

---

# SuperHub

## Installation Manual

[Rev 1.00]

---

Contents

1. INSTALLATION CABLING (REAR PANEL)
  - a. RS232 ports
  - b. Intelliplate port
  - c. RS485 ports
    - i. Standard wiring
    - ii. Configuring for RS422
2. USING THE MASTER RS232 PORT
  - a. Cabling
  - b. Using a Terminal Emulator
  - c. The menu system
3. USING THE ETHERNET PORT
  - a. Choosing a connection method
    - i. Direct wired
    - ii. Wired LAN
    - iii. Wireless LAN
    - iv. Remote (off-site) access
  - b. Uploading a script using ftp
  - c. Using a web browser to configure and monitor the system
4. BEFORE YOU GO
5. UPDATING THE FIRMWARE
  - a. Checking the current revision
  - b. Firmware updates
6. TROUBLESHOOTING GUIDE
7. FURTHER READING

## 1. INSTALLATION CABLING (REAR PANEL)

### a. RS232 ports

Most devices requiring control over RS232 will require the use of a standard RS232 cable which is usually wired PIN1 to PIN1 with a male connector at one end (the SuperHub end) and a female connector at the other.

However, some devices require the use of a null modem cable, which has a 9-way female connector at each end with pins 2 and 3 crossed and pins 7 and 8 crossed.

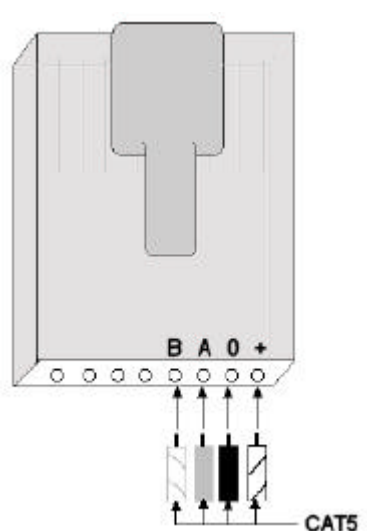
Audace Ltd can provide all of the above cables upon request. Please refer to the manual of the device being controlled for more information about their connectivity.

### b. Intelliplate Port

The dedicated Intelliplate port on the rear of the SuperHub is a standard 8/8 RJ45 socket of the type commonly used in LAN equipment such as Ethernet Hubs. In order to connect to this, you will require a special crimp tool which can be obtained from suppliers such as Rapid Electronics, RS Components, Maplin, Radio Shack and others. We can provide this on request if you cannot source this locally. However, they are commonly available.

In order to crimp a header to your Intelliplate buss, you will need to use stranded CAT5 cable. This is so that the IDC connection can make properly through the insulation and bite into the copper core.

The header should be wired as shown below:



### c. RS485 ports

The RS485 port(s) on the rear of the SuperHub are provided on screw-terminal Phoenix-style connectors of the type commonly used on professional A/V equipment.

Connecting cables to these is done simply using a screwdriver to tighten the jaws of the connector and thereby 'grip' the stripped end of the cable.

Most RS485 connections will use a single 2-wire RS485 port on the SuperHub. In that case, simply connect the A, B and Ground lines of the SuperHub to the corresponding lines on the third-party device.

If the optional second RS485 port is fitted to the SuperHub, you can configure the ports in one of the following ways:

- Two independent 2-wire RS485 ports
- One single 4-wire RS45 port
- One single 4-wire RS422 port

A detailed treatment of the various topologies for RS485/422/232 lies beyond the scope of this document and a great many resources on this topic already exist. We would refer you to the internet, to technical publishers and to the manuals of the third-party equipment for information about using these more 'exotic' wiring systems. However, if you are unable to find the information you require from any of these resources, we will be able to assist you if required.

## 2. USING THE MASTER RS232 PORT

Once your SuperHub unit has been wired correctly, you will need to configure it such that it can communicate with other devices. This includes defining the network settings, in order to be able to use the Ethernet port, detailing and configuring any wall plates that it is connected to, and settings its time/date calendar so that automatic error logging can operate and be monitored accurately and any automation operates as intended.

- **Cabling**

A standard RS232 serial cable should be used to connect the front panel Master RS232 port on the SuperHub to an available Serial Port on your PC. These cables are normally wired Pin1 to Pin 1 with a male connector on one end (to connect to the SuperHub) and a female connector at the other end (to connect to the PC). Suitable cables can be provided by Audace Ltd on request. Do not use a null modem cable.

- **Using a Terminal Emulator**

A wide variety of free-of-charge terminal emulator applications are available from third-party suppliers. In general these are downloadable from the internet. Note that many Windows™-based PC's come equipped with the HyperTerminal application. However, we have discovered some shortcomings in this application and our recommendation is the Tera Term program, which can be downloaded using a link on our web site – [www.intelliplate.com](http://www.intelliplate.com) or:

<http://www.vector.co.jp/authors/VA002416/teraterm.html>

The terminal emulator should be configured such that:

- Baud Rate is 19200
- Data = 8 Bit
- Parity = None
- Stop = 1 Bit
- Flow control = Hardware

Ensure you select the port on your PC that the SuperHub is physically connected to and that no other applications are running which use this port.

- **Terminal Emulator Menu**

Certain operations, including setting up TCP/IP and setting the time/date, can only be performed via the Master RS232 port, for security reasons.

When you have opened and configured your terminal emulator as described, press any key within the terminal emulator environment to bring up the configuration menu. You will be prompted for a password (default *audace*). Options within this environment are as follows:

```
MAIN MENU
1 - System setup
    1) Display Current Settings
    2) Set IP Address
    3) Set netmask
    4) Set gateway
    5) Set time/date
    6) Format file system
    7) -
    8) -
    9) Save settings and reset
    0) Abandon setting and exit
2 - Scripting
    1) Download current script
    2) Upload + compile new script
    3) Enter debug mode
    0) Exit menu
3 - Fault finding
    1) Download error log
    2) Clear error log
    0) Exit menu
4 - Wall panel setup
    1) Set number of panels
    2) Set all addresses
    3) Set one address
    4) Find panel
    0) Exit menu
0 - Exit from main menu
```

These items are self-explanatory. Please refer any queries to us using the contact details at the end of this publication or via our web site.

The most important points are that:

- You will need to format the file system if the SuperHub has not been used before or after doing a firmware update.
- You will need to ensure that the system settings are correct if you are using the Ethernet port or if you intend to run automated events. The time/date information is also used by the error log.
- The error log is automatically populated by the SuperHub
- In order to use wall panels with the SuperHub, you will need to assign unique, sequential addresses to your wall plate network. The easiest way to do this is to connect them up and then 'set number of panels' followed by 'set all addresses'. This will cause all the panels to flash and you can go round the venue assigning addresses in sequence by pressing one front-panel button on each panel in turn, until all the panel have been addressed.

For information on the 'debug mode', see the IntelliScript programming manual, which is available from the Intelliplate web site. This a facility to have messages appear on the Master RS232 port, generated by your script, for diagnostic purposes.

### 3. USING THE ETHERNET PORT

The SuperHub can also be configured via the Ethernet port using a computer running a standard web browser. This can be done directly, using a LAN patch cable, over a local network from any machine on the network, or from anywhere in the world via the internet, provided that a suitable connection is available.

You will need to ensure that the IP address and netmask information is correct in order to be able to establish a connection.

Note that a detailed discussion of networking, connectivity and wireless (802.11b) LAN technology is beyond the scope of this publication and we would refer you to the wide range of specialist publications on this subject for further information.

However, please note that certain functions cannot be performed via the web interface. Specifically, these are:

- 1) System settings
- 2) Enter debug mode

#### a. Choosing a Connection Method

##### i. Direct wired connection

Simply run a LAN patch cable between the Ethernet port on your computer and the Ethernet port of the SuperHub. This cable should be wired straight through and should not be a crossover cable.

##### ii. Wired LAN

Using this method of connection will enable you to configure the SuperHub and monitor it from any machine connected to your network, which may include off-site access, depending on your network.

Run a straight Ethernet patch cable between the Ethernet port on the SuperHub and an available port on your LAN hub.

##### iii. Wireless LAN

This offers the same advantages as wired LAN with the added convenience of a wireless connection. There are several topologies available using wireless technology, the two most common of which are:

- Place a wireless network interface card in your PC and then directly connect a wireless access point to the Ethernet port of the SuperHub, using a crossover patch cable.
- Directly wire your SuperHub to a LAN hub using a straight patch cable. Then connect a wireless access point to the LAN hub and use a wireless network interface card in your PC to connect

##### iv. Remote off-site access

Once a suitable connection has been provided for your SuperHub at the installation site and you have a suitable connection to the internet, you will be able to connect to the SuperHub using a standard web browser. You will simply need to type the access IP address (which will usually differ from the IP address that you have set in the SuperHub) into the address bar of a connected web browser.

You can then run diagnostic operations, test functions and execute control from the comfort of your own desk.

Note that our recommended methodology for this is to use a broadband connection with a static IP address. You can then configure the broadband modem/gateway to pass all http requests (port 80) through to the SuperHub.

### b. Uploading a Script Using FTP

FTP is the standard network protocol for transferring files to a server. In this case, the SuperHub acts as a server and your computer as a client. You can transfer a script file to the SuperHub using a third-party ftp application such as CuteFTP or you can use the ftp utility provided free-of-charge within the IntelliScribe authoring environment.

Script files have to be named script.txt when transferred to the SuperHub's memory, so that the compiler can find them. If you are using a third-party FTP utility, be sure to name the file script.txt before attempting to upload it to a SuperHub. SuperHub will block the attempted upload of any other files!

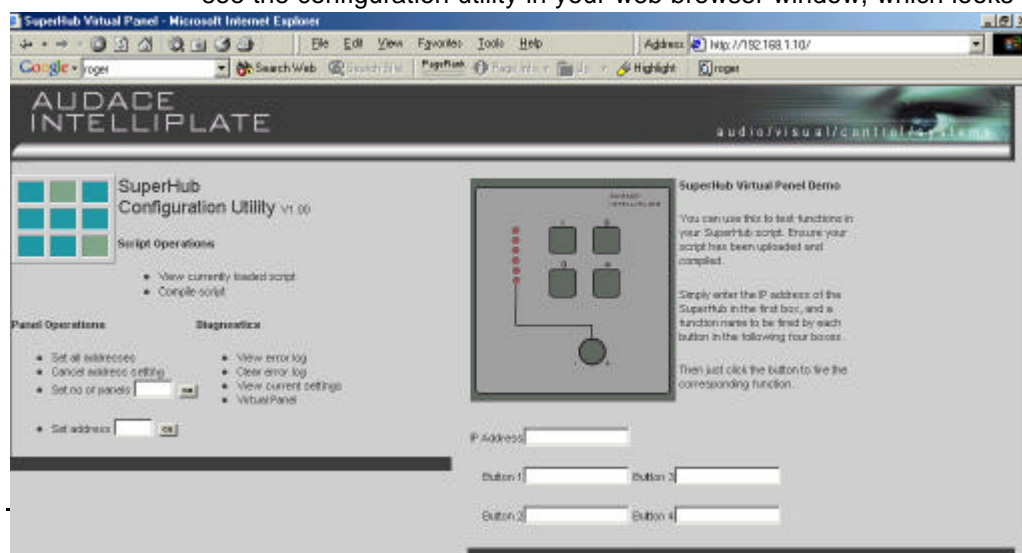
One advantage of using the IntelliScribe application is that you can give your script file any name on your local system and it will automatically take care of giving it the correct name in the SuperHub. So you can give your script files appropriate names, to help you catalogue and find them at a later date, while not having to worry about re-naming them before upload.

The information that you will require before completing upload is the hostname, the user name and the password for ftp access. The hostname is simply the IP address of the SuperHub, the default username is bryan and the password is audace. The port number is 21.

### c. Web-based Configuration

When you have successfully uploaded a script into your SuperHub, you can perform a range of configuration, diagnostic and functional operations using a standard web browser, which can be operated on a wide range of devices including PC's, Mac's or even PDA's.

All you need to do is to open a web browser on a computer which is connected to the same network as the SuperHub. Then, simply type the IP address of the SuperHub into the address bar of the browser. You should see the configuration utility in your web browser window, which looks like this:



Operations that can be performed using the web-based interface are as follows:

#### **View and compile an uploaded script**

Once a file has been uploaded into the SuperHub via ftp or the terminal emulator menu, you can view it and compile it from within the web-based interface.

#### **Configure connected wall panels**

You can set the number of panels that the SuperHub needs to look for and assign addresses to panels. This is required for panel to be able to communicate successfully with the SuperHub.

#### **View and Clear Error Log**

SuperHub automatically generates an error log in order to assist diagnostic functions. This log can be both inspected and cleared using your web browser. We recommend that this log is cleared once an installation is completed as it has limited space and errors may be missed if it is full.

#### **View Current Settings**

You can check information such as the network settings, time/date and no. of panels using this facility.

#### **Execute functions within a compiled script – Virtual Panel**

A virtual panel is provided within the web-based interface for two purposes. First of all it enables you to execute functions that are within your compiled script, which may be useful from a test and operational point of view. Also, it serves as a demonstration of how simple it is to create virtual panels that are operable from any TCP/IP-enabled device such as a PC, a Mac or a PDA. These interfaces can be as attractive, as simple or as sophisticated as you like and they are based on readily achieved html pages which can incorporate sophisticated images, sound clips, Macromedia Flash movies and more, if required.

In order to execute a function, simply place the IP address of the SuperHub into the 'IP Address' text box of the virtual panel. Then place the name of the function(s) that you want to execute in one or more of the four text boxes provided – one for each 'button'. Finally, click the virtual button to execute the corresponding function. Confirmation of a successful operation will appear in the bottom frame of the web page. Note that parameters or query strings may not be passed to functions using this method.

## 4. BEFORE YOU GO

Here is a checklist of basic installation steps that should be carried out prior to leaving a site:

- Set network and time/date settings in SuperHub
- Format the file system
- Upload and compile a script
- Run the Hubinit function to initialise everything (use the Virtual Panel if required)
- Set no of panels correctly
- Assign unique, sequential addresses to connected wall panels
- Test the system
- Clear the error log

## 5. UPDATING THE FIRMWARE

Firmware updates are provided on the Intelliplate web site and can be emailed on request.

### d. Check the Current Revision

Confirm your current firmware revision using the Terminal Emulator menu. The version appears at the start of the 'Welcome' screen.

### e. Performing Firmware Updates

In order to carry out a firmware update, you will require our programming cable – item 101-0513 – which can be obtained through the usual sales channels. You will also require the Rabbit Field Utility, which is available for free download from our web site.

The steps for achieving a successful firmware update are as follows:

- i. Remove the SuperHub from the rack
- ii. Remove the power from the SuperHub
- iii. Remove the lid from the SuperHub
- iv. Connect the programming cable 'PROG' header to the pin header on the Rabbit sub-board inside your SuperHub. Note that pin 1 on the cable is denoted by the red line on the cable and pin 1 on the circuit board is denoted by a triangle.
- v. Connect the D connector of the programming cable to a PC running Windows which has the Rabbit Field Utility installed on it (rfu.exe)
- vi. Open the Rabbit Field Utility
- vii. Select the File>Load Flash Image file option and select the Bin file you obtained from us.
- viii. Click OK and the file should upload. Note that you will need to ensure that the port settings in the Rabbit File Utility are correct – you will find these under Setup>Communications and they should be as follows:
  - Use Serial Connection
  - Baud Rate = 115200
  - Comm Port = Select the COM port you have connected to the programming cable
  - Disable processor detection
- ix. Remove the power from the SuperHub.
- x. Remove the programming lead from the SuperHub and replace the lid

## 6. TROUBLESHOOTING YOUR INSTALLATION

SuperHub includes some tools for troubleshooting assistance. These include the 'debugprint' facility within the scripting language – see the programming manual for more on this – the error log, which can be accessed locally or off-site and the front panel LEDs which can be configured within the script to indicate the status of the system.

Potential scripting problems are covered in more detail in the Programming Manual. Here are some suggestions about installation errors that might be of help to you:

### 1. Master RS232 Port Problems

If you are unable to see the menu in the terminal emulator:

- Check settings within your terminal emulator (see page xx)
- Check the cabling between your PC and SuperHub
- Try a power cycle on the SuperHub
- Try connecting via the web-based interface
- Ensure that the programming cable is not connected to the SuperHub
- Ensure that no other application is using the serial port on your PC

### 2. RS232 port problems

If you are unable to control devices connected via RS232 then the first thing to check is that data is coming out of the correct SuperHub port. You can check this by simply connecting a PC running a terminal emulator to the SuperHub's serial port. If this appears to be happening, and at the expected moment, then the most likely causes are:

- Connection problem between SuperHub and third-party device
- Message format is incorrect for third-party device
- Port settings are incorrect (e.g. baud rate) for the third party device

### 3. Ethernet problems

If you cannot connect to the SuperHub via Ethernet, check the following:

- Check the IP address
- If you are attempting to access the site remotely, try another web site to ensure that your web connection is 'live' (e.g. [www.google.com](http://www.google.com))
- Have someone on site ensure that the SuperHub is on and that the Ethernet port is wired to the network  
If you can, have the Ethernet connection verified by a direct connection between a PC and the SuperHub Ethernet port.

## 7. FURTHER READING

We would refer you in the first instance to our dedicated web site – [www.intelliplate.com](http://www.intelliplate.com) - which contains a wealth of information useful in familiarising yourself with our products. With regard to IntelliScript, this includes software, sample scripts, tutorials and more. The following publications are available for download:

- SuperHub Cut Sheet
- IntelliScribe Authoring Software and Manual
- SuperHub Programming Manual

- IntelliScript sample scripts

General programming manuals are available from a wide range of specialist publishers, which may be found on web sites such as amazon.com, www.barnesandnoble.com and so on.

Finally, a multitude of resources are available free of charge on the internet, including discussion groups, tutorials, code examples and more. We would strongly recommend taking the time to research here for any advanced information you require about general programming principles. Using a search engine such as www.google.com and entering keywords such as 'php scripting tutorial' will reveal all manner of useful information, which you can bring to bear on your project.

---

**Scope** – *this document (revision 1.00) relates to Audace Ltd's SuperHub running embedded software V1.00*

**Contact** –

*Audace Ltd, 50 Mt Ambrose, Redruth, Cornwall UK TR15 1RA  
Tel: +44(0)1209 214147  
Fax: +44 (0)870 705 1692  
Email: sales@audace.co.uk  
Web: www.audace.co.uk*

© 2003 Audace Ltd, E&OE.