Instructions for the
INCOM - Product Operated Network Interface
used with IMPACC Networks

I.L. 17547

THE I-PONI

The INCOM Product Operated Network Interface (I-PONI) communicates between a computer control station and IMPACC™ or INCOM™ compatible products in a Master/Slave format over a twisted-pair network. The I-PONI uses power from the product to which it is attached and needs no other source of power. The I-PONI operates over a temperature range of -20°C to 70°C.

PONI COMPATIBILITY

The following table shows the IMPACC and INCOM compatible products and which PONI to use when placed into a twisted-pair network.

I-PONI (Style Number 8793C52G01)		
• AEM II	• IQ 1000 II	• IQ Data Plus II
• AF 95	• IQ Analyzer	• IQ Data Plus II HV
• AF 97	• IQ CED II	• IQ Generator
• BIM	• IQ Data	• IQ Transfer
• CMU	• IQ Data Plus	• MMCO Relay
• IQ CED		

B-PONI (Style Number 8793C52G01)		
• AEM (TSF Mode)	• IQ 500	• URTD Module
• IQ 1000		

No PONI Required		
• Addressable Relay II	• Digitrip OPTIM	
• Alarm Relay	• Digitrip RMS	
• Breaker Controller	• IQ Energy Sentinel	
• Digitrip MV		

M-PONI (Style Number 2D79735G04)		
• ACM	• Advantage	

Table One   PONI Compatibility Guide

The function selector switch is located on the front of the I-PONI (see figure 1). The switch enables the user to select the IMPACC baud rate between one of two options:

1) 1200 baud = SWITCH UP
2) 9600 baud = SWITCH DOWN

Note: All products on the IMPACC network must be set at the same baud rate. Exception: Sub networks may operate at a different baud rate than the main network (see figure 7).

Each I-PONI has three hexadecimal (digits 0 through 9 plus A through F) selector switches (address switches) that must be used to assign a
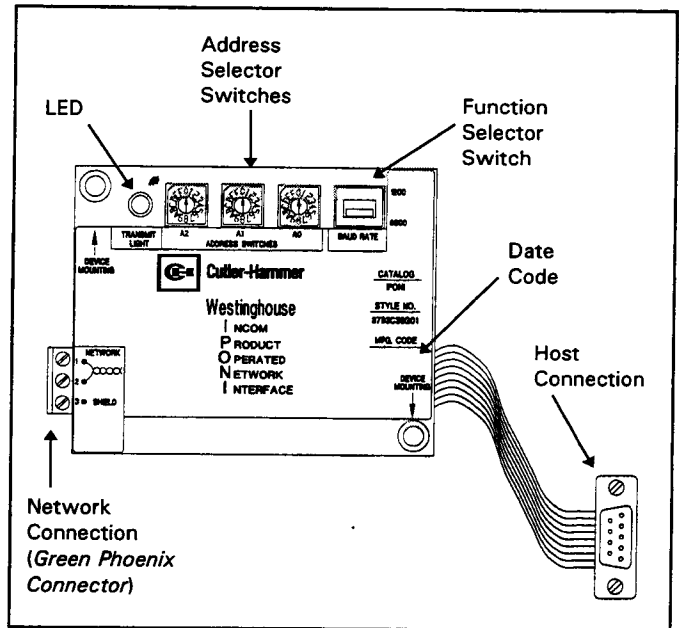

Figure 1   The Cutler-Hammer I-PONI

unique address to each product in the INCOM network (see figure 1). A light emitting diode (LED), located to the left of the three address switches, flashes while the I-PONI is transmitting information into the INCOM network. The LED does not light while the I-PONI is receiving messages (see figure 1).

There are other versions of the PONI available such as the RS 232 PONI and the PONI Modem, which do not communicate directly on the twisted-pair network. For applications involving these other products consult the *APSC* (Advanced Product Support Center).

INSTALLATION

The I-PONI is designed to be installed, operated, and maintained by adequately trained people. These instructions do not cover all details, variations, or combinations of the equipment, its storage, delivery, installation, check-out, safe operation, or maintenance. The installer must comply with the National Electric and local codes or regulations, as well as safety practices, for this class of equipment. Please refer to the IMPACC Systems Communication manual (I.L. 17384) and the IMPACC Wiring Specification (T.D. 17513) for more detailed information.

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> **NOTE: De-energize the device to which the I-PONI will be attached or wired -- otherwise miss-operation or damage to equipment could occur.**

1) Make sure mounting screws for the I-PONI have been included.

Item	Qty
#8-32 X 1-1/8" Screw	2

2) Set the baud rate to 1200 bps if all of the products on the IMPACC network are set for 1200 bps, 9600 bps if all of the products on the IMPACC network are set for 9600 bps. Note: Main networks and sub networks can be set at different baud rates (see figure 7).

3) Be sure to check the instruction leaflet mounting instructions for each I-PONI compatible slave device. The following illustrates common examples of mounting instructions. In all cases the I-PONI is to be mounted in a horizontal manner.

3a) Mounting to IQ1000/IQ1000II

Disconnect power to the IQ 1000. Mount bracket using the hardware indicated (see figure 2). Mount the I-PONI to the bracket (Part Number 7066C18H01) with LED and address switches on top and ribbon cable on the right. Insert the nine-pin connector attached to the I-PONI's ribbon cable into the matching receptacle on the IQ 1000 (see figure 3). With the plug lock assembly in position, tighten the lock assembly screws. Wire into network with twisted pair. Repower device.
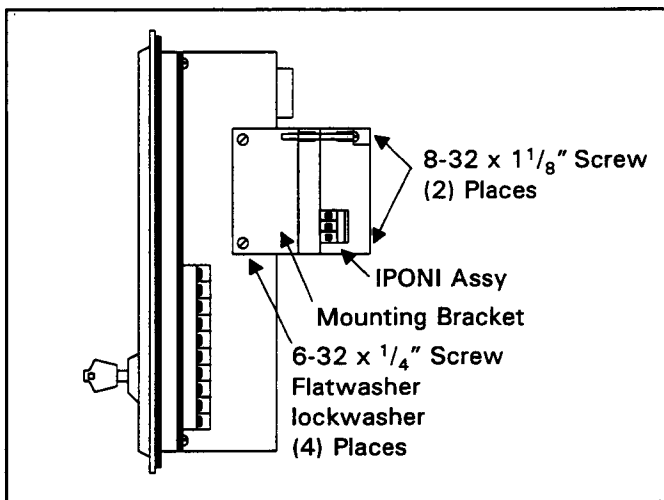

8-32 x 1¹/₈" Screw (2) Places
IPONI Assy
Mounting Bracket
6-32 x ¹/₄" Screw
Flatwasher
lockwasher
(4) Places

Figure 2   IQ 1000 Mounting

3b) Mounting to IQ Data Plus/IQ Data Plus II/IQ Analyzer (without power module)

Disconnect power to the IQ Data Plus. Mount I-PONI on the back of the IQ Data Plus using hardware indicated, with the LED and address switches on top and the ribbon cable on the right (see figure 4). Connect the ribbon cable from the I-PONI to the receptacle of the IQ Data Plus and screw the plug lock assembly tight (see figure 3). Repower device.
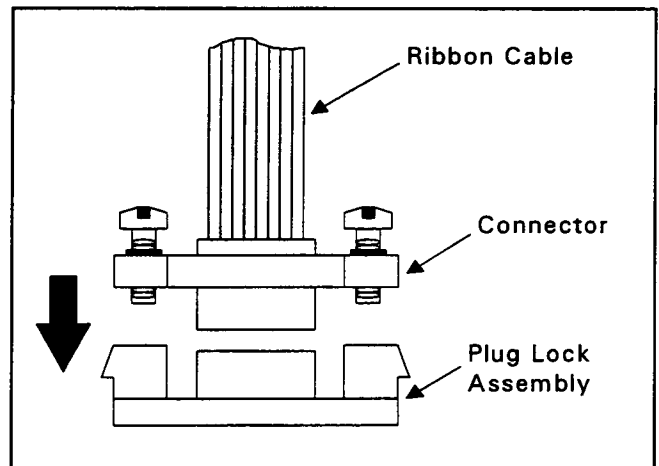

Ribbon Cable
Connector
Plug Lock Assembly

Figure 3   Attaching to the Plug Lock Assembly

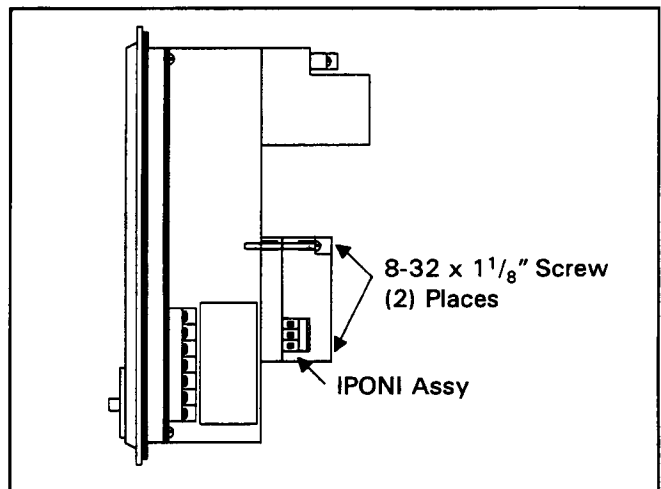8-32 x 1¹/₈" Screw (2) Places
IPONI Assy

Figure 4   IQ Data Plus without Power Module

3c) Mounting to IQ Data Plus/IQ Data Plus II (with power module)

Disconnect power to the IQ Data Plus. Mount the I-PONI to the threaded head stacking screws of the power module with the screws included with the I-PONI (see figure 5). Mount the I-PONI with the LED and address switches on top and the ribbon cable on the right. Connect the ribbon cable from the I-PONI to the receptacle of the IQ Data Plus and screw the plug lock assembly tight (see figure 3). Repower device.
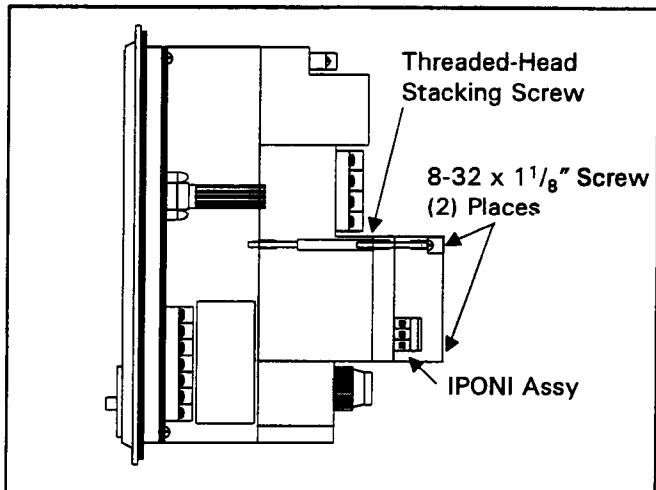
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Figure 5   IQ Data Plus with Power Module

4)   Set the address selector switches (see figure 6a).   Each I-PONI installed in any one network must have a unique address. The three hexadecimal selector switches offer 4094 different addresses (16X16X16), ranging from 001 to FFE. A2 is the most significant and A0 is the least significant Hex address digit. Records of addresses should be maintained in terms of the hexadecimal number along with the connected product and the baud rate of the I-PONI.
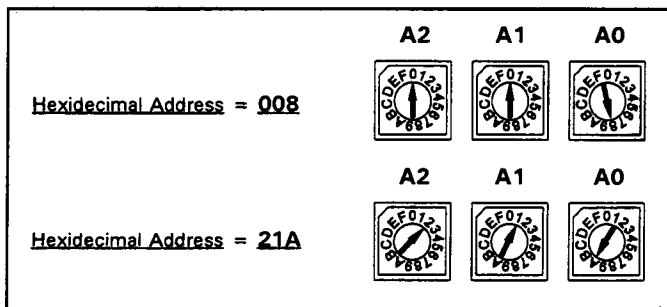

Figure 6a   IMPACC Address Switch Examples

The IMPACC Network reads the address settings in hexidecimal notation as shown above (figure 6a). Therefore the address can be read directly off of the I-PONI dials from left to right.
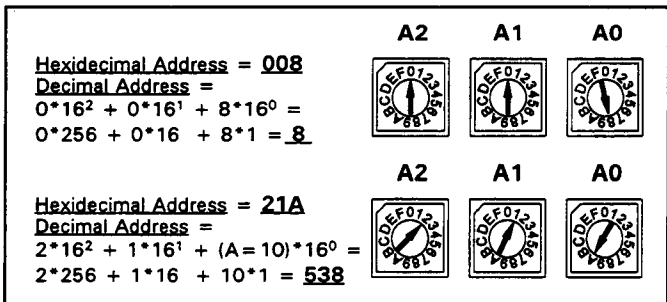

Figure 6b   Hexidecimal to Decimal Conversion

Some third party integrators may need to have the product address converted to decimal for their systems.   The above example shows how to accomplish this if necessary (see figure 6b).

NETWORKING

MASTER DEVICE

The control station for the IMPACC network must be a unit such as a PC or PLC that will accept the IMPACC serial network signals. A MINTII may be used to convert IMPACC signals to the RS 232 format for transmission to the master device.

SLAVE DEVICE

An I-PONI may be used with most IMPACC products or any product that is designed to operate with the INCOM network format, and that has the standard INCOM 9 pin D-subminiature connector. (See table one for compatibility)
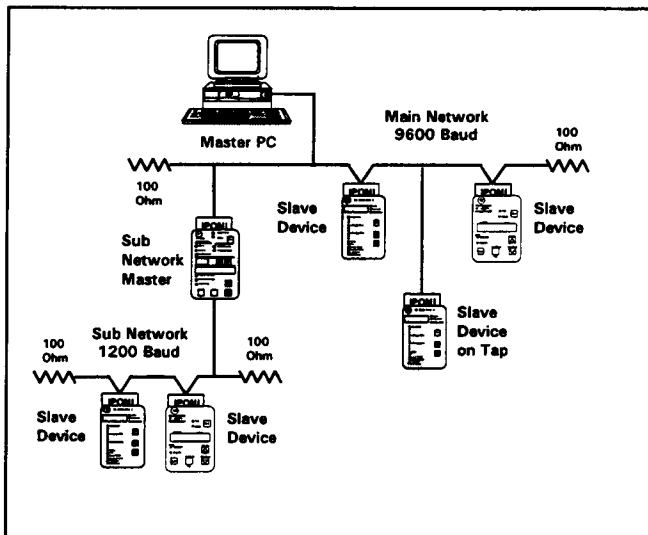

Figure 7   Network Interwiring

SIMPLIFIED WIRING RULES

The following simplified rules apply given a system consists of a single daisy chained main cable link between master and slave devices and all slave nodes are I-PONIs (see figure 7). For more complex considerations including star configurations or systems containing old and new PONIs please refer to the IMPACC Wiring Specification or the APSC for wiring instructions and system capacity considerations. The IMPACC Wiring Spec is T.D. 17513 or *FRED* (Fax Retrieval of Engineering Documents) Document 17513.
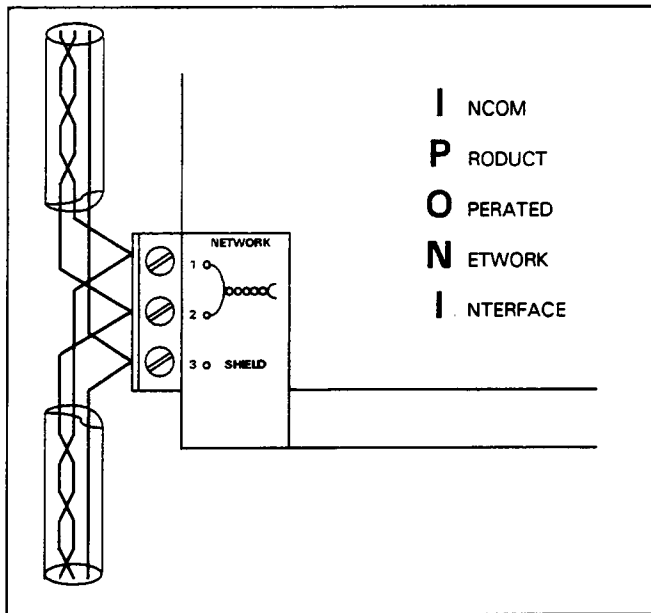
F·T·N

Figure 8   Daisy Chained Twisted Pair Termination

- The maximum system capacity is 10,000 feet of communications cable and 1000 slave devices.
- Main cable link must be terminated at each end by a 1/4 watt, 100 ohm, carbon resistor.
- Non terminated taps, up to 200 feet in length, off the main link are permitted, but add to the total cable length.
- Terminals 1 & 2 on the Network Connection (see figure 1 & 8) are for the twisted pair connection, while terminal 3 is for the shield. (Note: It is recommended that ferrules be used to dress the ends of the cable leads to minimize frayed connections.)
- Make sure that there is a twisted wire pair present that is intended for IMPACC network use. Use twisted pair wire (IMPCABLE, Belden 9463, or equivalent) to connect each I-PONI to the IMPACC network, daisy-chain style (see figure 2). Attach the twisted pairs to the three-pole plug located on the side of the I-PONI assembly. **The polarity of the twisted pair is not important.**

Drawing Number 8793C42H01

Cutler-Hammer
Westinghouse &
Cutler-Hammer Products
Five Parkway Center
Pittsburgh, Pennsylvania, U.S.A. 15220

OPERATION CHECK

After the IMPACC system has been installed, check the operation of each I-PONI by applying power to the parent unit and issuing an IMPACC command. Using the application software running on the PC to issue the commands, do this for each I-PONI using its selected address. The product responds by flashing the LED (OFF to receive, ON while transmitting, OFF to receive). The flashing LED indicates that the product is functioning correctly.

TROUBLE SHOOTING

In the unlikely event the LED remains OFF, try the following items:

1) Check the baud rate selection on the I-PONI. Make sure that it is communicating at the same rate as the rest of the network devices.
2) Check the function of the device the I-PONI is mounted on; is it connected, powered, and showing correct readings on the faceplate?
3) Check that the application software is installed and functioning correctly.
4) Remove and replace the I-PONI's ribbon cable from the product.
5) Check the IMPACC network wiring for loose connections, shorted wires, etc.
6) Apply Dr. IMPACC software (style number 8163A43G01). This software is provided with each CONI Card or can be downloaded by accessing the *APSC BBS* (Bulletin Board System).
7) If suggestions 1-6 do not remedy the problem, the I-PONI may need to be replaced.

The user should not attempt to service this equipment. The Phoenix Connector (see figure 1) is the only replacement part available for the I-PONI (C-H Part Number 5281C91H49 - Phoenix Contact # MSTB 2.5/3-ST-5.08)   Please contact your local Cutler-Hammer representative or the Cutler-Hammer Advanced Product Support Center for service information, additional questions regarding the I-PONI, or any other IQ/IMPACC product.

CONTACT PHONE NUMBERS

APSC	1-800-809-2772
	412-494-3750
APSC BBS	412-494-3746
FRED	412-494-3745
(When using FRED dial the number from the handset of your fax machine.)	