHRAE standard.

5 Installation

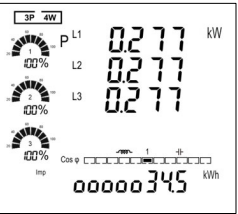
- Remove tab on rear label to expose connector
- Plug module on the rear of the product.

| LED STATUS | Description  |
|------------|--|
|            | Red = Communication Error  |
|            | Yellow = Indicates active communication between main product and Ethernet module |

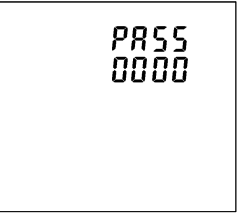
| LED STATUS | Description                            |
|------------|--|
|            | Yellow = Connected to Network          |
|            | Green = Indicates active communication |

6 Setup

Should setup of the option module be required, enter the setup screens by following the procedure below.



To enter setup mode, hold the and buttons for 3 seconds, until the password screen appears.



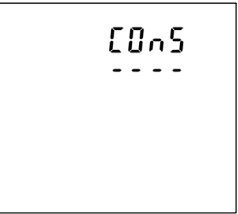
The setup is password-protected and must be entered before proceeding (default '0000').

Press 4 times.

If an incorrect password is entered, the product will exit the setup menu and return to the measurement screens. Entering the correct password will enter the setup mode.

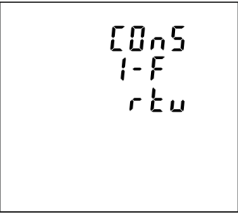
To query the communication parameters on the product use the menu's below.

6.1 Comms (cOnS)



Use the buttons to scroll through the available menu options until you get to the COnS screen.

Press to enter the Comms menu



rtu represents the Modbus RTU serial interface. This functions normally with the Ethernet module attached.

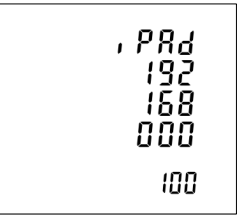


To set/query the Ethernet functions press

the up or down arrow buttons.

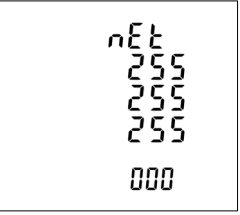
Press the button to select and move to the next mode.

6.2 Ethernet Parameters

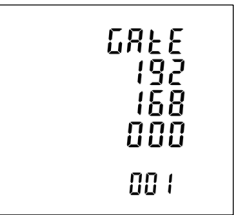


iPAD represents the IP Address. During factory testing an IP Address in the range 192.168.000 xxx will be assigned by the factory. This can be changed later by the user, via the web server pages, to create individual addresses.

Please note: 'xxx' represents the 4<sup>th</sup> line of digits shown on the display screen example. These will be assigned a number between 1 - 255.



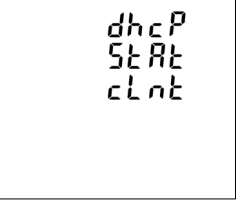
SubNet mask default shown. This can be changed by the user if necessary by using the Web Server pages (please see the 'Ethernet web pages' section within this manual).



Gateway Default gateway values shown.

This can be changed by the user if necessary by using the Web Server pages (please see the 'Ethernet web pages' section within this manual).

6.3 DHCP

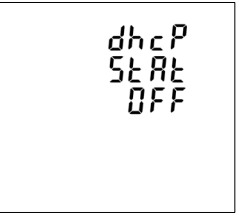


This screen shows DHCP status.

The available options within this menu are 'Client' (default) and 'Off'.

When set to 'Client' the iPAD, nEt and Gate will be set by the network DHCP server.

When set to 'Off' the iPAD, nEt and Gate will need to be set by the user.



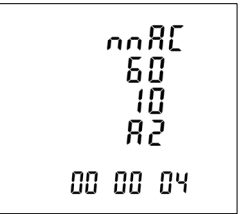
To set DHCP to OFF press and

then use either the up or down arrow buttons to choose the OFF option.



Press the button to change the DHCP status.

Setting the DHCP to OFF will prevent an IP Address being automatically assigned by the network.



nnAC shows the MAC Address 60 10 A2. Xx xx xx

Where xx xx xx represents unique values that will have been set at the factory.

7 Ethernet web pages

To access the web server pages, open a web browser (Google Chrome and Firefox are recommended) and type in the product IP address. This will enable access to the product settings which can then be edited by the user.

7.1 Home

This menu is the home screen. Additional web pages are accessed from the hyperlink on the left side of the screen.

Each hyperlink accesses a diferent page.



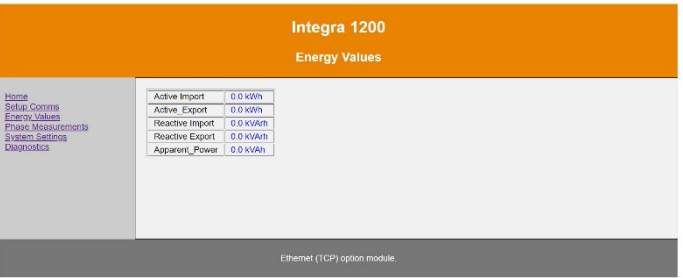
7.2 Setup Comms

This menu displays the products current IP settings. It also allows the user to change the IP settings. (see section 8)



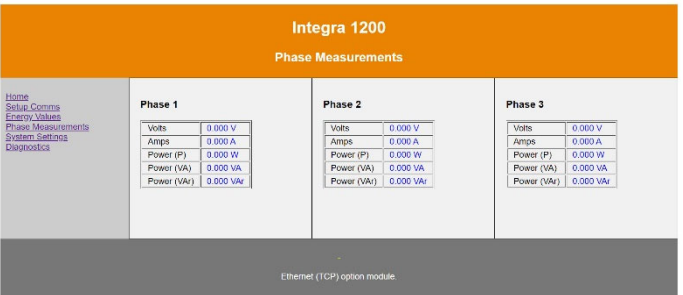
7.3 Energy Values

This menu displays the products most recent energy readings. To up date the readings, simply refresh the page.



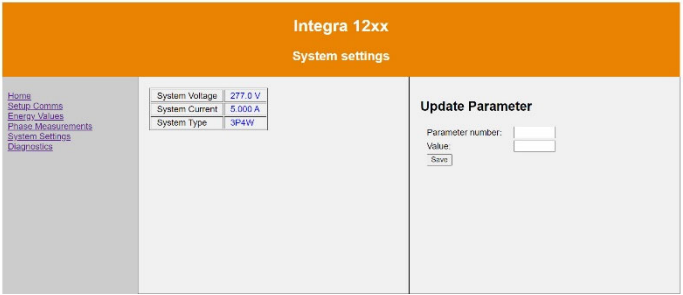
7.4 Display Measured Values

This menu displays the products current measured values for each measured phase.



7.5 Display System Settings

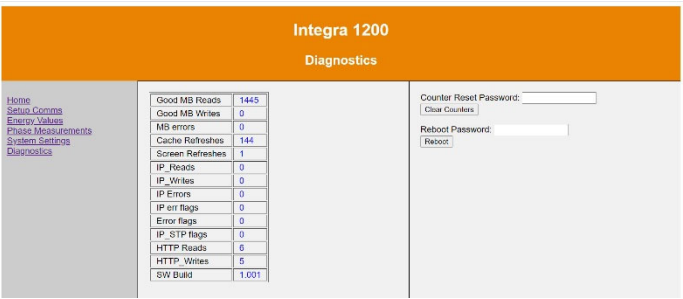
This menu displays the products current settings for System Voltage, System Current and System Type. It also allows the user to change the product settings by updating the parameters (see section 9)



7.6 Diagnostics

This menu displays the communication diagnostics and current software build of the attached Ethernet module. It also allows the user to Reset the diagnostic counters and Re-boot the module.

(See section 10)



8 Changing the IP settings via the Ethernet web pages:

- Go to Display System Settings menu.
- Enter number '13' (User Password) into the Parameter number box, then enter your product password into the Value box (Default '0000').
- Click Write.
- Now that your password has been entered, go to 'Setup Comms' menu.
- Enter the new desired value in the box of the setting you wish to change. i. It is not necessary to fill in a value for every box, just that of the setting you wish to change. ii. Only one setting can be changed at a time.
- Click Save.
- The change will update automatically on both the web page and the product. When changing the IP address you will lose connection to the web server, simply type the new IP address into the browser to re-connect.

9 Changing the holding register/product parameters via the Ethernet web pages:

A full list of Holding parameter numbers are available in Section 5 of the Communications Guide. This can be found by scanning the QR Code below:-



- Go to **Display System Settings** menu.
- Some parameters require the user password to be entered before being changed (detailed within the Comms Guide). If this is the case enter number '13' (User Password) into the Parameter number box, then enter your product password into the Value box (Default '0000').
- Now that your password has been entered, enter the desired parameter number into the parameter number box.
- Enter the desired value into the value box. i. *Full information on acceptable values and how to enter them can be found in Section 5 under **Valid Range**.*
- Click Save

10 Resetting and Re-Booting the Ethernet Module

The **Diagnostics** menu provides the option to 'Reset' the diagnostic counters and to 'Reboot' the module.

By resetting the counters the user resets the number of messages the module has received, this can be useful if another product has been added/removed from the network. To **Reset** the counters enter the reset password found below into the reset box. Then click 'Clear Counters'.

A reboot causes the module to disconnect from the network and internally restart. To **Reboot** the module enter the reboot password found below and enter it into the reboot box. Then click 'Reboot'.

Reset Password:

Cl##### - i.e. capital "C", lowercase "L" followed by the last six digits of the mac address of the product.

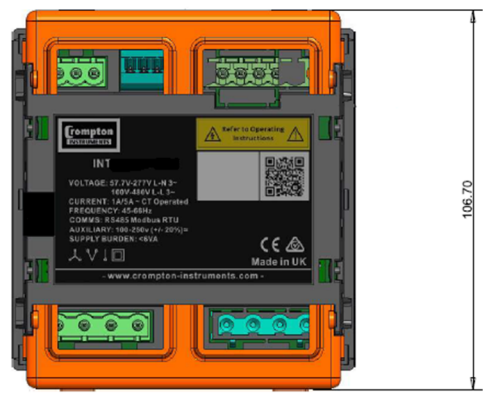
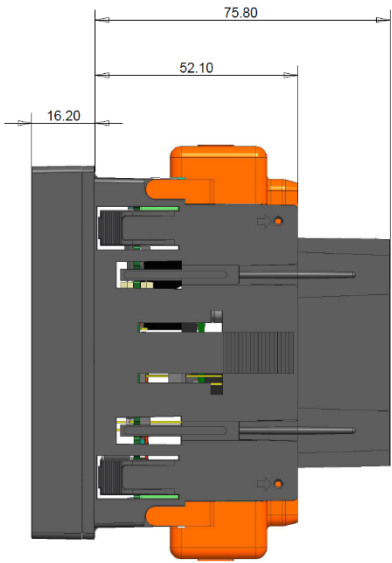
Reboot Password:

Re##### - i.e. capital "R", lowercase "e" followed by the last six digits of the mac address of the product.

11 Mechanics

Material UL 94-V0

12 Dimensions



Explanation of Symbols



Refer to manual



Danger of electric shock



Do not discard



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