Installation and Operating Handbook

ICLH Combiner
ISLH Splitter

Handbook Issue 1.10, 5th October 2015

$C \in$ **1997**

EN 55022 CLASS B
EN 50082-1
EN 60950

IMPORTANT NOTE: THE INFORMATION AND SPECIFICATIONS CONTAINED IN THIS DOCUMENT SUPERCEDE ALL PREVIOUSLY PUBLISHED INFORMATION CONCERNING THIS PRODUCT

PEAK COMMUNICATIONS Ltd maintains a continuing programme of product improvement and therefore reserves the right to change specifications without notice

Table of Contents

INTRODUCTION

The equipment covered by this manual are high grade units which can be applied to many situations where good stability and phase noise etc are required.

The specification for the particular model purchased can be found at the end of this manual.

EMC AND SAFETY

EMC

The equipment has been designed to comply with the following standards;

Emissions :   EN 55022 Class B; Limits and methods of measurement of radio interference characteristics of Information Technology Equipment.

Immunity   :   EN 50082 Part 1; Generic immunity standard, part 1: Domestic, commercial and light industrial environment.

The equipment must be operated with its lid on at all times. If it is necessary to remove the lid for routine servicing or fault finding then it is essential that the lid is fitted back correctly before normal operation.

For the Alarm and Remote Control data interfaces all 'D' type connectors must have grounding fingers on the plug shell to guarantee continuous shielding. The back-shells must comply to the requirements of VDE 0871 and FCC 20708, providing at least 40 dB of attenuation from 30 MHz to 1 GHz.

Connecting cables must be of the shielded type

Operation of the equipment in a non standard manner will invalidate compliancy to these standards.

Safety

To ensure safety of the operator the equipment has been designed to comply with the following safety standard;

EN 60950   Safety of information technology equipment, including electrical business machines.

Before operation the user must ensure that the installation complies with the information given.

The equipment is designed to operate in a static 19 inch rack system conforming to IEC 297-2. Operation of the equipment in transportable vehicles equipped with the means of providing a stable environment is permissible. Operation of the equipment on board vehicles, ships or aircraft without means of environmental conditioning will invalidate the safety compliancy; please contact the factory for further advice. Operation of the equipment in an environment other than that stated in the specifications will also invalidate the safety compliancy. The equipment must not be operated above 2000 metre altitude, extremes of temperature; excessive dust, moisture or vibration; flammable gases; corrosive or explosive atmospheres.

INSTALLATION

The equipment is classified in EN 60950 as a pluggable equipment class A for connection to the mains supply, as such it is provided with a mains inlet cord suitable for use in the country of operation. In normal circumstances this will be of an adequate length for installation in the rack. If the mains cord proves to be too short then any replacement must have a similar type fuse (if fitted) and be manufactured to similar specification: check for HAR, BASEC or HOXXX-X ratings on the cable. The connector ends should be marked with one of the following : BS1636A (UK free plug 13 amp); BSI, VDE, NF-USE, UL, CSA, OVE, CEBEC, NEMKO, DEMKO, SETI, IMQ, SEV and KEMA-KEUR for the IEC 6 amp free socket. Schuko and North American free plugs must have similar markings.

The installation of the equipment and the connection to the mains supply must be made in compliance to local or national wiring regulations for a category II impulse over voltage installation. The positioning of the equipment must be such that the mains supply socket outlet for the equipment should be near the equipment and easily accessible or that there should be another suitable means of disconnection from the mains supply.

The equipment is designed to operate from a TN type power supply system as specified in EN 60950. This is a system that has separate earth, line and neutral conductors. The equipment is not designed to operate with an IT power system which has no direct connection to earth.

UNIT DESCRIPTION
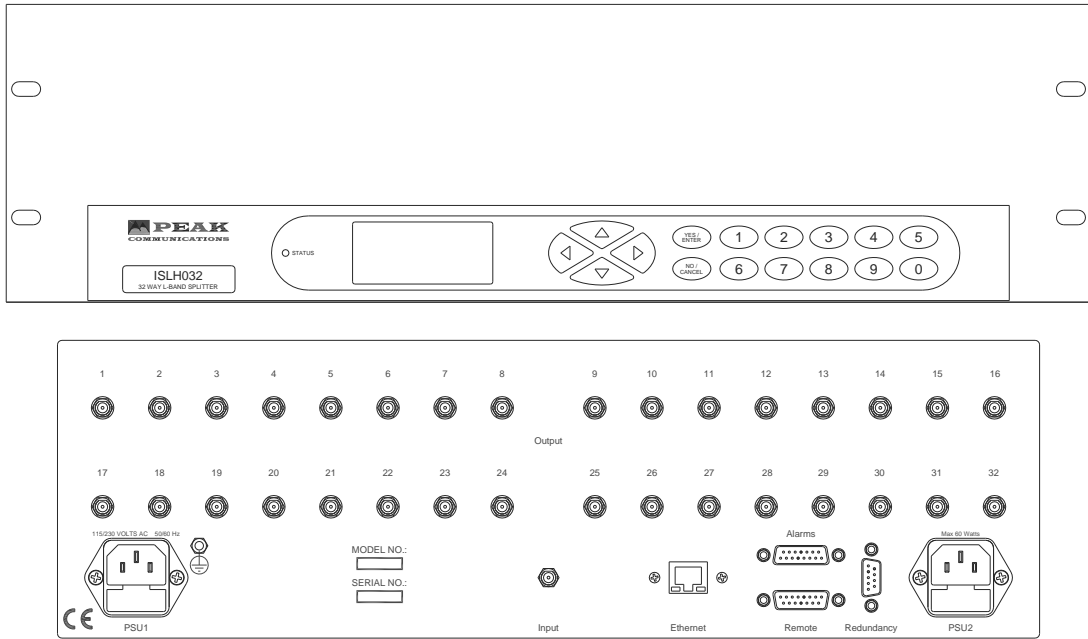
See page 15 for specific front / rear panels.

Front Panel Description

Keyboard

The keyboard is of the membrane type and is an integral part of the front panel assembly. The front panel overlay and is completely sealed against penetration of liquids but caution should be taken especially with solvents which may damage the front screen.
There are 16 keys in total - number keys in the range 0 to 9, YES/ENTER and NO/CANCEL and a 4 way arrow block of keys

LCD display

The backlit display is a graphic display and characters are scaled to incorporate as much information as possible on the screen. It provides detailed information about the status and configuration of the unit, and when appropriate, prompts the user to enter data via the keypad.

LED Indicator

Only one tricolour LED is present, marked STATUS. This shows GREEN when the unit is OK, RED when an internal fault is present and AMBER when in STANDBY (Redundancy operation)

An Internal alarm is caused by Power failure, Amplifier failure or Unit out of lock.

REAR PANEL DESCRIPTION (GENERIC)

EXT. Ref   External Reference input.

Remote   RS232/RS485 output for remote monitor and control of the unit.

Alarms   Alarms connection.

Ethernet   Ethernet connection if option is fitted.

Other rear panel connections maybe applicable to the specific unit purchased.

REAR PANEL PINOUTS

Remote
15 Way D type Female on the chassis with connections as follows

RS485 Rx +	1		9	RS485 Rx -
RS485 Tx +	2		10	RS485 Tx -
Not used	3		11	Not used
Not used	4		12	Not used
Not used	5		13	Not used
Not used	6		14	GROUND
RS232 Rx In	7		15	RS232 Tx Out
Not used	8			

Alarms
15 Way D type Male on the chassis with connections as follows

There are 2 independent relays controlled together designated (1) and (2) as follows. Important note : N/O means 'normally open' in the non fail state with STATUS LED Green

Unit fault (1) COM	1		9	Unit fault (1) N/O
Unit fault (1) N/C	2		10	Not used
Ext Mute (1)	3		11	Not used
Unit fault (2) COM	4		12	Unit fault (2) N/O
Unit fault (2) N/C	5		13	Not used
Not used	6		14	Not used
Not used	7		15	GROUND
Not used	8			

If the mute option is fitted then the unit will be muted unless the above Ext. Mute pin is joined to GROUND.

Ethernet
RJ45 8P8C female connector

OPERATION

On switching on the unit the STATUS indicator on the front of the unit should turn GREEN if all is OK.

If an alarm condition is seen check alarm conditions on the rear panel

Connect the INPUT signal in to the connector/s marked INPUT taking note of the power of the signal being input.

Output from the unit is from the connector/s marked OUTPUT.

Menu Structure

On Power up the unit will start in HOME mode displaying the following options.

Generally YES will select/enable an item and NO will step back one step with no changes.

The unit's HOME screen has 5 main menu options as shown in Figure 1 below:

```
              HOME
1: Operating Display
2: Status
3: Configure
4: Log
5: Service
```

Figure 1

Operating display

This menu shows a graphical representation of the RF path showing which amplifier is selected and the attenuation value.

Status

This menu shows an immediate summary of all settings and alarm conditions, more details may be available by pressing the down arrow.

```
-------- Combiner --------
Attenuator:          16.5dB
Redundancy:          Manual
Amp A: 115mA        Offline
Amp B: 109mA         Online
---- Combiner OK Since ----
      17/09/15 10:40:51
============================
```

Figure 2

Configure

This menu allows the user to configure different parts of the unit, the menu choice change depending on the unit, its options, and whether the unit is in remote or local mode.
When in local mode all the menu items are available to the user to change, when in remote mode only the REMOTE CONTROL menu option is available.

Figure 3, below, shows a basic configure menu, however as stated above the menu choices change depending on the unit and its options.

```
          CONFIGURE
1: Remote Control
2: Redundancy



```

Figure 3

The possible list of unit options that have their own configure menu items and associated configuration screens include:

- Attenuation

- Amp redundancy mode

- Amp selection when in manual redundancy mode

ATTENUATION

Allows the attenuation of the RF path of the unit to be changed, the step size and range are unit/option specific.

```
         ATTENUATION

Range +0.0 - +30.0 dB
        Use ↑/↓

        15.3 dB
```

Figure 4

AMP REDUNDANCY MODE

Allows the amp selection to be controlled manually or automatically.
In automatic mode, if the current amps consumption goes out of range then the other amp will be selected.
In manual mode, the amps can be changed over manually.

AMP CHANGEOVER

This option is only available when amp redundancy mode is set to manual and it allows either amp A or amp B to be selected.

REMOTE CONTROL

Selects a sub-menu with further menus. If the Ethernet module is not installed then the following menu will be shown:

```
       RS232 (LOCAL Mode)
          Address:N/A
         Baudrate:19200

1: Set REMOTE mode
2: Setup RS485
3: Setup RS232
```
Figure 8

1 Set REMOTE mode - Sets the unit to allow control from a remote source. Pressing 1 again returns the unit to local mode.
2 SETUP RS485 - Allows the selection of RS485 UNIT ADDRESS and BAUD RATE.
3 SETUP RS232 - Allows selection of BAUD RATE for RS232 communication.

If the Ethernet module is fitted then the menus change slightly to:

```
       REMOTE CONTROL
      RS232 (LOCAL Mode)
Address:N/A Baudrate:19200


1: Set REMOTE mode
2: Set Communications
```

Figure 9

1 Set REMOTE mode - Sets the unit to allow control from a remote source. Pressing 1 again returns the unit to local mode.
2 Setup Communications - Allows the selection of RS485, RS232 or Ethernet communication. RS232, RS485 menus work in the same way as shown above.

```
       COMMUNICATIONS
1: Serial RS232
2: Serial RS485
3: Ethernet
```

Figure 10

3 Ethernet – This brings up a further menu as shown below in figures 11 and 12, these are accessed by using the up/down buttons

```
  ETHERNET OPTIONS   1/2
1: DHCP          [Enabled]
2: IPv4 Address
3: Subnet Mask
4: Gateway
5: TCP Port
6: TCP Socket Timeout
7: SNMP         [Disabled]
```
Figure 11

```
  ETHERNET OPTIONS   2/2
1: SNMP Trap Address
2: Set Options
```
Figure 12

The menu choices (1-4) shown in figure 11 allow the user to change the relevant Ethernet settings of the unit.
5 TCP Port – Sets the TCP port number used that allows serial comms messages to be sent, via Ethernet, to the unit.
6 TCP Socket Timeout – Sets the timeout value, after which time if no communication is received on the open TCP socket it is closed.
7 SNMP – Allows the SNMP protocol to be turned Disabled/Enabled.

1 SNMP Trap Address – Sets the IP address of the device that will receive any SNMP trap error messages from the unit.

Set Options in figure 12 is used to set the Ethernet data all at once on the device, this must be used when trying to change the Ethernet settings.

Log

Event Log of any errors or events that have arisen.

```
              LOG
        Number of items: 14

1: View
2: Clear
```

Figure 16

1 View - Displays the stored logs.
2 Clear - Allows the user to clear the log.

Service

This menu has 5 submenus as shown below in figure 13.

```
            SERVICE
1: Monitor Points
2: Display Timeout
3: Amp Current Limits
4: Time And Date
5: RESET
```

Figure 17

1 Monitor Points - Allows monitoring of PSU points and internal temperature.
2 Display Timeout - Allows setting of display timeout
3 Amp Current Limits – Allows the minimum/maximum amp current limits to be changed
4 Time And Date - Allows setting of current time and date
5 RESET - Forces a software reset of the unit.
6 Fan – Allows control of the internal cooling fan (if fitted)

REMOTE CONTROL

Serial Communications RS232/ 485

The unit transmits and receives data serially in an asynchronous format using the standard ASCII character set. The serial data consists of message frames composed of the following message characters: STX, BYTE COUNT, UNIT ADDRESS, INSTRUCTION, BODY, CHECKSUM, ETX. All characters are compulsory except for the message body. The presence of a message body is determined by the message type (INSTRUCTION). The total number of message characters in a message frame may range from a minimum of 6 to a maximum of 255.

The remote control follows the following protocol: (in byte form)

[STX]   start of message character #02.

[B]   char defining how many characters are in the message including the STX & ETX parts.

[A]   **Address of unit**. Address ranges from ASCII character 001 to 255. If in RS232 Mode this address can be anything in the 001 to 255 range.

[I]   **Instruction number.** See List below

[MESSAGE]

        Numerous characters from length 0 upwards.

[CHKSUM]

        The checksum is used to verify the accuracy of the message frame. The checksum is defined as the summation of all the bytes in the message, **beginning** with the 3rd byte (DEVICE ADDRESS) and extending through the body of the message, **ending** with the last byte before the checksum. The total of the bytes is then ANDed with 255 so that the checksum is truncated to a single byte.

[ETX]   End of transmission character #03

All message to and from the unit follow the above protocol with a character format of 8 data bits, one stop bit, no parity, baud rate 19200, 9600, 4800, 2400, 1200 or 300. Note that all numeric values are shown as decimal.

For the specific remote control instructions for a given unit please see the appropriate unit's remote control manual.

Ethernet

The Ethernet option for the equipment adds the ability to control the unit by Ethernet as well as by the existing standard RS232 or RS485, this is achieved via a separate module within the unit.

The unit can be controlled through the Ethernet port using three different approaches.

TCP Port

The unit can be controlled using the serial remote control messages as described earlier sent through the TCP port set in the Ethernet menu option.

Web Page

The unit can be controlled via the in build web server's web page. There are two pages, Status and Configure. Hopefully both of which are self explanatory. Figures 17 & 18 show screen shots of the web pages.
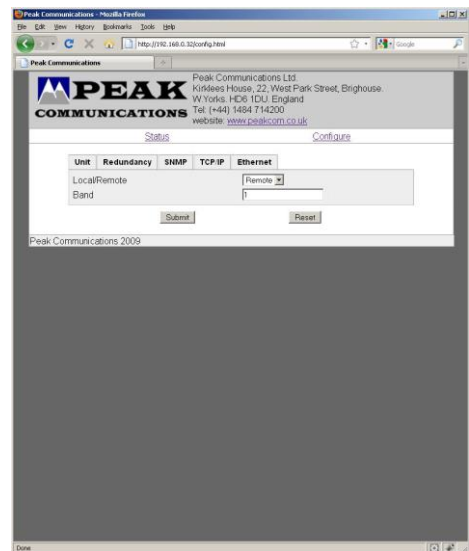

Figure 17

Figure 18

SNMP

The IBDH/IBUH series units fitted with Ethernet, have a built-in SNMP (Simple Network Management Protocol) agent software.
It supports SNMP Trap, RFC1155, 1157, 1212, 1213, 1901 & 1906, as well as the Peak MIBS.

The Peak SNMPv2 MIB files are available from Peak Communications Ltd website, below is a quick overview of them.

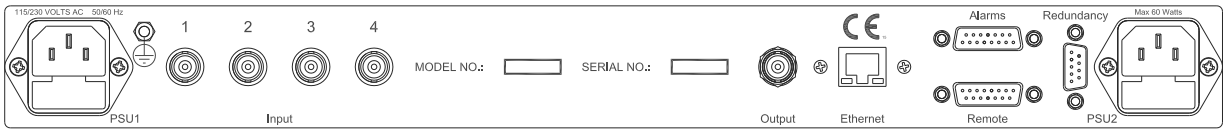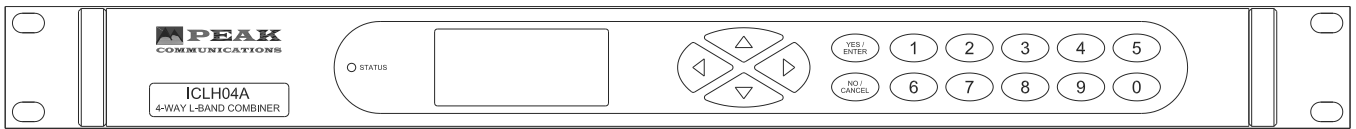The Peak Enterprises node is essentially split into three main areas:
Converters - In this node there is a peakxxxxxxxxxxxxxxxxxModule showing a table of the Converter module(s), this is where the band of the unit can be checked/changed.

Unit – This node allows the unit status to be checked as well as the Ethernet and redundancy settings.

PeakFaultsModule – This node contains the unit summary alarm as well as a table showing all the faults currently on the unit.

EXAMPLE FRONT / REAR PANELS

ICLH04A:

ISLH032: