HALL TECHNOLOGIES HIVE-NODE-RS-232 HIVE Node Wireless RS-232/IR and IP Controller Instruction Manual

Contents

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Product Information

Hive Node Kits

Hive Node Kits are advanced IoT controllers designed to offer an efficient and compact solution for controlling devices through RS-232, IR, and Relay interfaces via IP. These kits are PoE-powered and specifically designed to enhance the capabilities of the Hive Touch control panel and the Hive KP8 control keypad.

Overall Features:

- HIVE-NODE-RELAY FEATURES
- HIVE-NODE-RS-232 FEATURES
- HIVE-NODE-IR FEATURES

Package Contents:

HIVE-NODE-IR

- 1 x HIVE-NODE-MINI main controller
- 1 x Tri-port cable adapter
- 3 x IR Emitters

HIVE-NODE-RELAY

- 1 x HIVE-NODE-MINI main controller
- 1 x Relay Sensor

HIVE-NODE-RS-232

- 1 x HIVE-NODE-MINI main controller
- 1 x RS-232 Cable
- 1 x Gender Bender

Panel Description

HIVE-NODE-MINI

ID	Name	Description
1	USB Micro	Used for providing power to the device if a PoE switch is not available.
2	Receiver Port	3.5mm receiver port, used to connect to HIVE-NODE-IR, HIVE-NODE-RELAY, or HIVENODE-RS-232 devices.
3	Network	RJ45 PoE network port.

HIVE-NODE-IR

ID	Name	Description
1	IR Ports	3 x IR emitter ports.
2	3.5mm Connector	Connects into the HIVE-NODE-MINI receiver port.

HIVE-NODE-RELAY

ID	Name	Description
1	Relay	4 x Relay ports.
2	Contact Closure	4 x Contact closure ports.
3	3.5mm Connector	Connects into the HIVE-NODE-MINI receiver port.

HIVE-NODE-RS-232

ID	Name	Description
1	Speaker	2 x Speakers for audio signal output.
2	3.5mm Connector	Connects into the HIVE-NODE-MINI receiver port.

Relay Tech Guide:

The relay & sensor cable is an input/output cable for use with the HIVE-NODE-MINI. It provides relay outputs and sensor inputs, allowing control and monitoring of various devices.
Configuration can be done through hardware jumpers and software API. External devices are connected via push-release terminal blocks. The enclosure can be mounted directly on a DIN rail for easy integration with external relays. The relay outputs are fully configurable to operate as different standard relay types and can control a wide range of devices. The sensor inputs can detect contact closure, as well as AC and DC voltage.

Input and Output Connector Blocks:

The board provides terminal connector blocks for connecting external devices. These connector blocks are physically grouped as relay outputs and sensor inputs. Each distinct port within the relay outputs or sensor inputs uses 2 terminals. For example, in the figure above, Port 1 uses terminals 1 and 2, and port 2 uses terminals 3 and 4.

Introduction

OVERVIEW

Hive Node Kits are our advanced IoT controllers that offer an efficient and compact solution for controlling devices through RS-232, IR, and Relay interfaces via IP. These PoE-powered kits are designed specifically to enhance the capabilities of the Hive Touch control panel and the Hive KP8 control keypad.

OVERALL FEATURES

- Offers control over TCP/IP networks using a single Cat cable
- Equipped with IR, RS-232, and Relay accessories for diverse control
- Built-in IR Learner with a robust IR database for effective AV control
- PoE-powered for a convenient, hassle-free setup
- Web interface for easy setup
- UDP broadcasting for sensor data collection
- Designed to enhance the capabilities of Hive Touch control panel or Hive KP8 control keypad
- Scalable, supports multiple kits in a single installation
- Includes PC utilities for easy setup and testing
- Compact and DIN rail mountable for easy installation
- Made in the USA

HIVE-NODE-RELAY FEATURES

- 4 Relay outputs and 4 sensor inputs with LED indicators
- POE powered and easy installation with push/release terminals
- Flexible relay combinations and adaptable sensor modes
- Native compatibility with Hive Touch and Hive KP8
- Enhances the Hive-Node-RS-232 and/or Hive-Node-IR as part of a complete control solution
- Relay control via TCP and sensor updates via UDP

HIVE-NODE-RS-232 FEATURES

- Controls displays, projectors, switchers, and DSPs
- Includes PoE-powered Hive-Node-Mini with RS232 adapter and gender changer
- Supports RS-232, RS-422, RS-485, full and half duplex
- Configurable null modem settings and baud rate via web page or API
- Dedicated TCP IP port for serial communication
- Scalable and adaptable to unique project requirements

HIVE-NODE-IR FEATURES

- Versatile one-way device control
- Compatibility with an array of displays, projectors, and media players
- Includes PoE-powered Hive-Node-Mini, tri-port and 3 emitters
- Connects to single IR emitter or tri-port for multiple device control
- IR emitters provide blink feedback for easy troubleshooting
- Access to extensive IR device driver database
- Features IR learning capability via built-in sensor and utility
- Seamlessly integrates with Hive Touch and Hive KP8 controllers

Package Contents

HIVE-NODE-IR

- 1 x HIVE-NODE-MINI main controller
- 1 x Tri-port cable adapter
- 3 x IR Emitters

HIVE-NODE-RELAY

- 1 x HIVE-NODE-MINI main controller
- 1 x Relay Sensor

HIVE-NODE-RS-232

- 1 x HIVE-NODE-MINI main controller

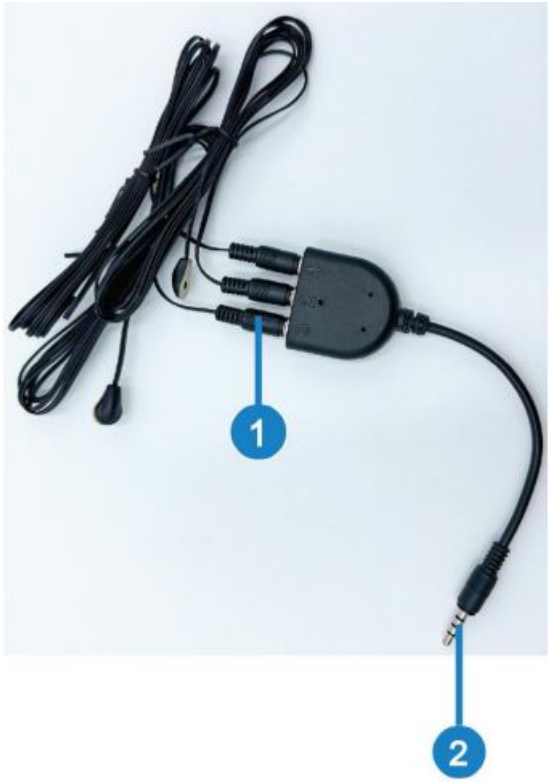
- 1 x RS-232 Cable
- 1 x Gender Bender

Panel Description

HIVE-NODE-MINI

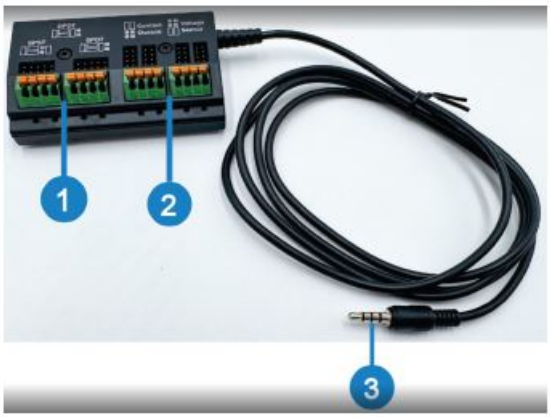
ID	Name	Description
1	USB Micro	Used for providing power to the device if a PoE switch is not available.
2	Receiver Port	3.5mm receiver port, used to connect to HIVE-NODE-IR, HIVE-NODE-RELAY, or HIVE- NODE-RS-232 devices
3	Network	RJ45 PoE network port

HIVE-NODE-IR



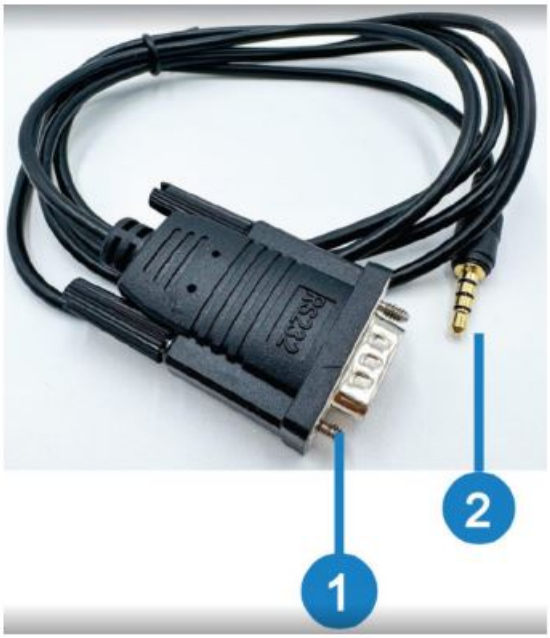
ID	Name	Description
1	IR Ports	3 x IR emitter ports
2	3.5mm Connector	Connects into the HIVE-NODE-MINI receiver port

HIVE-NODE-RELAY



ID	Name	Description
1	Relay	4 x Relay ports
2	Contact Closure	4 x Contact closure ports
3	3.5mm Connector	Connects into the HIVE-NODE-MINI receiver port

HIVE-NODE-RS-232

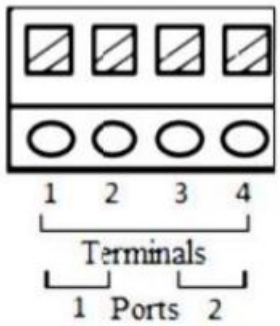


ID	Name	Description
1	Speaker	2 x Speakers for audio signal output.
2	3.5mm Connector	Connects into the HIVE-NODE-MINI receiver port

Relay Tech Guide

INTRODUCTION

- The relay & sensor cable is an input/output cable for use with the HIVE-NODE-MINI. It provides relay outputs and sensor inputs which allow control and monitoring of a variety of devices. Configuration is accomplished through hardware jumpers and software API. External devices are connected via push-release terminal blocks. The enclosure can be mounted directly on a DIN rail, allowing for simple integration with external relays.
- The relay outputs are fully configurable to operate as a number of different standard relay types and are capable of controlling a wide range of devices.
- The sensor inputs are configurable to allow detection of contact closure, as well as AC and DC voltage



INPUT AND OUTPUT CONNECTOR BLOCKS

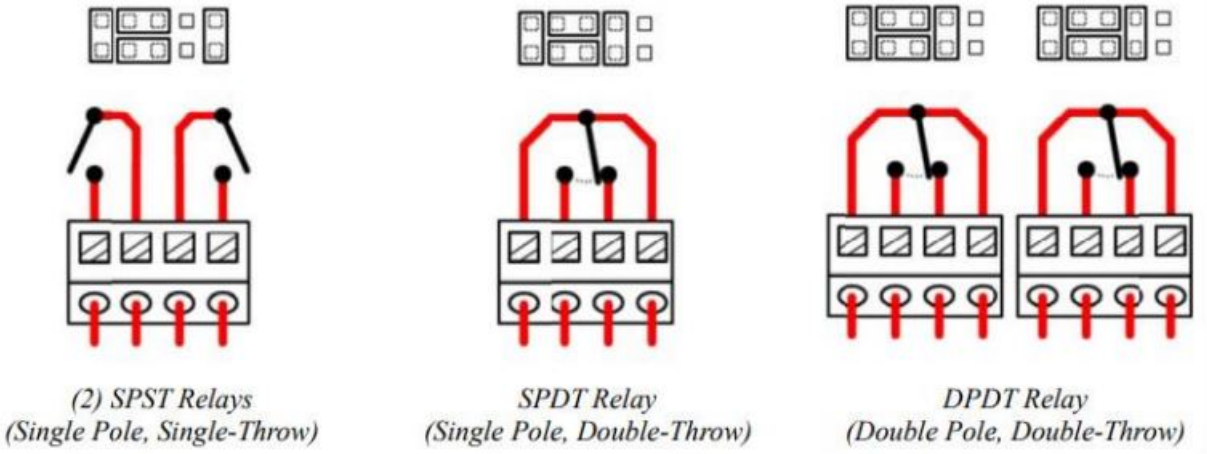
- The board provides terminal connector blocks for connecting external devices. These connector blocks are physically grouped as relay outputs, and sensor inputs. Each distinct port within the relay outputs or sensor

inputs use 2 terminals. For example, in the figure above, Port 1 uses terminals 1 and 2, and port 2 uses terminals 3 and 4.

- Relay ports can be configured as individual SPST relays, but can also be logically grouped with other ports to create other common relay type configurations. Input ports are all individually configurable and support either voltage sensing or contact closure modes.

RELAY OUTPUTS

- The relay outputs can be configured via hardware jumpers and software API to operate as various common relay types. These supported relay types and associated jumper settings are shown in the following illustrations.



(2) SPST Relays (Single Pole, Single-Throw)

SPDT Relay (Single Pole, Double-Throw)

DPDT Relay (Double Pole, Double-Throw)

- Each relay configuration has a configurable default state. This allows relays to be set up as either normally open or normally closed. The above illustrations depict the relays in an open state with a default state of open.
- Single Pole, Single Throw:
  - Each physical port functions as an individual relay, and each relay uses a single port. For example, Port 1 uses terminals 1 & 2, and Port 2 uses terminals 3 & 4.
- Single Pole, Double Throw:
  - Two physical relay output ports are grouped such that pins 1 and 4 are connected as the common pole, with double (2) throws (positions), to terminal 3 and terminal 2.This mode is useful for applications where two separate outputs are needed, rather than simply turning a device on or off.
- Double Pole, Double Throw:
  - Four ports (two relay blocks) are configured as a pair of SPDT relays. In this mode, the two SPDT relays are linked, so that both throw simultaneously.

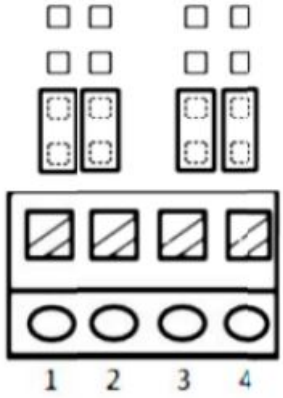
ELECTRICAL SPECIFICATIONS

Relay Rating	Minimum Value	Maximum Value
Voltage	—	24 Volts
Current	—	500mA

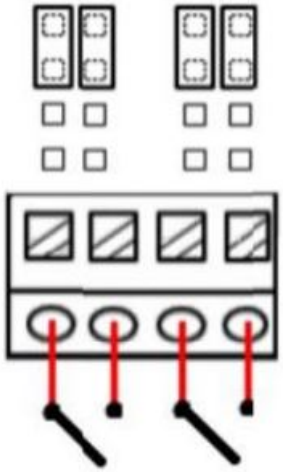
SENSORS

Sensor inputs are versatile and allow for sensing contact-closure, as well as the presence of voltages between ±3V and ±24V RMS value. Each terminal block provides 2 input ports. Each input port on an input block can be configured independently.

To configure a port for voltage input, disconnect all jumpers, or store jumpers vertically in the bottom two positions of the jumper pins. In the following figure, a block of 2 input ports is configured with both ports set for voltage-sense. In this state the inputs are read as open (‘0’) until a voltage is applied at which point the indicator LEDs turn on and the inputs are read as closed (‘1’).

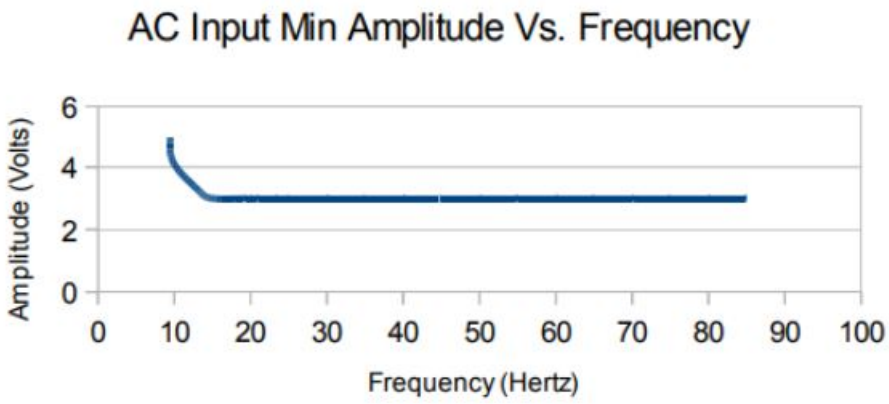


To configure input ports for contact closure, the jumpers should be placed vertically on the top two pins of each column of jumper pins, as shown below for the two ports. In this configuration, the state of the inputs will be closed (‘1’) until contact-closure occurs, at which point the input state will be open (‘0’).



SENSOR INPUT CHARACTERISTICS

Characteristics	**Minimum Value**	**Maximum Value**
Input Voltage AC/DC	±3V (RMS)*	±24V (RMS)*
Input Current	200µA	—
Input Low to High Response	1.5ms**	3ms**
Input High to Low Response	110ms**	250ms**
Contact Closure Detection Source Current	—	2mA



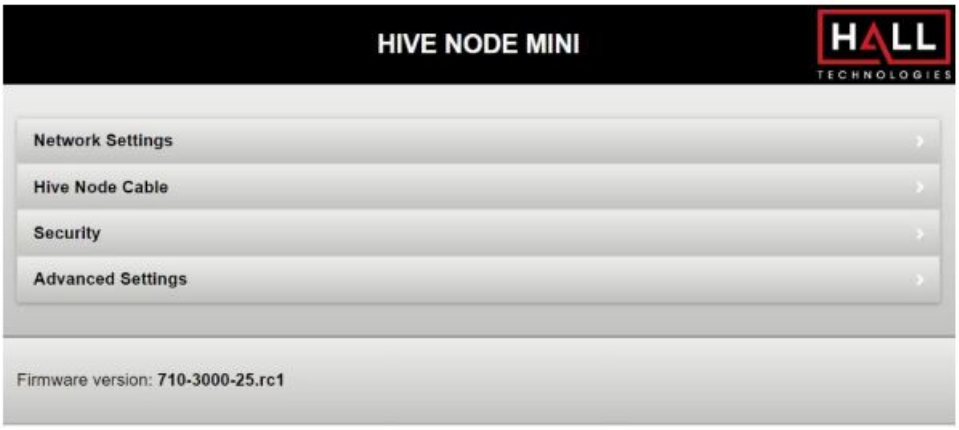
For AC signals at low frequencies the minimum input voltage becomes a function of frequency. The above graph depicts this relationship.
These times are for relay and sensor board hardware detection only and do not include network and processing delays.

The Web GUI designed for the HIVE-NODE family allows for basic controls and device settings. This Web UI can be accessed through a modern browser, e.g., Chrome, Safari, Firefox, IE10+, etc.

To get access the Web UI:

1. Connect the LAN port of the switcher to a local area network. Ensure there's a DHCP server in the network so that the device can obtain a valid IP address. (If there is no DHCP server the video bar will revert to a 169.254.x.x address which you can find on the OSD. Use this to change the video bar IP to a static IP address and set your own.)
2. Connect the PC to the same network as the HT-NODE.
3. Input the HIVE-NODE's IP address in the browser and press Enter, the following window pops up.
4. Input the password (default password: admin) and click Login to enter the main page

MAIN PAGE

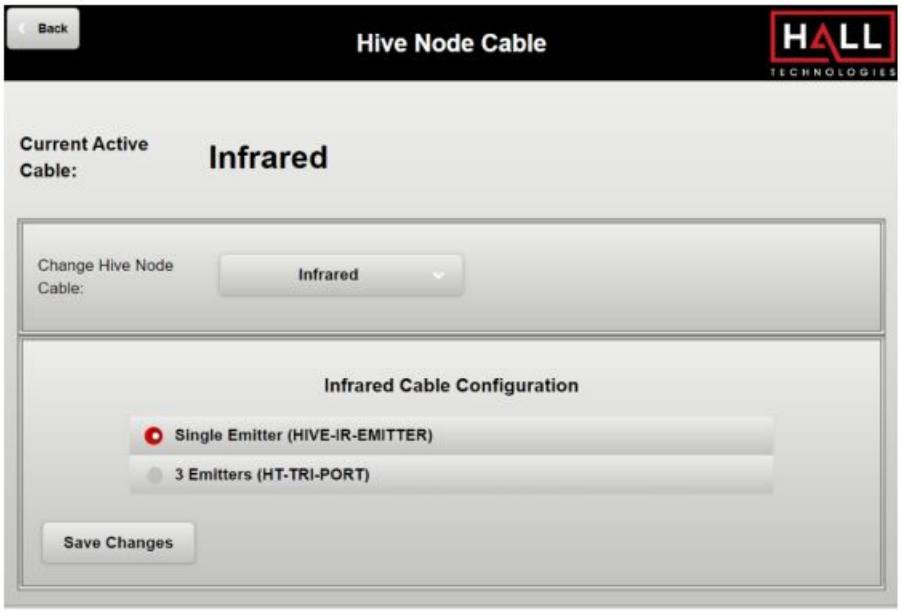


UI Element	Description
Network Settings	Click the icon to start the preview of the camera.
Hive Node Cable	Selects the control cable to be used.
Security	Security settings such as username and password.
Advanced Settings	Select the desired tracking mode between Off, Auto Framing, Speaker Tracking, and Presenter Tracking.

NETWORK SETTINGS

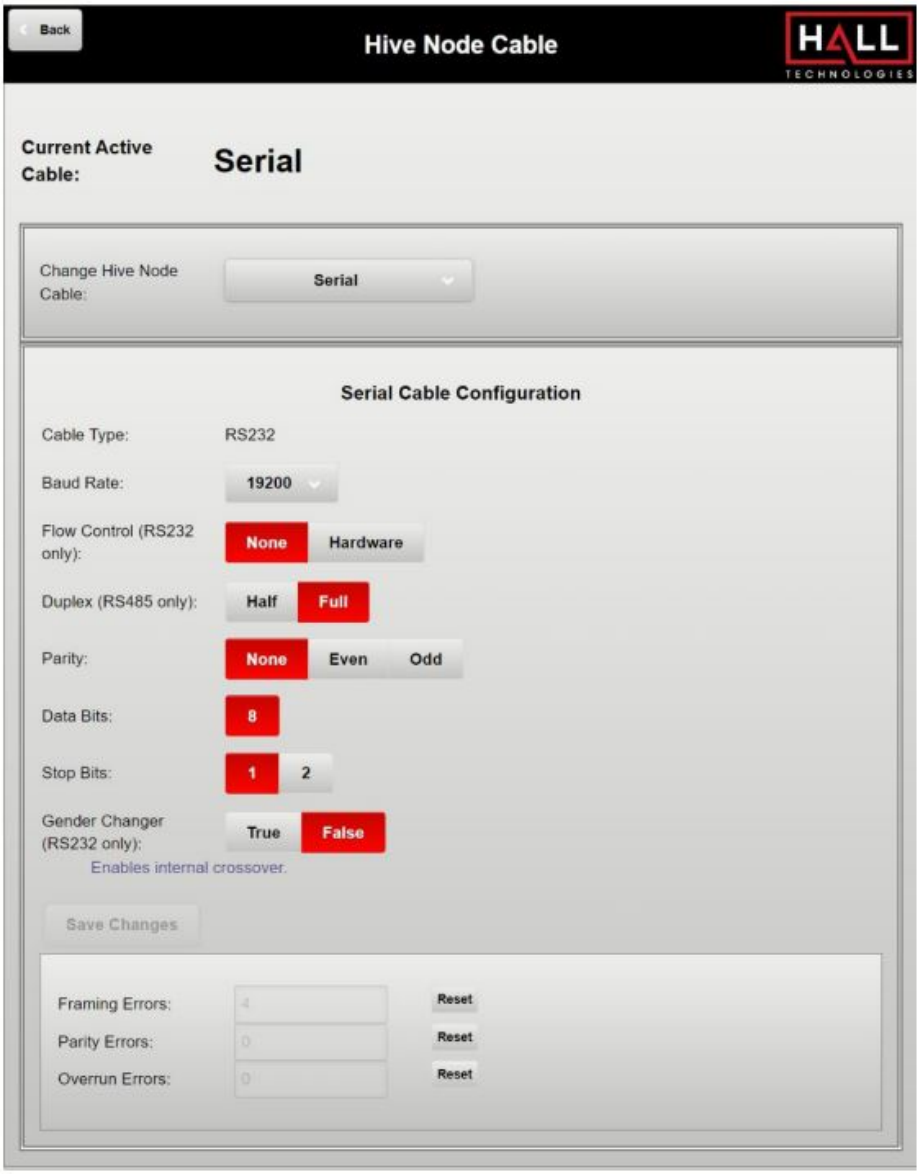
UI Element	Description
DHCP Enabled/Disabled	Click to enable/disable DHCP (default is set to DHCP)
Hostname	Set the desired name of the host
Save Changes	Click to save the changes

INFRARED CABLE



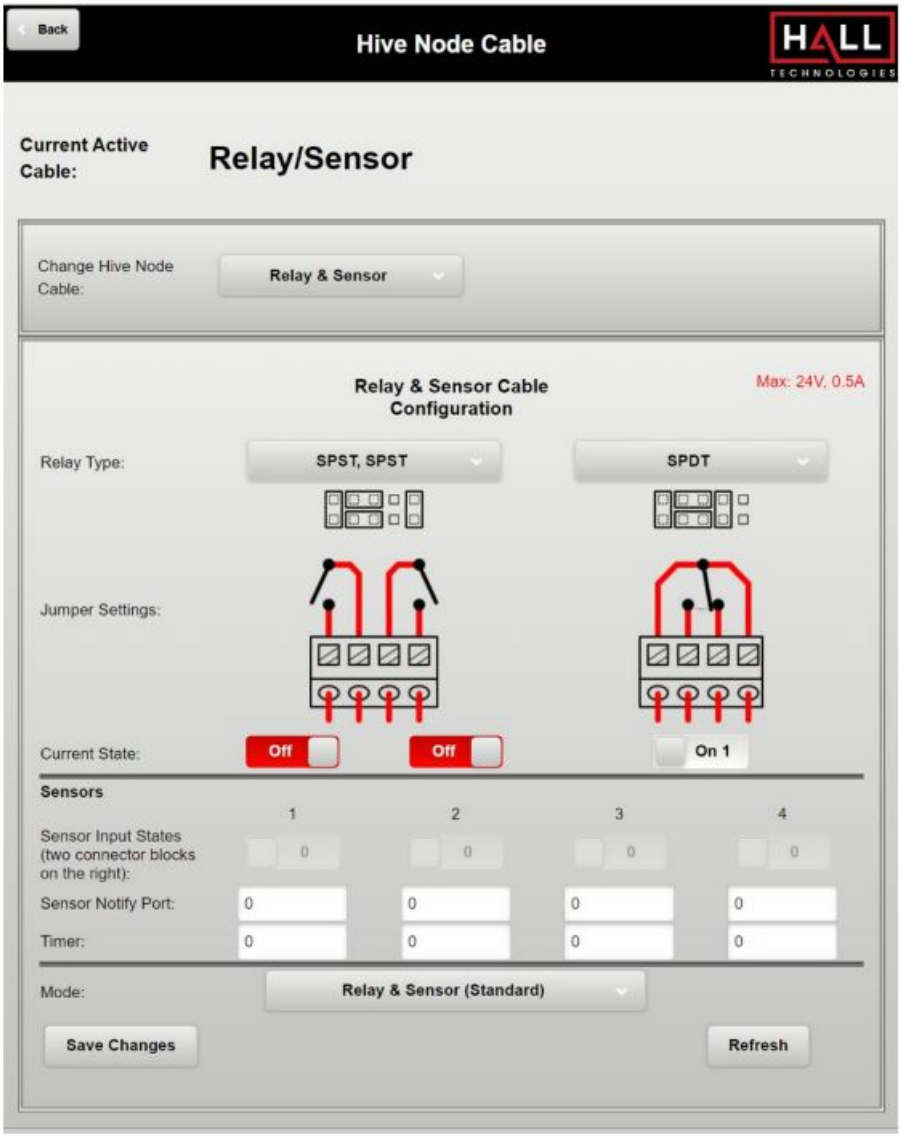
UI Element	Description
Emitter Type	Select the IR connection method
Save Changes	Click to save any changes to the IR emitter selection

SERIAL CABLE



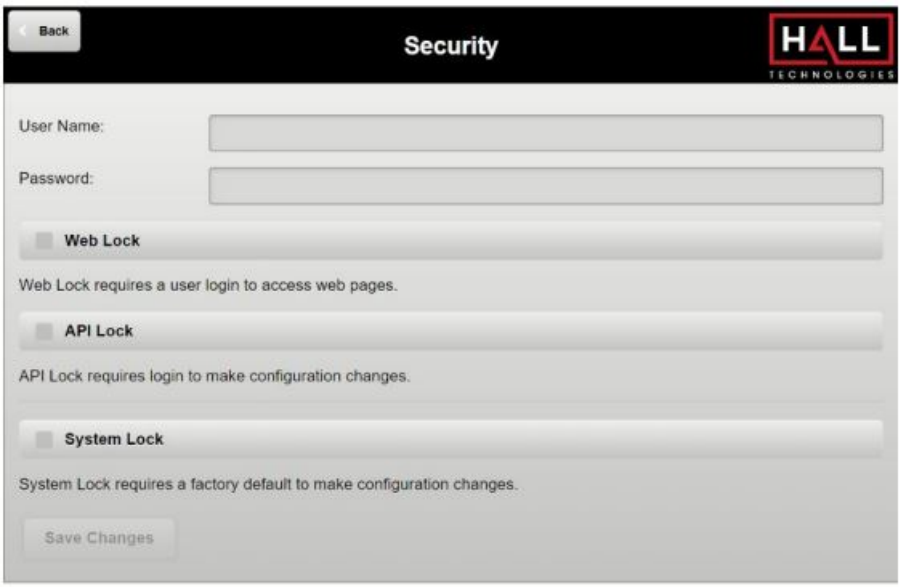
UI Element	Description
Baud Rate	Set the desired baud rate:
Flow Control (RS-232)	
Duplex (RS-485)	Select between half and full duplex when using RS-485. Set **Full** for 4-signal RS-485, and **Half** for 2-signal RS-485.
Parity	Set desired parity: None, Even, or Odd
Data Bits	Set the desired data bits
Stop Bits	Set the desired stop bits
Gender Changer (RS-232)	The gender of the data cable can be changed using the included gender changer. · True: used if the gender changer is used · False: used if the gender changer is not used
Errors	Tracks any communication errors that may occur. Click to reset each error count.

RELAY/SENSOR



UI Element	Description
Relay Type	In Presenter Tracking mode the camera frames the location of the presenter. This i s typically used for a single presenter. **Note:** there are no adjustments for smooth or speed of the framing in this mode.
Jumper Settings	Mirror flips the camera in the mirrored direction.
Current State	If there is flicker in the camera, typically caused by fluorescent light bulbs in the roo m, change the set frequency to the other one. (Options are 50Hz or 60Hz)
Sensors	Off decreases the quality of the camera to ensure laptop compatibility; On increase s the quality to HD.
Save Changes	Adjusts wide dynamic range to improve the camera’s image quality under high-contrast lighting conditions.

SECURITY



UI Element	Description
User Name	Change the user name (default is admin)
Password	Change the password (default is admin)
Web Lock	Click to enable/disable web lock
API Lock	Click to enable/disable API lock
System Lock	Click to enable/disable System Lock
Save Changes	Click to save any changes made to the security settings

ADVANCED

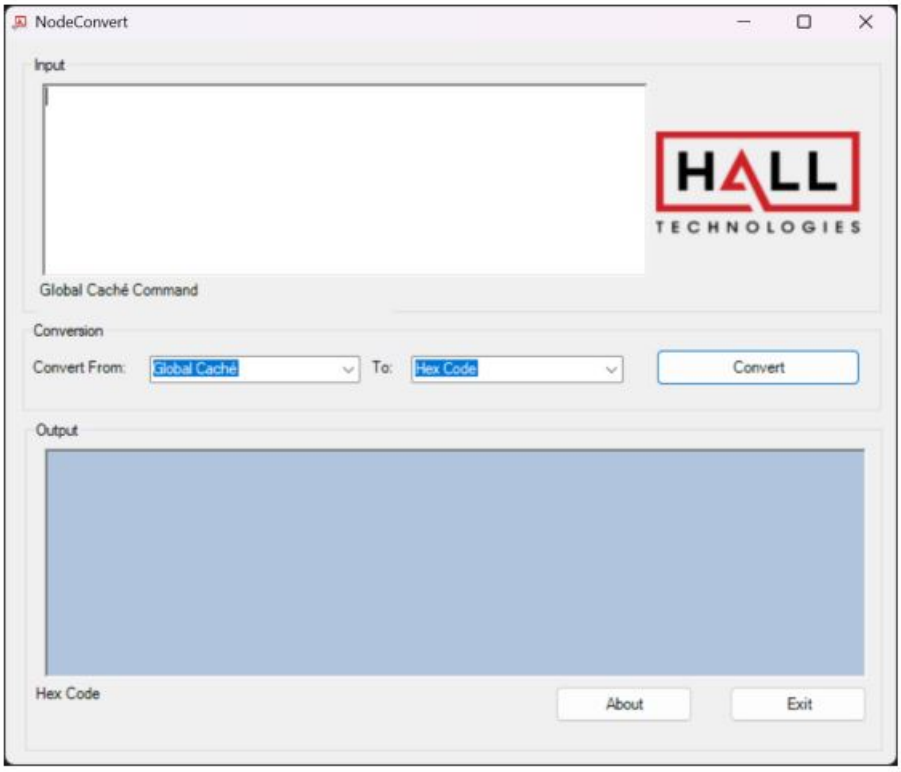
UI Element	Description
Reboot	Click to reboot the HIVE-NODE-MINI
Factory Reset	Click to restore the HIVE-NODE-MINI to the original factory settings

Utility Applications

There are four different utility applications.

NODE CONVERT
This utility is used to convert between IR codes and Hex codes. This is an executable file and does not require

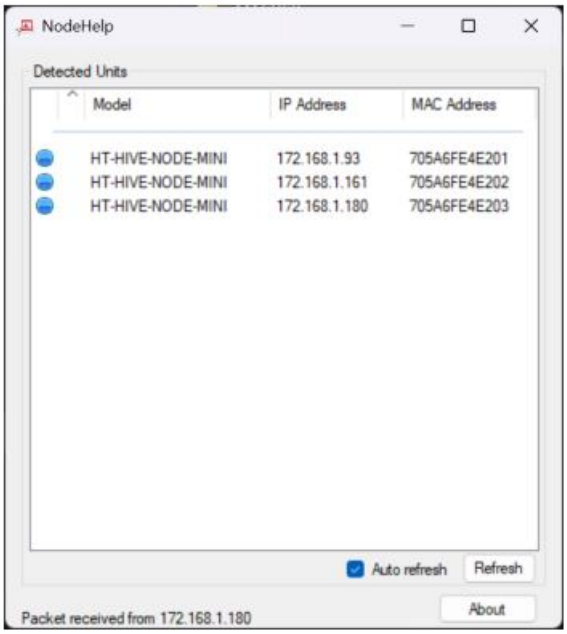
installation.



UI Element	Description
Input	Enter the command you wish to have converted
Convert From/To	Use the drop-down to select the desired command to be converted to.
Convert	Click on “Convert” to convert the command.

NODE HELP

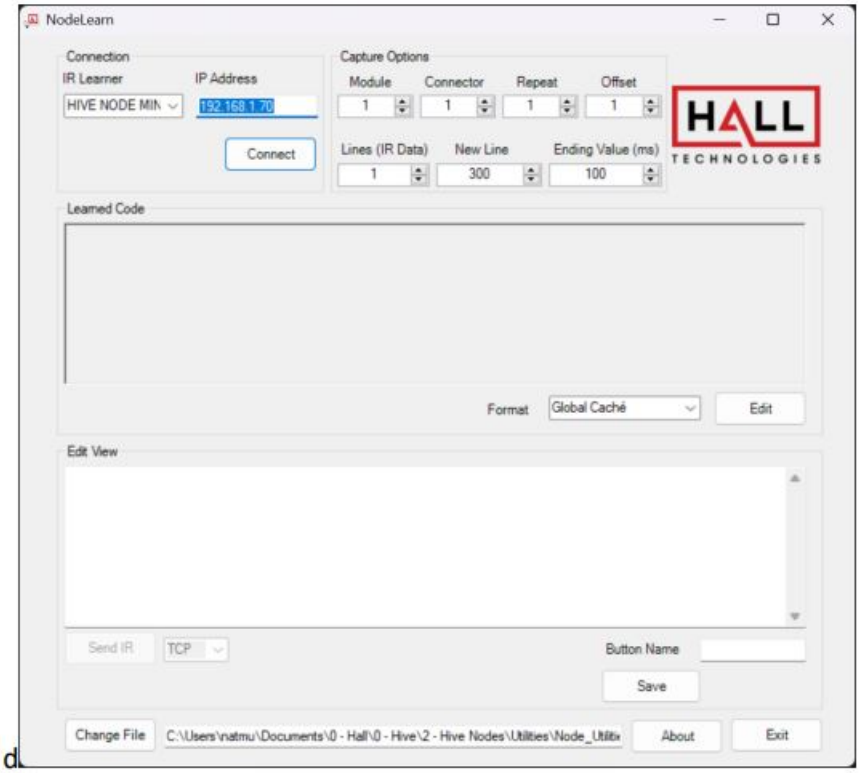
This utility is used to locate and configure HIVE-NODE-MINI devices on the network and is necessary to update the firmware. This is an executable file and does not require installation. When this utility is used it sends out multicast beacons and displays every MAC ID and IP Address within one minute.



UI Element	**Description**
Detected Units	Displays all detected HIVE-HIVE-NODE-MINI devices on the network
Auto refresh / **Refresh**	Click to checkbox to enable auto refresh. With this enabled the NodeHelp utility will constantly search for new HIVE-NODE-MINI devices. If unchecked, click the “Refr esh” button to refresh the list manually.

NODE LEARN

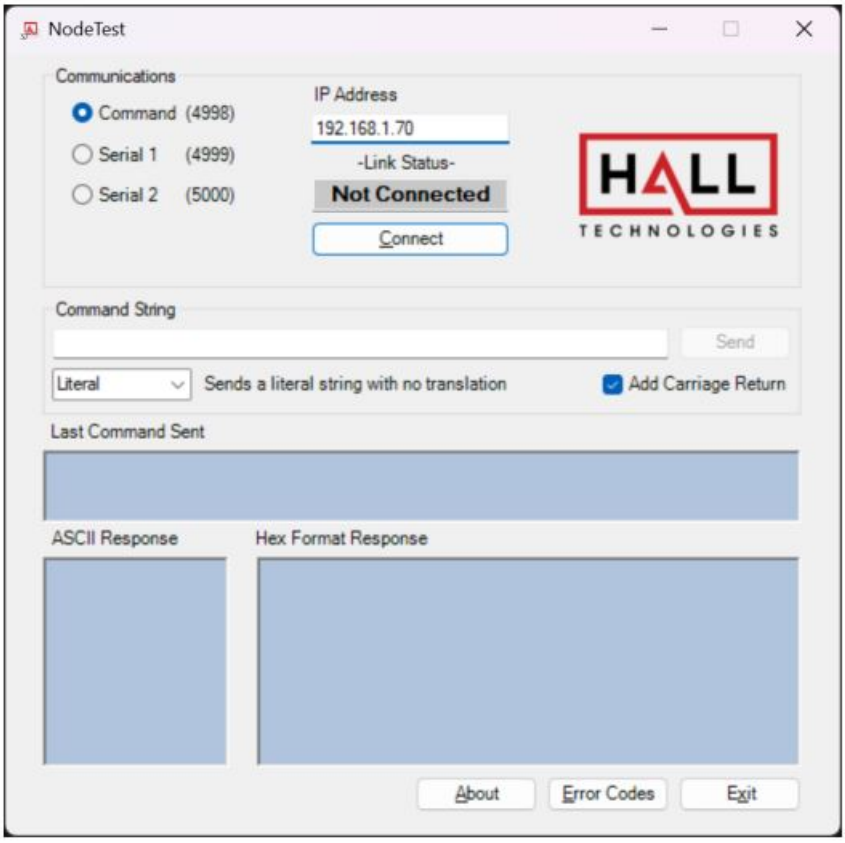
This utility is used to capture IR commands from different devices. This is an executable file and does not require installation.



UI Element	Description
Connection	Select the desired HIVE-NODE-MINI and click connect.
Capture Options	Set the desired capture options.
Format	Select the desired output format of the learned IR command
Save	Save the learned command to the desired file location.

NODE TEST

This utility is used to send literal strings, individual hex bytes, or a mixture of both to devices connected to HIVE-NODE-MINI. This utility contains two receive windows, one printing ASCII, and the other printing the hex values of each character received in a sixteen-byte hex dump format. This is an executable file and does not require installation.



UI Element	Description
Communications	Select the desired communication string along with the HIVE-NODE-MINI's IP address and connect to the device.
Command String	Enter the command string to be tested and hit Send
Responses	Responses to the command will be shown in these windows

Specifications

HIVE-NODE-MINI	
Interface	1 x RJ45, 1 x USB Micro, 1 x 3.5mm Connector
Setup & Configuration	Integrated web server for easy configuration and HTTP control
Network Connection	DHCP (default) & Static, 10/100 Mb Ethernet protocol
LED Indicators	Power to indicate activity and status
Control APIs	TCP Ÿ ASCII textual commands Ÿ Comma delimited, carriage return terminated HTTP Ÿ Web-based control using HTTP commands with JSON payload data
Dimensions (L x W x H)	65.5mm x 30.99mm x 20.83mm (2.58” x 1.22” x 0.82”)
Certifications	FCC (Part 15, Class B), C-tick, RoHS compliant

Infrared	
IR Output	3.5mm connector, from 20 to 500 kHz
IR Tri-Port	Support for emitter-emitter-emitter or emitter-emitter-blaster

Relay	
Relay Outputs	Ÿ 4 Integrated SPST relays with transient voltage suppression and easy p ush release terminal blocks Ÿ 24V AC/DC or 500mA N.O. contact relays
Relay Configurations	Ÿ Single Pole Single Throw (SPSP) Ÿ Single Pole Double Throw (SPDT) Ÿ Double Pole Double Throw (DPDT)
Sensor Inputs	Ÿ 4 configurable inputs Ÿ Voltage or contact closure sense modes
Voltage Sense Mode	Sense AC/DC voltages ±3V (RMS) to ±24V (RMS)
Contact Closure Mode	Sense contact closure from input from devices or feedback from external rel ays
Cable/Connector	Ÿ 3.5mm four conductor jack to HIVE-NODE-MINI Ÿ 4 easy push four terminal blocks for relay and sensor connections Ÿ 16 hardware jumpers included Ÿ 4.5 ft (1.5m) cable
Dimensions (L x W x H)	82.3mm x 50.8mm x 22.86mm (3.24” x 2” x 0.9”)

Serial	
Serial Outputs	RS-232 Ÿ Full support for Tx, Rx, CTS, RTS, DTR, and DTS signals Ÿ Bi-directional communication with hardware handshaking

	RS-232 Mini Jack Ÿ Full support for Tx, and Rx signals Ÿ Bi-directional communication with hardware handshaking RS-485 Ÿ Four wire (full duplex) and Two wire (half duplex) capable

Serial Configurations	Ÿ Baud Rate: 300 baud to 115200 baud Ÿ Parity: Even, Odd, or None Ÿ Stop Bits: 1 or 2 RS-232 Ÿ Flow Control: Enable hardware RTS/CTS flow control. Ÿ Gender: Allows configuration of cable gender. Allows for null modem and straight through cable creation. RS-232 Mini Jack Ÿ Gender: Allows for null modem and straight through cable creation. RS-485 Ÿ Duplex: full duplex or half duplex Ÿ RS-422 compatible
Cable/Connector	Ÿ 3.5mm four conductor jack to HIVE-NODE-MINI RS-232 Ÿ Male DB9 connector with locking screws Ÿ Includes gender changer Ÿ 5ft (1.5m) cable RS-232 Mini Jack Ÿ Male 3.5mm mini jack stereo connector Ÿ 6.5ft (2m) cable RS-485 Ÿ 5-pin screw terminal block Ÿ Connector at 90° angle for easy fit Ÿ 5ft (1.5m) cable
Dimensions (H x L x W)	55.9mm x 32.5mm x 15.2mm (2.2” x 1.28” x 0.6”)

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Hall Technologies June 1, 2023

Documents / Resources

	HALL TECHNOLOGIES HIVE-NODE-RS-232 HIVE Node Wireless RS-232/IR and IP Controller [pdf] Instruction Manual HIVE-NODE-RS-232 HIVE Node Wireless RS-232 IR and IP Controller, HIVE-NODE-RS-232, HIVE Node Wireless RS-232 IR and IP Controller, Wireless RS-232 IR and IP Controller, RS-232 IR and IP Controller, IP Controller, Controller

References

- Home - Hall Technologies