HALL RESEARCH

CNT-IP-264
Web Enabled Controller

Order toll-free in the U.S. 800-959-6439
For technical support, call 714-641-6607
Hall Research, 1163 Warner Ave. Tustin, CA 92780
www.hallresearch.com   info@hallresearch.com

Introduction

Thank you for purchasing the CNT-IP-264 Web Enabled RS232 controller. This product provides the ability to easily create and add webpage control of one or more RS232 devices through the local area network. In addition, the CNT-IP-264 can control an unlimited number of IP enabled devices by means of Telnet protocol. The CNT-IP-264 features battery backed real-time clock that can be used to schedule events. For example a timer can be setup to send power off commands at the end of the day.

Before you install and start using the CNT-IP-264, **we highly recommend** that you pre-configure at least one unit on the bench with each possible type of device you intend to control, and get the system operating as you wish.

Once you have pre-configured the controller, then you can download and save the configuration file for safekeeping or for uploading to other CNT-IP-264 devices in your facility via the LAN.

First and foremost you need to identify the CNT-IP-264 device's IP address in order to program and configure it. Please read the following sections, and refer to the full user manual on the our website:

http://www.hallresearch.com/page/Products/CNT-IP-264

Configuring the System

A main feature of this unit is that for normal operation there is no need to install any software on your PC or app on your tablet or smart phone. You define the desired serial or telnet commands using the built-in web pages in the CNT-IP-264.

Furthermore, the elements (buttons) displayed on the control page are updated bi-directionally in real-time. Multiple users can access the same device at the same time and any changes made by one user will be reflected on all other browsers in real-time with in milliseconds and with no perceptible delay.

Each device has a unique MAC address shown on the product's label. The MAC address will be useful for identifying DHCP assigned IP address of that unit.

As shipped, the product does not have a static IP address (since a fixed IP address may not be on the same subnet as your LAN) and employs DHCP which enables unit to get an IP address from your local network. This makes the unit visible on your LAN. Hall Research provides free software tool called *Device Finder* which scans the local network for Hall Research devices. Result of search shows unique MAC addresses, assigned IP addresses, and model names of found devices. Further sections will explain more about this process.

Once you have the IP address (which may be temporary due to DHCP), then you can assign static IP address to each unit using the *Device Finder* software or by accessing the built-in web pages in the unit where you can change IP settings as desired.

Hardware Installation

The CNT-IP-264 has two Serial ports. The two ports can operate independent from each other or they can be configured to act as seamless pass-through but with the ability to issue commands via the network or scheduled event to either port. These modes are referred to as 'Dual-Port' or 'Pass-Thru'. Both configurations have their own advantages based on user's application. Modes differ in way information is passed to/from both serial ports. The either configuration.

Dual-Port (Default)

In dual port mode, the CNT-IP-264 device can be used to control 2 serial devices independently. Both serial ports will communicate with only IP interface on CNT-IP-264 as shown in Figure-1. No information will be passed between Serial port1 and Serial port 2.
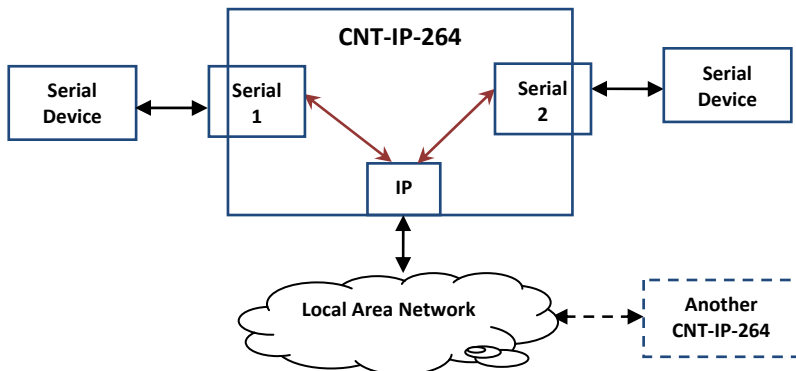

Figure-1 Dual Port Mode

Pass-Thru

In pass thru mode, information can be directly passed between both serial ports on CNT-IP-264 at the same time the IP interface on CNT-IP-264 can be used to monitor serial traffic as well as send data to either serial device. This allows 3rd party controllers to be used with the CNT-IP-264 device adding the web connectivity or IP control as shown in Figure-2.
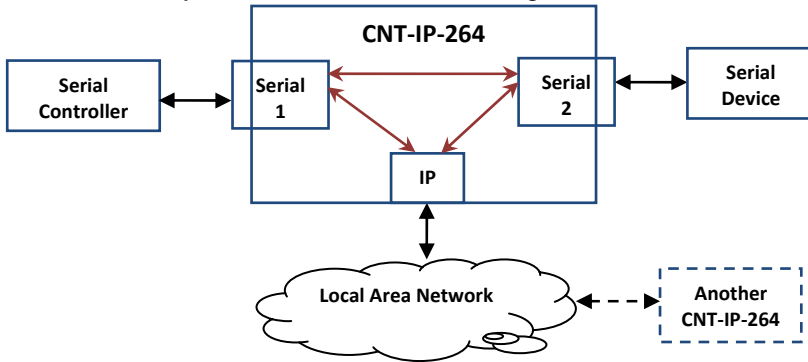

Figure-2 Pass Through Mode

Connections

- Connect the RS232 devices to be controlled to the Serial Port 1 and Serial Port 2 connectors on the CNT-IP-264 device. The appropriate RS232 cable needed; either straight-thru or null modem will be determined by the device being controlled. Pin definitions for both serial ports on CNT-IP-264 are described in tables below.
- Connect the LAN cable from your network router or switch (which is connected to router) to the CNT-IP-264 device IP connector.
- Connect the power supply to the CNT-IP-264 device. (The power LED shall illuminate when power is applied).

PORT #1 (FEMALE)		Signal Direction	External Serial Device (MALE)		External Serial Device (FEMALE)	
PIN	Definition		PIN	Definition	PIN	Definition
2	TxD	→	2	RxD	3	RxD
3	RxD	←	3	TxD	2	TxD
5	GND	↔	5	GND	5	GND

PORT #2 (MALE)		Signal Direction	External Serial Device (FEMALE)		External Serial Device (MALE)	
PIN	Definition		PIN	Definition	PIN	Definition
2	RxD	←	2	TxD	3	TxD
3	TxD	→	3	RxD	2	RxD
5	GND	↔	5	GND	5	GND

Embedded Software

Finding the IP Address of CNT-IP-264

Units are shipped with DHCP enabled which means when connected to LAN network, your network router will assign a dynamic IP address to CNT-IP-264. Each unit also has unique MAC address printed on the back of the unit. Please note this address.

To find the IP address, use the Hall Research 'Device Finder' Software. This is a free software and available for Windows™ or Mac™ operating systems. Device Finder can be downloaded from
http://www.hallresearch.com/page/Products/DeviceFinder

Please follow steps below to find an IP address of the Unit.
- Download and Install Device Finder.
- Run Device Finder and Click on 'Search'.
- Device Finder will now scan your network for Hall Research products and will list them as it finds. As shown in the image below.
- In the list of devices displayed by Device Finder, look for MAC address (printed on the back side) of your unit to get an IP address of that particular unit.


NOTE   CNT-IP-264 uses multiple ports on LAN to offer different services. For unit to be fully functional LAN should allow network traffic on following network ports.
- Port 23   [TCP]   for (Telnet Control)
- Port 80   [TCP]   (Web Interface)
- Port 8080   [TCP]   (WebSockets in Web Interface)
- Port 6324   [UDP]   (Device Finder Utility)

CNT-IP-264 Web interface uses WebSockets in protocol in when communicating through browser. Almost all the latest browsers supports this protocol, however there are some older version that does not. Below is list of minimum requirement for different web browsers that works with CNT-IP-264.
 1) Google Chrome (12.0 and later)   2) Firefox 5 (with Websockets enabled)
3) Safari 5   4) Mobile Safari (iOS 4.2 and later)
5) Opera (Not recommended, Version 12.0 works but later versions do not)
Apple iPad, iPhone, iPod Touch (basically iOS devices with version 4.2 and above) are currently supported.
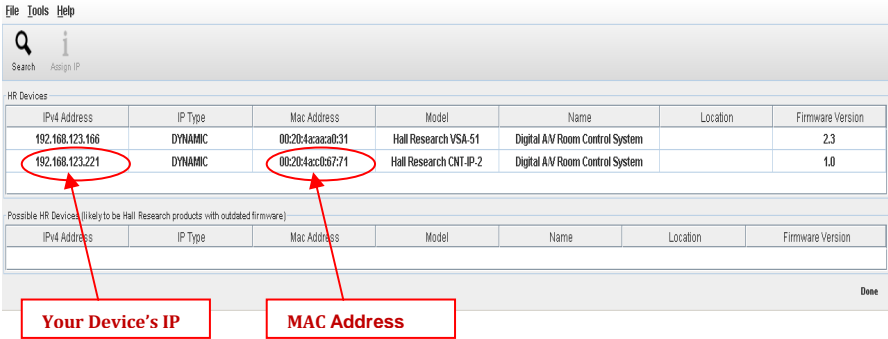
Device Finder Utility

The IP address that you found is Dynamic in nature since DHCP is used to get the address. Which means, It could change between power cycles. To prevent this, one can change the settings to set STATIC IP address from Web Manager explained in the next Section.

Once STATIC IP address is assigned unit will remember it and will always come up at same IP address.

Web Manger and Control
- Access the CNT-IP-264 device from its web interface via a browser
- Type the IP address of the CNT-IP-264 device in the address bar of the browser. For example, http://192.168.123.221 and press ENTER.
- When presented with a LOGIN dialog box, type in the following information to gain access to the unit.
     USERNAME: admin
     PASSWORD: pass

- The webpage will always start out by showing the systems CONTROL tab
- To navigate in the interface, click on the desired 'TAB' at the top of the screen (Status, Control or Configuration).
- The CONTROL Tab contains the graphical buttons that the webpage user will click to send the serial or Telnet commands to the attached serial devices.
- The STATUS Tab shows general information about the device

- The CONFIGURATION Tab contains all the user configurable controls and settings. From these screens, the user programs the CNT-IP Serial device.

At this point, if desired, change the IP configuration to a STATIC address that matches your network settings.
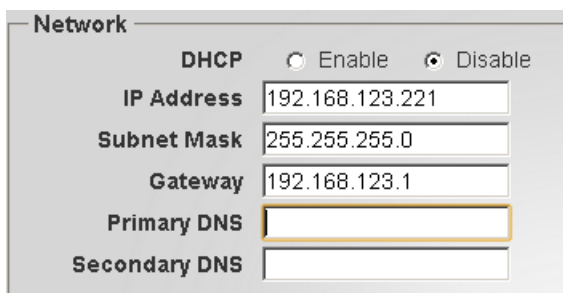
The network settings are available on the following tab:

> Configuration -> System -> Communications

Disable the DHCP to set a STATIC address

Supply the desired IP Address, Subnet Mask and Gateway Addresses that match your network requirements.

SAVE the changes by clicking the small disk icon in the upper right corner when finished.

```
┌─ Network ──────────────────────────────────┐
│           DHCP    ○ Enable    ⊙ Disable     │
│     IP Address   │192.168.123.221│          │
│    Subnet Mask   │255.255.255.0 │           │
│        Gateway   │192.168.123.1 │           │
│     Primary DNS  │              │           │
│   Secondary DNS  │              │           │
└────────────────────────────────────────────┘
```

Program the serial commands for the device(s) to be controlled into the appropriate ACTIONS through the web interface.

Create buttons (toggle or momentary) and tie ACTIONS to those buttons

See the users' manual for full details.