

# **SnakeSys User Manual**

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REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME
Latest	20/08/2024		ChamSys

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## Chapter 1

# SnakeSys Products

The SnakeSys Product range currently includes:

SnakeSys B4	A four universe Ethernet to DMX convertor. It supports four DMX512 ports that are configurable as either inputs or outputs, and one DMX port that is always assigned as an input.
SnakeSys R4	A four universe multi-purpose network distribution node comprising DMX output ports, DMX input ports and multiple network ports in a 1U rack
SnakeSys T2	A truss mountable two universe Ethernet to DMX convertor with an in-built network switch. Each universe has three separate outputs removing the need for a separate DMX buffer.
SnakeSys R8	An eight universe Ethernet to DMX convertor in a 1U rack. It supports eight DMX512 ports that are configurable as either inputs or outputs, and also features dual network ports.

### 1.1 SnakeSys Philosophy

SnakeSys network products enable DMX data, media data and control data to be distributed throughout the lighting rig from control consoles to fixtures. SnakeSys products can be used with any lighting console or media server - they are independent of MagicQ products.

SnakeSys products are designed and manufactured in the UK using quality electronic components, and are designed for reliability. Wherever possible, all components are mounted on a single circuit board to avoid the need for interconnecting cables. SnakeSys products are designed at a "chip" level, rather than repackaging IT products.

SnakeSys products use professional locking Neutrik Ethercon connectors for all network connections, this avoiding the limited lifetime associated with traditional RJ45 network plugs and sockets.

SnakeSys products use professional locking Neutrik Powercon connectors for power input, ensuring a reliable power input. All SnakeSys products accept voltages from 90V to 250V AC without needing any changes.

Where appropriate, SnakeSys products have in-built battery backup to protect against unexpected power loss.

SnakeSys products support Power over Ethernet - the SnakeSys B4 and T2 can both be powered directly from the R4 rack nodes and switches using Power over Ethernet rather than from the mains - this reduces the number of cables in the system.

SnakeSys products support firmware updates over the network, enabling the products to be easily upgraded to support new features.



## 1.2 Networking

SnakeSys products support Art-Net I, Art-Net II and Art-Net III, along with ACN Streaming DMX network protocols. The DMX512 ports are fully configurable with DMX packet length, framing rate, and timings.

All SnakeSys products ship with a 2.X.X.X IP address and 255.0.0.0 Subnet Mask as standard. For most situations when just connecting a single SnakeSys product to a MagicQ console this IP address does not need to be changed.

It is important that any consoles, PCs or Macs that will be communicating with SnakeSys products are set to IP addresses within the IP address range that is set on the SnakeSys.

SnakeSys products have inbuilt Ethernet switches with auto MDI/MDIX detection, so when connecting directly between a PC/Console and SnakeSys products a cross over Ethernet cable is not required.

If you change the IP address of the SnakeSys product it will not show up again in Net Manager until you have reconfigured the network on your system to be within the same range as the Interface. Wherever possible the IP address should be kept on the 2.x.x.x network. On a SnakeSys B4 and R4 there is no display panel to show the current IP address on the unit - so if you forget the IP address range then you may need to factory reset the unit.

All SnakeSys products unlock MagicQ PC/Mac Software from Demo mode when connected over network regardless of the mode set up on the SnakeSys product, allowing access to the restricted features of MagicQ.

SnakeSys products with USB ports are for initial factory programming and should not be connected under normal use.

## Chapter 2

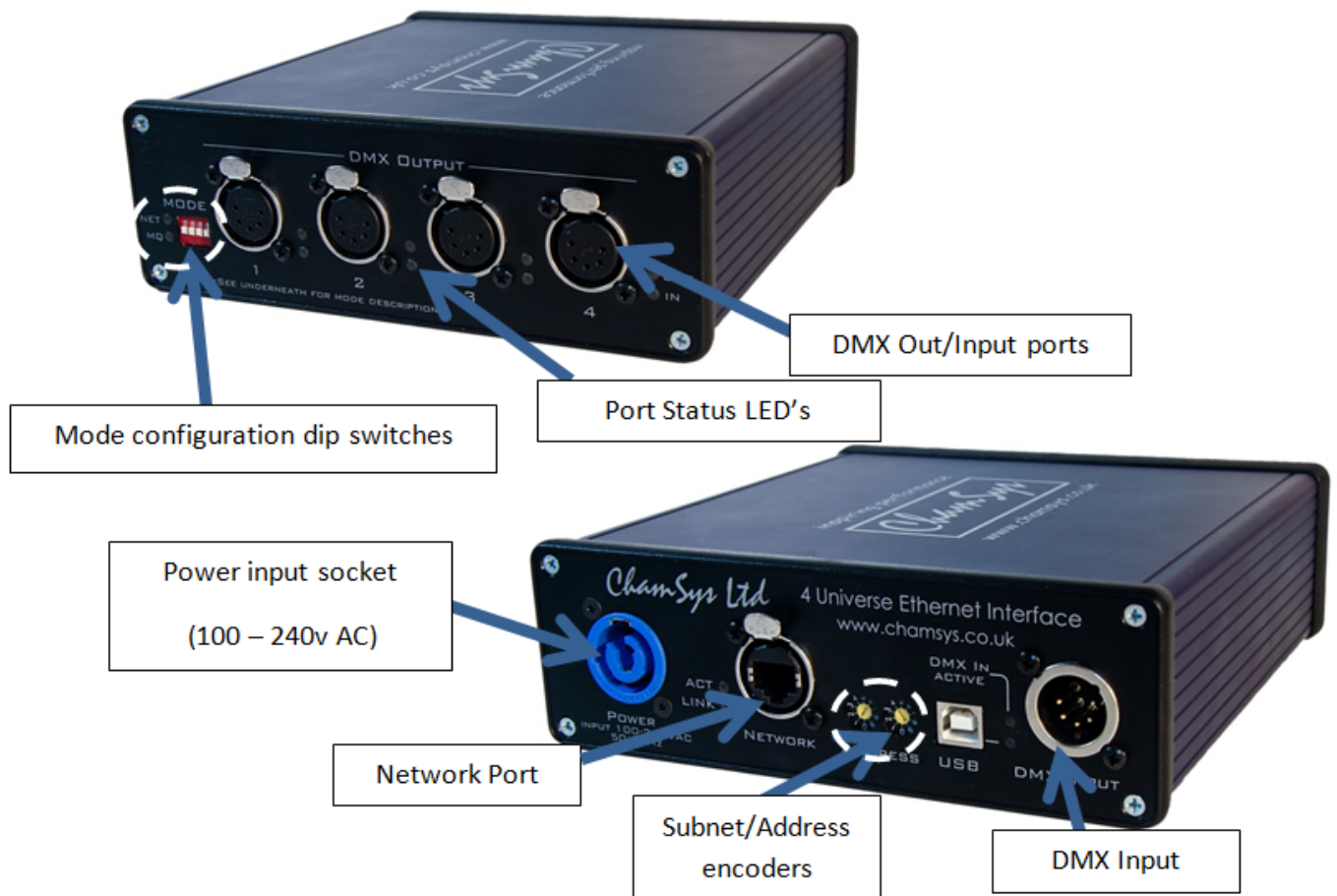
# SnakeSys B4

The SnakeSys B4 is a four universe DMX to Ethernet convertor. It supports four DMX512 ports that are configurable as either inputs or outputs and one DMX port that is always assigned as an input. The SnakeSys B4 is designed as a multi purpose box to be used in places where a small portable Ethernet to DMX conversion solution is required.

- Universal Ethernet to DMX Interface
- Four DMX512 Ports (configurable as input or output)
- One dedicated DMX512 input port
- Art-Net and ACN Streaming DMX support
- Can be used with any Art-Net or ACN compliant console
- Universe selectable by rotary switches
- ChamNet remote configuration
- Stand-alone DMX buffer mode
- Can be powered by Power over Ethernet

Multiple SnakeSys B4s can be used on a single network, either configured directly from the unit or by using ChamNet control from a MagicQ console. Multiple SnakeSys B4s can be synchronised together to ensure that the DMX output from the console is consistent and does not involve "tearing" either within universes or across multiple universes.

## 2.1 Product Diagram



For simple Art-Net or ACN to DMX output conversion on the SnakeSys B4 the DIP switches/rotatory encoders can be used to quickly configure the device for this mode.

## 2.2 Art-Net Output

On the DMX output end of the B4, the DIP switches are used to configure the device mode. For Art-Net to DMX output mode DIP Switch 4 (switch nearest Socket 1) should be up and all other DIP switches should be in the down position.



The rotary encoders on the reverse side of the unit are used to configure the Art-net Subnet and Universe. In this mode universes following sequentially, so for example when set to 0-0 the 4 DMX output ports would map to Subnet 0, Universes 0, 1, 2, 3 respectively. The LEDs next to the DMX output sockets will light in Blue when the DMX port is active and the unit is outputting DMX.



## 2.3 Art-Net Output + DMX Input

This mode is exactly the same as Art-Net Output except that the DMX Input connector on the rear of the unit is enabled, DIP Switch 2 is used to enable the rear DMX Input.



The Input Art-Net Universe follows after the 4 Output Universes, so for example when the rotary encoders are set to 0-0 the 4 DMX Output Ports would map to Subnet 0, Universes 0, 1, 2, 3 and the DMX Input would generate Art-Net Universe 4.

The DMX Input LED will illuminate when the B4 is receiving DMX.

## 2.4 ACN Output

On the DMX output end of the B4, the DIP switches are used to configure the device mode. For ACN to DMX output mode DIP Switch 3 should be up and all other DIP switches should be in the down position.



The rotary encoders on the reverse side of the unit are used to configure the ACN Universes. With the left hand encoder setting the ten value and the right encoder setting the unit value.



In this mode universes following sequentially, so for example when set to 0-1 the 4 DMX output ports would map to ACN Universes 1, 2, 3, 4 respectively. The LEDs next to the DMX output sockets will light in Blue when the DMX port is active and the unit is outputting DMX.

## 2.5 ACN Output + DMX Input

This mode is exactly the same as ACN Output except that the DMX Input connector on the rear of the unit is enabled, DIP switch 2 is used to enable the rear DMX Input.



The Input ACN Universe follows after the 4 Output Universes, so for example when the rotary encoders are set to 0-1 the 4 DMX Output Ports would map to ACN Universes 1, 2, 3, 4 respectively, and the ACN Input Universe will be ACN Universe 5.

The DMX Input LED will illuminate when the B4 is receiving DMX.

## 2.6 Same Universe Output

When the B4 is operating in either Art-Net or ACN mode the DIP Switch Position 1 can be used to optionally enable all 4 DMX Outputs to output the same universe, i.e. the first universe selected by the Rotary Encoders. The B4 will output the same universe when DIP Switch Position 1 is in the UP position.

In the case where the DMX Input feature is also enabled, the DMX Input will generate DMX Output Universe + 1.

## 2.7 ChamNet Mode

Running the B4 in ChamNet Mode allows the device to be custom configured. In this mode MagicQ can be used to configure each port individually, set DMX timing and refresh rates along with setting the units IP Address and Subnet Mask. The unit can also be firmware upgraded using MagicQ when in ChamNet mode. On the DMX output end of the B4, the dip switches are used to configure the device mode.

For ChamNet Mode all DIP switches should be in the down position.



When the unit is in ChamNet mode the rotary encoders are used to set the units MagicQ box id. This is only useful if you have more than one SnakeSys product attached to the network, as each SnakeSys product should have its own unique ChamNet address. If you only have one SnakeSys device attached you can safely leave the rotary encoders both set to zero.



The Unit can be accessed within MagicQ under Net Manager, found under Setup > View DMX I/O > Net Manager.

**Note**

If the unit product version is **B4 MK2 or later** the unit will remember the settings that you make in MagicQ Net Manager. Please allow at least 40 seconds for the unit to store the information into flash memory before removing the power. If the unit is left in MagicQ ChamNet mode it will boot up with the settings that you made previously in Net Manager (MagicQ will not be required to be connected to keep the port settings). This is a useful work around if you need to pre-configure port settings outside the options that are available through the normal DIP switch settings for use without MagicQ. This save to flash feature is not available on **B4 MK1**.

## 2.8 DMX Buffer Mode

The SnakeSys B4 can also be used as a simple DMX buffer, giving 4 DMX outputs from a single DMX input.

For DMX buffer Mode DIP switch 1 should be in the up position with all other DIP switches down.



### 2.8.1 Rotary Encoder Function, DMX Buffer Mode

The rotary encoders when the unit is operating in DMX buffer mode allow some adjustments to the DMX output protocol, including DMX packet rate, DMX packet length, DMX break length and overall DMX frame timing.

**Note**

These are advanced options, if you do not fully understand what the DMX packet timings actually adjust with regards to the DMX output, or you would just like the default setting you should set both encoders to 0 when using DMX buffer mode.

**Note**

A version of the tables below is also written on the base of the B4 unit for quick reference in the field.

Table 2.1: Packet Rate and Length [Left Encoder]:

Num Channels	Rate 40Hz	Rate 33Hz	Rate 25Hz
512	0	1	2
256	3	4	5
128	6	7	8
64			9

**Some examples using the above table:**

- Setting position 2 on the **Left Encoder** will give 512 DMX output channels at a 25Hz update rate.
- Setting position 6 on the **Left Encoder** will give 128 DMX output channels at a 40Hz update rate.

Table 2.2: Frame Timing [Right Encoder]:

Break (uS)	Frame 48uS	Frame 56us	Frame 64uS
92	0	1	2
176	3	4	5
256	6	7	8
384	9		

**Some examples using the above table:**

- Setting position 3 on the Right Encoder will give DMX break of 176uS and the frame data bytes will take 48uS
- Setting position 8 on the Right Encoder will give DMX break of 256uS and the frame data bytes will take 64uS

## 2.9 DMX Connectors

### 2.9.1 DMX Output Connectors

The four DMX Output connectors are bi-directional and can be configured either as DMX Output or DMX Input however they can only be set as Inputs when the unit is used in ChamNet mode through the Net Manager. When using any DMX Output channel as a DMX Input a male to male 5 pin gender adaptor or equivalent cable may be required.

### 2.9.2 DMX Input Connector

The DMX Input connector on the rear of the unit can only be used as an Input. The DMX Input connector when enabled can be used in Art-Net, ACN and ChamNet mode.

## 2.10 Powering the SnakeSys B4

The B4 can be powered either by the mains Powercon Input socket or via PoE (Power over Ethernet) from a compatible device such as the SnakeSys R4, when running via PoE the B4 accepts between 37-57V and takes 6.5-12.9W.

The mains power supply is universal wide input range type and has the following specification: **85 to 264VAC @ 47 to 63 Hz or 120 to 370VDC**

The SnakeSys B4 does not have an internal battery.

## 2.11 Factory reset

From V215 firmware, it is possible to reset the IP address of the B4 if it has been changed via ChamNet.

To clear settings, disconnect the power and set all DIP switches to the OFF position and set both address switches to F. Then power on the unit.

Unit will toggle both the NET and MQ LED's if the settings were not already set as default and the default settings were restored.

Unit will flash both the NET and MQ LED's together if the settings are already set as default and flash erase is not required.

Note that from V215 address FF is no longer a valid ChamNet address.

All internal settings are reset including port configuration.



## Chapter 3

# SnakeSys R4

The SnakeSys R4 is a multi-purpose network distribution node, comprising DMX output ports, DMX input ports and multiple network ports in a 1U rack.

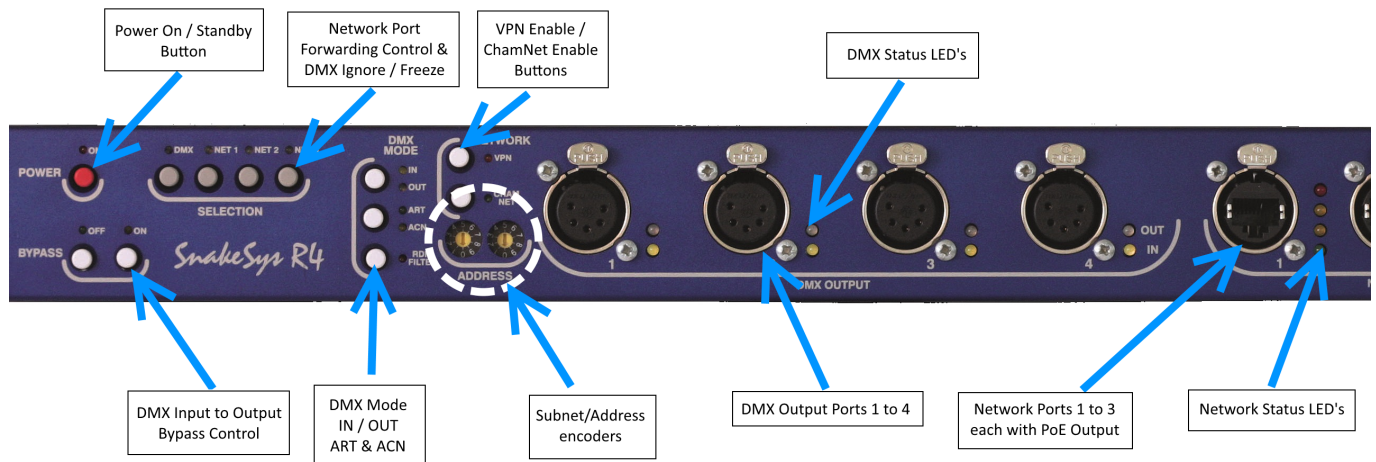
The SnakeSys R4 is designed to be used on stage for Ethernet to DMX conversion, at front of house for DMX to Ethernet conversion, and in any other location that requires conversion between DMX and Ethernet or Ethernet switching.

Using one SnakeSys R4 at front of house and one SnakeSys R4 at stage interconnected by a single CAT 5 network cable, the system provides four DMX lines and three independent network lines all over one cable.

The SnakeSys R4 is a 1U rack featuring:

- Powercon input
  - Battery backup
  - Three Ethercon network connections on front (all can supply Power over Ethernet)
  - Two Ethercon network connections on rear
  - Four 5-pin DMX output sockets on the front
  - Four 5-pin DMX input sockets on the rear
  - Full break detect on all four DMX inputs
  - Two remote contact inputs
  - Relays to automatically connect inputs to outputs in the event of a power failure
-

### 3.1 Product Diagram



### 3.2 Network Buttons

- **CHAMNET**

Enables ChamNet mode for use with MagicQ console, or disables ChamNet mode where local control mode will be used instead.

- **VPN**

Enables **VPN** (VLAN) mode, which is used to connect two R4 units together and create a virtual private network. Connect a network cable between **NET4** on both units and enable the VLAN with the **VPN** button and the LED will illuminate. **NET1**, **NET2** and **NET3** and **NET5** will each become a separate **VPN** on both units.

Table 3.1: VPN (VLAN) Connectivity:

Unit #1 NET Port	Unit #2 NET Port	Connection
NET1	NET1	Virtual LAN (Port to Port)
NET2	NET2	Virtual LAN (Port to Port)
NET3	NET3	Virtual LAN (Port to Port)
NET5	NET5	Virtual LAN (Port to Port)

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**Note**

Each of the network connectors will behave as separate networks.

---

When in **VPN** Mode, **NET5** is still linked to the processor on each of the R4 units. Using **NET5** on either one of the two units will allow both of the units to be accessed.

### 3.3 DMX Mode Buttons

- **IN / OUT**

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When the unit is not in ChamNet mode this button can be used to configure the unit as DMX input (on the rear connectors) or DMX output (on the front connectors).

- **ART / ACN**

When the unit is not in ChamNet mode this button can be used to configure the unit as sending or receiving Art-Net or streaming ACN.

- **RDM FILTER**

This button has no function - future firmware update may use this button.

### 3.4 Selection Buttons

- **DMX**

When the unit is configured as DMX OUT then the DMX button causes the unit to ignore incoming DMX network packets and freeze the DMX output. When the unit is configured as DMX input the DMX button will prevent DMX network packets from being placed onto the network.

- **NET1, NET2, NET3**

These three network buttons disable the packet forwarding on each of the front three network sockets **NETWORK 1**, **NETWORK 2**, **NETWORK 3** respectively. This disables the socket but keeps the link active, and allows for selection of console via the front-panel of the unit. These buttons still work as expected if the unit is operating in **VPN** mode. These buttons do not affect Power over Ethernet (PoE) output.

### 3.5 Bypass Buttons

- **ON**

When the bypass is enabled the unit links the 4 DMX inputs on the back to the 4 DMX outputs on the front, so **DMX1** links to **DMX1**, **DMX2** links to **DMX2** etc. This bypasses the entire unit and can be used to allow the DMX inputs to take control of the show. When the unit is fully powered off, the bypass relays will automatically activate.

- **OFF**

This disables the bypass when the unit is powered up and puts the unit into normal operation mode.

### 3.6 Address Switches

The leftmost address switch controls tens the rightmost address switch controls units.

Address Switches (ChamNet mode) When the unit is placed into ChamNet mode the address switches control the unique identifier for the unit, this will appear in MagicQ in the NET MANAGER when the unit is detected.

Address Switches (Art-Net mode) When the unit is placed into Art-Net mode the address switches control the Art-Net universe.

Address Switches (sACN mode) When the unit is placed into sACN mode the address switches control the ACN universe.

Please note that the first available ACN universe is 1 so switch setting 0 - 0 should not be used in ACN mode.

---

## 3.7 Power Button

### • POWER

The **POWER** button is used to shut down (when on battery power) or place the unit in standby (when on mains power). Since the unit has an internal UPS when the unit is in standby it will still charge the battery. It is normal that the fan continues to run in standby mode.

When the power LED flashes it means that the unit has detected the loss of mains power and it is running on battery back-up. Depending on the load conditions regarding Power over Ethernet on the front three network ports, the unit should run for approximately 30 to 40 minutes on battery. When the unit is running off battery back-up it monitors the network link status and DMX inputs and will auto shut off if there is no activity after a predetermined period of time. The feature prevents the battery from being depleted should the power be removed when the show shuts down.

## 3.8 Factory Reset

The R4 has a feature to enable all settings to be reset to factory default.

The procedure to clear the settings is to hold down buttons **NET1**, **NET2** and **NET3** simultaneously and also while keeping the net buttons held down then press and hold the ChamNet button. The R4 will then reboot and factory default settings will be restored.

## 3.9 Special Mode Feature

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### Note

This is a newer feature, please ensure firmware version >= v210 is installed.

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Holding down the **DMX** button for 5 seconds will cause R4 to enter special mode selection. One or more of the **NET** buttons can then be used to enable or disable extended DMX feature. During special mode selection the **DMX** button LED will flash.

Table 3.2: Special Mode Table

Special Mode	LED On	LED Off
NET1	DMX Input uses software based break detect	DMX Input uses hardware based break detect
NET2	Future Expansion	Future Expansion
NET3	Future Expansion	Future Expansion

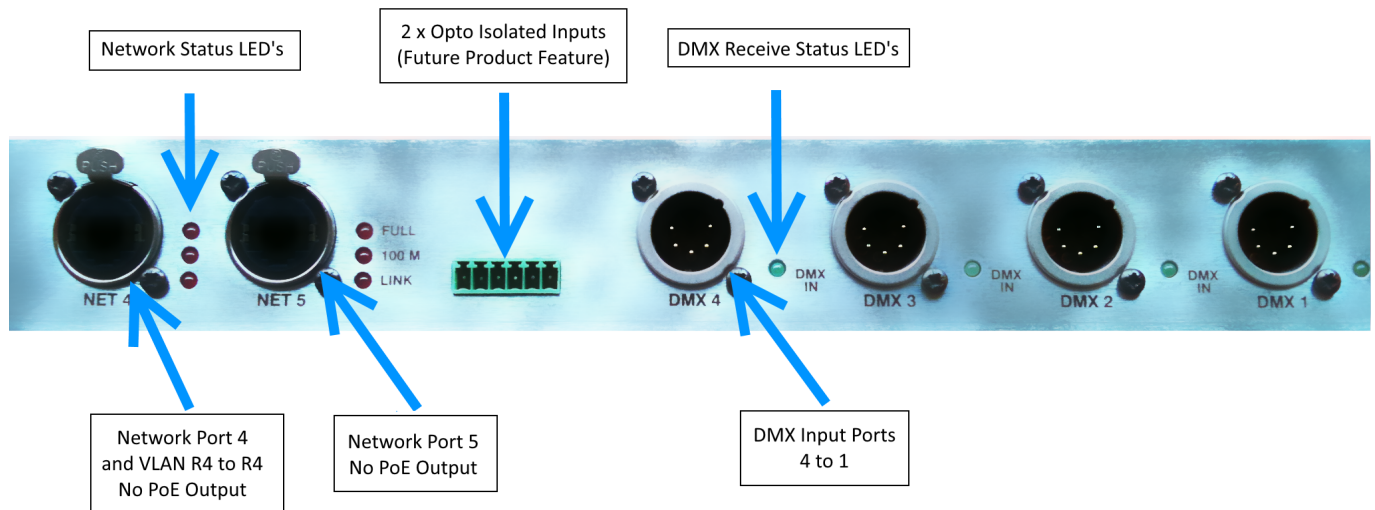
Once the required special mode has been selected pressing the **DMX** button again will save the feature to flash and the selected feature will become immediately active. The unit will then return to regular frontpanel function.

## 3.10 Power Over Ethernet (PoE)

The SnakeSys R4 contains a fully isolated and standards compliant Power over Ethernet system. PoE output source is available on the front three network sockets by plugging in a PoE compliant network device.

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### 3.11 Rear Panel Diagram



The two **NET** ports on the back of the device do not have PoE (Power over Ethernet) functionality. Both ports can be of general use, and **NET4** can also be used as the **VPN** link between two R4 units.

### 3.12 ChamNet Mode Information

In ChamNet Mode, the SnakeSys R4 is configured and controlled from the Net Manager within MagicQ.

#### Note

The R4 unit will remember the settings that you make in MagicQ Net Manager. If the unit is left in MagicQ ChamNet mode it will boot up with the settings that you made previously in Net Manager. (MagicQ will not be required to be connected via network to retain the settings).

### 3.13 Powering the SnakeSys R4

SnakeSys R4 is powered using the supplied Powercon cable.

The power supply is universal wide range input type and has the following specification: **85 to 264VAC @ 47 to 63Hz**



#### Caution

During usage please ensure that the unit has adequate ventilation and that the cooling grilles on the unit are not obstructed.

#### 3.13.1 Thermal Management

The SnakeSys R4 contains its own thermal management system. The fan is automatically controlled for regulation of the internal temperature of the unit.

### 3.13.2 Battery Care Information

The inbuilt UPS feature of the SnakeSys R4 is powered by a Battery. If planning to place the unit into long term storage it is recommended to first re-charge the battery by leaving the unit on mains power for at least 2 hours. Storing a unit with a low battery level for a number of months without periodic use can dramatically reduce the operational life of the battery.

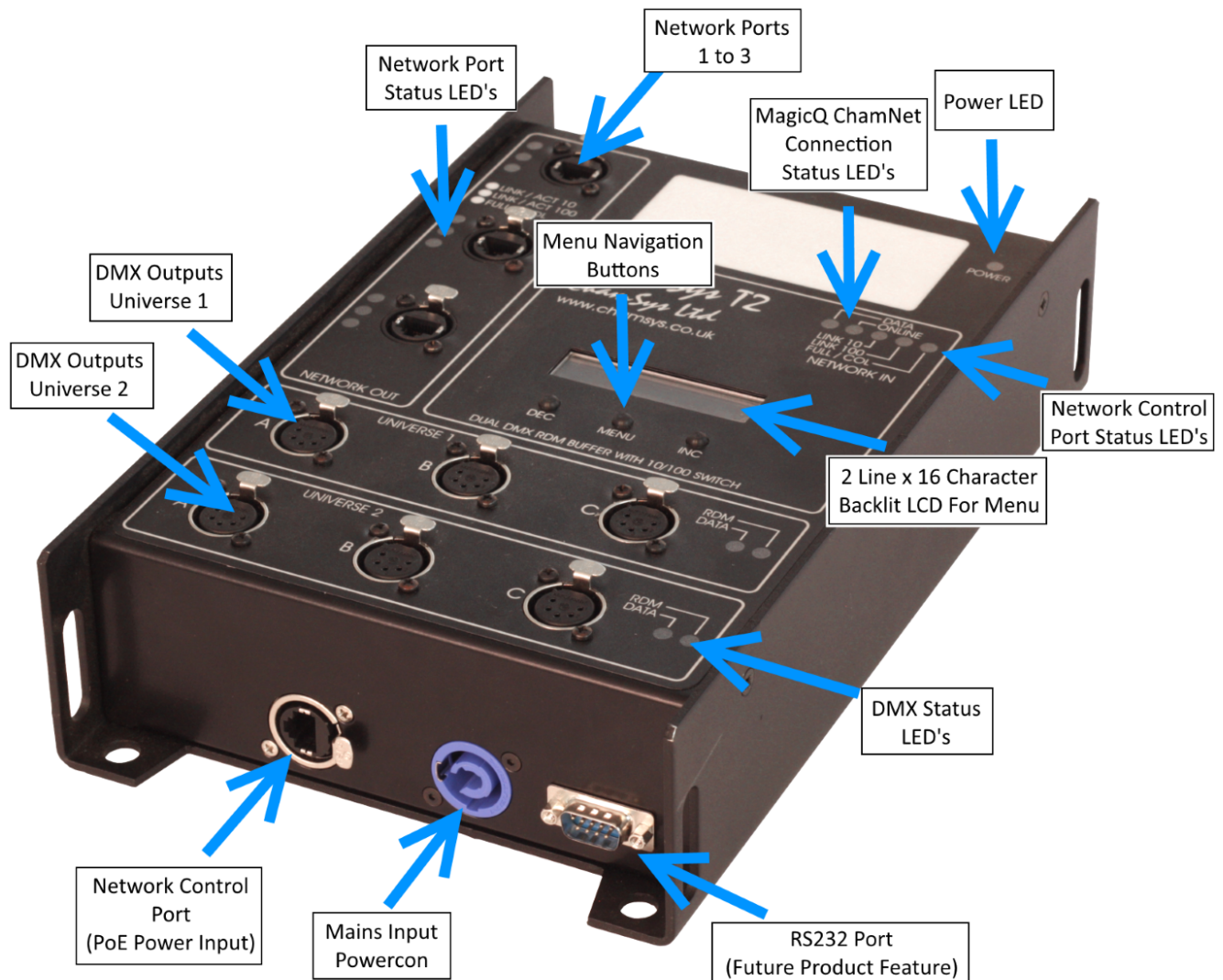
## Chapter 4

# SnakeSys T2

The SnakeSys T2 is a rugged truss mountable two universe Ethernet to DMX convertor with an in-built network switch supporting three separate DMX output sockets per universe.

- Two universes
  - Three 5-pin DMX output sockets per universe
  - Four network ports
  - Can be powered by Power over Ethernet
  - Can be used with any Art-Net or ACN compliant console
  - LCD display and buttons for configuration
  - Serial port connector - e.g for connecting projectors
  - Hook clamp fixable in three different orientations
  - Omega clamp fixable in four different orientations
  - Can be configured without power (inbuilt battery)
-

## 4.1 Product Diagram



### Note

Image shown in diagram is T2 product version MK1

For Simple Art-net or ACN to DMX output conversion the SnakeSys T2 inbuilt menu system can be used to quickly configure the device for the required mode.

The T2 can be powered either by the Powercon Input socket or via PoE (Power over Ethernet) from a compatible device such as the SnakeSys R4, when running via PoE the B4 accepts between 37-57V and 6.5-12.9W.

The T2 has an internal battery for configuring the unit without the need for connecting to a power source. The battery is used for addressing and setup of the unit only.

If running it battery mode and not connected to a power source press the menu button once to power on.

## 4.2 DMX Connectors

The SnakeSys T2 has a total of six DMX Output connectors. The DMX Output connectors are arranged in two rows of three. When operating in Art-Net or ACN mode the top row of DMX connectors output the first universe that the unit is addressed



to, and the second row of DMX connectors output the current universe address + 1. All DMX Outputs are Opto-Isolated, even though each group of three output the same universe.

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**Note**

The SnakeSys T2 MK2 includes an additional DMX Input connector, which is used to provide a DMX Buffer feature and additional DMX Input option for Art-Net and ACN modes.

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**Note**

The additional DMX Input connector on the T2 MK2 is not currently supported in MagicQ ChamNet mode.

---

## 4.3 Network Connectors

The SnakeSys T2 has a total of 4 Ethernet Network connectors. The function of these connectors is identical, and they are connected to the same network switch, and they can be used for communication with the T2 device and other devices connected to any of the T2 network ports. The PoE network connector located next to the Powercon connector on the base of the unit also has additional power distribution circuitry for powering the T2 via PoE (Power over Ethernet).

Due to the circuit difference with the PoE input connector in some circumstances when the T2 is connected with an incorrectly wired Ethernet cable, the network side of the PoE connector may appear not to function when compared to plugging the incorrectly wired cable into the other network connectors. This is completely normal.

The three network connectors on the front of the unit can have packet forwarding enabled or disabled via the Network Port Menu. In the menu they are referred to as ports A, B and C from top to bottom respectively. When default settings are applied, all the connectors have packet forwarding enabled.

## 4.4 Menu System

The SnakeSys T2 is operated using an in-built menu system.

The **MENU** button is dual purpose and serves as an enter button as well. In all cases the **INC** and **DEC** buttons are used to either increase or decrease values or selections respectively and generally combined with the enter key provide basic menu navigation.

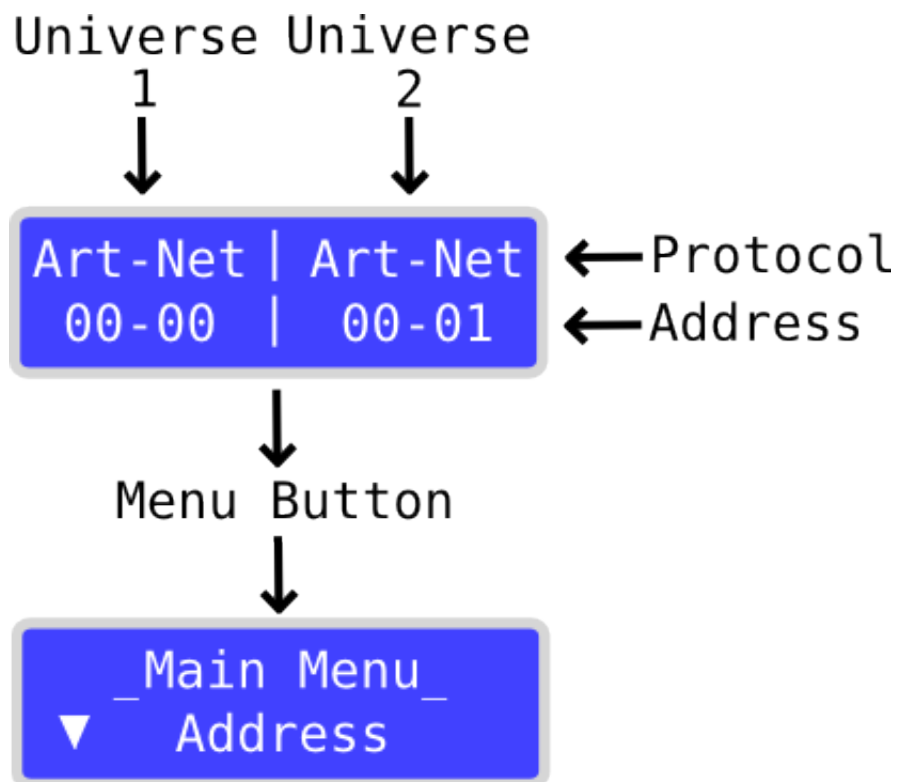
Pressing the **MENU** button from the Top Screen will cause the T2 unit to enter the main menu. If the unit is left navigating one of the menu's and no buttons are pressed for some time the unit will automatically return to the Top Screen.

When in ChamNet mode any changes applied to each T2 universe will be automatically updated on the Top Screen.

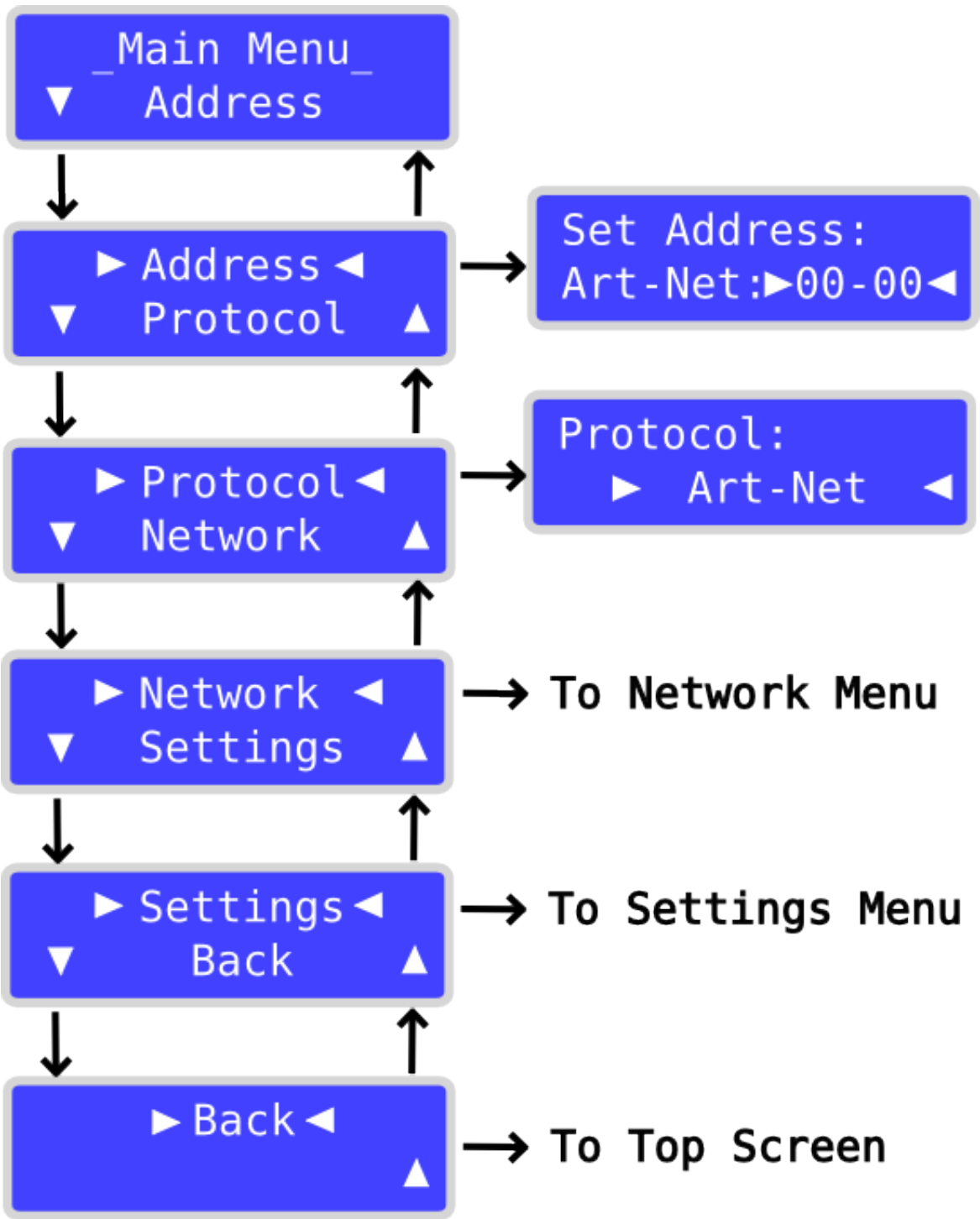
If backlight timeout is not set to infinite then the unit will automatically turn off the backlight after the user set time in the backlight menu if no buttons are pressed.

The top level screen provides immediate information regarding both universes, which includes protocol and address:

---



4.4.1 Main Menu



- Address

Used to set the T2 address / universe, which can be either:

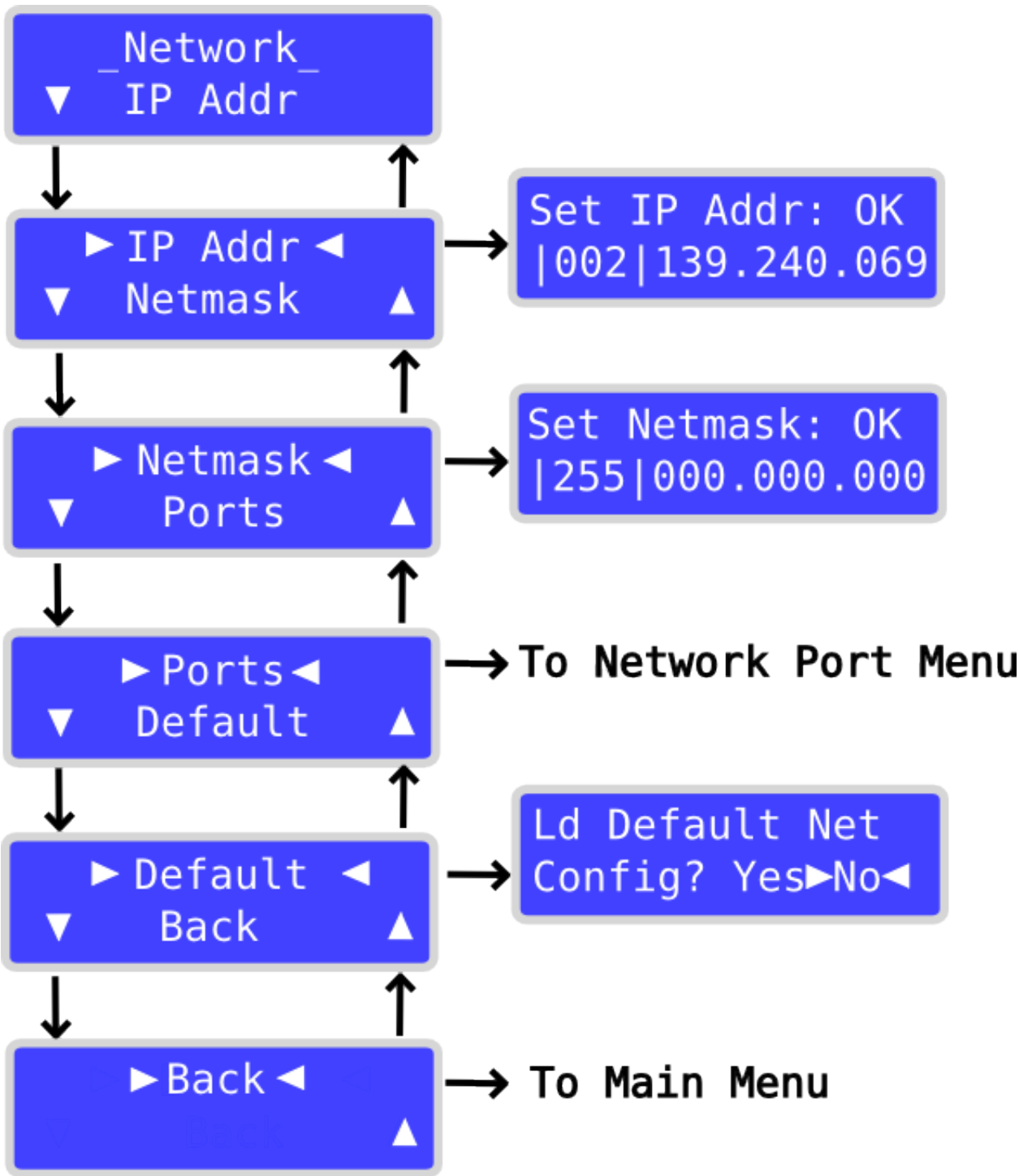
Menu Item	Function
Box Id	ChamNet Mode
Art-Net universe	Art-Net Mode
sACN universe	sACN Mode

- Protocol

Used to set the network protocol used by the T2, there are now two versions of the unit the MK2 version T2 has an additional DMX input, both units use the same firmware but the MK2 has some additional features present in the Protocol menu. The MK1 unit will still be supported although we are no longer shipping the MK1 and it has been replaced by the more advanced MK2. The available options are listed below along with the product version:

Menu Item	Function	Product Version
Not Enabled	No DMX output	T2 MK1 and MK2
MQ ChamNet	Controlled by MagicQ	T2 MK1 and MK2
Art-Net	Art-Net Mode	T2 MK1 and MK2
Art-Net + In	Art-Net Mode with DMX Input enabled	T2 MK2 Only
ACN	sACN Mode	T2 MK1 and MK2
ACN + In	sACN Mode with DMX Input enabled	T2 MK2 Only
DMX Buffer	Unit operates as a simple DMX Buffer	T2 MK2 Only

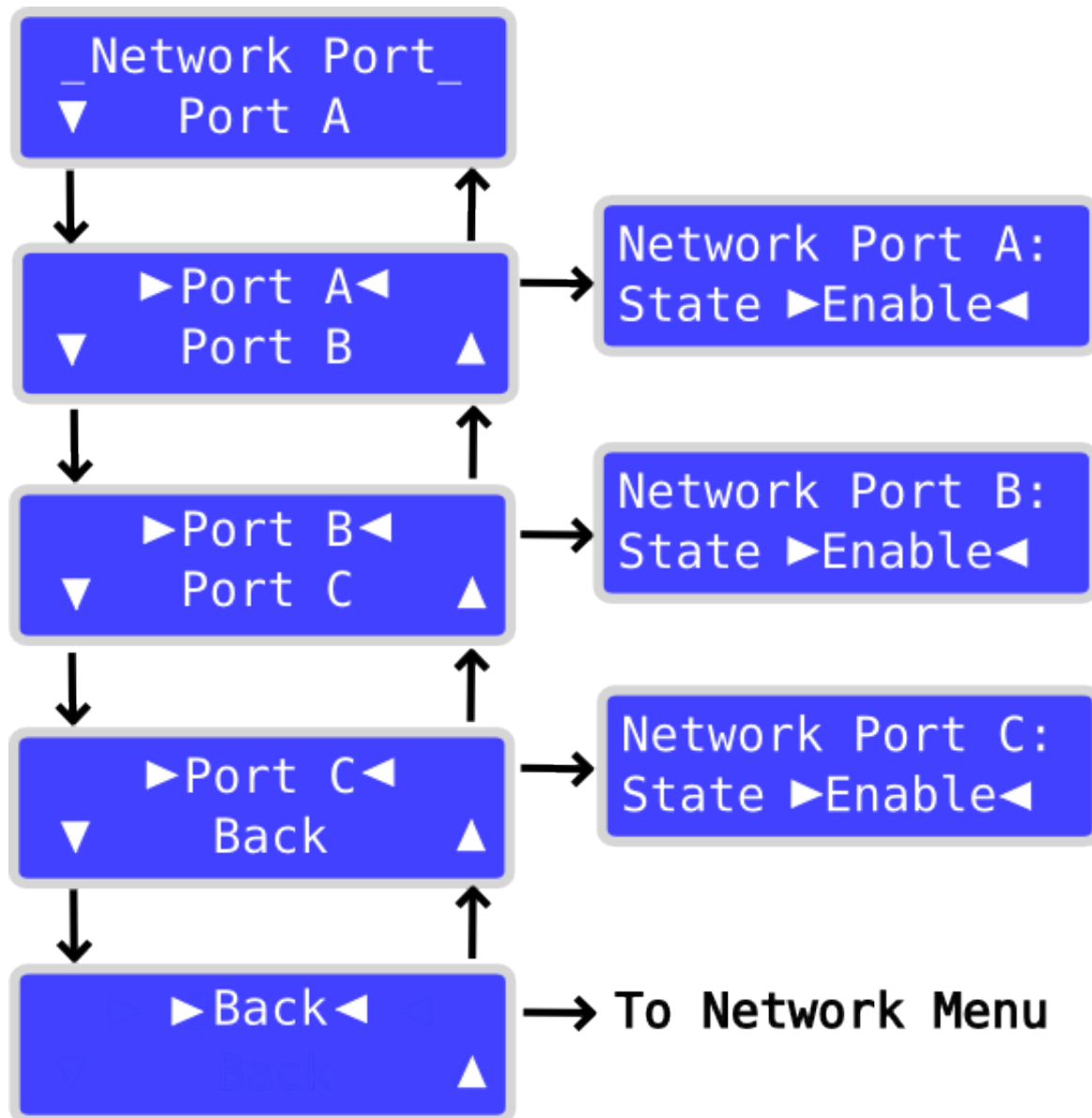
4.4.2 Network Menu



Menu Item	Function
IP Addr	Used to set the T2 network IP address used by the T2 processor. The IP address is automatically chosen when the T2 units default settings are applied, however sometimes it is necessary to change the address. This is an advanced option.

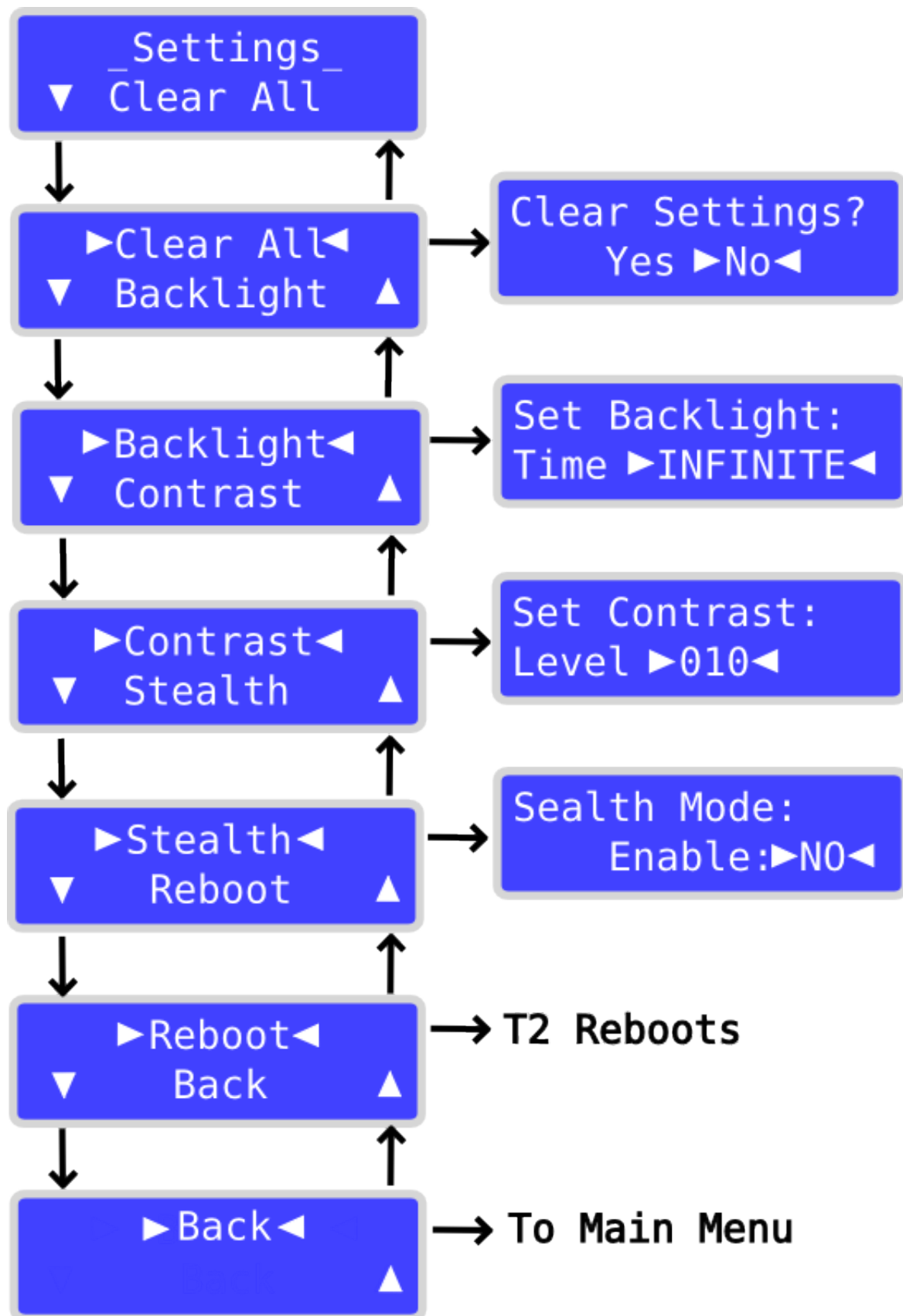
Menu Item	Function
Netmask	Used to set the T2 network sub-net mask which is applied to all network data that the T2 processor receives. This is an advanced option, The default subnet mask is normally 255.0.0.0
Default	Used to restore default networking settings to the T2. Everything which can be adjusted in the Network menu or any of its sub-menus is restored to factory default settings.

#### 4.4.3 Network Port Menu



Menu Item	Function
Port A, Port B, Port C	Used to enable or disable network packet forwarding for the respective network port on the front of the T2 unit. (Port A is the top-most port on the T2). The default setting is enabled.

#### 4.4.4 Settings Menu



Menu Item	Function
Clear All	Used to clear all T2 settings, and restore the entire unit to factory default settings. The T2 will automatically reboot after default settings are restored.
Backlight	Used to set the backlight timeout for the LCD display. This is for how long the backlight stays on after a button has been pressed.
Contrast	Used to set the LCD display contrast.
Stealth	Used to enable Stealth Mode on the T2. When the unit is in Stealth Mode the network and DMX LED's are disabled to make the unit appear darker. You can also make the unit darker if you enable the backlight timeout feature. If you require the unit to be completely dark then that can be achieved by using the Led Status option on MagicQ and selecting Off. The LED status option will turn off all light from the unit including the display, however the feature currently is only available in ChamNet mode.
Reboot	Used to completely reboot the T2 unit.

## 4.5 ChamNet Mode Information

In ChamNet Mode the SnakeSys T2 is configured and controlled from the Net Manager within MagicQ.

- DATA LED

The red DATA LED on the SnakeSys T2 indicates that valid ChamNet network data is being received by the unit.

- ONLINE LED

The green ONLINE LED on the SnakeSys T2 indicates that the unit has recently sent T2 device information to MagicQ and should have consequently appeared as online in the MagicQ Net Manager.

---

### Note

The T2 unit will remember the settings that you make in MagicQ Net Manager. Please allow at least 40 seconds for the unit to store the information into flash memory before removing the power. If the unit is left in MagicQ ChamNet mode it will boot up with the settings that you made previously in Net Manager. (MagicQ will not be required to be connected via network to retain the settings).

---

## 4.6 T2 Truss Mounting



### Caution

If the T2 unit is installed into Truss using clamps then additional care should always be taken to ensure that the unit is installed with an adequate safety chain firmly attached through the T2 rear chassis. Care should also be taken to ensure that the units clamp is securely fastened to the Truss, and only T2 clamp mounts supplied by ChamSys Ltd are recommended.

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## 4.7 Powering the SnakeSys T2

There are three methods in which the SnakeSys T2 can be powered:

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Mains supply via Powercon connector on the base of the unit	The power supply is universal wide range input type and has the following specification: <b>85 to 264VAC @ 47 to 63 Hz</b> or <b>120 to 370VDC</b>
PoE (Power over Ethernet)	Using the network connector located next to the Powercon connector on the base of the unit.
Battery	Pressing the "Menu" button when no power is supplied to the unit will cause the T2 to enter "Battery Mode". When in battery mode the address and mode of operation can be set via the menu. This is a useful feature as the unit can be addressed and configured without the presence of any stage power. When in battery mode the unit will automatically turn off after 1 minute of inactivity. DMX and Network operations are not available in battery mode.

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**Note**

It is possible to connect up both Mains and PoE supplies at the same time which provides some fail safe redundancy should one of the supplies fail for some reason.

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## Chapter 5

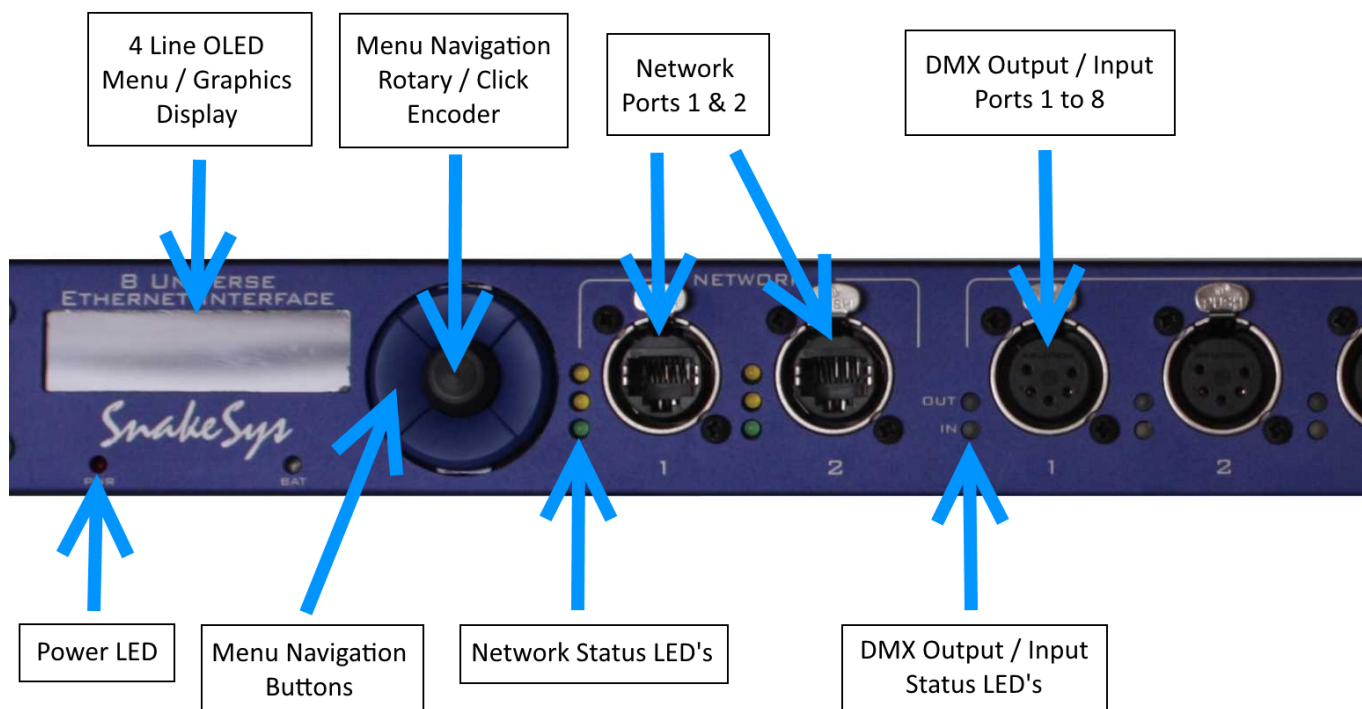
# SnakeSys R8

The SnakeSys R8 is an eight universe Ethernet to DMX convertor in a 1U rack. It support eight DMX512 ports that are fully configurable as either inputs or outputs. It also features dual Neutrik Ethercon network ports.

The SnakeSys R8 is designed to be used on shows where large numbers of universes are in use and there is a need to convert to and from DMX. It provides the ability to easily switch between different Ethernet or DMX sources.

- Universal Ethernet to DMX interface
  - Eight DMX512 ports, configurable as outputs or inputs
  - Dual Ethernet ports
  - Art-Net and ACN support
  - Can be used with any Art-Net or ACN compliant console
  - LCD display with multi-switch selection
  - ChamNet remote configuration
  - Stand alone DMX buffer mode
-

## 5.1 Product Diagram



## 5.2 DMX Connectors

The DMX connectors are bi-directional and can be configured either as DMX Output or DMX Input. When using any channel as DMX Input a male to male 5 pin gender adaptor or equivalent cable may be required.

## 5.3 Network Connectors

The SnakeSys R8 has a total of two Ethernet Network connectors. The function of the network connectors are identical, and they are connected to the same network switch, they can be used for communication with the R8 device and additionally other devices connected to the other R8 network port.

### Note

Care should be taken to avoid any network loop caused by incorrect network connection in your configuration, one symptom of a network loop is that the R8 will be overloaded with excessive network traffic and as a result the main menu will seem unresponsive. If you notice the symptom, please re-check your networking connections and correct accordingly.

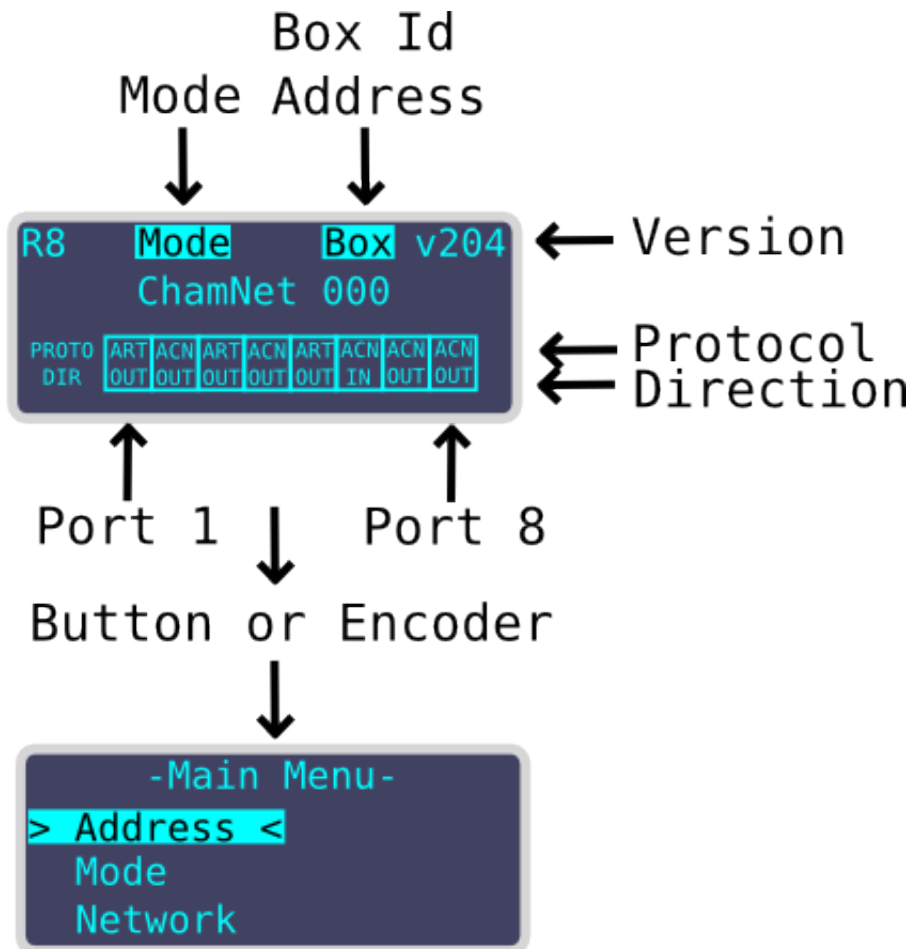
## 5.4 Menu System

The SnakeSys R8 is operated using an in-built menu system.

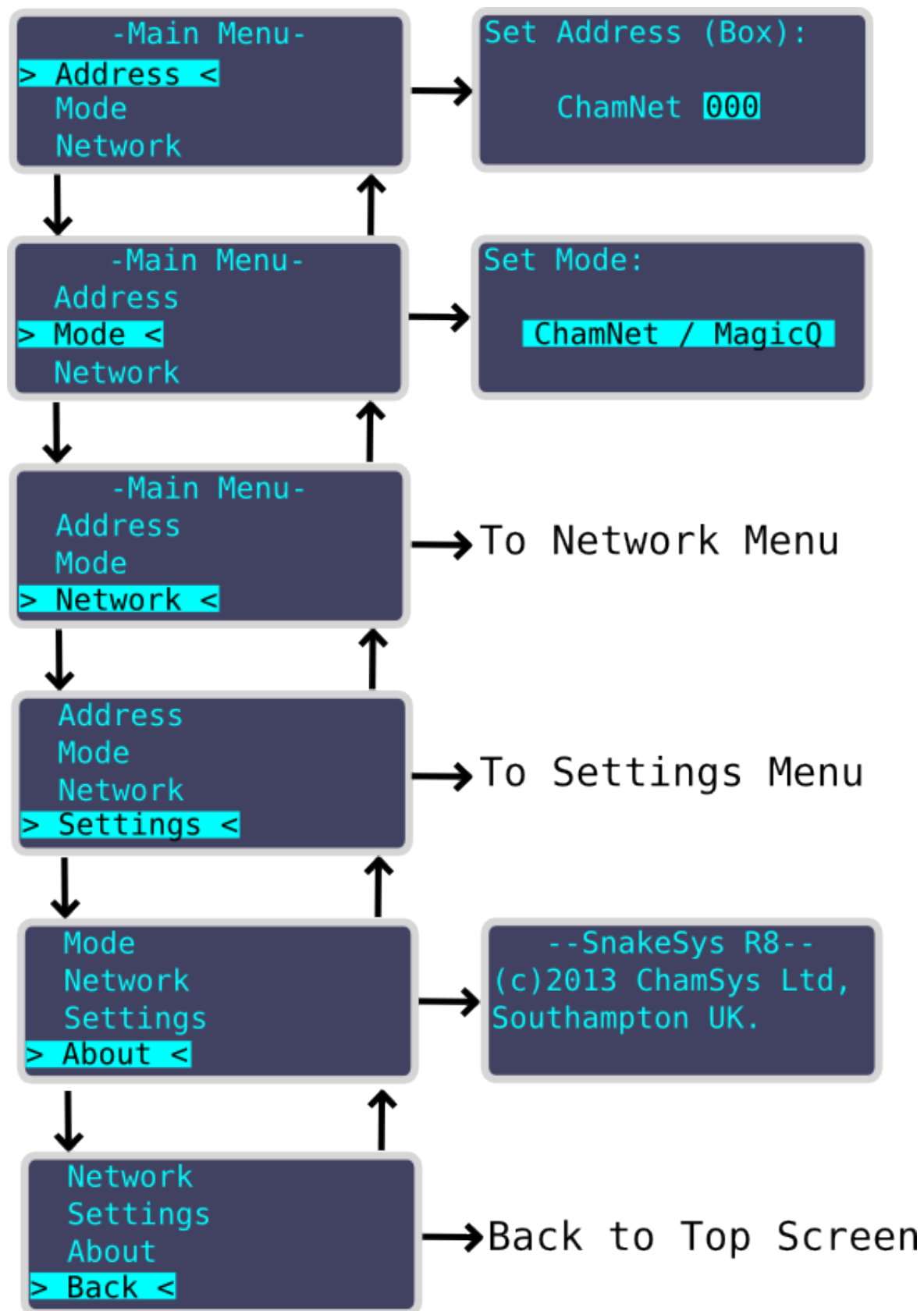
The interface incorporates an encoder, for changing menu item values, which also acts as a push button with enter functionality. There are also **UP** / **DOWN** / **LEFT** and **RIGHT** buttons which can also be used for navigation and change of menu items.

The top level screen provides some immediate information regarding each of the 8 ports, and also indicates the units base address, protocol, and firmware version.

Pressing the any button or rotating the encoder during display of the Top Screen will cause the R8 unit to enter the main menu. If the unit is left navigating one of the menu's and no button or encoder movement is detected for some time the unit will automatically return to the Top Screen. When in the R8 is in ChamNet mode the protocol or direction changes applied to each R8 port will be automatically updated on the Top Screen.



### 5.4.1 Main Menu



- **Address**

Used to set the R8 address / universe, which can be either:

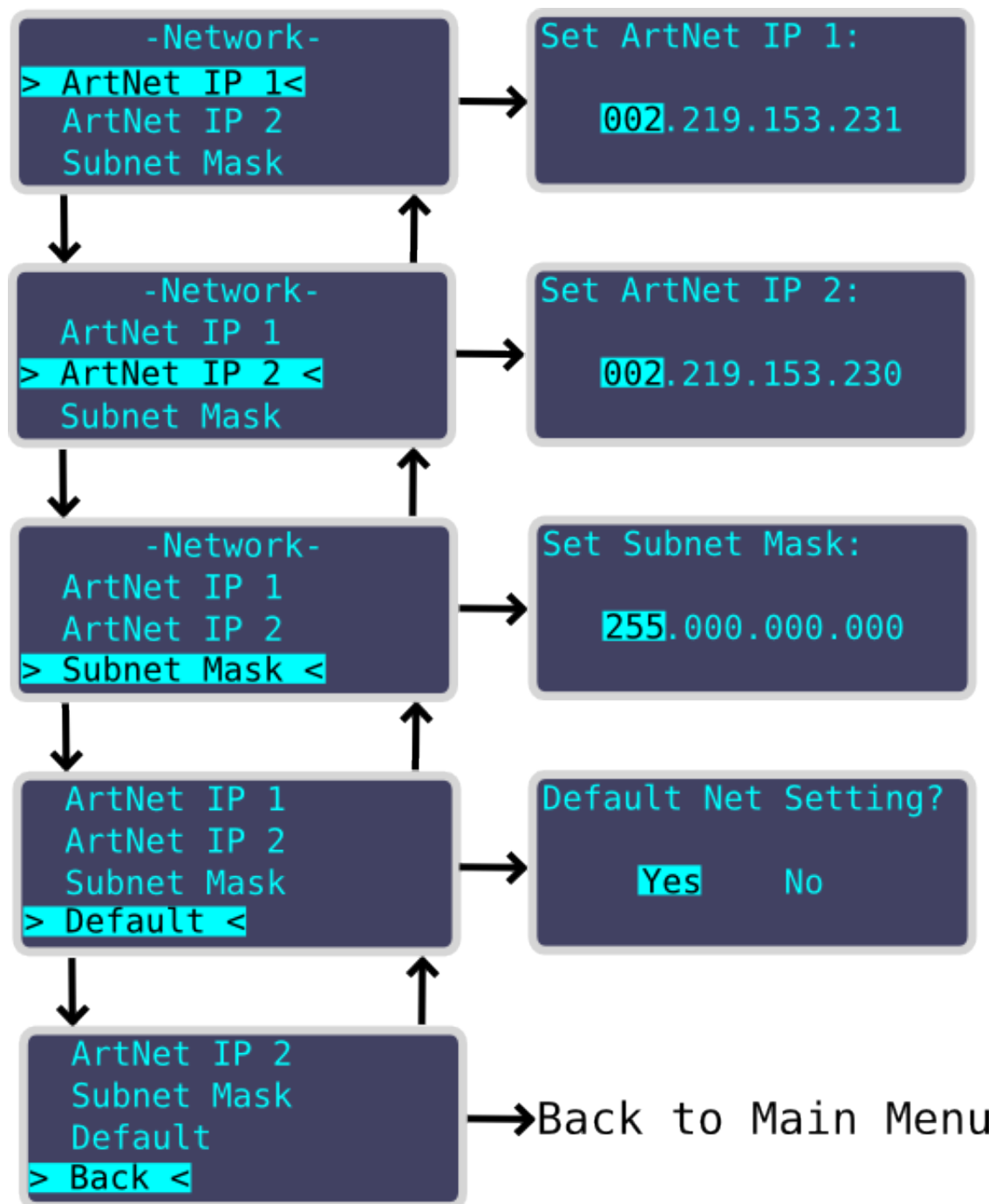
Box Id	ChamNet Mode
Art-Net universe	Art-Net Mode
sACN universe	sACN Mode

- **Mode**

Used to set the network protocol mode used by the R8, which can be either:

Menu Item	Function
Disabled	No ports output or input
ChamNet/MagicQ	Ports controlled by MagicQ
Art-Net/Output	Ports 1 to 8 output Art-Net Mode
Art-Net/Input	Ports 1 to 8 input Art-Net Mode
ACN/Output	Ports 1 to 8 output sACN Mode
ACN/Input	Ports 1 to 8 input sACN Mode

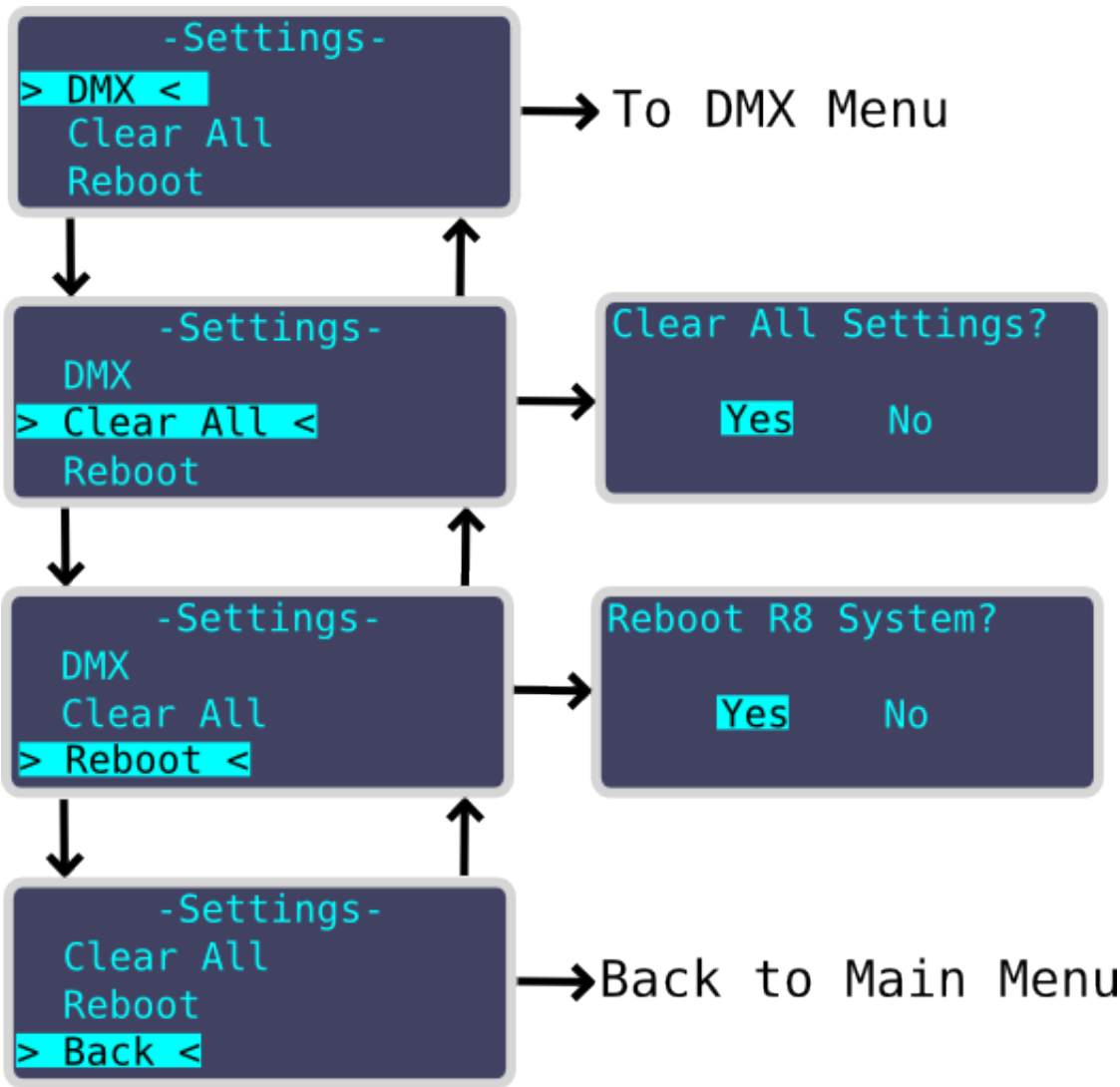
## 5.4.2 Network Menu



Menu Item	Function
ArtNet IP 1	Used to set the main R8 network IP address used by the R8 processor. If the unit is placed into Art-Net mode then this IP is used for Art-Poll-Reply / Art-Net DMX network data on ports 1 through 4. The main IP address is automatically chosen when the R8 units default settings are applied, however sometimes it is necessary to change the address. This is an advanced option.
ArtNet IP 2	Secondary IP address used only in Art-Net mode for Art-Poll-Reply / Art-Net. DMX network data on ports 5 through 8. The secondary IP address is automatically chosen when the R8 units default settings are applied, however sometimes it is necessary to change the address. This is an advanced option.
Subnet Mask	This is an advanced option, The default subnet mask is normally 255.0.0.0
Default	Used to restore default networking settings to the R8.



5.4.3 Settings Menu

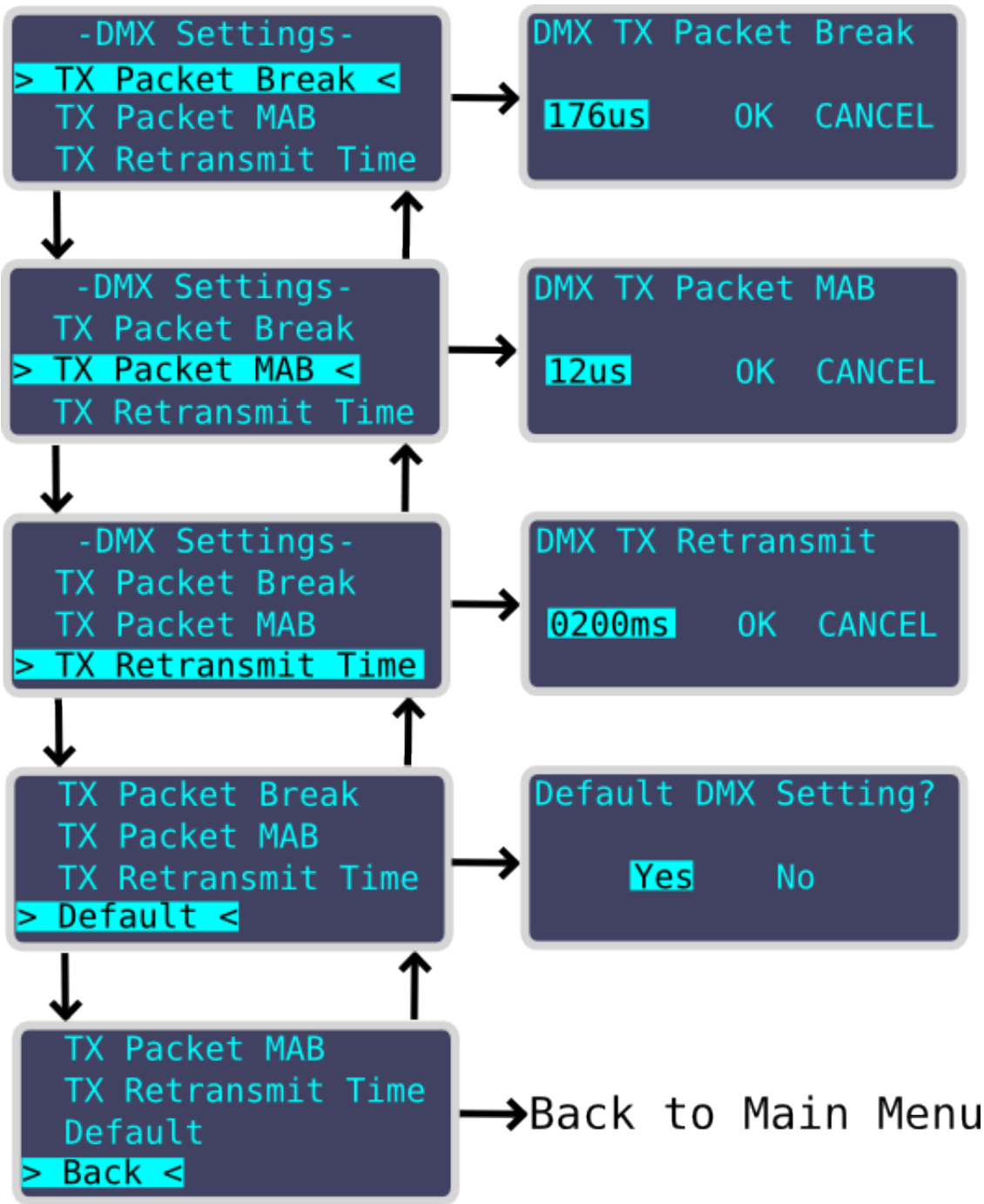


Menu Item	Function
Clear All	Used to clear all R8 settings, and restore the entire unit to factory default settings. The R8 will automatically reboot after default settings are restored.
Reboot	Used to completely reboot the R8 unit.

5.4.4 DMX Settings Menu



**Caution**  
The following settings are a feature for advanced users which can be used if DMX timing related issues are found with certain fixtures. It is not recommended to adjust these features unless you are familiar with DMX packet and understand what the adjustments are actually doing.



Menu Item	Function
TX Packet Break	Used to adjust the length of the transmitted DMX Break which is adjustable in microseconds

Menu Item	Function
TX Packet MAB	Used to adjust the length of the transmitted DMX Mark After Break which is adjustable in microseconds
TX Retransmit Time	When DMX network packets are not received this corresponds to the frame refresh delay between transmitted DMX packets to keep the DMX transmit alive, and is adjustable in milliseconds.
Default	This restores the DMX settings to factory default values. This is a useful feature to try if you experience issues with fixtures and are unsure what the DMX packet settings should be.

In v2.14 firmware the default TX retransmit time was changed to 50ms - in previous versions it was 200ms. If you experience delays when pressing flash buttons with fixtures we recommend changing the TX retransmit time to 50ms.

Alternatively change your console to send ArtNet/ACN continuously rather than just sending changes.

## 5.5 ChamNet Mode Information

In ChamNet Mode the SnakeSys R8 is configured and controlled from the Net Manager within MagicQ.

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### Note

The main IP address for the Interface can be reconfigured in Net Manager. It is not possible to change the secondary IP address from within Net Manager.

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---

### Note

The R8 unit will remember the settings that you make in MagicQ Net Manager. Please allow at least 40 seconds for the unit to store the information into flash memory before removing the power. If the unit is left in MagicQ ChamNet mode it will boot up with the settings that you made previously in Net Manager. (MagicQ will not be required to be connected via network to retain the settings).

---

## 5.6 Powering the SnakeSys R8

SnakeSys R8 is powered using the supplied Powercon cable.

The power supply is universal wide range input type and has the following specification: **85 to 264VAC @ 47 to 63 Hz or 120 to 370VDC**

The SnakeSys R8 does not have an internal battery.



### Caution

During usage please ensure that the unit has adequate ventilation and that the cooling grilles on the unit are not obstructed.

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## 5.7 Security Measure Warning

The R8 incorporates a number of advanced security measures to prevent copying and unauthorized reproduction of the firmware.

---

**Caution**

If user attempting repair of the PCB please do not use motherboard connector J3. Please also take care not to short out or touch any of motherboard connector J3 pins while the motherboard is powered up. Damage to the units firmware may result if the unit detects multiple tampering events, and the unit will have to be returned to ChamSys for reprogramming.

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## Chapter 6

# Network Manager

MagicQ supports a Network Manager (Setup, View DMX I/O, Net Manager) for monitoring and configuring network devices, including Art-Net and sACN nodes, RDM devices, GeNetix and SnakeSys products using the ChamNet protocol.

VIEW CHAMNET	VIEW ART-NET	VIEW SACN	VIEW RDM	VIEW DEVICES	VIEW PORTS	CONFIG DEVICE			INSERT B4 MK1	CLOSE WINDOW	UPGRADE DEVICE
NET MANAGER											
ID	Name	Status	Type	Config	Unit	IP Address	Subnet Mask	Mode Sw	Unit Sw	MAC Address	Firmware
CH 0		Detected	B4 ChamNet	Art-Net Out	Art 0-0	10.0.0.38	255.0.0.0	0000	0	54:10:EC:DA:8A:C3	0217 (17228)
											228s
											None
											Normal

### 6.1 VIEW CHAMNET

ChamNet devices include GeNetix Nodes (GW2I, GW2O, GN2, GN5 and GN10, 10Scene Store), legacy SnakeSys Nodes (B4, R4, R8 and T2 (T6), older ChamSys 5 port Ethernet Interfaces and 10Scene Gateways,

GeNetix Nodes can be configured in multiple different ways, via their front panel switches and buttons on the product (GN2, GN5 and GN10), via their inbuilt webserver or via Network using Net Manager window on MagicQ consoles. GeNetix nodes always operate in ChamNet mode.

When using a PC or Mac, ensure that the correct network host adaptor is chosen in Setup, View Settings, Network, IP address. If an invalid network host adaptor is selected then INVALID NET will show in the title bar and MagicQ may not be able to discover ChamNet devices.

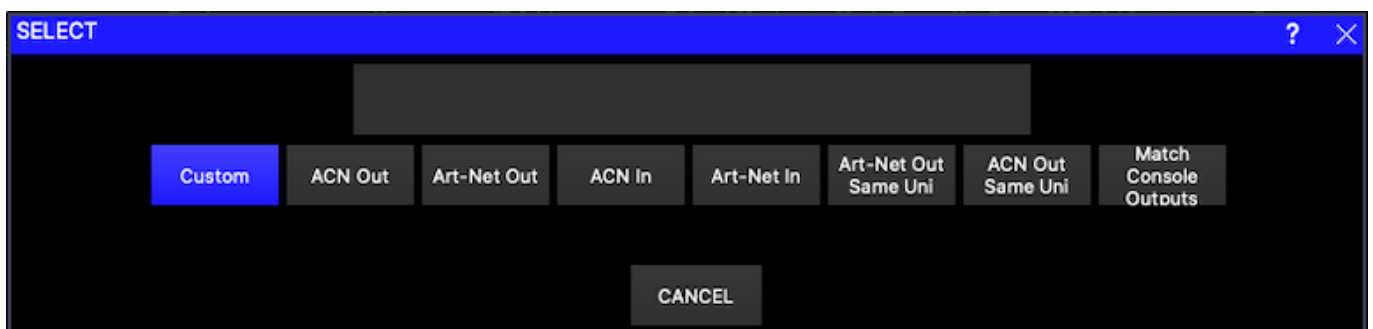
The ChamNet view has four tabs - Devices, Ports, Scenes and Options.

#### 6.1.1 Devices

The IP address and subnet mask of the device can be set from this tab.

##### 6.1.1.1 Configuring entire devices

All GeNetix and SnakeSys nodes can be configured using the CONFIG DEVICE soft button and selecting an appropriate profile.



The profiles act as a starting point – once a starting profile has been chosen, the detailed configuration can all be set individually for each port by changing to the VIEW PORTS view.

At any time you can revert back to a standard profile by pressing the CONFIG DEVICE soft button – this will show the list of DMX profiles.

#### **6.1.1.2 Identify**

Identify mode can be turned on from soft button C.

When Identify mode is entered, all ChamNet devices are set to LEDs off except for one device which is set into Identify mode with all LEDs on. Stepping through the devices in MagicQ will Identify each device in turn.

When Identify mode is exited, all ChamNet devices return to their normal LED states.

GeNetix nodes with front panels indicate Identify mode on the display as well as turning on all the LEDs. SnakeSys nodes turn all LEDs on.

#### **6.1.1.3 RDM**

GeNetix network nodes support ANSI E1.20 RDM which is enabled by default.

The GeNetix nodes only perform RDM operations when requested by the MagicQ or QuickQ console. They do not perform discovery on start up, or at predefined intervals – they only perform RDM discovery when explicitly requested by the console. This ensures that show critical DMX operation is not affected by RDM.

RDM on the node can be disabled on a menu option from the front panel and from the MagicQ console.

The node can also be set into a RDM Read Only mode. In this mode the GeNetix node will respond to RDM GET commands to receive information but will block all RDM SET commands. This enables users to discover the lighting rig, but not to change it.

### **6.1.2 Legacy SnakeSys nodes**

SnakeSys Nodes can be configured in two different ways – in normal mode the product is configured from the front panel switches and buttons on the product. In ChamNet mode the switches and buttons are ignored and the product is configured from MagicQ only.

If the SnakeSys product is set in a mode other than ChamNet Mode (such as Art-Net, ACN or buffer) then it is not possible to configure the interface from Net Manager. However, the device will still appear in Net Manager and it is possible to view its configuration.

#### **6.1.2.1 ChamNet Mode**

In ChamNet mode each SnakeSys product on the network has a different ID in the range 0 to 99. All interfaces should have different IDs.

The ID is set on the SnakeSys product using either the control panel or rotary switches. The 10Scene Gateway ID can only be configured through Net Manager as it has no physical buttons on the device.

### **6.1.3 Older ChamSys 4 Port Ethernet interfaces**

Older ChamSys 4 Port Ethernet Interfaces and the SnakeSys B4 interfaces manufactured prior to 2013 (serial numbers with last 4 digits less than 0268) have no storage for configuration data and so when in ChamNet mode they always get their configuration from MagicQ every time they are powered up.

When the interface starts up it will recognise that it is in MQ Mode and then will search on the network to find a MagicQ system that can give it a configuration. The interface will not output or input DMX data until it has received configuration from a MagicQ system.

---

The MagicQ system stores the configuration information for all these older interfaces as console settings. In View Ports, press the INSERT B4MK1 button to add a new interface. MagicQ will present a list of default profiles for configuring the interface.

An interface can be removed by putting the cursor on the line of the interface and pressing REMOVE.

If there are multiple MagicQ consoles on the network, then only the master one (as per Hot Takeover) will provide configuration information to the interfaces.

Newer SnakeSys B4s and all other SnakeSys and all GeNetix products will appear automatically in the list and do not need to be inserted or removed.

### 6.1.4 Upgrading GeNetix and SnakeSys firmware

GeNetix and SnakeSys nodes can be firmware upgraded from MagicQ software - the latest MagicQ software contains the latest firmware for all GeNetix and SnakeSys products - this can be found in the firmware folder under on the installation.

ChamSys recommend not attempting a firmware update in a critical show environment.

Download the latest MagicQ software from the ChamSys download site. In order to upgrade GeNetix devices, MagicQ must be running software version 1.9.5.0 or above.

<http://chamsys.co.uk/download>

- Connect the GeNetix or SnakeSys node to either a MagicQ Console or MagicQ PC/Mac System via a direct network cable. It is advisable to remove all other equipment from the network.
- GeNetix devices ship with a default IP address in the 10.X.X.X range, in order to update the firmware on your device MagicQ must also be set to an IP address within this range.
- SnakeSys devices ship with a default IP address in the 2.X.X.X range, in order to update the firmware on your device MagicQ must also be set to an IP address within this range.
- For SnakeSys devices, set them into ChamNet/MagicQ mode. GeNetix devices upgrade in all modes, so no change is required.
- In Net Manager, put the cursor on the device to be upgraded and press UPGRADE DEVICE.
- Choose the required firmware version.
- Do not power off the interface whilst the firmware is being upgraded. When MagicQ reports "Device restarted successfully" the upgrade is complete.

VIEW CHAMNET	VIEW ART-NET	VIEW SACN	VIEW RDM	VIEW DEVICES	VIEW PORTS	CONFIG DEVICE			INSERT B4 MK1	CLOSE WINDOW	UPGRADE DEVICE
NET MANAGER											
ID	Name	Status	Type	Config	Uni	IP Address	Subnet Mask	Mode Sw	Uni Sw	MAC Address	
CH 0		Not detected	B4 ChamNet	Art-Net Out	Art 0-0	10.0.0.109	255.255.0.0				

If you are sent a newer firmware file by ChamSys support then copy the file into the firmware folder in the MagicQ installation. To install it onto a MagicQ console put the file onto a USB stick, then in MagicQ go to Setup, File Manager. Select USB DRIVE. Press COPY and select the file as the source to copy. Then select the destination, by selecting HARD DRIVE, UP DIR, and select the firmware folder. Press the "." item to copy to. Then follow the procedure above.

The firmware has the filename firmware\_XXXX\_YYYY or firmware\_XXXX\_XXXX\_YYYY where the XXXX or XXXX\_XXXX is the product code and YYYY is the firmware version number. The product codes are:

- SnakeSys B4 334A
- SnakeSys R4 342A
- SnakeSys T2 419B

- SnakeSys R8 330A
- 10Scene 0310\_0024
- GeNetix GW2I 5000
- GeNetix GW2O 5000
- GeNetix GN2 5000
- GeNetix GN5 5100
- GeNetix GN10 5100

GeNetix nodes start up in a boot firmware, indicated red on the front panel display before starting the main application firmware. During firmware upgrade the nodes return to boot code. If for any reason the main application fails to program or run then the GeNetix node will return to the boot firmware and can be upgraded again.

### 6.1.5 Output Setup

In order to use a GeNetix or SnakeSys node with a MagicQ system the MagicQ system must be set up in Setup, View DMX I/O to output or input universes over the network

When outputting from the GeNetix node set up MagicQ universes with Output type of Art-Net or sACN with the Out Uni set to the Art-Net or sACN universes that the GeNetix node is set to decode.

For inputting DMX from the GeNetix node set up MagicQ universes with Input type of Art-Net or sACN with the In Uni set to the Art-Net or sACN universes that the GeNetix node is set to generate.

## 6.2 VIEW ART-NET

This view shows all Art-Net devices detected on the network. This includes all MagicQ consoles, QuickQ consoles and stand alone MagicVis and MagicHD applications as they all have Art-Net capability.

Press REFRESH NODES to force MagicQ to clear its table of Art-Net nodes and re-detect all nodes.

For each node that it detects it shows the IP address, node name and port configuration.

For each port it shows the universe that the node is set to output or input. The universe is preceded by the following letters to indicate status:

- O Port is configured as an Output
- OE Port is configured as an Output and is enabled
- sAO Port is configured as an Output for sACN
- sAOE Port is configured as an Output for sACN and is enabled
- I Port is configured as an Input
- IR Port is configured as an Input and is receiving data

For Art-Net ports the universe is the Art-Net universe (starting at 0) for sACN it is the sACN universe.

Note that whether these indicators are displayed is entirely dependent on the node and whether the manufacturer has implemented these fields in their Art-Net implementation. Where the node supports it, it is possible to directly configure the ports of the node by setting the Universe value in the Port Field.

GeNetix nodes fully support configuration over Art-Net.

Type S or s in the Port field to set the port to sACN. Type A or a in the port field to set the port to Art-Net.



Type I or i in the Port field to set the port to Input. Type O or o in the port field to set the port to Output.

Press RDM DISCOVERY to force an Art-Net node that supports RDMM to perform discovery and retrieve the RDM table of devices. Any devices that are detected will be shown in the VIEW RDM menu. SHIFT + GET RDM TOD retrieves the table of devices (TOD) without forcing the node to do a discovery of new devices.

Press VIEW STATUS to jump to the Output Window, Art-Net View to see the number of Art-Net packets being received on Art-Net universe 0 to 255.

## 6.3 VIEW SACN

This view shows all sACN RDMNET devices detected on the network. In order to detect RDMNET devices the IP Address and port of the RDMNET gateway must be first configured in Setup, View Settings, Network.

Once a RDMNET gateway has been detected, use GET ENDPOINTS to get the Endpoint data.

## 6.4 VIEW RDM

This view shows RDM devices.

MagicQ stores the list of RDM devices (to enable restoring of a lighting rig via RDM) in the show file, so the device list may contain devices that are not currently accessible.

Devices that have been discovered in the current session are shown in white, whilst devices that have been discovered in previous sessions and stored in the show file are shown in grey.

Press SHIFT and CLEAR RDM to clear all stored RDM devices out of the MagicQ show. Alternatively, use REMOVE to remove one or more individual entries.

### 6.4.1 Discovering and configuring devices

Press DISCOVER ALL to discover RDM devices. MagicQ will attempt to discover RDM compliant devices on its direct console ports (MQ50, MQ70, MQ80, MQ250M and Stadium Connect) and via connected Art-Net nodes that support RDM.

When MagicQ detects the RDM devices it will automatically attempt to get information from each fixture in turn on all. Some devices may not respond immediately - in this case it may be necessary to press GET INFO to force this information to be retrieved.

If the RDM devices are connected to an Art-Net node and nothing is detected then check that your RDM-enabled Art-Net node appears in VIEW ART-NET.

VIEW CHAMNET	VIEW ART-NET	VIEW SACN	VIEW RDM	VIEW PIDS	DISCOVER ALL	GET INFO	AUTO ADDRESS	CREATE HEAD	PATCH RDM HEAD	CLOSE WINDOW	MANUAL REPATCH			
Universe All	NET MANAGER (2 devs)													
	Uni	Type	RDM Uni	Addr	Chans	Per	Tot	Manufacturer	Model	Mode	UID	Model ID (hex)	Curve	Fre
	1	Direct	0	1	0	3	0				21A4-A30810F6	00AE		
	1	Direct	0	48	0	1	0				21A4-A3086621	00AE		

The fixture address, mode, dimmer curve and modulation frequency can be set directly for each RDM device shown in the Window. It is also possible to factory reset devices that support it.

#### COLUMNS

##### Uni

MagicQ universe number.

##### Type

Shows if this is running over Art-Net or ACN.

**RDM Uni**

If this is running over Art-Net, this shows the Art-Net universe.

**Addr**

DMX address (1 - 512). Set this field to change the DMX address of the fixture.

**Chans**

Number of DMX channels this fixture uses in its current mode.

**Per**

Mode/personality of the fixture (1+). Set this field to change the mode of the fixture - MagicQ will show a list of the modes reported by the fixture.

**Tot**

Number of modes/personalities supported by this fixture.

**Manufacturer**

Manufacturer of the fixture.

**Model**

Model of the fixture.

**Mode**

Name of the currently selected mode/personality. Modes start from 1. This field can be set to change the mode of the fixture.

**UID**

This is a 12 digit hexadecimal number that is unique to this device. It enables the RDM protocol to ensure messages can be sent to specific devices. The first four digits of the UID is also known as the "ESTA Manufacturer ID" assigned to that manufacturer.

**Device Model ID**

A four digit hexadecimal number which uniquely identifies the model of the fixture for that manufacturer.

**Curve**

The dimmer curve of the fixture. Dimmer curve is an optional RDM field.

**Freq**

The modulation frequency of the fixture. Frequency is an optional RDM field.

**Reset**

This field enables resetting the fixture. Press on the field and confirm yes to perform a cold (like power on) reset on the fixture. This is an optional RDM field and is not supported by many fixtures.

**Factory Reset**

This field indicates if the fixture is in its factory reset state and enables setting to the factory reset state. Press on the field and confirm yes to perform a factory reset. This is an optional RDM field and is not supported by many fixtures.

**Cable Index**

This field is reserved for indicating cable index in systems that support DMX cable index identification.

**Sel PID**

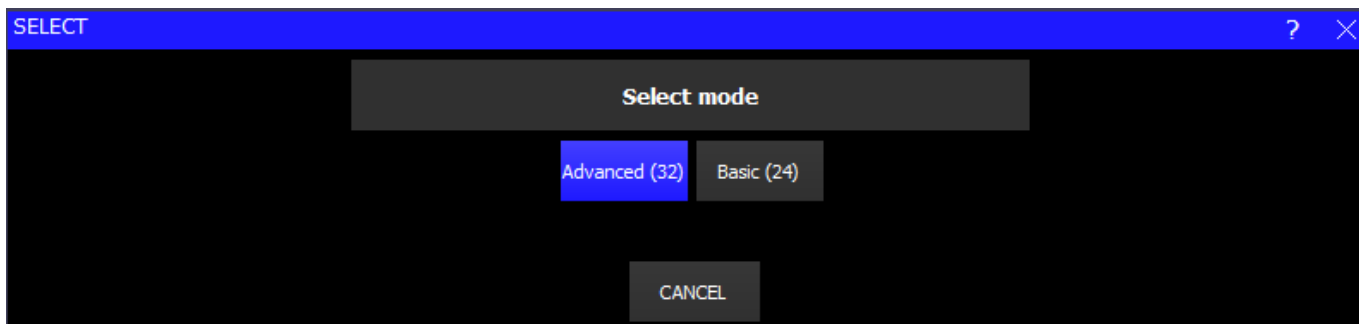
This field shows the value of the selected PID as selected on Soft Button X.

To further configure the manufacturer parameter PIDs of each connected RDM device, put the cursor on the required device and press VIEW PIDS.

Note that The DISCOVER ALL command requests Art-Net nodes to perform a flush of their RDM table of devices (TOD) and to then perform a discovery of all currently connected devices. In some cases it may be useful to just retrieve the table off devices without forcing a new discovery - in this case press SHIFT + GET TOD ALL. .

### 6.4.2 Auto addressing

Press the AUTO ADDRESS soft button to automatically address all the fixtures in the list, starting at 1 and incrementing based on the channel count of each fixture.



Where there are devices from more than one universe the devices on each universe will be addressed starting at 1.

### 6.4.3 Restore addressing

Once a DISCOVER ALL and GET INFO has been performed on a lighting rig, MagicQ stores the RDM address and mode for each fixture with its unique UUID in the show file. This is maintained in the show file through subsequent loads and saves of that show file.

At any time a lighting rig can be restored to a known state from a MagicQ show file.

First in Net Manager perform a DISCOVER ALL and GET INFO to get the addresses and mode of the RDM devices. Check that all the expected devices have been detected.

Then press SHIFT + RESTORE ADDRESS and select a show file to load the RDM information from. MagicQ loads the RDM data from that show file and readdresses the RDM fixtures to the mode and address from that show file. Note that MagicQ only loads the RDM information from that show file, it does not load or change any other data in your show.

When setting up a new venue, or a new lighting rig that uses RDM when the configuration is complete it is recommended to DISCOVER ALL and GET INFO for the complete rig and save the MagicQ show file with a name such as "VenueRDM.shw" which can then be used in the future to restore the lighting rig to the correct RDM state.

### 6.4.4 Identifying devices

The RDM identify command forces a fixture to identify itself. This is usually a flashing white light or continuous pan, tilt and colour scroll. This allows you to match up the devices you are seeing in the VIEW RDM window with physical devices on the lighting rig, similar to the Head Test feature in the Patch window.

In the VIEW RDM window, press soft button C, RDM Test, and use the cursor keys to scroll up and down the list of devices. The device at the cursor will be sent the RDM identify message and highlighted red to show it is in test mode.

### 6.4.5 Sensors

Sensor information for the RDM device at the cursor is displayed at the top of the window and is continually refreshed. If the device is able to report multiple sensors then they are all shown.

### 6.4.6 Auto patching

Pressing the PATCH RDM HEAD soft button will patch the RDM device at the cursor into the show, using its current DMX address and mode.

Press SHIFT and PATCH ALL RDM soft button to patch everything in the list.

This tries to find a matching head file using the ESTA Manufacturer ID, Device Model ID and mode. If this fails it tries to match the manufacturer and model descriptions and channel count.

To improve the accuracy of the auto patching feature, you can add in the RDM information into the head file using the [head editor](#). In the General View there is

#### ESTA manufacturer ID (hex)

This is a four digit hexadecimal number which uniquely identifies the manufacturer of the fixture. This can be found by taking the first four digits of the UID (e.g. in the VIEW RDM window image above, the UID of the first fixture is 21A4-A30810F6 so the ESTA ID is 21A4, which will be the same for all Chauvet fixtures). A complete list can be found on the [ESTA website](#).

#### RDM device model ID (hex)

This is a four digit hexadecimal number which uniquely identifies the model for this manufacturer. It can be found in the *Device Model ID* column or in the manual. In this example, device model ID 00AE will be the same for all Chauvet Rogue R1 FX-B fixtures.

#### RDM personality number

This is a decimal number which represents the mode/personality reported by RDM. This can be found in the *Per* column and must be 1 or higher.

The ESTA Manufacturer ID, Device Model ID and Personality number are all reported by the fixture over RDM and together can be used to match a specific head file. You should not have more than one head file with all three of these fields the same.

HEAD EDITOR (Chauvet\_MavMK2Spot\_Advanced.hed) ERRORS Gobo Types LO

Names	DMX	Params	Options	Multi	Media
<b>Parameter</b>	<b>Value</b>				
Manufacturer Name	Chauvet				
Short Name	MavMK2Spot				
Mode	Advanced				
Longer Name	Maverick MK2 Spot				
Head Description	Maverick MK2 Spot				
Head File Version	19				
Head File Save Date	Mon Jun 24 10:31:33 2019				
ESTA manufacturer ID (hex)	0000 [ESTA Reserved]				
RDM device model ID (hex)	0000				
RDM personality number	0				
GDTF UUID					
Capture Make					
Capture Name					
WYSIWYG Name					
Old file name					

### 6.4.7 Creating Heads from RDM data

MagicQ has an extensive personality library which covers nearly all fixtures. MagicQ personality library has very detailed modelling of fixtures including gobo icons and physical dimensions.

RDM optionally allows fixtures to provide basic reporting of attribute allocation enabling MagicQ to create a basic new personality which can be then used to patch the head.

Put the cursor on the required device and press **CREATE HEAD** to create a new personality. The name of the personality will be based on the Manufacturer, Model and Mode fields reported by the RDM device.

Note that creating heads is only possible if the RDM device supports the RDM SLOT\_INFO PID.

### 6.4.8 Manual Repatch

MagicQ provides shortcuts for repatching a lighting rig RDM compliant fixtures in it.

There are two options - Readdress physical fixtures and Repatch show to fixtures.

#### 6.4.8.1 Readdress physical fixtures

This is used when you want to change the addresses on the physical fixtures in the venue to match your show file - for example, when setting up a lighting rig for the first time where the fixtures have not yet been addressed.

Readdressing physical fixtures does not change the Patch information or any of your programming in your show - instead it uses RDM commands to change the address and mode of the physical fixtures, just as if you were changing them on the fixture control panel.

First press **DISCOVER ALL** and **GET INFO** to get the RDM information for the RDM compliant fixtures in the lighting rig.

Then press **MANUAL REPATCH** and select **Readdress physical fixtures**. "RDM Readdr" will flash in the status window under the clock whilst RDM Readdr mode is in operation.

In RDM Readdr mode the fixture at the cursor in Net Manager is automatically tested (identified) to identify the fixture in the physical lighting rig.

Use the **NEXT HEAD** and **PREV HEAD** buttons to move to different fixtures in the lighting rig. Note that the **NEXT HEAD** and **PREV HEAD** buttons are not used to select heads whilst in RDM Readdr mode.

To readdress a RDM fixture to match a head in your show use one of the normal MagicQ head selection operations - either:

- Enter the head number - e.g. for head 10 type 10 @ @
- Select the head in Group, View Heads
- Select the head in the Plot Window
- Select the head in the Output Window, View Grid
- In the Patch Window, move cursor to a Head and press ENTER.

The RDM device will be readdressed and set to the mode of the selected head in the MagicQ show.

Use **NEXT HEAD** or **PREV HEAD** to change to another RDM fixture, and then select the head in the MagicQ show to readdress this fixture to.

When all readdressing has been done press the **END READDRESS** button in the Net Manager.

#### 6.4.8.2 Repatch show to fixtures

This is used when you want to change your show data to match the DMX addresses and modes of the physical fixtures in the venue - for example, when touring and visiting a venue with a fixed lighting rig.

Repatch show to fixtures does not change the address, mode or any other parameters of the physical fixtures - instead it morphs your show file to the physical fixtures and repatches the addresses to match the physical rig.

First press **DISCOVER ALL** and **GET INFO** to get the RDM information for the RDM compliant fixtures in the lighting rig.

---

Then press MANUAL REPATCH and select Repatch show to fixtures. "RDM Repatch" will flash in the status window under the clock whilst RDM Repatch mode is in operation.

In RDM Repatch mode the fixture at the cursor in Net Manager is automatically tested (identified) to identify the fixture in the physical lighting rig.

Use the NEXT HEAD and PREV HEAD buttons to move to different fixtures in the lighting rig. Note that the NEXT HEAD and PREV HEAD buttons are not used to select heads whilst in RDM Repatch mode.

To repatch a head in your show to use the physical fixture select that head using one of the normal MagicQ head selection operations - either:

- Enter the head number - e.g. for head 10 type 10 @ @
- Select the head in Group, View Heads
- Select the head in the Plot Window
- Select the head in the Output Window, View Grid
- In the Patch Window, move cursor to a Head and press ENTER.

The head in the MagicQ Patch will be morphed to the RDM fixture, and it will be moved to the DMX address that the RDM device reported.

Use NEXT HEAD or PREV HEAD to change to another RDM fixture, and then select the head in the MagicQ show to repatch for this fixture.

When all repatching has been done press the END REPATCH button in the Net Manager.

### 6.4.9 Background Check

Use soft button F to enable background RDM checking. When Background Check is on, MagicQ performs a RDM discovery every 60 seconds to detect RDM devices and get their info.

When Background Check is off, MagicQ only performs RDM discovery when requested by pressing the DISCOVER ALL button.

Note that Background RDM checking requires a lot of RDM traffic, particularly on larger lighting rigs or with complex fixtures, which may slow down DMX refresh rates.

### 6.4.10 Auto Patch

Auto Patch enables a lighting rig to be detected and patched automatically. It also enables the show to be updated if any devices have had their address or mode changed.

Use soft button Y to enable RDM auto patching. When Auto Patch is on, then Background Check is automatically turned on.

When Auto Patch is on, MagicQ performs a background discovery and patches any new devices that it had not previously encountered in the show using the current device mode. If MagicQ determines that devices that it had previously auto patched have changed DMX address or mode then MagicQ will change the DMX address or mode of the patched Head in the show.

Note that MagicQ does not remove Heads from the Patch if devices are not detected - this ensures that the show programming is maintained. If devices are permanently removed from the lighting rig then they must be manually unpatched from the show.

### 6.4.11 Rig Lock

Rig Lock enables a lighting rig to be locked so that users cannot change the DMX address or modes of fixtures.

Use soft button X to enable RDM Rig Lock. When Rig Lock is on, then Background Check is automatically turned on.

When Rig Lock is on, MagicQ performs a background discovery and checks any devices found. If the device address or mode has been changed then MagicQ sends a RDM command to return the device to the address and mode from its show file.

Rig Lock takes priority over Auto Patch. Generally Auto Patch should be set to off when Rig Lock is in use.

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## 6.4.12 VIEW PIDS

RDM fixtures support parameters referred to as PIDs. Parameters can be "Get" - i.e read only, "Set", i.e. set only, or "Get and Set".

All RDM fixtures must support the parameters used for discovering the device, identifying the device and setting the DMX start address.

In the VIEW PIDS all the PIDs that the device reports that it supports are shown. For each parameter there is an ID (as defined by the RDM specification), a description and the current value.

Standard PIDs have IDs in the range 0x0001 to 0x7FFF. Manufacturer specific PIDs are in the range 0x8000 to 0xFFDF.

The Size, Data Type, Min, Max, Type, Default, Unit and Prefix fields give more information about the particular parameter.

For parameters that are "Set" or "Get and Set" the Value field can be set. Enter a new value on the keyboard to change the value.

Press REFRESH PIDS to reload the PIDs from the device.

The GET SLOTS and LOG RDM soft buttons are used for testing RDM fixtures. Press GET SLOTS to force MagicQ to get the DMX Slot information (fixture attribute information) from the RDM device. LOG RDM writes all the details that have been retrieved from the RDM device including the general info, modes, slot info and PIDs to the file "rdm.csv" in the log folder.

Press COPY PID to copy the PID that the cursor is on to all devices of the same type. Press SHIFT + COPY ALL PIDs to copy all PIDs to all devices of the same type.

## 6.5 VIEW LYNTEC

MagicQ supports remote control and monitoring of up to 10 separate Lyntec relay or motorised break control devices.

MagicQ supports individual zone control on the 12 Lyntec zones, or individual circuit control on up to 168 breakers / relays per Lyntec device.

In Net Manger the VIEW LYNTEC enables configuration of connections to Lyntec devices and monitoring and changing of status of Zones on the Lyntec devices.

Connection to each Lyntec device is via TCP/IP. MagicQ stores an IP address, user name and password to connect to for up to 10 Lyntec devices.

When connected, the Zone information shows the Zone name and status for each Zone. The status is On, Off or Processing. Pressing ENTER when the status is On changes the status to Off. Pressing ENTER when the status is Off changes the status to On.

In Net Manger the VIEW LYNTEC CHANS enables monitoring and changing of individual breaker or relay channels on the Lyntec devices.

When connected, the channel name and status is shown for each channel. The status is On, Off, Tripped, Faulty or Empty. Pressing ENTER when the status is On changes the status to Off. Pressing ENTER for status of Off or Tripped status will attempt to change the status to On.

Lyntec devices can be controlled automatically from MagicQ uses Automs in the Automation window and Cue Stack Macros.

## Chapter 7

# SnakeSys Firmware Release Notes (B4, R4, T2)

### 7.1 Version 220

#### 7.1.1 SnakeSys B4, R4, T2

MagicQ "Core Mode" support to unlock MagicQ versions 1.9.5.3 and above.

### 7.2 Version 219

#### 7.2.1 SnakeSys B4, R4, T2

Fixes an issue where ArtPollReply packet contained incorrect port information when in ChamNet mode, which meant using V4 Unicast in MagicQ would not work.

### 7.3 Version 218

#### 7.3.1 SnakeSys B4, R4, T2

Fix for DMX input where it sometimes stopped working after a while.

### 7.4 Version 217

#### 7.4.1 SnakeSys B4, R4, T2

Fix for DMX Buffer mode.

### 7.5 Version 216

#### 7.5.1 SnakeSys R4

Fix to a occasional problem when used for DMX output, whereby DMX would drop for a few seconds.

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## 7.5.2 SnakeSys T2 & B4

Updated the DMX output firmware with the same DMX firmware correction to match R4.

## 7.6 Version 215

### 7.6.1 SnakeSys B4

Added the ability to clear unit settings on unit boot up by the user first setting all DIP switches to OFF position and also setting both address switches to F then powering up the unit. Unit will toggle both the NET and MQ LED's if the settings were not already set as default and the default settings were restored. Unit will flash both the NET and MQ LED's together if the settings are already set as default and flash erase is not required. In any-case the unit will have default settings after the operation, this firmware change invalidates the usage of ChamNet address FF and users should not use the address from now on.

The main purpose of this firmware change is to allow the Subnet Mask and IP Address to be restored to factory values, although in this case the port configuration set in the NetManager is also cleared.

### 7.6.2 Other products

No changes in this version.

## 7.7 Version 214

### 7.7.1 All Products (Changes to DMX output hold policy)

The output and input standard LED timeout has been increased to 5 seconds. When a DMX output LED has turned from ON to OFF to indicate that network data is not anymore being received the unit will now continue to repeat the last received DMX packet on the respective output regardless of the network DMX protocol used, whereas the original policy was to only hold if Art-Net was used.

## 7.8 Version 213

### 7.8.1 All Products (Improve Policy For Save Of Settings)

Reduced the required time that the user needed to wait for units to save their Net-Manager DMX port settings to flash memory from 30 seconds to 15 seconds.

Network IP and Subnet-Mask settings that are adjusted from the Net-Manager are now saved to flash memory immediately.

Synchronisation settings were not previously saved, they are now saved immediately to flash after adjustment via the Net-Manager.

Fixed a bug which caused a longer delay than expected before settings were written to flash memory.

## 7.9 Version 212

### 7.9.1 SnakeSys B4

Fixed issue when using Art-Net and ACN subnets 3-0 and above which would cause the DMX packet to be reduced to less than the full 512 values. This potentially affects all versions V200 to V211 but was most noticeable in V210 and V211.

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The above issue would also cause the DMX framing timings to be erroneously adjusted from the defaults when using Art-Net and ACN start universe above universe 0-0 up to universe 2-15. The DMX output was within spec but could be slower than expected. In Art-Net and ACN mode the subnet and universe selection were incorrectly being used to apply the timing settings from the buffer mode (as per the rear panel legend).

Fixed break interrupt issue with DMX input which was introduced in V211.

Changed operation of DMX in LED to work like the other products.

## 7.10 Version 211

### 7.10.1 SnakeSys T2 Version 2

Added support for T2 Version 2 with DMX input option.

Added PCB version dependent menu items.

## 7.11 Version 210

### 7.11.1 SnakeSys R4

Increased timeout value for DMX input LED display.

Added optional software based break detect and also added DMX special mode to allow software based break detect:

R4 now has the ability to switch between hardware break detect or software break detect, so users who experience the CPLD.v1 break detect issue can still get the unit to receive DMX correctly: This is done by holding the DMX button on the front-panel for 5 seconds until it starts flashing. Once the button is flashing pressing the NET1 button will toggle between both break detect types:

NET1 Illuminated: Software break detect NET1 Off Hardware break detect

Pressing again the DMX button will exit back to standard front-panel operation, and the state will be saved.

### 7.11.2 All Products

Fixed a timing issue with DMX receive where the output packet update did not take place until the next packet's break was received. This could cause latency problems on systems with slow DMX refresh.

## 7.12 Version 209

### 7.12.1 All Products

Applied the Art-Net output hold fix to DMX to always hold the DMX output after valid Art-Net has been received and output as DMX.

## 7.13 Version 208

### 7.13.1 SnakeSys T2

Support for SnakeSys T2 added.

## 7.14 Version 206

### 7.14.1 SnakeSys B4

Added support for storing of ChamNet settings.

## 7.15 Version 204

### 7.15.1 Snakesys R4

Fixed a bug where when the units settings were reset from the front-panel the POE ports were disabled. Since there is still no way to re-enable the ports in MagicQ this could be a serious issue for some end users.

Fixed a bug where the PoE ports were not turned off when the unit was placed in standby mode.

Changed operation of RDM filter button to match that of ART/ACN and IN / OUT with respect to ChamNet mode

### 7.15.2 Snakesys B4

Enabled break detect on DMX input

## 7.16 Version 203

### 7.16.1 Snakesys B4

Modified DMX input so that it can be enabled when outputs 1-4 are active

## 7.17 Version 202

### 7.17.1 Snakesys R4

In ChamNet mode the IN/OUT and ART/ACN LEDs now reflect the current ChamNet settings, and will toggle if combined protocol or input / outputs are used.

### 7.17.2 All Products

Added notifications so MagicQ can detect when port settings are changed.

## 7.18 Version 201

### 7.18.1 Snakesys R4

Changed the operation the following buttons so that ChamNet does not get disabled when they are pressed:

DMX IN/OUT ART/ACN RDM FILTER

Fixed an issue with the thermal management regarding the fan, which now has a programmed minimum fan speed of 1500RPM, and starts instantly on power up, and also improved the fan control system and sample rate.

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### **7.18.2 All Products**

ART: Updated the Art-Poll Reply packet to correctly report the products short and long names.

ACN: Minor change to the header to reflect a tiny version of the product name.

## **7.19 Version 200**

Version 2 framework supporting both R4 and B4.

## Chapter 8

# SnakeSys Firmware Release Notes (R8)

### 8.1 Version 216

MagicQ "Core Mode" support to unlock MagicQ versions 1.9.5.3 and above.

### 8.2 Version 215

Fixes an issue where ArtPollReply packet contained incorrect port information when in ChamNet mode, which meant using V4 Unicast in MagicQ would not work.

### 8.3 Version 214

Change default DMX setting of the retime transmit timer from 200ms to 50ms as a small number of fixture types were found not to be responding on time when the 200ms setting was used. Minor improvements and adjustments to DMX send on input logic.

### 8.4 Version 213

Change the policy for ACN output to hold the current DMX output packet, to correct an issue where some fixtures may not respond on time when DMX output restarts. Upgrade the version to 213 to match the other SnakeSys products.

### 8.5 Version 204

Improved DMX output logic synthesis to correct issues with certain fixtures. Firmware changes for DMX menu.

### 8.6 Version 203

Initial release version

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