



## HELIX Remote Control: Hardware Set-up Guide



**Contact Details:**

Klark Teknik,  
Klark Teknik Building,  
Walter Nash Road,  
Kidderminster.  
Worcestershire.  
DY11 7HJ.  
England.

Tel: +44 1562 741515  
Fax: +44 1562 745371

Email: [info@uk.telex.com](mailto:info@uk.telex.com)  
Website: [www.klarkteknik.com](http://www.klarkteknik.com)

HELIX Remote Control: Hardware Set-up Guide - User Guide  
DOC00061 Issue A - August 2007  
© Telex Communications (UK) Limited.

In line with the company's policy of continual improvement, specifications and function may be subject to change without notice. This User Guide was correct at the time of writing. E&OE.



## **CONTENTS**

<b>1</b>	<b>INTRODUCTION .....</b>	<b>7</b>
1.1	Associated documentation .....	7
<b>2</b>	<b>CONTROLLING A NETWORK USING HELIX RCS .....</b>	<b>8</b>
2.1	Solo Tracking System (STS).....	8
2.2	Working with a RapidE (multi-master mode).....	8
<b>3</b>	<b>HELIX UNIT INTERCONNECTIONS.....</b>	<b>9</b>
3.1	Connecting the HELIX units in a 'daisy chain'.....	9
3.2	Connecting the HELIX units to an Ethernet switch or hub.....	10
<b>4</b>	<b>ETHERNET CONNECTION .....</b>	<b>11</b>
4.1	Ethernet connection – standard .....	11
4.2	Ethernet connection – wireless option.....	12
4.3	Configuring the network devices .....	13
4.3.1	HELIX unit/PC configuration .....	13
4.3.2	RapidE unit/PC configuration .....	13
4.3.3	Wireless and Lantronix UDS110 configuration .....	13
4.3.4	Fault Finding Tips .....	13
<b>5</b>	<b>SERIAL CONNECTION (OPTION) .....</b>	<b>14</b>
5.1	Serial connection details.....	14
5.2	Connection Procedure .....	14
<b>6</b>	<b>REMOTE CONTROL CONNECTION OPTIONS.....</b>	<b>16</b>
6.1	Single-unit serial connections.....	16
6.2	Multiple-unit Ethernet connections .....	17
6.3	Multiple-unit serial connections.....	19
6.4	Ethernet and serial .....	20
6.5	RapidE .....	21



## **1 INTRODUCTION**

This User Guide gives details of HELIX remote control, which is fundamental to the Show Command system. It shows you how to control a network using HELIX Remote Control Software (RCS), how to connect HELIX units together in a system or network, what types of system-to-PC/RapidE Ethernet connections are available and details all of the remote connection options.

The Show Command units covered are: DN9340E, DN9344E, DN9848E, DN9340, DN9344, DN9848 and DN9331. Units with the "E" suffix are Ethernet units and the DN9331 is the RapidE.

Please note the following when considering your remote control connection options:

- A system comprises two or more units of a single type (Ethernet or non-Ethernet) directly interconnected or connected to the same Ethernet switch/hub.
- A network comprises one or more systems directly connected to a single port of a laptop/PC, a wireless access point (Ethernet only) or external port of a RapidE (Ethernet only).
- Although there are many combinations available for remote operation, it is always worthwhile remembering that Ethernet provides faster operation than serial.
- All units in a system must be running the same protocol version. The protocol version is determined by the first digit in the software version, for example, if a DN9340E unit was running host software version 4.00, the protocol version is 4.
- When using dual Ethernet-serial networks, both networks can be running different protocols. However, the laptop/PC needs to be running an RCS program - of matching protocol - for each network.
- To combine Ethernet and serial together in a single network, a Lantronix UDS1100 converter is required. (The Lantronix UDS1100 is a lead-free version of the Lantronix UDS100.)
- Connection to the laptop/PC can be via Ethernet (direct or wireless), serial or USB.
- Wireless operation is only available using Ethernet.

### **1.1 Associated documentation**

To carry out some of the procedures detailed in this guide you will need the following User Guides:

- "ELGAR Library Manager", part number DOC00045-ELGAR.
- "HELIX Remote Control Software: Brief Guide to Setting Up an Ethernet System", part number DOC02-UDS1100.

We also recommend that this User Guide is read in conjunction with the Operator Manual and User Guide appropriate to your equipment.

The User Guide "A Brief Introduction To Show Command", part number DOC00062 gives useful background information on Show Command.

All of this documentation can be found on our website [www.klarktechnik.com](http://www.klarktechnik.com).

## **2 CONTROLLING A NETWORK USING HELIX RCS**

To control an equaliser or processing system (or network) using a laptop/PC, a software program called ELGAR is required. ELGAR is a software shell that allows Add-Ins (product control software) to operate. So, for example, to control a processing system comprising HELIX DN9848E units, you would run ELGAR and add the required devices through the HELIX DN9848E Remote Control Software (RCS) Add-In.

When the laptop/PC running the appropriate RCS is connected to a HELIX unit system, it assumes control of that system. In an equaliser network the PC replaces the master DN9340E unit and assumes control of the daisy-chained HELIX units under preset slave addresses.

The following laptop/PC-system connections are available:

- Ethernet:** Three options are available for connecting the system to a laptop/PC via Ethernet: direct Ethernet; local area network (LAN); and wireless. The wireless option offers increased flexibility during the event set-up, as the engineer can move around freely with a laptop and adjust the equalisation while listening to the end effect at any place in the venue.
- Serial (option):** The optional RS-232 serial connection is via the "PC PORT" on the front panel of the first HELIX unit. The other HELIX units can still be connected via the Ethernet two-port switches on their rear panels. Serial must be used if Solo Tracking input is required. Please note that this serial method of connection will be slower than using Ethernet.

### **2.1 Solo Tracking System (STS)**

If Solo Tracking input is required, there are three connection options:

- Direct to console (via a Lantronix UDS1100 converter).
- Via a serial link to the "PC PORT" socket on the front panel of the HELIX unit.
- Via the Rapide.

### **2.2 Working with a Rapide**

The Rapide unit, which forms the networking centre of the Show Command System, allows you to remotely control the graphic equaliser (GEQ) systems within digital consoles or HELIX units. An eight-external port Ethernet hub is incorporated into the device, allowing the connection of Helix digital equalisers and system processors, with wired or wireless connections to laptop or tablet PCs running the equivalent ELGAR RCS.

The Rapide can be operated in multi-master mode, which uses two masters in a system to control the GEQ, such as a PC and the Rapide.



### 3 HELIX UNIT INTERCONNECTIONS

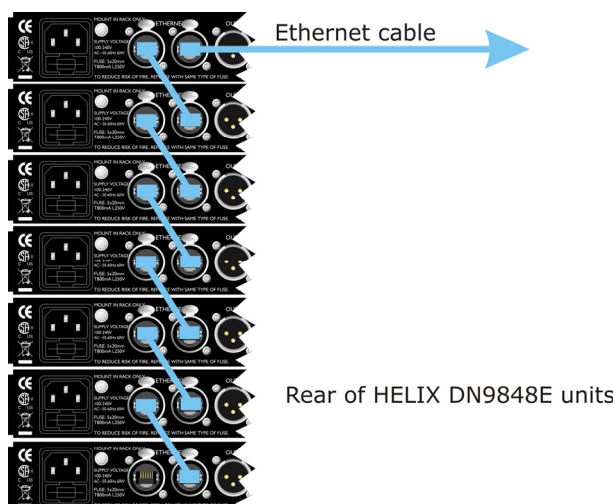
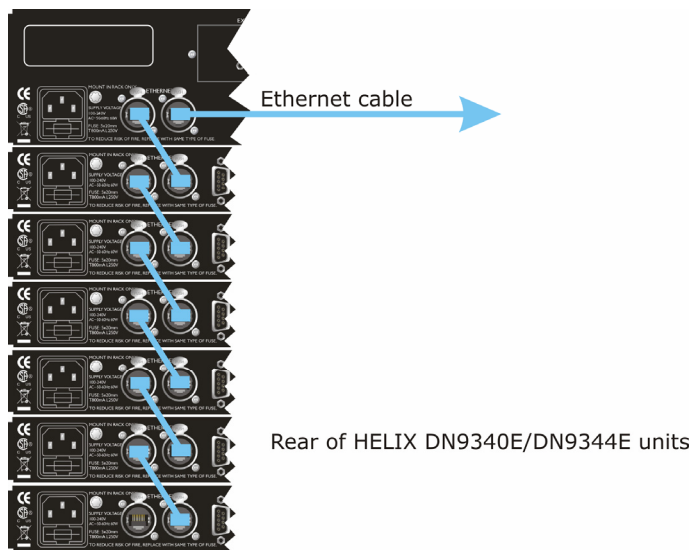
There are two ways to connect HELIX Ethernet units together to form a system. One method is to 'daisy chain' the units and the other is to connect each one directly to an Ethernet switch or hub.

Each HELIX Ethernet unit has an ETHERNET two-port switch on the rear panel that provides Ethernet connectivity.

**Note** When connecting the Ethernet cable to the rear panel of a HELIX unit, either of the Ethernet ports can be used.

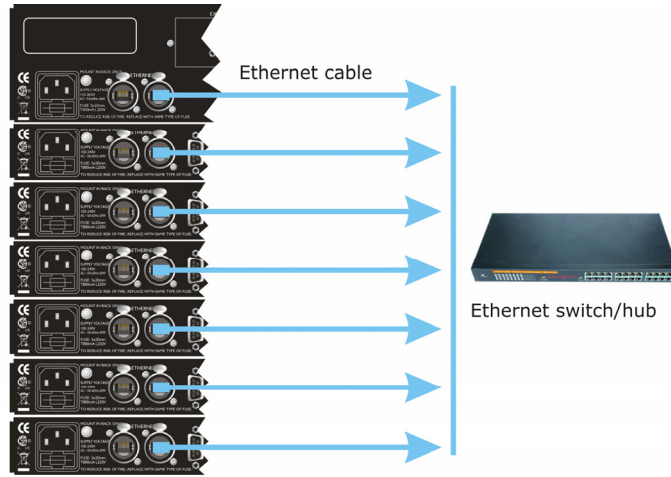
#### 3.1 Connecting the HELIX units in a 'daisy chain'

The following diagrams show typical examples of HELIX DN9340E/DN9344E and DN9848E units interconnected via their Ethernet two-port switches to form a 'daisy-chain'.

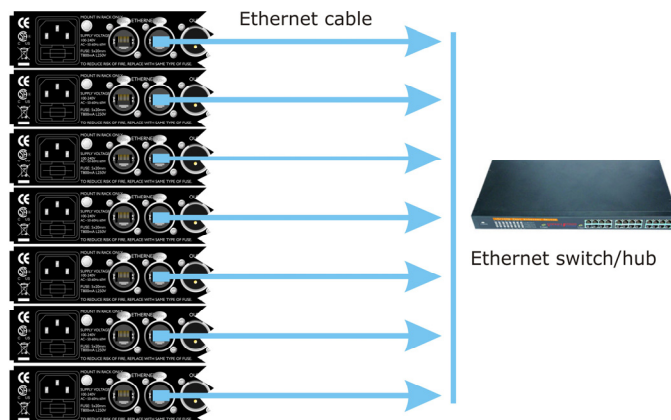


### 3.2 Connecting the HELIX units to an Ethernet switch or hub

The following diagrams show systems of HELIX DN9340E/DN9344E and DN9848E units, with each unit in both systems directly connected to an Ethernet switch or hub. The switch or hub is then connected to a laptop/PC.



Rear of HELIX DN9340E/DN9344E units



Rear of HELIX DN9848E units

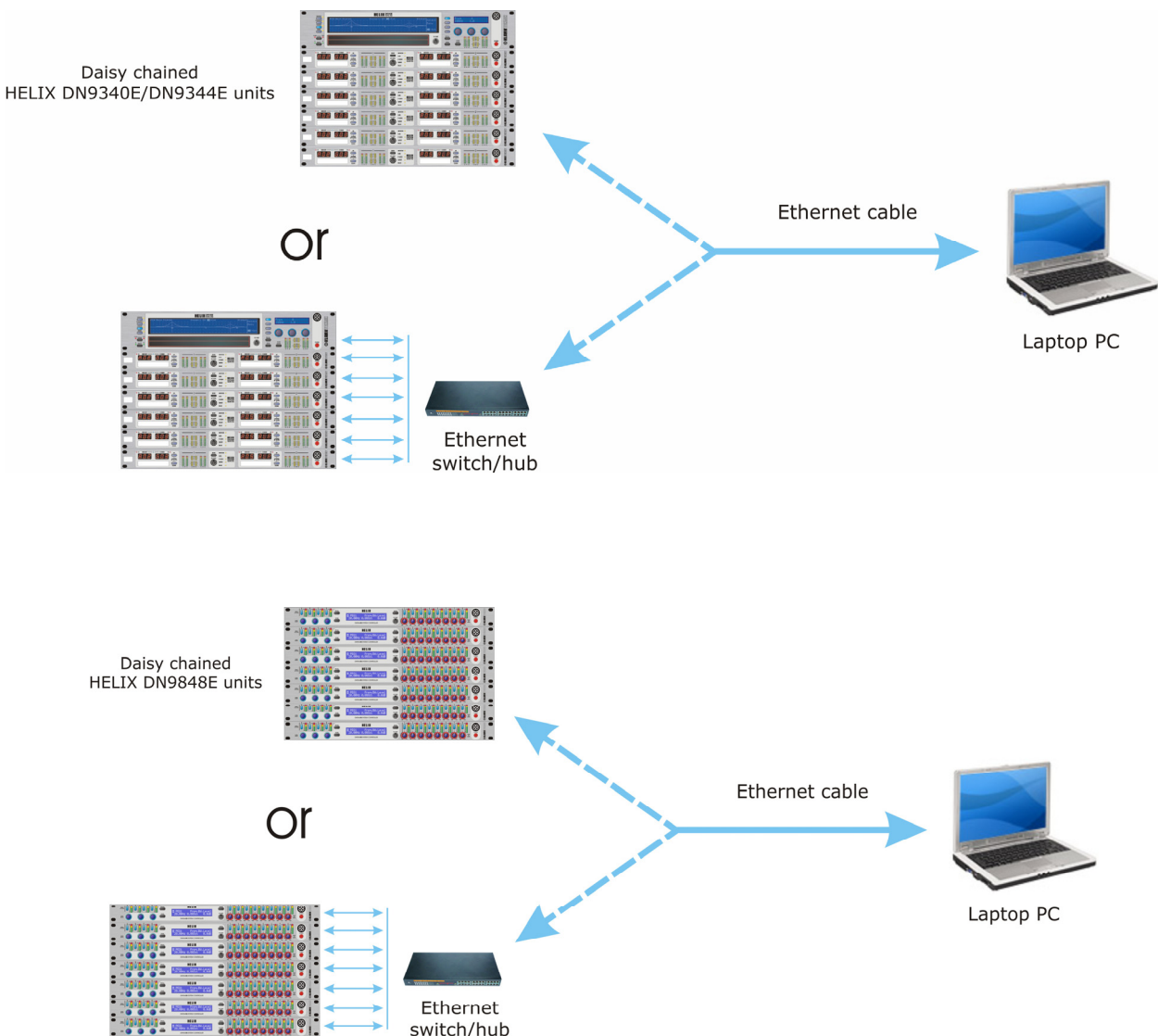
## 4 ETHERNET CONNECTION

For familiarisation purposes, a basic Ethernet connection may be made to a single unit by connecting the Ethernet cable to either of the unit's rear panel Ethernet two-port switches and then to the network socket on the laptop PC or wireless access point (wireless option).

For Ethernet connectivity, the HELIX units must be operating V4.00 (or later) host code, that is, version 4 protocol. For details on setting up the IP address of the HELIX units, please refer to their operator manual. For HELIX unit interconnection details, refer to Section 3.

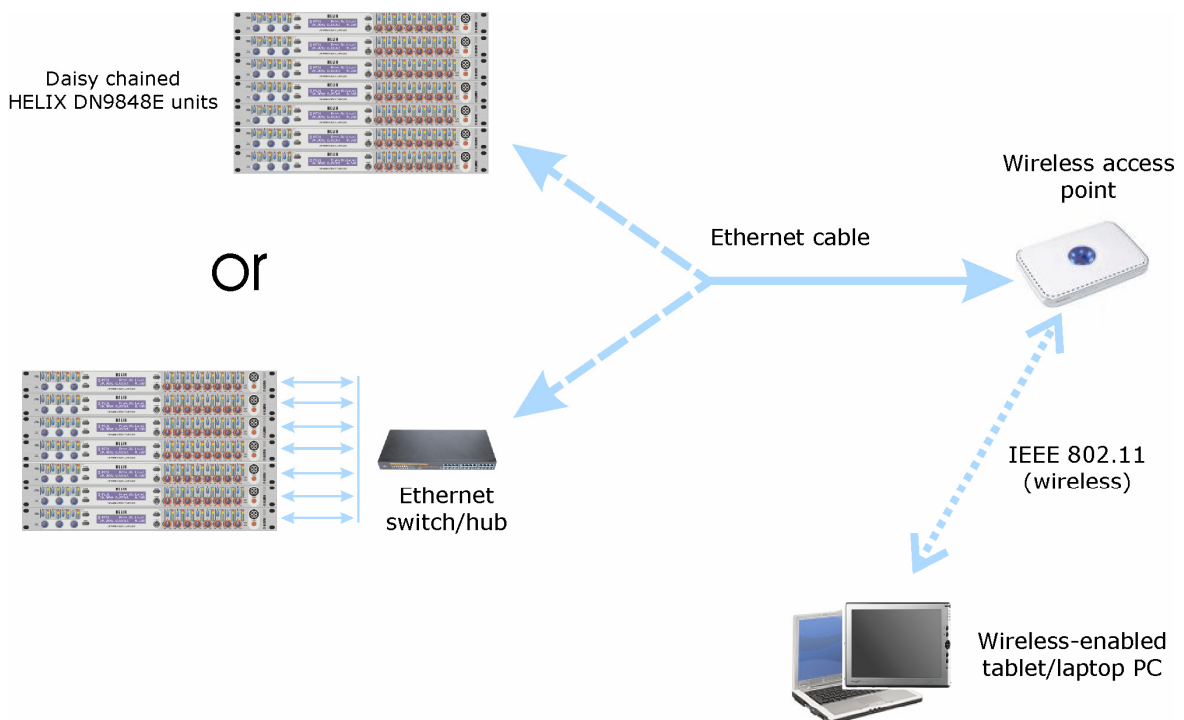
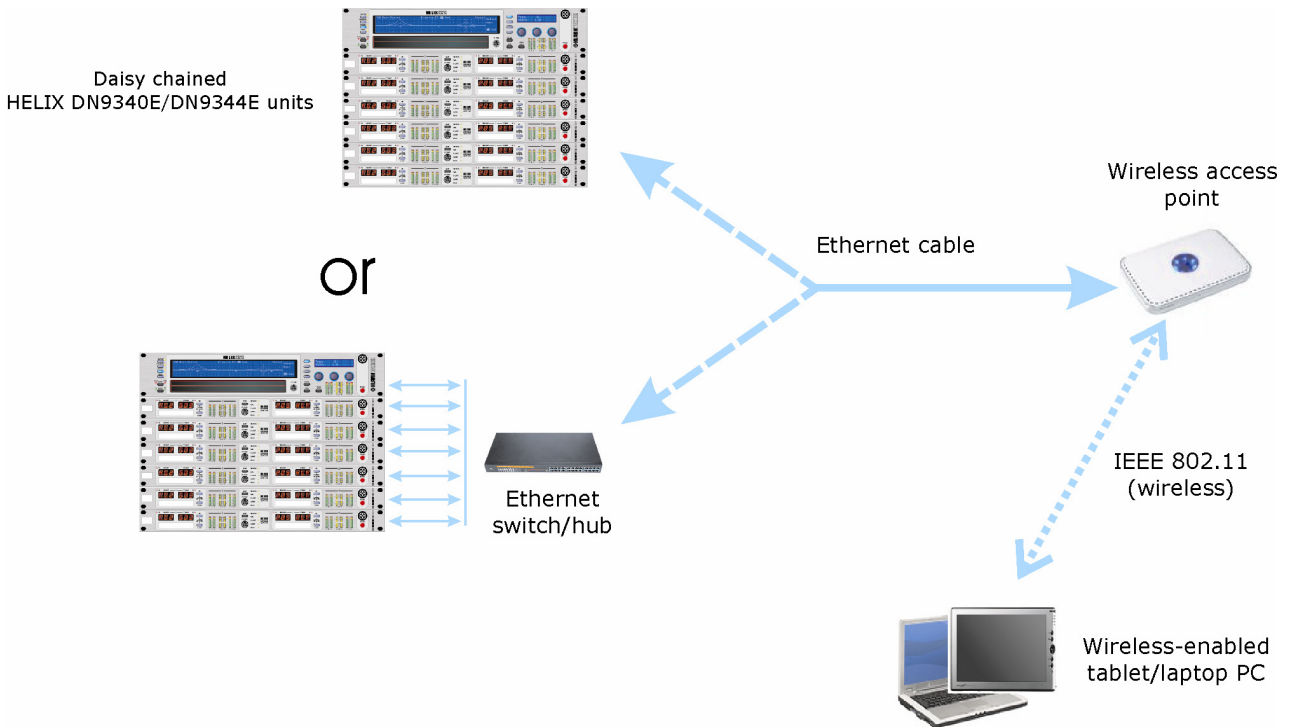
### 4.1 Ethernet connection – standard

The standard system set up is via Ethernet cable, where the network socket of the laptop/PC is directly connected to an Ethernet two-port switch on one of the HELIX units (daisy chain) or to an Ethernet switch or hub, depending on system configuration. The following diagrams show typical Ethernet connection configurations for systems of HELIX DN9340E/DN9344E and DN9848E units.



## 4.2 Ethernet connection – wireless option

The system set up for the wireless Ethernet connection option is via an Ethernet cable, where one end is connected to the network socket of the wireless access point and the other end is connected to either an Ethernet two-port switch on one of the HELIX units (daisy chain) or to an Ethernet switch or hub, depending on system configuration. This system is operated remotely from a tablet or laptop PC.



## 4.3 Configuring the network devices

### 4.3.1 HELIX unit/PC configuration

Before setting up the Ethernet system for operational purposes, you must first configure the laptop/PC and HELIX units to communicate with each other using TCP/IP protocol. This is done by assigning them unique IP addresses on a shared system.

#### ▶▶ To add new ports and assign them to the network devices

There are three main steps to this procedure:

1. Adding a new port.
2. Assigning a port to a device.
3. Checking that your unit (Ethernet device) is communicating with the PC.

Steps 1 and 2 are detailed in the port configuration section of the ELGAR Library Manager User Guide. Please ensure that during the Step 1 procedure you make sure **Echo** is set to **Generic Echo Off** for an Ethernet-type port.

If Step 3 is successful, the system should be ready for online operation. Indication of successful communication is by illumination of the yellow **NETWORK** LED on the DN9340E/DN9344E units and by 'rotating' symbols at the bottom right-hand corner of the LCD panel ("TIRI" → "T/R/" → "T—R—") on HELIX DN9848E units.

### 4.3.2 RapidE unit/PC configuration

If you are using a RapidE with a PC for remote control, you must configure the RapidE for multi-master mode operation and assign channels to any connected HELIX units/console. Then go on to add a new Ethernet port for the RapidE and assign it to the "RAPIDE" audio unit.

#### ▶▶ To configure the RapidE for multi-mode operation

Enter the RapidE's set up menu by pressing and holding down the **HOME (SETUP)** button. Then select multi-master mode by selecting "Yes" at the "Connect via PC n/y" display prompt and confirming this choice. After this you can assign any devices connected to the RapidE, that is, HELIX units and console. For more details, please refer to the HELIX RAPIDE DN9331 Operator Manual (part number DOC02-DN9331).

#### ▶▶ To add a new port and assign it to the RapidE

Add a new Ethernet port, ensuring that **Echo** is set to **Generic Echo Off**, and then assign this 'virtual port' to the RapidE unit. Refer to the ELGAR Library Manager User Guide for details.

### 4.3.3 Wireless and Lantronix UDS110 configuration

If you are operating the system remotely with your PC via a wireless access point, you will need to set up the access point and your PC's wireless card. Also, if your system includes non-Ethernet units (DN9340, DN934 or DN9848) it will have a Lantronix UDS1100 converter; this will also need setting up. Details on setting up this equipment can be found in the "HELIX Remote Control Software: Brief Guide to Setting Up an Ethernet System" User Guide.

### 4.3.4 Fault Finding Tips

If you are having networking problems there is a fault finding section at the back of the "HELIX Remote Control Software: Brief Guide to Setting Up an Ethernet System".

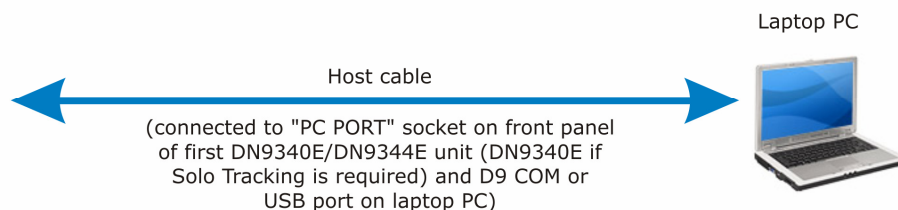
## 5 SERIAL CONNECTION (OPTION)

There is an option to control your system remotely from a laptop PC via an RS-232 connection.

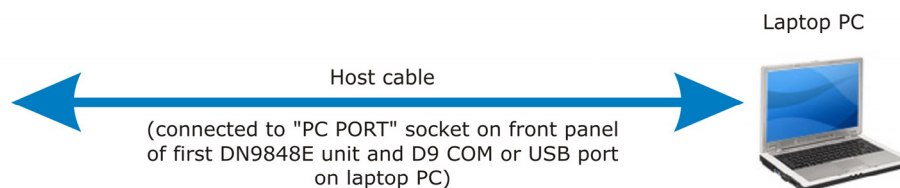
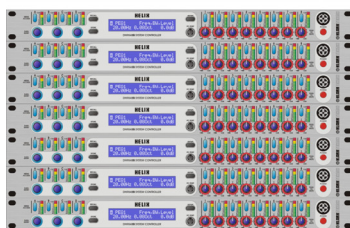
### 5.1 Serial connection details

The system set up for serial connection is illustrated in the following diagrams, which show DN9340E/DN9344E and DN9848E systems.

Daisy chained  
HELIX DN9340E/DN9344E units



Daisy chained  
HELIX DN9848E units




### 5.2 Connection Procedure

#### ►► To connect, set up and configure your system for serial operation

- 1 Connect the HELIX units in a daisy chain configuration, see section 3.1.
- 2 Power up the HELIX units and assign each one a unique Comms channel address, as follows:
  - On the HELIX unit's front panel, press and hold the **HOME (SETUP)** button to access the Comms menu page.
  - Use the left-hand **DATA ENTRY** knob to select a unique channel address between 1 and 32.
  - Press **HOME (SETUP)** to accept.

The front panel controls, except the **HOME (SETUP)** button, are locked out to facilitate remote operation. The display indicates that the unit is under remote control.

**Note** The order of the addresses does not need to mirror the order of the daisy chain networking, but each unit **MUST** have a unique comms channel address.

- 3** Referring to Sections 6.1 and 6.3, connect your laptop/PC to the first HELIX unit in the daisy chain. For details of converters please refer to our website.
- 4** Open ELGAR by clicking on the ELGAR  desktop icon.
- 5** Select **File > Open** from the ELGAR menu to locate and open the KTG show file containing the HELIX unit settings
- 6** Continue the set up in ELGAR – referring to the ELGAR Library Manager User Guide – by adding a new port and assigning a port to a device.
- 7** Your system should now be ready for online operation. Indication of successful communication is by illumination of the yellow **NETWORK** LED on the DN9340E/DN9344E units and by 'rotating' symbols at the bottom right-hand corner of the LCD panel ("TIRI" → "T/R/" → "T-R-") on HELIX DN9848E units.

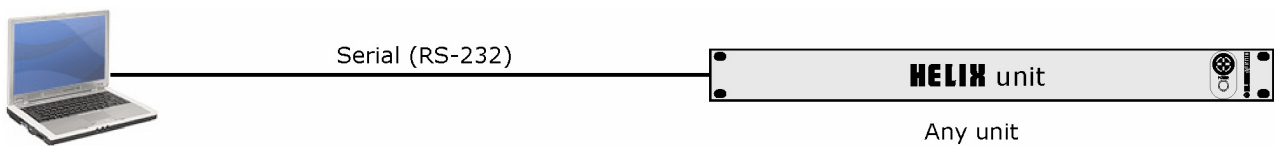
## 6 REMOTE CONTROL CONNECTION OPTIONS

### 6.1 Single-unit serial connections

**Note** The following converters are the *only* converters supported by Klark Teknik. Even though other converters may appear to work, we cannot guarantee their correct functionality and compatibility when used with our products.

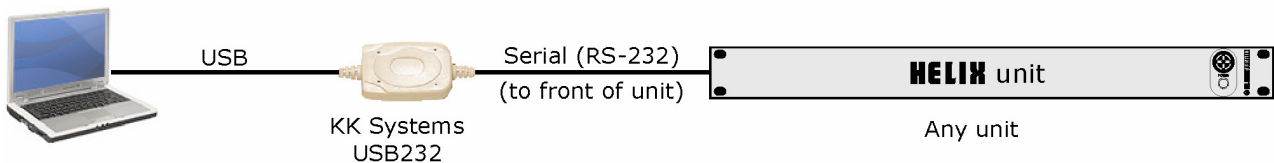
#### ▶▶ To connect a single unit via serial RS-232

The KT RS-232 host cable (supplied with every unit) is connected to the front panel of the unit and then to the RS-232 port on the laptop/PC.



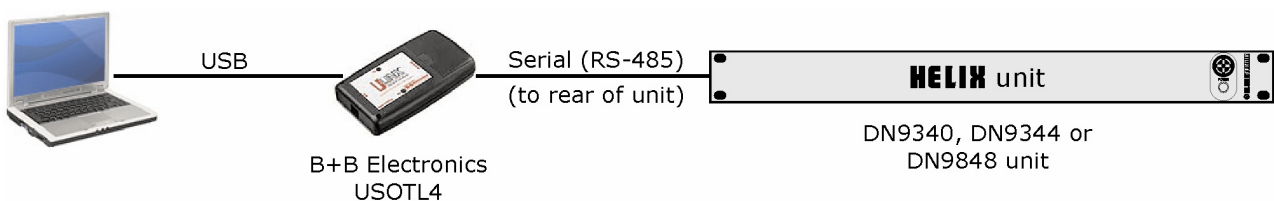
#### ▶▶ To connect a single unit – USB to front panel

The KT RS-232 host cable (supplied with every unit) is connected to the front panel of the unit and then to a KK Systems USB232 USB-to-serial converter. The converter is then connected to a USB port on the laptop/PC via a USB cable.



#### ▶▶ To connect a single non-Ethernet unit – USB to rear panel

A serial RS-485 cable is connected to the rear panel of a DN9340, DN9344 or DN9848 unit and then to a B+B Systems USOTL4 USB-to-RS-485 converter, using a serial RS-485 cable. The converter is then connected to a USB port on the laptop/PC via a USB cable.

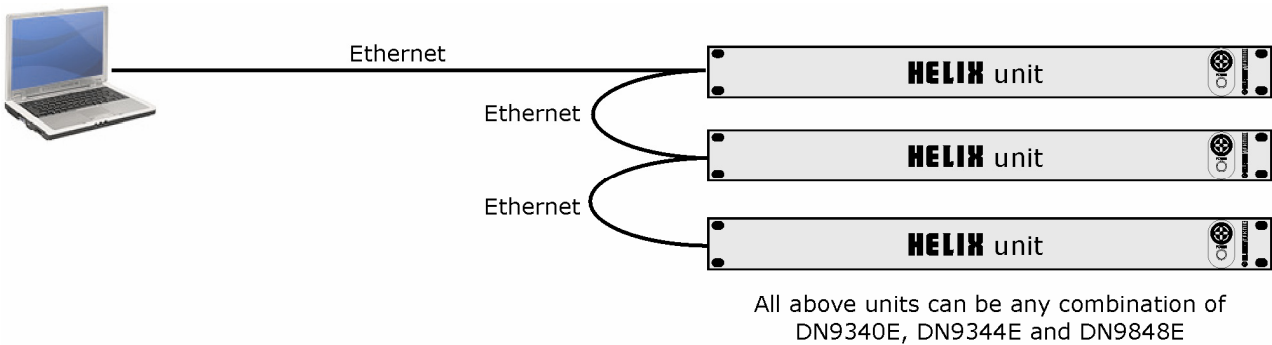




## 6.2 Multiple-unit Ethernet connections

### ▶▶ To connect any Ethernet units in an Ethernet system

This fast Ethernet-only system can incorporate the Ethernet units in any combination. The following diagram shows the standard connection, where the units are daisy chained together and one unit is directly connected to the laptop/PC, all with Ethernet cable. For other connection options, please refer to Sections 2.1 and 4.

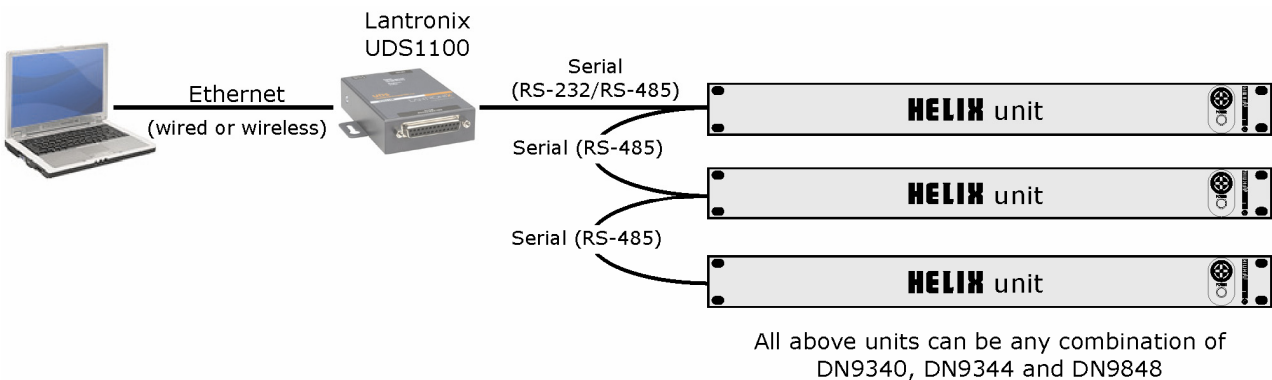


### ▶▶ To connect non-Ethernet units in an Ethernet-to-serial system

The non-Ethernet units are daisy-chained using serial RS-485 cabling. The first unit is connected to a Lantronix UDS1100 Ethernet-to-serial converter via either a serial RS-232 or RS-485 cable. Connection to the laptop/PC can be either direct from the Lantronix unit or via a wireless access point for wireless operation, both using Ethernet cable; see Section 4.

To set up the Lantronix UDS1100 converter, please refer to the "HELIX Remote Control Software: Brief Guide to Setting Up an Ethernet System" User Guide.

In this system the speed of operation is limited by the serial connection.



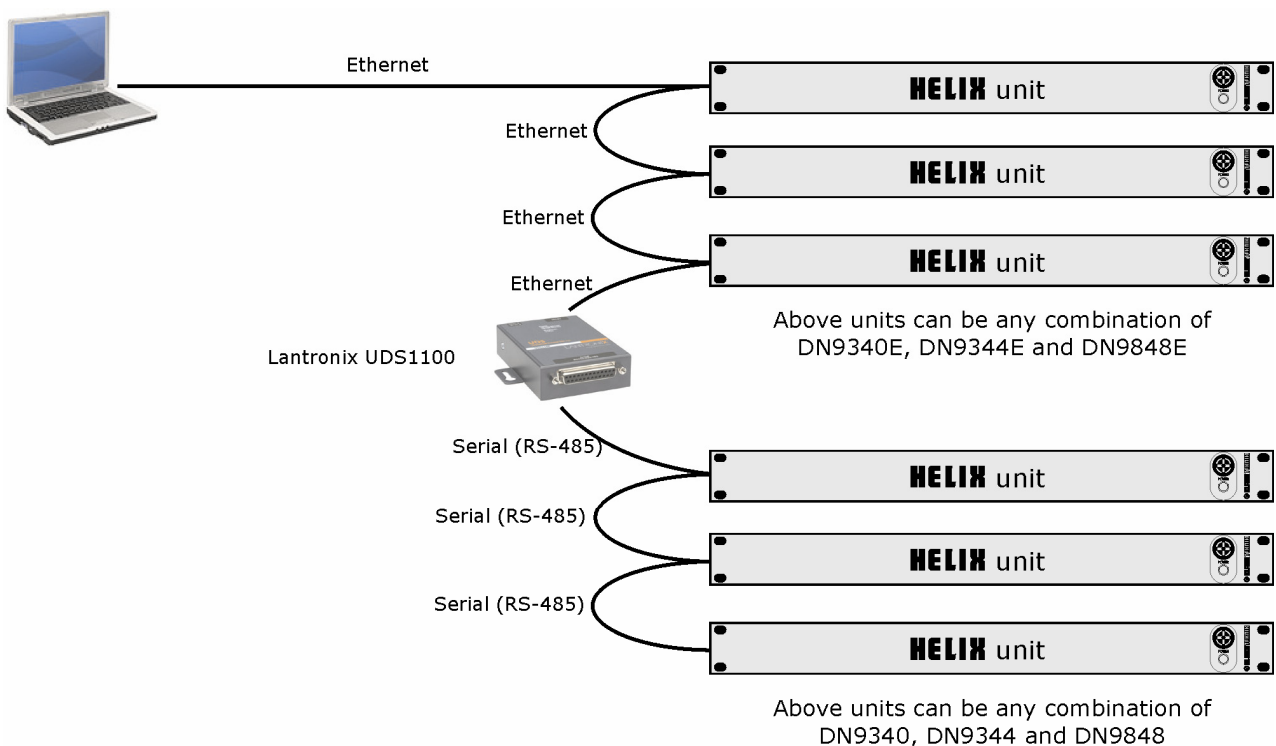
►► **To connect Ethernet and non-Ethernet systems in an Ethernet-serial network**

The following diagram shows a typical Ethernet-serial network, which combines Ethernet and non-Ethernet systems interconnected via a Lantronix UDS1100.

**Note** | When using this method of connection the laptop/PC is always connected to the Ethernet units.

Connect the Ethernet units together (see Section 3) and connect one of them to the laptop/PC, all with Ethernet cable. One of the other remaining Ethernet units is then connected to a Lantronix UDS1100 Ethernet-to-serial converter using Ethernet cable. The serial connector at the other end of the Lantronix converter is then connected to the first non-Ethernet unit via serial RS-485 cabling. All of the non-Ethernet units are connected in a daisy-chain configuration using RS-485 cabling.

To set up the Lantronix UDS1100 converter, please refer to the "HELIX Remote Control Software: Brief Guide to Setting Up an Ethernet System" User Guide.

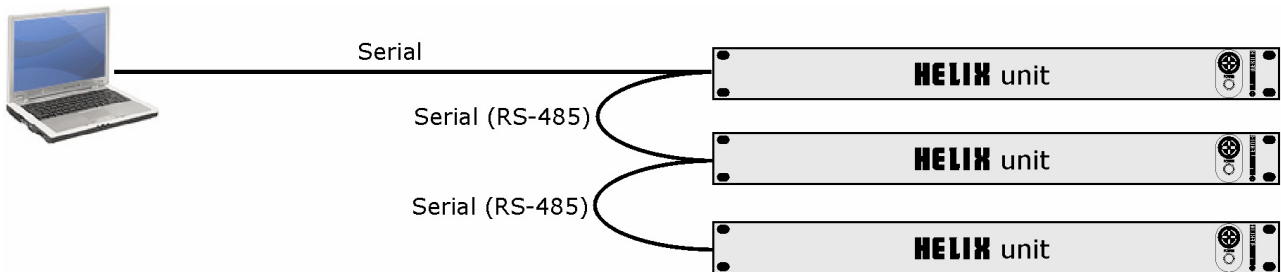


**Note** | To combine Ethernet and non-Ethernet units in a single system, the Ethernet units need to be running host software version 4.03 or later and Xport version 2.0 or later. Xport is a communications device fitted inside all Ethernet units that provides Ethernet access. More information and details on upgrading the software can be found on our website; go to [www.klarktechnik.com](http://www.klarktechnik.com).

### 6.3 Multiple-unit serial connections

▶▶ **To connect any combination of non-Ethernet units serial-to-RS-485**

Connect any combination of non-Ethernet units in a daisy chain configuration, using serial RS-485 cable. Connect the first unit to the PC using any of the methods shown in Section 6.1.

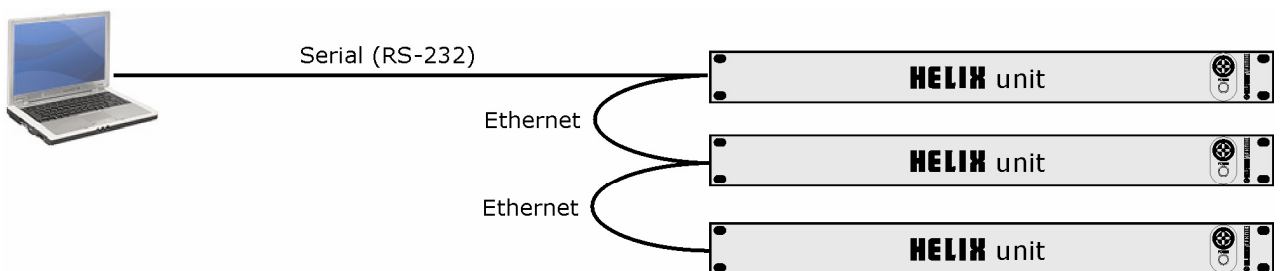


All above units can be any combination of DN9340, DN9344 and DN9848

▶▶ **To connect any combination of Ethernet units serial-to-Ethernet**

Connect any combination of Ethernet units together using Ethernet cable, as shown in Section 2.1. Connect the KT RS-232 host cable (supplied with every unit) to the front panel of the first unit and then to the RS-232 port on the laptop/PC.

The speed of system operation is limited by the serial connection to the PC.



All above units can be any combination of DN9340E, DN9344E and DN9848E

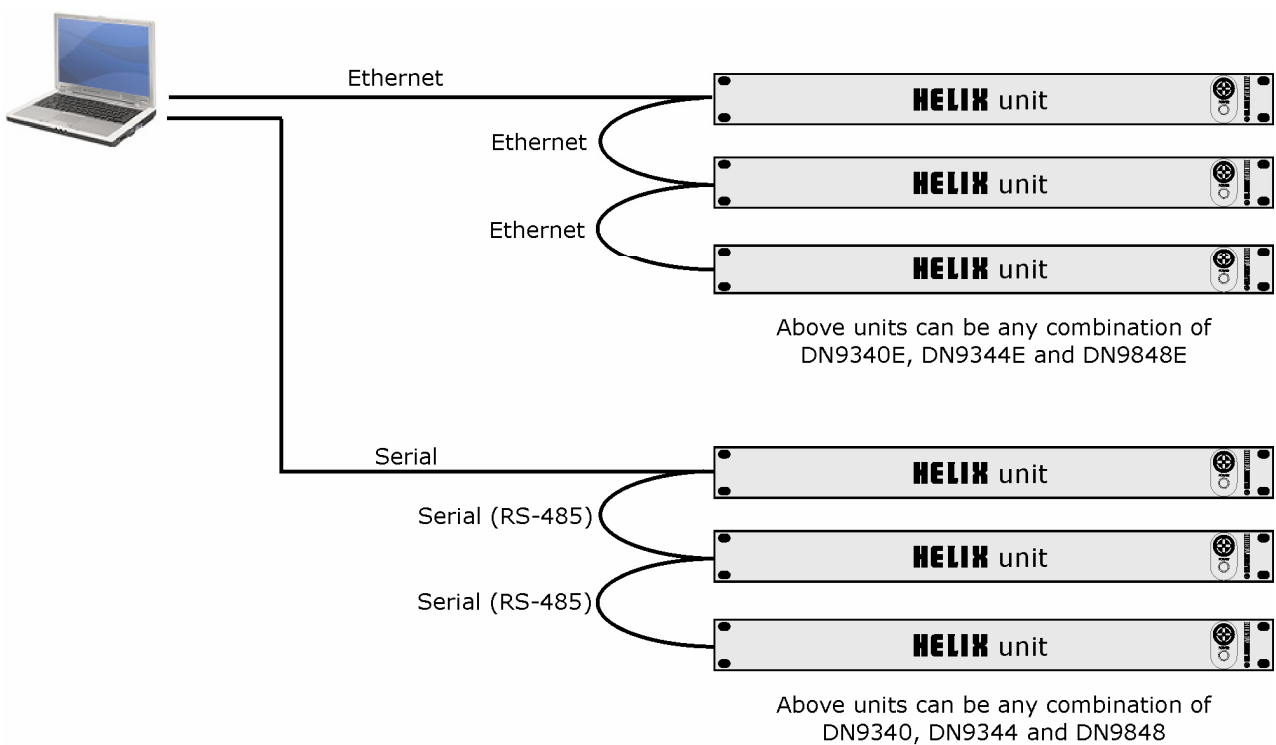
## 6.4 Ethernet and serial

### ► To connect Ethernet and non-Ethernet units in a dual Ethernet-serial system

In this dual network configuration, both the Ethernet and serial networks are entirely separate, as they are connected to different ports on the laptop/PC. This allows both networks to be running different protocols. In this configuration the Ethernet system provides fast operation, while the serial provides slow operation.

In the Ethernet system, connect the Ethernet units together with Ethernet cable using one of the options in Section 3. Connect the first Ethernet unit to the PC using one of the options in Section 4.

In the serial system, connect the non-Ethernet units together in a daisy chain configuration using RS-485 cabling and connect the first of these units to the PC using any of the methods shown in Section 6.1.



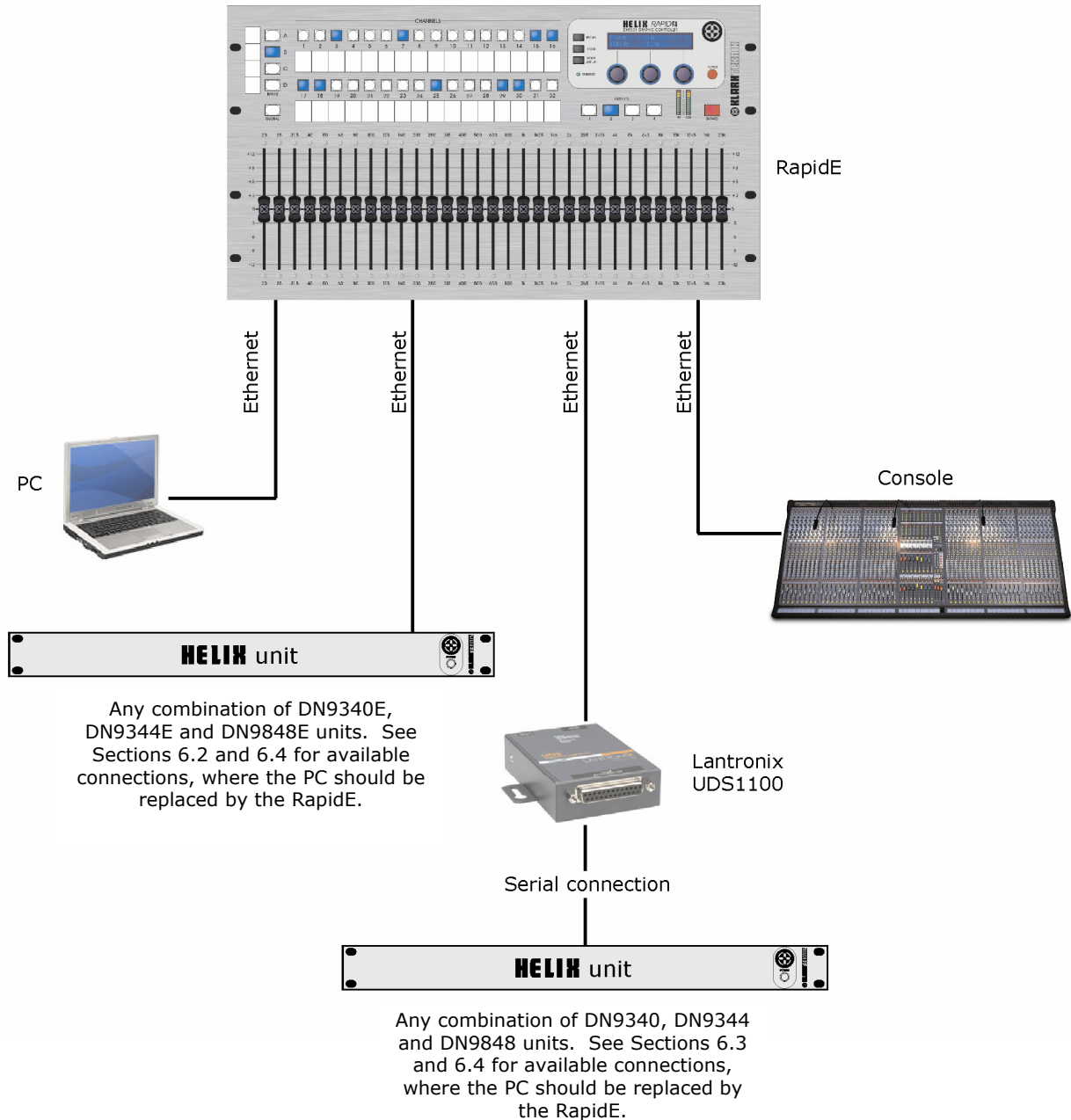
**Note** So that the networks can both run on different protocols the PC needs to be running two RCS programs of equivalent protocol.

## 6.5 RapidE

The RapidE acts as an Ethernet network hub allowing you to connect a PC, console and HELIX units. It gives you the option to control the console/HELIX units remotely without using the PC, if you wish.

### ►► To network the RapidE

Each connection to the RapidE must be via Ethernet cable, and any of the RapidE's eight external ports can be used for any connection. Each external port connection that connects HELIX units is treated as a single network.



**Note** | So that the networks can run on different protocols the PC needs to be running RCS programs of equivalent protocol.

