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# $\textbf{SUPER NODE}^{^{\text{TM}}}$

**USER MANUAL** 

AutoPar<sup>®</sup>, Bad Boy<sup>®</sup>, Best Boy 4000<sup>®</sup>, PRG Series 400<sup>®</sup>, MBOX<sup>®</sup>, MBOX Extreme<sup>®</sup>, OHM<sup>™</sup>, Super Node<sup>™</sup>, V476<sup>®</sup>, V676<sup>®</sup>, Virtuoso<sup>®</sup>, Virtuoso<sup>®</sup>, Virtuoso<sup>®</sup> DX, Virtuoso<sup>®</sup> DX2, and VL6C+<sup>™</sup> are trademarks of Production Resource Group, LLC, registered in the U.S. and other countries.

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Super Node™ User Manual

Version as of: November 5, 2013

PRG part number: 02.9821.0001 B

Production Resource Group, LLC Dallas Office 8617 Ambassador Row, Suite 120 Dallas, Texas 75247 www.prg.com

# **FOREWORD**

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- 5) (a) THIS WARRANTY IS CONTINGENT ON THE CUSTOMER'S FULL AND TIMELY COMPLIANCE WITH THE TERMS OF USE AND PAYMENT SET FORTH HEREIN.
  - (b) This written warranty is intended as a complete and exclusive statement of the terms thereof. Prior dealings or trade usage shall not be relevant to modify, explain or vary this warranty.
  - (c) To obtain warranty service contact PRG at 214-819-3100, DallasService@prg.com, or via mail at Production Resource Group, 8617 Ambassador Row, Suite 120, Dallas, Texas 75247.
- 6) For sales outside of North America, the relevant PRG repair location shall be listed on the face of your invoice.

# **Important Safety Instructions**

- + Read these instructions.
- + Keep these instructions.
- + Heed all warnings.
- Follow all instructions.
- + Do not use this apparatus near water.
- + Clean only with dry cloth.
- + Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- + Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- + Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- + Unplug this apparatus during lightning storms or when unused for long periods of time.
- + Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- + In Europe: The building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.
- + In Finland: Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan.
- + In Norway: Apparatet må tilkoples jordet stikkontakt.
- + In Sweden: Apparaten skall anslutas till jordat uttag.
- + Minimum distances around the apparatus for sufficient ventilation shall be 1" (2.54 cm) on the left and right sides where the air inlet and outlet are located.
- + The ventilation should not be impeded by covering the ventilation openings with items.
- + No naked flame sources should be placed on the apparatus.
- + Apparatus for use in tropical climates.
- + The apparatus shall not be exposed to dripping or splashing. No objects filled with liquids, such as vases, shall be placed on the apparatus.

Safety symbols used throughout this manual are as follows:



**CAUTION** advising of potential damage to product.



**WARNING** advising of potential injury or death to persons.







WARNING! To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.



**ATTENTION!** Pour réduire le risque d'incendie ou un choc électrique, ne pas exposer cet appareil à la pluie ou à l'humidité.



WARNING! Power supply plug and/or power switch/circuit breaker shall remain readily operable.



**ATTENTION!** Prise d'alimentation et / ou l'interrupteur d'alimentation / disjoncteur doit rester facilement accessible.



WARNING! The battery shall not be exposed to excessive heat such as sunshine, fire or the like.



ATTENTION! La batterie ne doit pas être exposée à une chaleur excessive comme le soleil, le feu ou similaire.



**CAUTION**: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type: Panasonic CR2032 Manganese Dioxide 3V Lithium Coin Battery.



**ATTENTION:** Danger d'explosion si la pile est remplacée de façon incorrecte. Remplacez-la uniquement avec le même type ou équivalent: Panasonic CR2032 3V Lithium Manganese Dioxide pile bouton.



WARNING! This CLASS I apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.



ATTENTION! Ce appareils de CLASSE I doit être raccordé à une prise secteur dotée d'une connexion à la terre.



**WARNING!** Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.



**ATTENTION!** Si la fiche d'alimentation ou un coupleur d'appareil est utilisé comme dispositif de déconnexion, le dispositif de déconnexion doit rester facilement accessible.



**WARNING!** For personal safety, this equipment must be properly grounded.

Do not, under any circumstances, cut or remove the ground prong from the power cord.

The power cord of this equipment is provided with a 3-prong grounding plug which mates with a standard 3-prong grounded wall outlet to minimize the possibility of electric shock hazard from this equipment.

Have the wall outlet and electrical circuit checked by a qualified electrician to ensure the outlet is properly grounded. If the outlet is a standard 2-prong outlet, it is your personal responsibility and obligation to have it replaced with a properly grounded 3-prong outlet.

Never unplug the equipment by pulling on the power cord. Always grip the plug firmly and pull it straight out from the outlet. Do not use a cord that shows cracks or damage along its length or at either end. Replacement cords may be ordered from PRG.



ATTENTION! Pour votre sécurité, cet appareil doit être correctement mis à la terre.

Il ne faut en aucun cas couper ou enlever la broche de terre du cordon d'alimentation.

Le cordon d'alimentation de cet appareil est fourni avec une fiche à 3 broches qui s'accouple avec un standard à 3 broches mise à la terre prise murale afin de minimiser le risque de choc électrique de cet équipement.

Faites vérifier la prise murale et le circuit électrique par un électricien qualifié pour assurer la prise est correctement mise à la terre. Si la prise est un standard 2 broches prise, il est de votre responsabilité et l'obligation de la faire remplacer par une prise à 3 broches prise.

Ne jamais débrancher l'appareil en tirant sur le cordon d'alimentation. Toujours saisir fermement la fiche et tirez-le tout droit hors de la prise. Ne pas utiliser un cordon qui présente des fissures ou des dommages sur toute sa longueur ou aux extrémités. Cordons de rechange peuvent être commandées auprès PRG.

# **Revision History**

This manual has been revised as follows:

4.4	Release Date	Notes	
BASIC	May 8, 2013	Initial Release	
A		Revised features list.	
В	November 5, 2013	Updated menu instructions and screen images.	

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# INTRODUCTION

#### **About This Guide**

This guide provides necessary information regarding product safety, installation, and operation for the following PRG equipment:

+ Super Node™ (20.9821.0001)

Familiarizing yourself with this information will help you get the most out of your PRG product.

#### **Additional Documentation**

For more information about PRG systems, refer to the following manuals:

+ PRG Lighting Systems Networking Guide (02.3004.1000.0)

For more information regarding DMX512 systems, refer to the DMX512/1990 & AMX 192 Standards publication available from United States Institute for Theatre Technology, Inc. (USITT).

USITT 6443 Ridings Road Syracuse, NY 13206-1111 USA 1-800-93USITT www.usitt.org

For more information regarding Art-Net protocol, refer to the specification for Art-Net II Ethernet Communication Standard available from Artistic Licence Ltd.

Artistic Licence (UK) Ltd (Registered Office) 24 Forward Drive, Christchurch Avenue, Harrow, Middlesex, HA3 8NT, United Kingdom +44 (0)20 88 63 45 15 (phone) +44 (0)20 84 26 05 51 (fax) www.artisticlicence.com

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#### **PRG Dallas (International Service)**

8617 Ambassador Row, Suite 120

Dallas, Texas 75247 USA Phone: 214.630.1963

Fax: 214.630.5867

Service Fax: 214.638.2125 Service Email: orders@prg.com

For Vx76 support, please contact: VX76support@prg.com

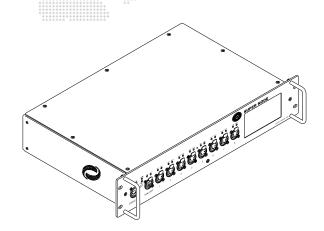
For additional resources and documentation, please visit our website at: www.prg.com

# **DESCRIPTION**

#### **Overview**

The Super Node™ provides a powerful and convenient interface between Vx76 or DMX-over-Ethernet (DoE) compatible control consoles, pixel mapping from media servers, and other control equipment which require either DMX-over-Ethernet or DMX512-A control signals. The unit accepts high level commands in either Vx76 or DMX-over-Ethernet protocols and converts the data into eight universes of DMX512-A.

The Super Node includes a menu display for configuring the unit and checking system status. The menu system is navigated using the touchscreen, allowing configuration of the Vx76 address, configuration of DoE inputs in Series 400® Mode, real-time monitoring of DMX512-A data on each output, display of network error information, and display of current software version.



#### Features:

- + Accepts proprietary Vx76 protocol.
- + Accepts DMX-over-Ethernet protocols, including Art-Net.
- + Compatible with 10Base-T, 1000Base-T, or 100Base-TX standard signals.
- + Automatic detection and mode configuration according to input signal type.
- + One (1) Ethernet output port supporting up to sixteen (16) DMX512-A universes.
- + One (1) Ethernet input port supporting Vx76 or DoE protocol.
- + Eight (8) DMX512-A serial output ports supporting one (1) DMX512-A universe each.
- + One (1) DMX512-A input port (located on the back of the unit).
- + LEDs indicating link and activity status for all Ethernet ports.
- + LEDs indicating DMX and RDM data status for all DMX ports.
- + Display support for configuration of Vx76 address, configuration of DoE inputs in Series 400 Mode, real-time monitoring of DMX512-A data on each output, display of network error information, and display of current software version.
- + Neutrik® PowerCon® connector for input AC supply.
- + Neutrik® PowerCon® thru connector for AC supply daisy-chaining.
- + Standard 2U 19" rack mount chassis.

#### Modes:

The Super Node operates in one of two primary modes:

- + Vx76 Mode accepts Vx76 protocol and generates both DoE and DMX512-A outputs.
- + Series 400 Mode accepts DoE protocol and converts it to DMX512-A.

The operating mode is automatically configured by the unit according to the input signal type.

# **Included Items**

The following illustration shows all items included with the Super Node.

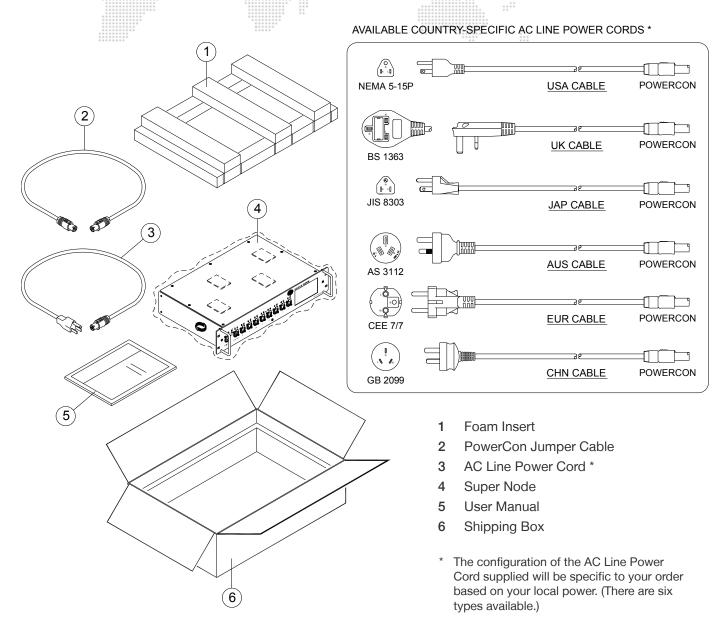
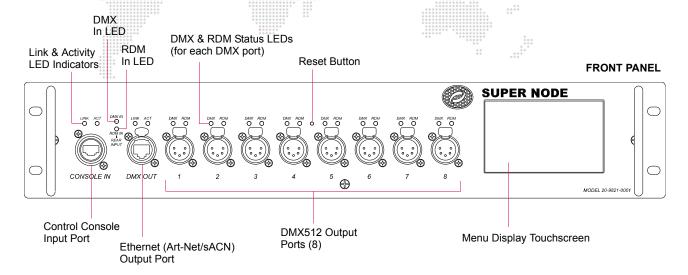


Figure 1: Included Items

# **Controls and Indicators**

The Super Node contains the following components:



#### **REAR PANEL**

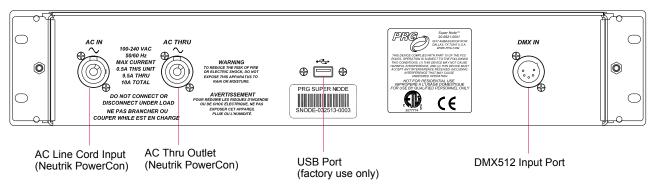


Figure 2: Controls and Indicators

# **INSTALLATION**

# **System Options**

#### Vx76

In the Vx76 configuration, one or two Vx76 control consoles may be connected to one or more Super Nodes.

#### Guidelines:

- + When connecting two Vx76 consoles and multiple Super Nodes, a 100Mb Ethernet switch or hub *must* be used. Standard CAT5e Ethernet cables should be used in this configuration. Refer to the illustration below.
- + The Vx76 Mode of operation is used in this configuration. Refer to "Vx76 Mode" on page 16.

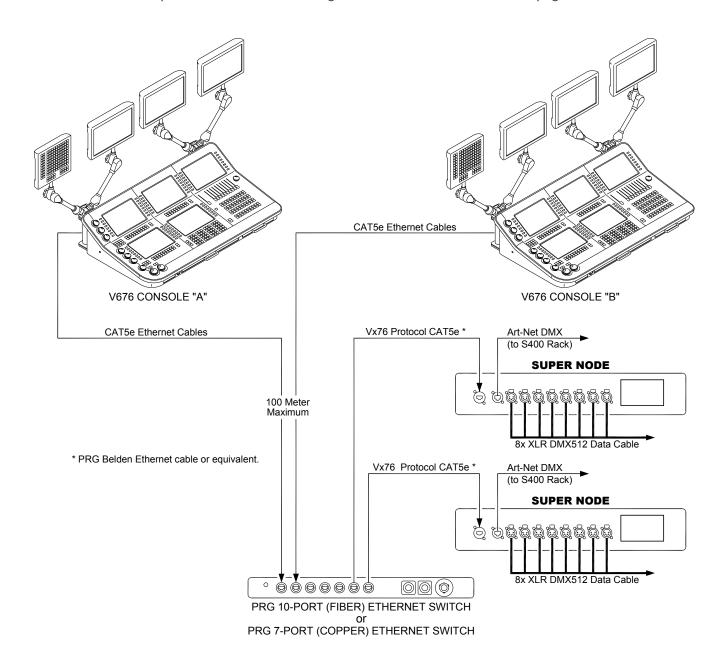


Figure 3: Vx76 Configuration Example

#### Series 400

In the Series 400 configuration, an Art-Net compatible control console may be connected to one or more Super Nodes.

#### Guidelines:

- + When connecting an Art-Net compatible console and multiple Super Nodes, a 100Mb Ethernet switch or hub *must* be used. Standard CAT5e Ethernet cables should be used in this configuration. Refer to the illustration below.
- + The Series 400 Mode of operation should be used in this configuration. Refer to "Series 400 Mode" on page 17.
- + When using a Node as an Art-Net-to-DMX device, note that the Art-Net/sACN output does not pass data; it only mirrors the DMX outputs. It is not possible to place the Art-Net/sACN output on the same network as the Art-Net input.

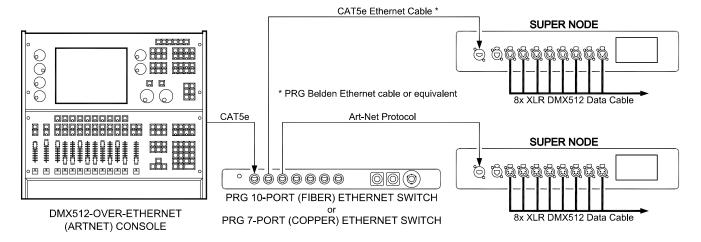


Figure 4: Series 400 Configuration Example

#### **AC Input/Thru**

At rear panel, connect the AC Line Cord Power Cable to the AC IN outlet.

The AC THRU outlet may be used to tap power for additional Super Nodes or Ethernet Switches using the included PowerCon Jumper Cable. (Do not exceed the 10A maximum total input current to the device.)

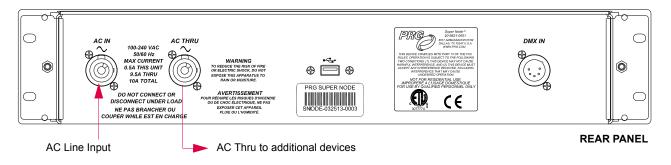


Figure 5: Connecting AC Input and Thru Cables

#### **Power Up Procedure**

#### To power up the Super Node unit and set its address:

Step 1. Once the AC input cable is connected and power is applied, the unit will receive power. (It does not have a power on/off switch.)

Step 2. Using Menu Display controls, set Super Node thumbwheel address (refer to "Menu Controls" on page 15). Ensure that addresses are unique among all Nodes in system.

#### **Vx76 Console Setup**

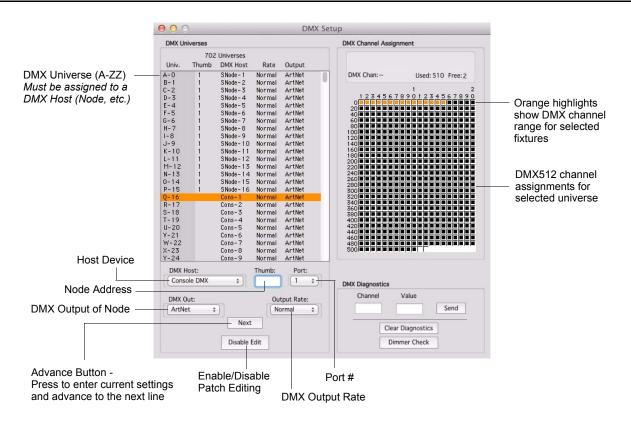
When using a Super Node with a PRG Vx76 console, the Node can be set up using the console's DMX Setup window.

- Step 1. At Setup menu, select DMX Setup. (DMX Setup window will open.)
- Step 2. Select desired DMX Universe.
- Step 3. Enable Patch Edit by pressing Patch Edit button at bottom of window.
- Step 4. Select "Super Node" from DMX Host menu.
- Step 5. Enter Node thumbwheel address in "Thumb" field.
- Step 6. Choose "Port" output.
- Step 7. If assigning multiple universes, click **Next** or press [Enter] to edit the next universe. Otherwise, select **Disable Edit** to disable patch edit and save changes.

Settings
Ethernet
Pairing
System Config %K
Calibrate Screen
Legacy Media Setup
Media Server Setup

Log %L
Plan View %B
Patch %T
3D Location
DMX Setup

**Note:** If patching sequential Nodes and outputs, pressing the [Return] button on the keyboard will auto increment the patch. If not sequential, repeat Steps 4 through 6.



#### **Troubleshooting**

Symptom	Indication	Remedy
Super Node online, but no control.	Appears in console configuration window, but channels are not online.	Verify Super Node address and that universes are set to "Super Node" not "Console" or "Node" in DMX Setup window.

# **GENERAL OPERATION**

# **Operating Modes Overview**

The Super Node operates in one of two modes: Vx76 or Series 400. The mode will depend on what protocol it is receiving on its Console In Port.

+ Vx76 Mode - In this mode, the unit will accept Vx76 protocol and generate *both* Art-Net/sACN and DMX512 outputs.

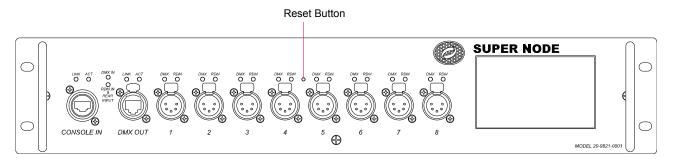


+ Series 400 Mode - In this mode, the unit will accept Art-Net protocol and convert it to DMX512. (When used with the Series 400 rack, the Node will follow the selected A, B, or C system.)



#### Reset

In the event a software reset is necessary, press the reset button located between ports 4 and 5. (The button can be pressed using a small instrument.)



**Figure 6: Reset Button** 

# **MENU CONTROLS**

## **Using the Menu Display**

The Super Node includes a menu system for configuring the unit and checking system status. The menu system can be navigated using the touchscreen display available on the front of the unit.

#### General screen layout:

- + Status Bar provides node status information and current screen title.
- + Status and Controls provides system status information and controls for configuring the node.
- + Back Button provides navigation control.
  - Pressing the Back button will return to the previous screen.
  - Holding the Back button for 2 seconds will return to the main screen.

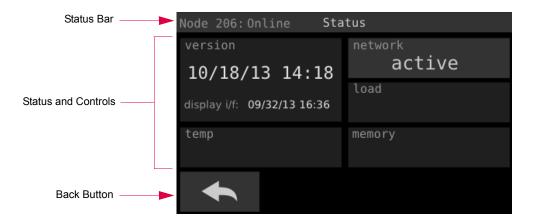


Figure 7: Menu Display Layout

Alpha and Numeric keypads provide a method for configuring the node:

#### Keypad Alpha:



#### **Keypad Numeric:**



Figure 8: Alpha and Numeric Keypads

Refer to the following sections for information about each of the menu screens.

#### Vx76 Mode

When the Super Node is connected to a Vx76 series console, the menu system will provide "Vx76" screens which can be used to set up and monitor the Vx76 system.

#### Vx76 Node (Address)

- + Indicates the node address as a number.
- + Press this button to open the Settings screen. (Refer to "Settings" on page 18.)

#### **Status**

- + Displays the current status of the node using the following indicators:
  - Configure: Node is waiting for patch data from the console.
  - Download: Node is downloading show data from the console.
  - Online: Node is operating normally.
  - Updating: A software update is in progress.
- + Press this button to open the Status screen. (Refer to "Status" on page 18.)

#### IN (In Port)

+ For future use.

#### Out Ports (1-16)

- + Displays one button per physical port across the top of the bottom half of the screen. (8 Total.)
- + Displays one button per network-only port across the bottom of the bottom half of the screen. (8 Total.)
- + Buttons show the assigned universe (in the chosen display format).
- + If no universe is assigned, the button shows only the port
- + Press any of these buttons to open the Monitor screen. (Refer to "Monitor" on page 19.)



#### **Example status indications:**



#### **Series 400 Mode**

When the Super Node has been loaded with Series 400 software, the menu system will provide "Series 400" screens which can be used to set up and monitor an Art-Net system.

#### Vx76 Node (Address)

+ Indicates the node address as a number.

#### **Status**

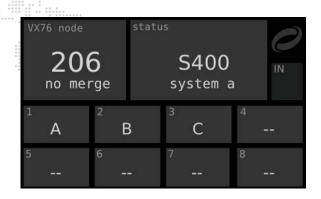
- + \$400: Indicates that the node is in Series 400 Mode.
- + System (x): Displays the currently active Series 400 system.

#### IN (In Port)

+ For future use.

#### Out Ports (1-8)

- + Displays one button per physical port. (8 total.)
- + Buttons show the assigned universe (in the chosen display format).
- + If no universe is assigned, the button shows only the port
- + If the assigned universe is not being received, the universe value changes from White to Black.



#### **Status Bar**

A status bar is provided at the top of every sub screen. The bar provides the following information:

#### **Node ID**

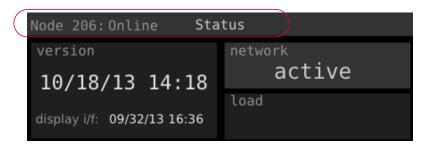
- + Node (x): Node address number.
- + \$400: Node is in Series 400 Mode.

#### **Node Status**

+ Provides the same status as the status button on the main screen (e.g. Online, Download, etc.).

#### **Screen Title**

+ Title of the current screen (e.g. Settings, Network, Monitor, etc.).



# **Settings**

The Settings screen configures universal settings for the node.

#### Node Thumbwheel Address (Vx76 Mode)

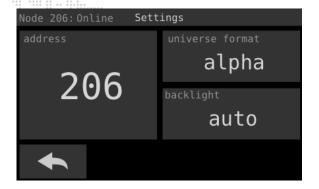
- + Press address to set the node thumbwheel address using the numeric keypad.
- + Note: Press the number field to clear the value.

#### **Universe Display**

+ Sets display format for DMX universes as either Numeric or Alphabetical. (This is a device-wide setting.)

#### **Backlight**

- + Sets the display's backlight behavior.
  - On: The display backlight is always on.
  - Auto: The display backlight turns off after a period of inactivity. The first tap on the screen will wake up the display but not activate a button.



#### **Keypad Numeric:**

55 ×			cancel	
1	2	3	0	
4	5	6		
7	8	9	enter	

#### **Status**

The Status screen displays various information about the node for troubleshooting purposes.

- + Version: Displays the currently loaded Super Node software version number and build date.
- Network: Displays whether a valid network link is established (e.g. active, inactive). Press this button to open the Network screen. (Refer to "Network" on page 19.)
- + Temperature: For future use.
- + Load: For future use.
- + Memory: For future use.



#### Network

The Network screen displays the node's network related information.

- + IP Address: Displays the assigned IP address of the node.
- + Subnet Mask: Displays the networking subnet for node communication.
- MAC Address: Displays the internal MAC address of the node's networking port.
- + Serial Number: Displays the node's unique factoryassigned serial number.

# node 206: Online Network ip address mac address 10.67.64.56 58:b0:35:78:73:80 subnet mask serial number 255.255.0.0 15

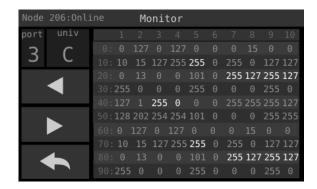
#### **Monitor**

The Monitor screen provides status information for each port.

- + Port: currently selected port.
- + Universe: associated universe. (In S400 mode, this field is active so that the Series 400 universe may be configured.)
- + Arrow Left: moves to lower port number.
- + Arrow Right: moves to higher port number.

#### **Universe Monitor**

- + Displays a live updating table of DMX values active in the currently selected universe.
- + Actively changing values are represented in white text.
- + Press the Top Half of the Monitor section to Scroll Up.
- Press the Bottom Half of the Monitor section to Scroll Down.



# **SPECIFICATIONS**

# **Technical Specifications**

POWER REQUIREMENT: 100 to 240 VAC, 47 to 63 Hz, 0.5A, 60W max.

COOLING: Forced air with ultra-quiet chassis fan and CPU cooler.

OPERATING TEMP: -20°C to 50°C (-4°F to 122°F).

INPUT: One control signal input which is fed from a console providing either Vx76 or DMX-over-

Ethernet (Art-Net) protocol.

One male XLR connector for DMX input (rear panel). One USB port for factory setup and configuration.

OUTPUT: One DMX-over-Ethernet (Art-Net) output carrying up to sixteen DMX512-A universes.

Eight (non-isolated) standard DMX512-A serial outputs, each carrying one DMX512-A

universe. (Both output protocols are simultaneously active.)

POWER THRU: Additional loads may be connected up to 10A total input current.

BACKUP BATTERY: Panasonic CR2032 3V Lithium Coin.

COMM INDICATORS: LEDs indicating Link and Activity data for all Ethernet outputs, and DMX and RDM status

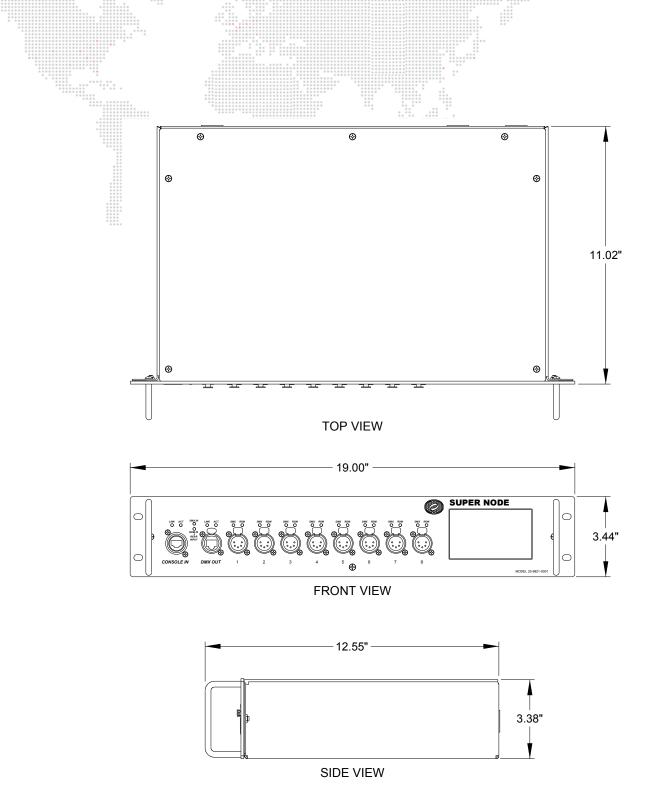
for each DMX port.

CONTROL: Built-in Menu Display touchscreen.

HOUSING: Standard 2U 19" rack-mount chassis, 11" deep.

WEIGHT: 6.5 lbs. (2.9 kg)

COMPLIANCE: ETL & cETL approvals, CE Marked.



**Figure 9: Super Node Dimensions** 





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PRG part number: 02.9821.0001 B





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