KT-NCC

Network Communications Controller

Installation Manual

KANTECH

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Pre-Installation Information

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Safety Instructions Only service personnel will install and maintain the KT-NCC. Service personnel must have appropriate technical training and experience necessary to be aware of the hazards to which they are exposed and of measures to minimize the danger to themselves or other persons.

Fixed Class III equipment is designed for continuous operation. It shall be installed in non hazardous locations only, overvoltage category II, and it shall be powered via a limited power source as defined within the Clause 2.5 EN60950:2000. The equipment shall be interconnected with other equipment by using cables insulated with PVC, TFE, PTFE, FEP, neoprene or polymide and which are rated for the intended environment.

The cabinet of the KT-NCC must be secured to the building structure before operation.

The connection to the mains supply must be made as per the local authorities' rules and regulations. An appropriate disconnect device shall be provided as part of the building installation; where it is not possible to rely on the identification of the neutral in the AC mains supply, the disconnecting device shall disconnect both poles simultaneously (Line and Neutral).

The power supply must be permanently connected. In European Union countries, it shall meet the applicable requirements of the low voltage directive and protected as per the EN60950 standard. In all other countries, it shall be of an approved type acceptable to the local authorities.

If during the installation, openings are made in the cabinet, it is the installer's responsibility to ensure that the same degree of protection for the cabinet as it had before will be provided, by the use of bushings, fittings, adequate sealant, etc. (These must be appropriate for the expected environmental conditions).

Internal wiring shall be routed in a manner that prevents excessive strain on wires and on terminal connections, loosening of terminal connections, and damage of conductor insulation.

Caution: DANGER OF EXPLOSION if lithium battery is incorrectly replaced. Replace only with the same equivalent type recommended by the manufacturer.

It is the responsibility of the end-user and installer to ensure that used batteries are disposed according to the waste recovery and recycling regulations applicable of the intended market. The used batteries shall be in full conformance with 91/157/EEC Directive.

Attention: DISCONNECT THE POWER WHEN SERVICING THE KT-NCC.

Technical Support For technical assistance with the KT-NCC and other Kantech products, contact technical support, Monday to Friday 8:00 AM to 8:00 PM E.S.T. (GMT -5:00)

- **Toll-Free phone (US & Canada)**: 1 (888) 222-1560
- **Phone**: +1 (450) 444-2030
- **Fax**: +1 (450) 444-2029
- **Internet:** www.kantech.com
- **E-mail:** kantechsupport@tycoint.com

KT-NCC Compliance Specifications

KT-NCC FCC & IC Compliance

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation. This class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. The KT-NCC is also compliant with EN55022: 1994, amendment 1:1995, Class A.

UL 294 Compliance Notice

- The KT-NCC is UL 294 listed with EntraPass, KT-300 Door Access Controllers, IoProx Proximity readers, and Trex request to exit devices
- Each KT-NCC enclosure will be installed in a secured and protected location with tamper supervision
- Each KT-NCC will be powered by a class 2 transformer such as the TR1640U
- Each KT-NCC will be battery backed up with a BD7-12, 12V/7Ah battery
- Should additional sites or loops of KT-300 controllers be added, the installer must configure alarms to be acknowledged in the event of communication troubles or failures
- Each KT-NCC will be equipped with an AC powered LED installed outside the KT-NCC and connected to an onboard relay, and visible at all time to monitor relay status, as per UL294, section 32.1.5.

UL 1076 Compliance Notice

- The KT-NCC is UL 1076 Listed as a Commercial Proprietary Control Unit Accessory (Section 83.2), with EntraPass and Redundant Server, alarm system features, KT-300 Door Access Controllers, IoProx Proximity readers, and Trex request to exit devices – other sensor devices (temperature, water level, etc.) may be used as long as they are also UL 1076 Listed
- The EntraPass and Redundant Server shall be running at all time, and manned 24 hours a day, 365 days a year – The EntraPass and Redundant Server will each have their own operator workstation
- Data processing equipment and office appliance and business equipment used as central supervisory equipment station shall be Listed to Information Technology Equipment - UL 60950
- Should the EntraPass and/or Redundant Server be replaced, a UL 60950 listed computer must be used - Kantech recommends the use of Dell computers, models Optiplex or Precision, with the following requirements:
    - Operating Systems: Windows® 98 (Second edition)/NT/2000/XP/2003 Standard and Enterprise Server Editions
    - Pentium III at 800 MHz (minimum) processor
    - 256 MB RAM minimum
    - 4 GB minimum free hard disk space
    - 17 inch screen (1024 x 768 minimal resolution)
    - 24-bit (16 million colors) color depth (for video integration)
    - 1024 x 768 screen resolution
    - 32 MB graphic adapter
    - CD-ROM drive
    - 10/100 Base-T network adaptor interface card
- The Central Supervisory Equipment shall employ supply line transient protection complying with the Standard for Transient Voltage Surge Suppressors, UL 1449, with a maximum marked rating of 330 V.
- The Central Supervisory Equipment shall employ signal line Transient protection complying with the Standard for Protectors for Data Communications and Fire Alarm Circuits, UL 497B, with a maximum marked rating of 50 V.
- The Central Supervisory Equipment shall employ that communication circuits and network components connected to the telecommunications network shall be protected by secondary protectors for communication circuits. These protectors shall comply with the Standard for Secondary Protectors for Communications Circuits, UL 497A. These protectors shall be used only in the protected site of the telecommunications network.
- The Central Supervisory Equipment shall be installed in a temperature controlled environment. A temperature controlled environment is defined as one that can be maintained between 13° - 35°C

(55° - 95°F) by HVAC system. Twenty-four hours on standby power shall be provided for the HVAC system. The standby power system for the HVAC system may be supplied by an engine driven generator alone. A standby battery is not required to be used.

- A marking to identify the application and signaling function of the product is located on the inside of the unit (inner door sticker).
- For certified commercial proprietary control unit accessory applications, the requirements of UL 1076, Commercial Proprietary Control Unit Accessory also apply.
- All alarms shall be reported and acknowledged in the following priority*:
    1. Fire alarm and industrial supervision where a risk of injury to persons, or damage or destruction of property may be involved
    2. Hold-up or panic alarm
    3. Burglar alarm
    4. Watchman tour (Guard tour)
    5. Fire-alarm supervision
    6. Burglar-alarm supervision
    7. Industrial supervision where a risk of injury to persons, or damage or destruction of property will not be involved

* To set these priorities, please adjust the Event Parameters, found in EntraPass System.

KT-NCC UL Compliance

In order to comply with UL listings, the following has to be respected:

- Use of a UL listed 60950 computer
- Use of a UL recognized tamper switch on every housing cabinet for the KT-NCC
- Use only UL listed or recognized cables
- Use only UL listed or recognized adaptors
- Use only a UL listed transformer such as Kantech TR1640U
- Use a Kantech BD7-12, 12V/7Ah battery

Note: The backup battery provides operation fo up to 6 hours; This battery has only been tested for only 4 hours as per Section 33 of UL 294, fifth edition. A message will be sent to the monitoring station when the battery life has less than 4 hours remaining.

Overview

Introduction

The KT-NCC Network Communications Controller, the latest controller in the Kantech family of products, redefines the way you can manage access control for a widely-dispersed environment. In fact, all events from the controllers are stored in the KT-NCC for additional security, in case of communications failure between the controllers and the server. This innovative way of bringing the communication closer to the controller eliminates wiring costs, PC reliability issues, and cuts down the actual distance the information has to travel through the network, greatly reducing the bandwidth required. The KT-NCC can connect up to seven loops per gateway and features four relays that can activate in the event of communication loss, power failure, or upon activation of a tamper switch.

Combining the powerful EntraPass Global Edition software to the KT-NCC also allows for a more effective way of utilizing global security features such as the anti-pass back, alarm systems, guard tours, dual custody, etc.

The KT-NCC's main task is to acquire information from all input channels and relay the results back to all output channels through the controller loops. The KT-NCC communicates with the server through an ethernet 10/100 Base-T port and indicates its communication status through a heartbeat LED. The KT-NCC will report low battery and battery failure events, and can activate relays in instances of battery power loss or communication failure. For added security, the KT-NCC has an onboard rechargeable lithium battery that ensures data retention for a minimum of 75 hours, to safeguard any loss of data due to a complete failure.
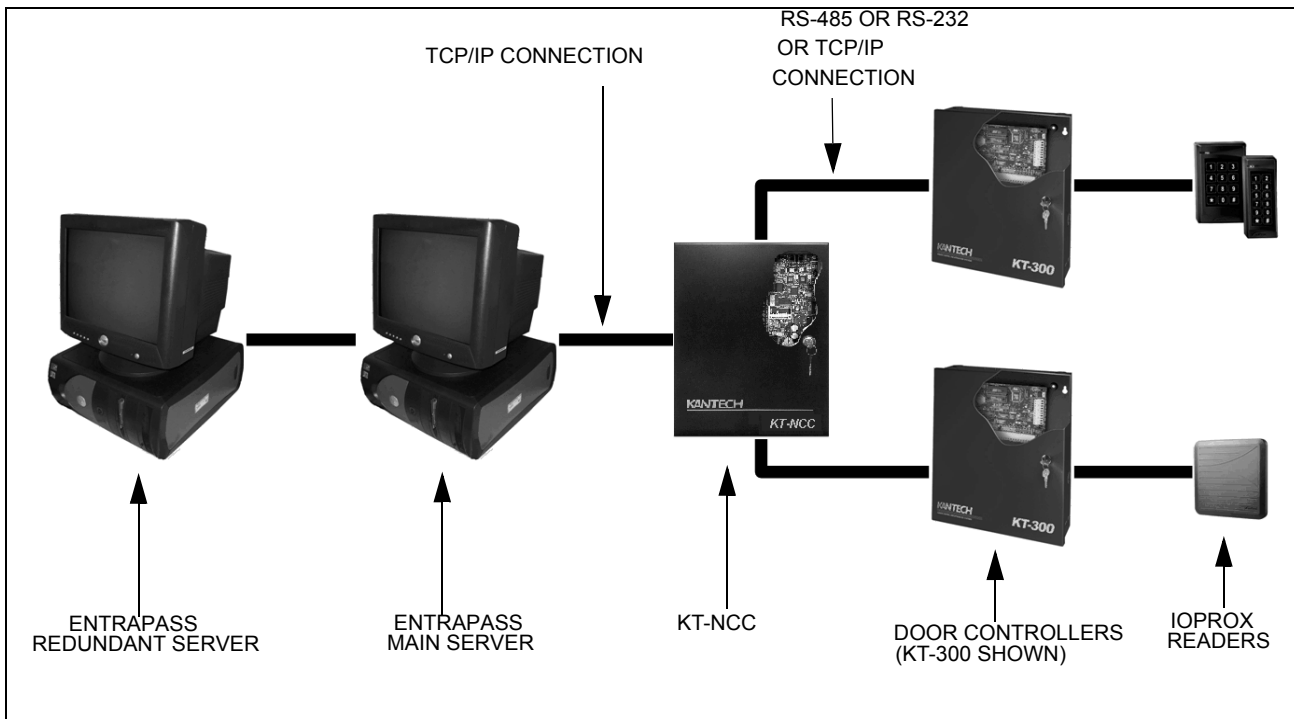
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Figure 1. KT-NCC Configuration

Environmental Specifications

Table 1. Environmental and Electrical Specifications

Specification	Description
Operating Temperature	2°C to 49°C (35°F to 120°F)
Humidity Level	0 to 85% non-condensed, indoor use only
AC Power Input	16.5 VAC, 40VA class 2 transformer (Part #: in US TR1640U - Part # in Canada TR1640P/CSA)
AC Power Rating	16.5VAC, 40VA, 2.42A
Battery Back-Up	1 KT-BD7-12, 12V/7Ah battery supervised, provides a minimum of 4 hours of operation

KT-NCC Specifications

Table 2. KT-NCC Specifications

Specification	Description
Cabinet Dimensions	375.9 mm (14.80") x 304.8 mm (12.0") x 125.7 mm (4.95")
Cabinet Weight	4.0 kg (8.8 lbs)
KT-NCC Board dimension with heat sink	22.90 cm (9") x 13.98 cm (5 1/2") x 5.20 cm (2 1/16")
Communication Ports	RS-485 x 2, RS-232, Ethernet 10/100 base-T
Communication Speed	Up to 19,200 Baud for serial communication
Firmware Flash Memory	16 MB
SDRAM Memory	64 MB (Protected by a rechargeable Lithium ION battery for a minimum of 75 hrs)
Auxiliary Power Output	12 VDC, 250 mA, resettable fuse protected
Relays	4 form "C" relays, 30VDC/5A

KT-NCC Characteristics With EntraPass Global Edition

Table 3. KT-NCC Characteristics With EntraPass Global Edition

Specification	Description
Controllers per KT-NCC	128
Loops Per Gateway	7 loops (2 x RS-485, 1 x RS-232, 4 x IP)
Maximum Controllers per Loop	RS-485 (COM1) = 32 RS-485 (COM2) = 32 RS-232 = 32 IP#1 = 8 IP#2 = 8 IP#3 = 8 IP#4 = 8
Number of Cards	56,000
Readers/Keypads per Gateway	128 X 2 = 256
Door Lock Outputs per Gateway	128 X 2 = 256
Maximum Number of Floors	64 floors
Access Levels	250
Access Door Groups	100
Relay Groups	100
Controller Groups	100
Access Code Groups	100
Operating System	Windows CE embedded v 5.0

Pre-Installation

Before installing the KT-NCC, confirm that all parts are in order, all necessary tools are available, and that the site is properly prepared.

If you are connecting your KT-NCC to the EntraPass Global Edition software, you must make sure that you are running version 3.17 or higher of EntraPass Global Edition software.

Equipment Checklist

The KT-NCC includes the following parts:

- Cabinet enclosure: KT-NCC-CAB (Cabinet and green ground cable only)
- KT-NCC Board: KT-NCC-PCB (PCB with accessory kit - KT-NCC-ACC, battery cable, hardware to affix the wire and the PCB)
- Accessory Kit: KT-NCC-ACC (Accessory kit with EOL resistors, CAB-2S VC-485 to KT-NCC cable, and screwdriver)
- Tamper Switch: KT-TAMPER
- Lock and keys: KT-LOCK (CamLock with ring spacer, hexnut an keys. Already installed on the cabinet)
- Installation Manual: DN1611

Along with the included parts, the following items will be needed to correctly install the KT-NCC:

- An AC transformer 16.5 VAC, 40 VA, class 2 wire-in or plug-in transformer. The Kantech TR1640U (in USA) or TR1640P/CSA (in Canada) is recommended.
- One KT-BD7-12, 12V/7Ah battery.
- Network cable (not supplied)

Tool Checklist

The following tools will be required to install the KT-NCC:

- Small screwdriver (included in the KT-NCC kit)
- .65 cm (1/4 in) nut driver
- Wire strippers
- Small needlenose pliers

Reading Checklist

We strongly suggest that you keep the following documents close at hand:

- *EntraPass Global Edition Reference Manual*, DN1316
- *KT-NCC Quick Set-up Guide*, DN1656
- *How to Migrate to KT-NCC*, DN1661
- *To Upgrade EntraPass Global Edition software from Version 1 to Version 3*, DN1541
- *Upgrading NCC8000 to NCC Windows*, DN1567
- *Setting Up EntraPass Mirror Database and Redundant Server*, DN1317
- *Lantronix UDS-10 Setup Instructions*, DN1506

Site Checklist

Ensure the following:

- The mounting site is ready. The upper mounting screws should be 25.65 cm (9.9 in) center to center, the bottom mounting holes are 31.50 cm (12.40 in) below the upper mount holes.
- The site has been approved and all wiring complies with UL requirements and other codes as appropriate.
- All preliminary site work is completed and the site is clean and free of dust or other contaminants.

KT-NCC Installation

The KT-NCC installation process consists of installing your KT-NCC and then configure it in EntraPass Global Edition software.

To install the KT-NCC, first mount the cabinet, connect back-up power and grounding connections, then wire all relays and controller loops to the board.

Mount the KT-NCC Enclosure

The KT-NCC cabinet does not require any additional enclosures.

- The cabinet must be mounted indoor in a secure, yet accessible, location that supports the environmental conditions listed in the environmental specifications on page 7.
- Leave 23 cm (8 in) clearance space around the sides of the cabinet, and at least 33 cm (13 in) space in front of the cabinet.
- Avoid placing the cabinet near electrical or communication devices.
- Electrical metallic tubing (EMT) 1.9 cm (3/4 in) conduit knockouts are provided on all sides of the cabinet.
- Install the cabinet on the selected wall using four screws fed through the mounting holes. Refer to Figure 27 on page 39 for details on the KT-NCC enclosure.
- Install an AC Powered LED outside the KT-NCC cabinet, that can be monitored 24 hours/day.

Remove the Enclosure Door (Optional)

The enclosure door can be removed to facilitate access to the KT-NCC board and to ease installation. To remove the door:

1. Remove the ground wire from the screw on the door (see Figure 2 below).
2. Lift the door up until the hinges no longer touch the pins.

Note: When re-attaching the ground wire be sure to slide the metal loop at the end of the wire onto the screw, then add the nut on the screw to ensure that the ground wire stays in contact with the door.
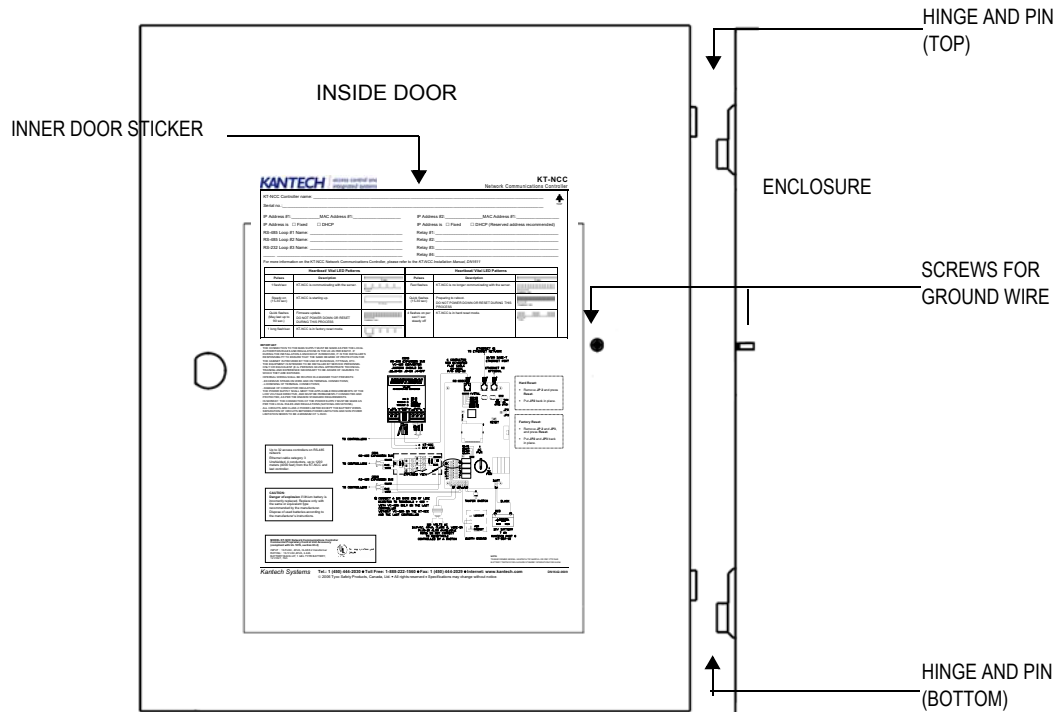

Figure 2. Enclosure Door and Hinge

Earth Ground   Use a single conductor solid copper wire to ground the KT-NCC to a good earth ground as per the local electrical code. Refer to Figure 3 below.
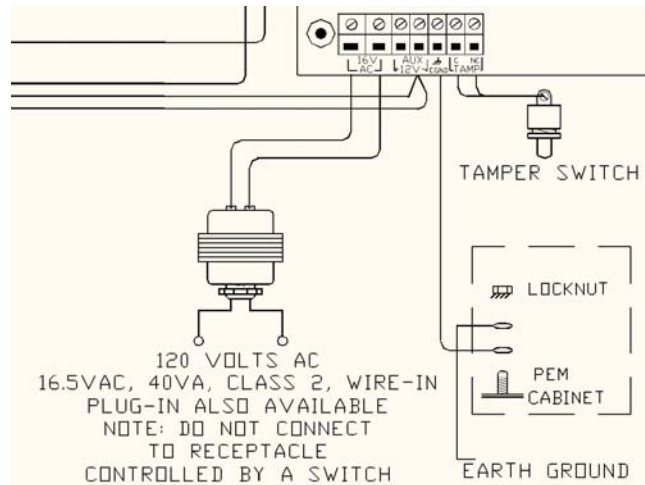

Figure 3. Tamper Switch and Earth Grounding

Connect the KT-NCC to Controllers Loops

The KT-NCC can connect to two RS-485 expansion buses and through one RS-232 connection. The following figures demonstrate these connections. The maximum connection loop length with the appropriate cable is 1.2 kilometers (4,000 feet).

Note: Connecting several KT-NCC's at a single point is not acceptable nor are "Y" or "spider web networks".

1. The two RS-485 terminals (labeled COM 1 and COM 2) can be found next to the relay terminals at the bottom of the left side of the KT-NCC board. Wire the loops according to Figure 4 below: The orange wire connects into the + terminal; the blue wire connects into the - terminal; and the white wire connects to the ground for the KT-NCC.
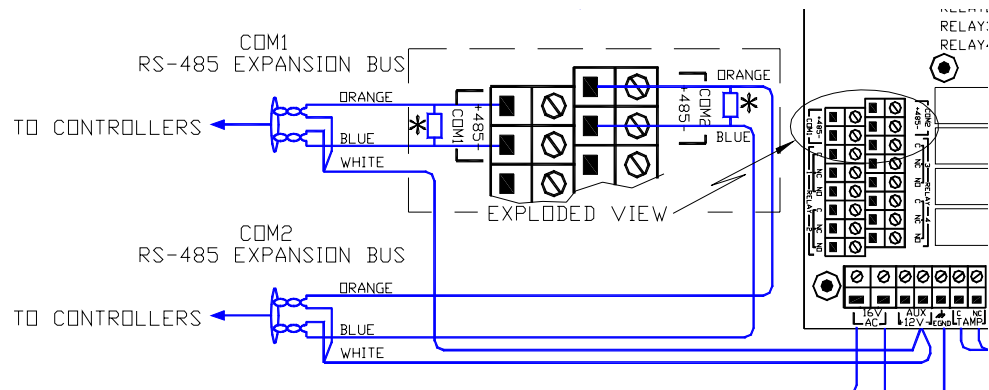

Figure 4. RS-485 Connection

2. The RS-232 connection is demonstrated in Figure 5 below. A straight flat cable (included in the accessory kit), connects from the RS-232 connector on the top of the KT-NCC board to a VC-485.
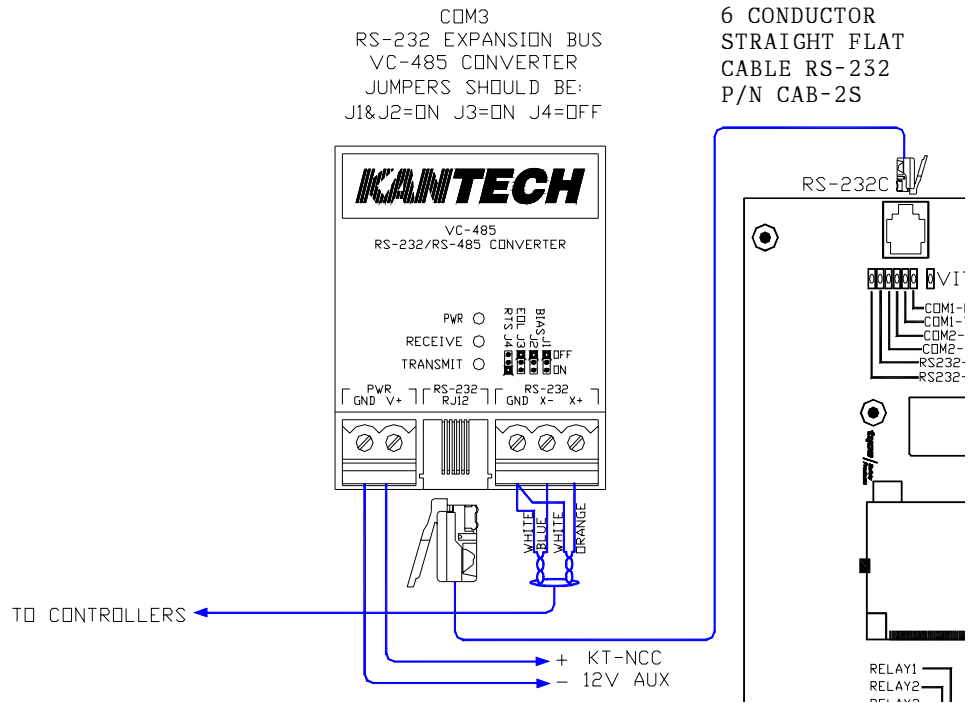
Figure 5. RS-232 Connection

Relays

The KT-NCC comes with four onboard relays located below the RS-485 terminals (COM 1 and COM 2). These relays activate under conditions chosen in EntraPass Global Edition software. By default, on-board relay #2 is configured to monitor AC power failure. (Configuration is done in the Gateway dialog in EntraPass.)

In order for the KT-NCC to comply with UL294 section 32.1.5, the installation technician has the responsibility of installing an AC powered LED outside the KT-NCC cabinet and connect it to relay # 2 on the KT-NCC circuit board. The LED must be visible at all time.
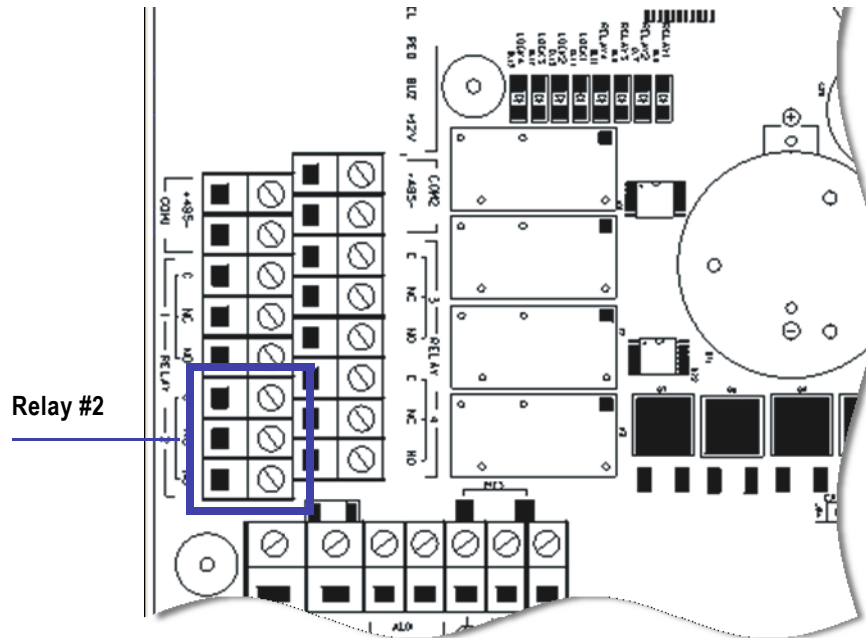

Figure 6. Onboard Relay

Note: Relay #2 is located at the bottom left of the KT-NCC circuit board.

For more information on configuring relays, please refer to the *EntraPass Global Edition Reference Manual,* DN1316.

Install Additional Sites

You can install four additional sites of eight controllers using a Lantronix UDS-10 for each site, as shown in Figure 7 below.
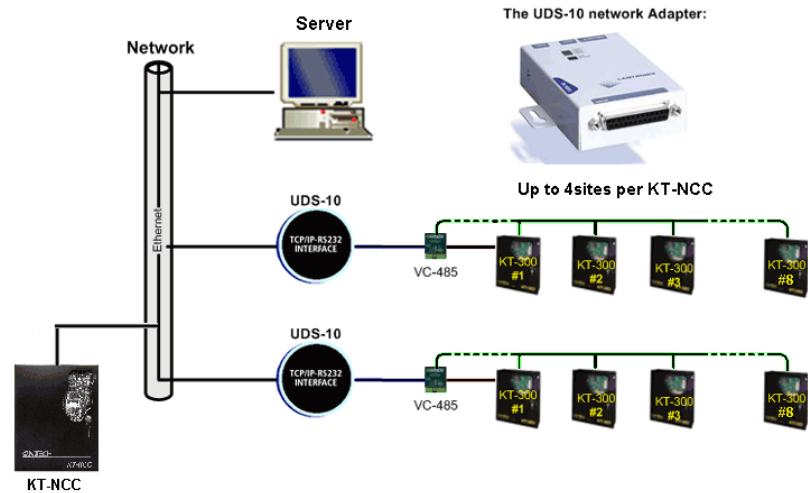

Figure 7 Additional Sites Installed with the UDS-10 Network Adapter

Note: This type of installation has not been verified by UL.

Install the BD7-12, 12V/7Ah battery

The cabinet is large enough to accommodate the battery backup supply and the necessary wiring connections for most applications. The battery sits in the enclosure as shown in Figure 27 on page 39.

1. Place the KT-BD7-12, 12V/7Ah battery in the cabinet.

2. To connect the board to the battery, connect the battery to the RED and BLACK leads on the KT-NCC as illustrated in Figure 8 below.
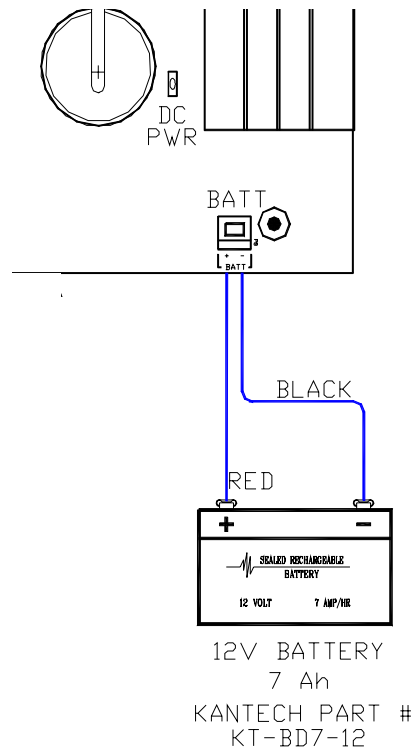

DC
PWR

BATT

BLACK

RED

+   −

SEALED RECHARGEABLE
BATTERY

12 VOLT   7 AMP/HR

12V BATTERY
7 Ah
KANTECH PART #
KT-BD7-12

Figure 8. Connecting the Battery

Note: The backup battery will support normal operations for up to 4 hours if the AC supply is removed. An internal battery verification will cut the battery power if the battery voltage level falls below 9.5 volts.

Install the AC Transformer

1. Install the 16.5 VAC, 40 VA, class 2 transformer. KT-NCC unit will not start on battery alone.
2. Power up the KT-NCC.
3. Make sure the KT-NCC is in factory default before you start the configuration. Check the blue heartbeat LED located next to the RS-232 connector to determine the status of communication and other vital parameters. (Refer to Table 6 on page 40 for details on the heartbeat pulses.)
4. We suggest that you fill-out the detachable KT-NCC *Configuration Reference Sheet* (on the last page of this manual) with your configuration information and keep the information close at hands.

KT-NCC Software Configuration

Pre-Configuration

Before you register your KT-NCC to EntraPass Global Edition software and start configuring it, you must verify the following:

- Make sure that you are running version 3.17 or higher of EntraPass Global Edition software.
- Define what type of connection your network architecture will be requiring: LAN or WAN and DHCP with enterprise server; DHCP with EntraPass server; Static IP address.
- Once you have defined the type of connection you will be using, the System Administrator has to provide you with the proper IP address information.
- We suggest that you fill-out the detachable KT-NCC *Configuration Reference Sheet* with your configuration information and keep the information close at hands. The sheet is located on the last page of this document.

Configuration Scenarios

Two types of network architectures exist: Local Area Network (LAN) and Wide Area Network (WAN). Each of these types of architecture has various possible configurations.

LAN enables users to communicate, exchange data and share resources in an internal network. A local network can be made up of a server and one or several controllers connected to the server through a hub or switch. Whatever the case, an IP address has to be assigned so that the KT-NCC controllers and the EntraPass server can communicate. When the EntraPass server is used, a static or DHCP address can be assigned to establish the communication. When the Enterprise server is used, the DHCP server assigns a dynamic IP address.

WAN is generally deployed on a long geographic distance and connects two or several local networks. The wide area network may use public networks to communicate and transmit data between the distant networks.

In a WAN architecture, IP addresses can be reserved or the server could be left to assign IP addresses automatically (DHCP).

Here is the definition of the different scenarios and the basic steps you will follow to configure your system.

**DHCP with Enterprise Server IP Address (LAN)**

You will use this type of configuration in an environment where the Enterprise DHCP server will assign IP addresses automatically for communication with the KT-NCC controller(s).

EntraPass Server

Enterprise DHCP Server Already installed
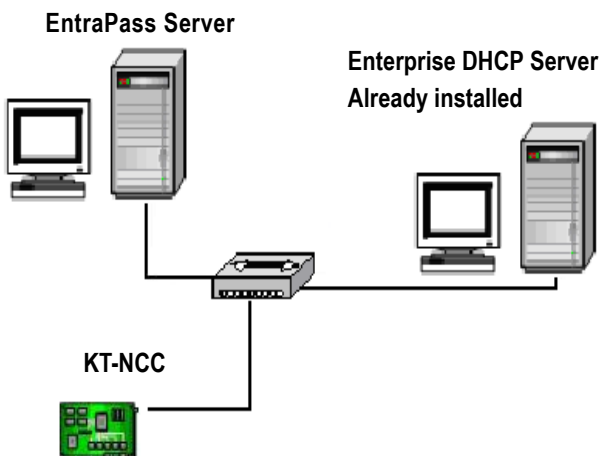
KT-NCC

a Perform a hard reset (See instructions on page 19.)
b Connect your KT-NCC to the network (See instructions on page 20.)
c Register your KT-NCC to the EntraPass Global Edition network (See instructions on page 21.)
d Configure gateway parameters (See instructions on page 23.)
e Check the connection status. (See instructions on page 35.)

**DHCP with EntraPass Server IP Address (LAN)**

You will use this type of configuration in an environment where the EntraPass DHCP server assigns the reserved IP addresses automatically for communication with the KT-NCC controller(s). The IP address will be configured directly in the EntraPass Global Edition software.
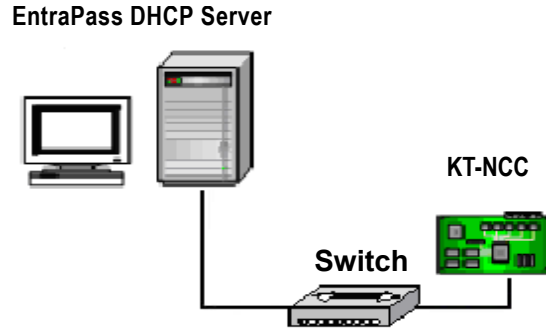
EntraPass DHCP Server

a   Perform a hard reset. (See instructions on page 19.)

b   Connect your KT-NCC to the network. (See instructions on page 20.)

c   Register your KT-NCC to the EntraPass Global Edition network (See instructions on page 21.)

d   Configure gateway parameters (See instructions on page 25.)

e   Check the connection status. (See instructions on page 35.)

Static IP address

You will use this type of configuration in an environment where the Network Administrator will determine the IP addresses for communication between the EntraPass server and the KT-NCC controller. The IP address will be configured using the KT-NCC Web Configuration tool.
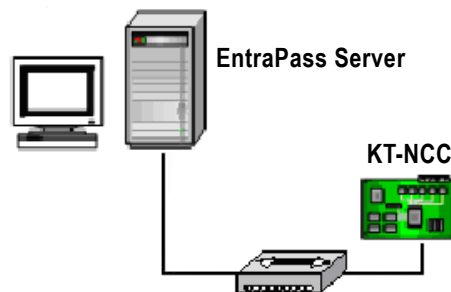
a   Perform a hard reset. (See instructions on page 19.)

b   Connect your KT-NCC to the network. (See instructions on page 20.)

c   Register your KT-NCC to the EntraPass Global Edition network (See instructions on page 21.)

d   Assign Static IP address using the KT-NCC Web Configuration tool and configure gateway parameters (See instructions on page 28.)

e   Check the connection status. (See instructions on page 35.)

WAN Configuration	You will use this type of setup in an environment where remote sites are protected with routers and they communicate with each other through the Internet.
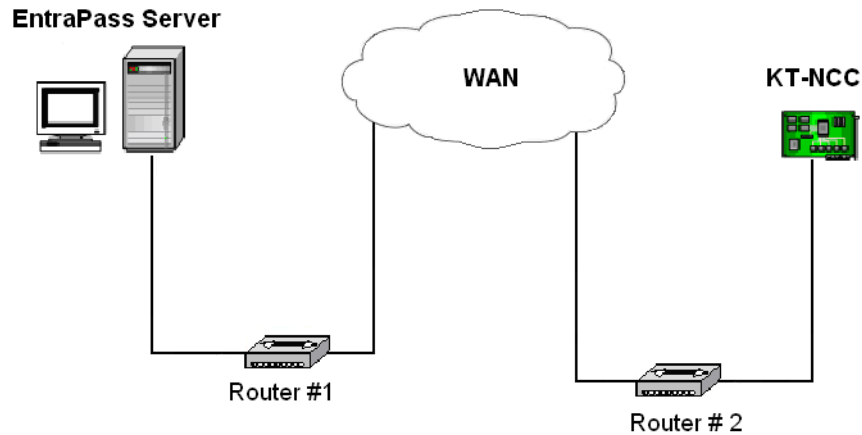
a   Initialize the KT-NCC in factory reset mode. (See instructions on page 19.)

b   Verify the port forwarding configuration with the Network Administrator.

c   Connect the KT-NCC to the network. (See instructions on page 20.)

d   Register the KT-NCC to the EntraPass Global Edition server (See instructions on page 21).

e   Enter TCP/IP parameters in the EntraPass server and configure gateway parameters (See instructions on page 32).

f   Check the connection status. (See instructions on page 35.)

Port forwarding

Before you start configuring the KT-NCC in a WAN environment, we suggest that you verify the port forwarding parameters with the System Administrator.

*   Port forwarding configuration is only done on static IP or reserved DHCP addresses.
*   Port forwarding is done to the same IP address. If you install more than one KT-NCC with a router, you should use different ports for every KT-NCC.

Site Server Router #1

*   Ensure that port 18710 is forwarded to the address of the EntraPass Server.
*   Ensure that UDP protocol is selected.

KT-NCC Site Router #2

*   Ensure that the KT-NCC port router is fowarded to the KT-NCC IP address.
*   Ensure that the UDP protocol is selected.

Communication Timing

A communication timing parameter can be configured for the KT-NCC in a WAN architecture. This parameter determines the communication frequency (latency period) between the EntraPass server and the KT-NCC. This parameter will be adjusted based on the complexity and size of the network. For example, when the network architecture is simple, a communication timing will be set to faster. On the other hand, when the network architecture is large and complex a slower communication timing will be more appropriate. It is important for the communication timing to be well configured in order to avoid communication breakdowns.

The following table contains the parameters that will be defined in EntraPass Global Edition Software.

Table 4 KT-NCC Communication Timings

Parameter	Communication timing
Very fast	Latency period: max 300 ms
Fast	Latency period: max 800 ms
Average	Latency period: max 1500 ms
Slow	Latency period: max 2500 ms
Very slow	Latency period: max 4000 ms
Extremely slow	Latency period: max 6000 ms

Once again, we suggest that you consult the Network Administrator in order to measure the complexity of the network architecture where you will install the KT-NCC.

Resetting the KT-NCC

For maintenance purposes, the KT-NCC may need to be reset. Three types of resets can be performed on the system: Soft reset, hard reset and factory reset.

Please refer to Figure 25 on page 37 to locate the different components of the KT-NCC board required to perform system resets.

Table 5 KT-NCC Reset Types

Reset Type	Instructions
Soft Reset.	A soft reset will only re-initialize statuses. 1. Press the **Reset** button.
Hard Reset	A hard reset will reset the KT-NCC to it's default values but will keep the IP address intact. 1. Use the needlenose pliers to remove **jumper JP2**. 2. Press the **Reset** button. 3. You must wait until the LED starts to flash again (approximately 15 seconds) before you put **jumper JP2** back in place.
Factory Reset	**We strongly suggest that you call Kantech Technical Support before performing a factory reset on your system.** A factory reset will clear all KT-NCC configuration including the IP address. 1. Use the needlenose pliers to remove jumpers **JP2** and **JP3**. 2. Press the **Reset** button. 3. Put **jumpers JP2** and **JP3** back in place.

Connect the KT-NCC to the Network

The KT-NCC communicates with the EntraPass Server via a10/100 Base-T Ethernet link.
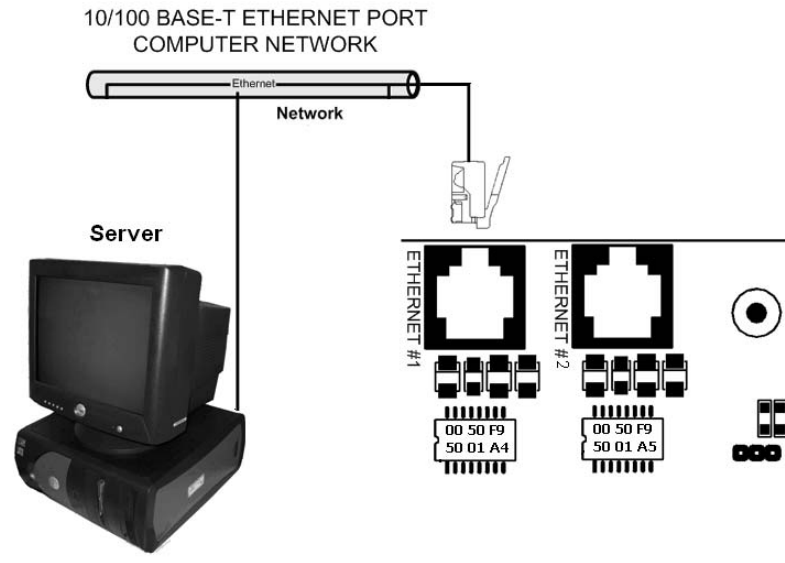

Figure 9. Ethernet #1 Connection to KT-NCC

1. Connect the cable from the KT-NCC to the network hosting the server application. Refer to Figure 9 above.

    - When connecting the KT-NCC to the network computer, connect the cable in the Ethernet #1 to the server.
    - When configuring the KT-NCC on the Web, connect the cable from the KT-NCC Ethernet #2 port to the computer.
    - If your KT-NCC controller is connected directly to the computer where you will be doing the Web configuration, you must use a crossover cable to connect the Ethernet #2 port to the workstation.
    - If a switch or a router is used to communicate between the KT-NCC and the workstation where you will be doing the Web configuration, you must use a patch cable to connect the Ethernet #2 port to the network.

Attention: If you are configuring your network to use a static IP address, **DO NOT** connect the network cable in the Ethernet Port #1 until indicated in the instructions further down.

Registering Your KT-NCC in EntraPass Global Edition

Before you go any further, you must register your KT-NCC in EntraPass Global Edition.

1. Make sure that your EntraPass server application is running at all time.
2. Start the EntraPass Global Edition Workstation application.
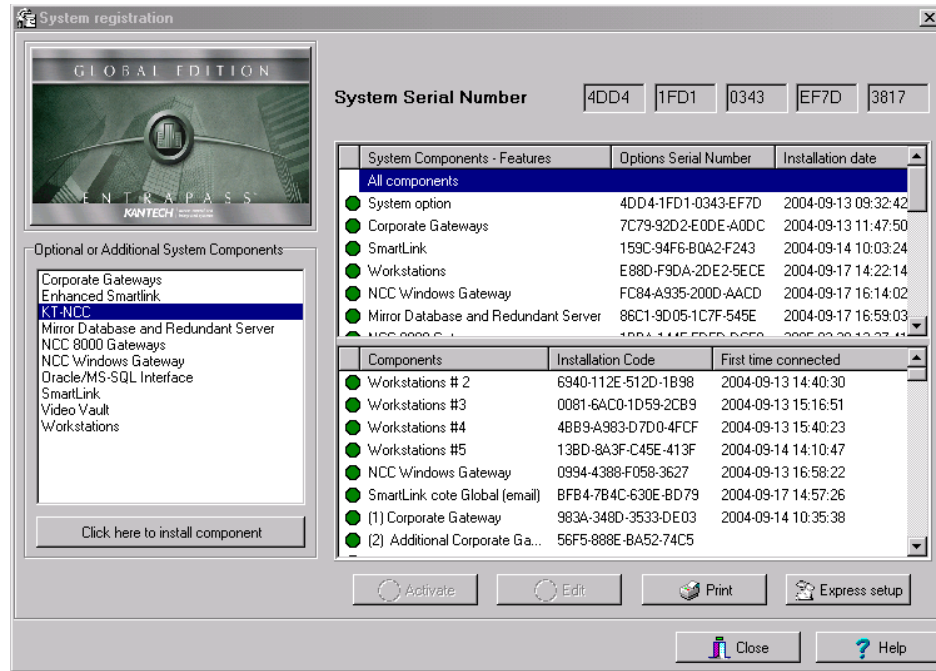3. Under the **Options** tab, click **System Registration.**

Figure 10 System Registration Dialog

4. In the **Optional and Additional System Components** area, highlight KT-NCC.
5. **Click here to install component**. The list on the right hand side of the window will refresh to display the new KT-NCC identified with a blue dot.
6. Select the KT-NCC device. The **Activate** button will be enabled.
7. Click **Activate** to register the KT-NCC in EntraPass Global Edition.
   - The indicator turns green and the new controller is added to the list above
   - The **Edit** button becomes enabled so that you can configure the security options
8. Close the System registration window.

   Note: At this stage, the system checks if the version numbers of the software and the controller are the same. If not, the system will automatically update the KT-NCC firmware. Three messages will appear on the EntraPass workstation list of messages to indicate that the update has been completed.
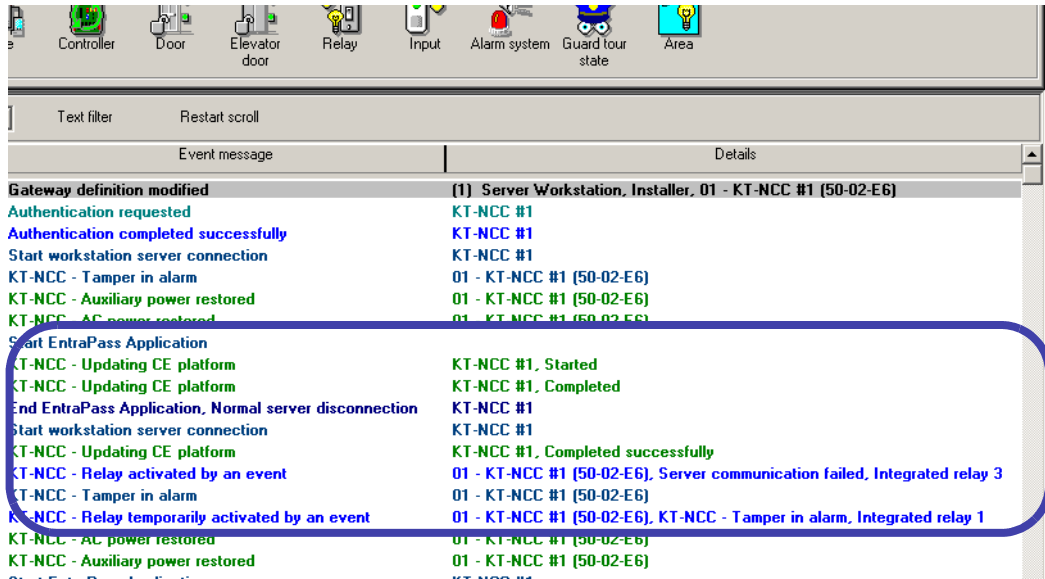
Figure 11 EntraPass Message List Desktop

The messages to lookout for are:
- KT-NCC Update of platform CE - KT-NCC, Started
- KT-NCC Update of platform CE - KT-NCC, Completed
- KT-NCC Update of platform CE - KT-NCC, Completed successfully.

Configuring DHCP with Enterprise Server IP Address

The Enterprise DHCP server will assign IP addresses automatically for communication with the KT-NCC controller(s). We strongly suggest that you use a reserved IP address for the KT-NCC MAC address.

Configure the Gateway

1. In the EntraPass Workstation main window, move to the **Devices** tab and click **Gateway** to open the corresponding dialog.
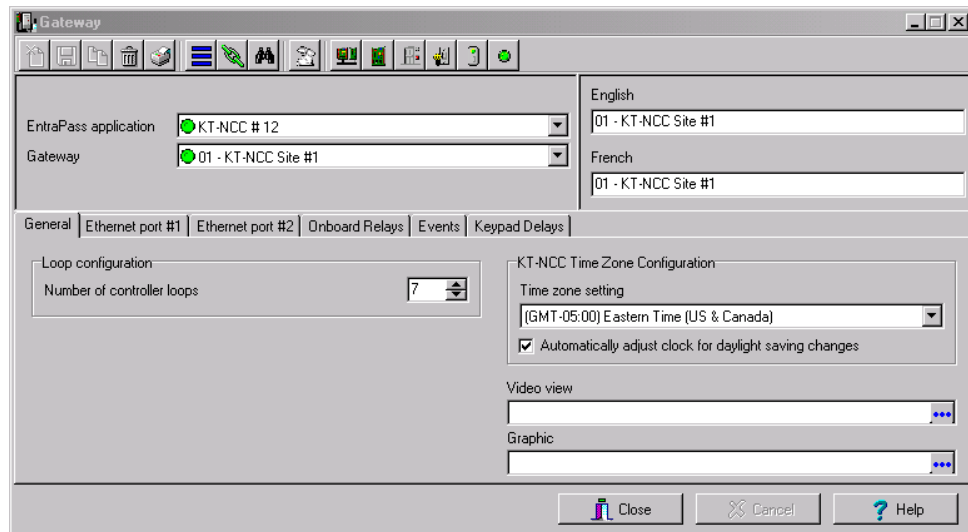

Figure 12 Gateway Dialog - General Tab DHCP Enterprise

2. Click the down arrow next to the text box marked **Gateway** and scroll down the selection of gateways until you reach the KT-NCC gateway you have just saved. The KT-NCC gateway will appear along with a number on the right-hand side of the dialog.
    *   You can rename the KT-NCC gateway in the **French** and **English** fields.
3. Click the **General** tab.
4. Select the **Number of controller loops** in the text box under **Loop Configuration**. The KT-NCC can physically support 7 controller loops.
5. In the **KT-NCC Time Zone configuration** area, you must select the appropriate **Time zone setting.**

Note: It is advisable to check with the Network Administrator if the site where you are installing the KT-NCC is situated in an area where daylight saving time is in effect.

6. Check the box underneath it if you want the system to **Automatically adjust the clock for daylight saving changes**.
7. When applicable select the **Graphic** or **Video View** that pertains to the KT-NCC.
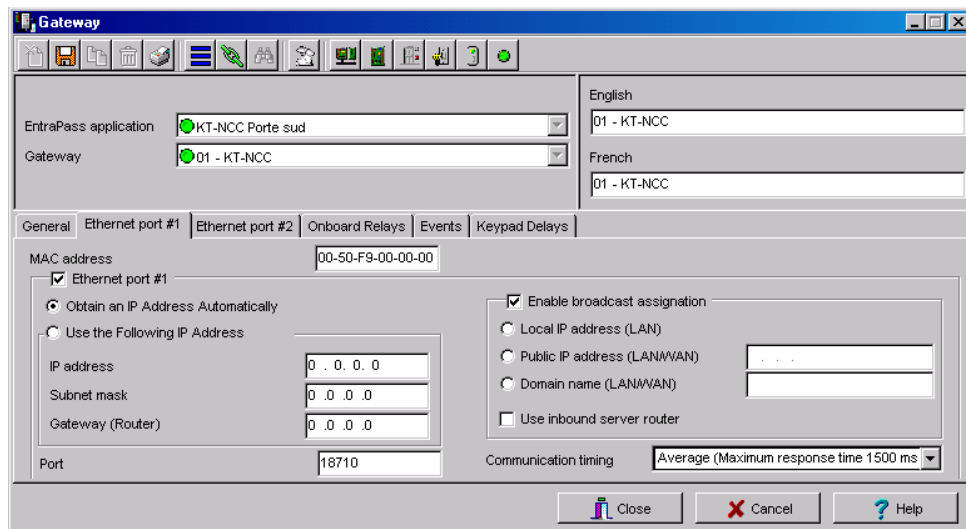8. Move to the **Ethernet #1** tab.

Figure 13. Gateway Window - Ethernet #1 Tab DHCP Enterprise

9. Enter the KT-NCC **MAC address**. The first 6 numbers in the MAC address (00-50-F9) cannot be modified.

   Note: The MAC address can be found on the KT-NCC board, underneath the Ethernet #1 port. It is a 12-digit hexadecimal code, with each two digits separated by a dash (i.e. xx-xx-xx-xx-xx) Refer to Figure 25 on page 37 to locate the MAC address on the KT-NCC board.

10. Select the **Obtain an IP address automatically** option.

11. Port **18710** is automatically assigned to the KT-NCC by default. It is advisable not to modify it.

12. By default, the **Enable broadcast assignation** box is checked. Leave it to default.

13. Click the **Save** icon.

14. To verify if the server is communicating with the KT-NCC, you can monitor the incoming messages in the Desktop Message list. (It may take a few minutes between saving the configuration to the first message broadcast to the server.) Or, you can check the connection status in the Connection List (See instructions on page 35).

15. If you have more than one KT-NCC gateway, configure them all at this time.

Configuring DHCP with EntraPass Server IP Address

In this setup, the EntraPass DHCP server will automatically assign IP addresses for communication with the KT-NCC controller(s).

Note: *In order to avoid serious network conflicts, you will use the EntraPass DHCP server only when there is no other DHCP server on the local network.*

Configure Server Parameters

1. In the EntraPass Server main window or the EntraPass Workstation main window, move to the **Options** tab.
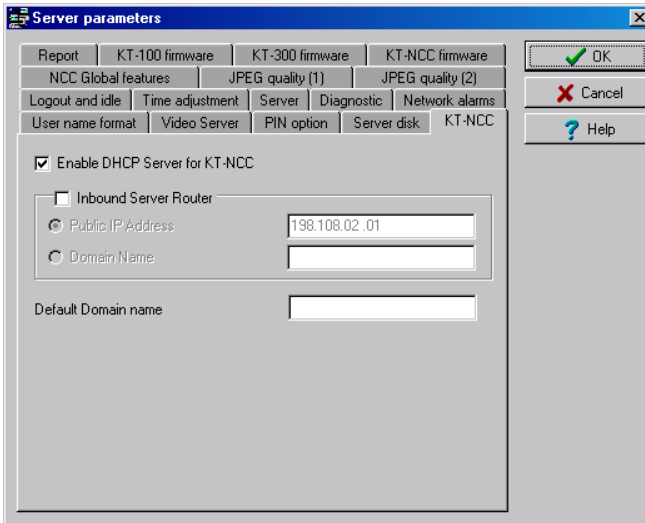2. Click **Server Parameters** to open the corresponding dialog.

Figure 14 Server Parameters Dialog DHCP EntraPass

3. Select the **KT-NCC** tab.
4. Check the box labeled **Enable DHCP server for KT-NCC**.

   Note: This option is greyed out if you already have a DHCP server on your network.

5. Click **Ok** to close the dialog.
6. Restart the EntraPass Global Edition Server application.

Configure the Gateway

1. In the EntraPass Workstation main window, move to the **Devices** tab and click **Gateway**.
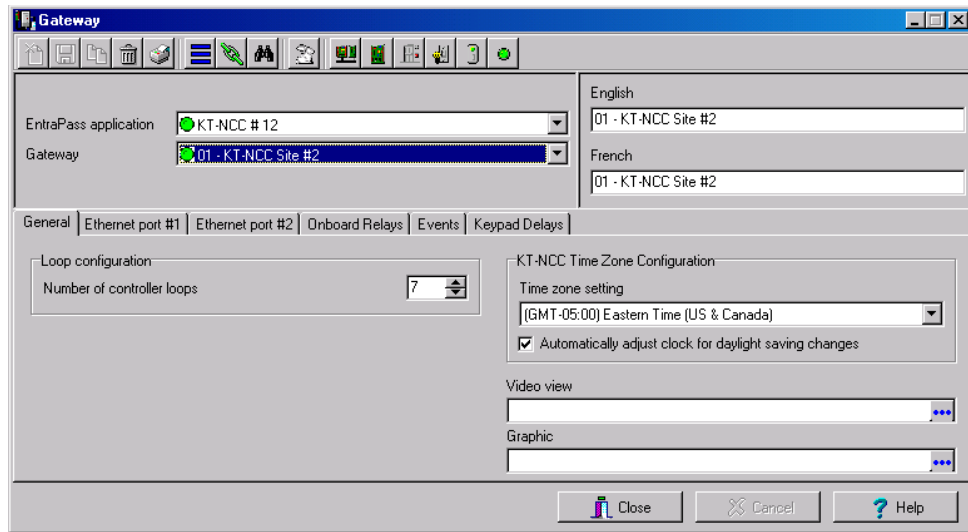

Figure 15 Gateway Dialog - General Tab DHCP EntraPass

2. Click the down arrow next to the text box marked **Gateway** and scroll down the selection of gateways until you reach the KT-NCC gateway you have just saved. The KT-NCC gateway will appear along with a number on the right-hand side of the dialog.
   • You can rename the KT-NCC gateway in the **French** and **English** fields.

3. Click the **General** tab.

4. Select the **Number of controller loops** in the text box under **Loop Configuration**. The KT-NCC can physically support 7 controller loops.

5. In the **KT-NCC Time Zone configuration** area, you must select the appropriate **Time zone setting.**

Note: It is advisable to check with the Network Administrator if the site where you are installing the KT-NCC is situated in an area where daylight saving time is in effect.

6. Check the box underneath it if you want the system to **Automatically adjust the clock for daylight saving changes**.

7. When applicable select the **Graphic** or **Video View** that pertains to the KT-NCC.

8. Move to the **Ethernet #1** tab. The section **Use the Following IP Address** will be empty.
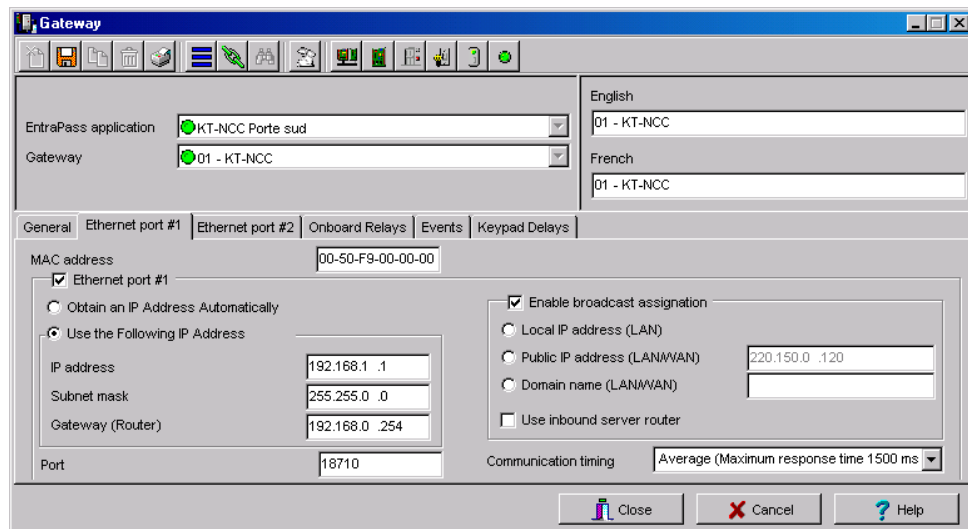

Figure 16. Gateway Dialog - Ethernet #1 Tab - DHCP EntraPass

9. Enter the KT-NCC **MAC address**. The first 6 numbers in the MAC address (00-50-F9) cannot be modified.

   Note: The MAC address can be found on the KT-NCC board, underneath the Ethernet #1 port. It is a 12-digit hexadecimal code, with each two digits separated by a dash (i.e. xx-xx-xx-xx-xx) Refer to Figure 25 on page 37 to locate the MAC address on the KT-NCC board.

10. Check the **Ethernet port #1** box.

11. Check the **Use the Following IP Address** option.

12. Enter the KT-NCC **IP Address** and the **Subnet mask**. The addresses should have been provided by the System Administrator. Make sure that the IP address is unique and belongs to the same segment than the KT-NCC segment (for example: 192.168.0.X, X being the number that differs from the KT-NCC IP address). Make sure that the subnet mask is the same as the Entrapass Global Edition server.

13. Port **18710** is automatically assigned to the KT-NCC by default. It is advisable not to modify it.

14. The box **Enable broadcast assignation** is selected by default. Leave this option as is.

15. Click the **Save** icon.

16. Close the Gateway dialog.

17. Check the connection status (See instructions on page 35).

18. If you have more than one KT-NCC gateway, configure them all at this time.

Configuring Static IP Addresses

Communication between the EntraPass Global server and the KT-NCC controller(s) will be done through a static address. These addresses will be configured using the KT-NCC Web Configuration tool for communication between the EntraPass server and the KT-NCC controller(s).

The System Administrator should provide you with the static IP address. This address must be within the same segment as the KT-NCC default IP address. You will always use the default IP address on Port #2 when setting up your KT-NCC with the KT-NCC Web Configuration tool. It is advisable to use the address 192.168.0.5 and the subnet mask 255.255.255.0.

Note: NEVER use the address 192.168.0.2 to configure the IP address of the PC. This address is assigned by default to Ethernet port #2 of the KT-NCC.

Warning: Make sure that your **network cable** is **NOT** connected to the **Ethernet Port #1**

KT-NCC Web Configuration

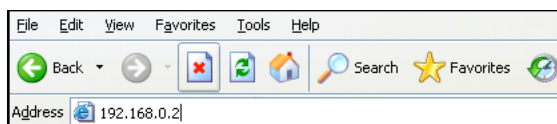1. Start Internet Explorer.

Figure 17 IP Address location

2. Enter the default IP Address of your KT-NCC in the **Address field.** (**192.168.0.2**), and press **Enter** on your keyboard. The KT-NCC Web Configuration window will open.
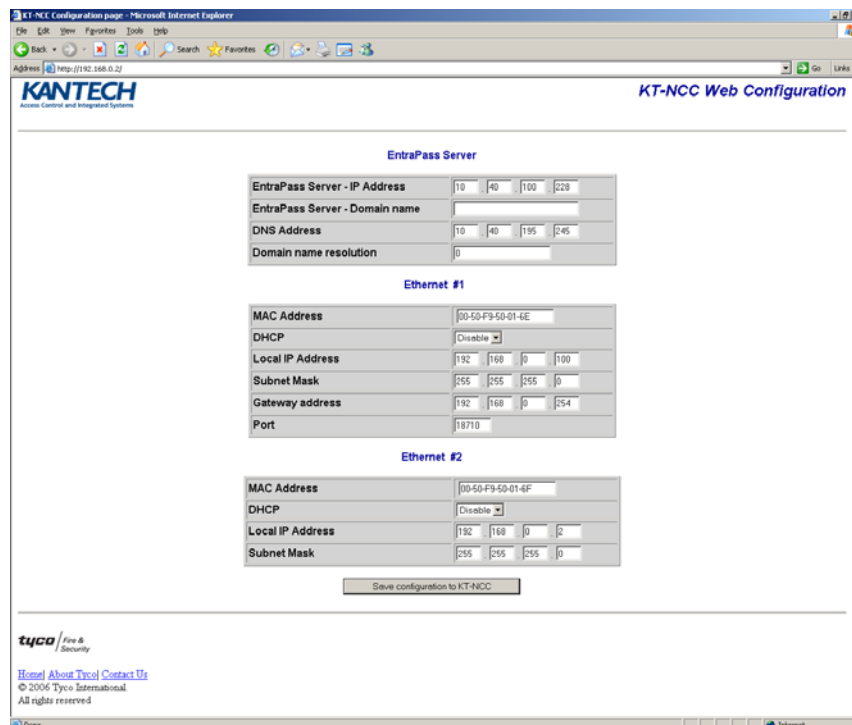

Figure 18 KT-NCC Web Configuration Window

3. In the **EntraPass Server** section, enter the **EntraPass Server IP Address**.

4. In the **Ethernet #1** section:
   - The **MAC Address** of the KT-NCC is already configured. The MAC address is found on the top right of the KT-NCC circuit, under Ethernet Port #1. (See Figure 25 on page 37.)
   - Ensure that the **DHCP** parameter is **Disabled**.

- Enter the **IP address** of the KT-NCC that you received from the Network Administrator.
- Enter the KT-NCC **Subnet Mask** 255.255.255.0.
- The **Port** number is already configured. It is advisable to always use the default value **18710**.

5. The fields in the **Ethernet #2** section are already configured. You do not have to change these parameters.

6. Click **Save Configuration to KT-NCC**. A message showing that the configuration is saved and that the KT-NCC is reinitializing will appear on the screen.

Figure 19 Save configuration Web page

7. Click **Click here to return**. The screen will return to the KT-NCC Web Configuration tool main window. Meanwhile, the KT-NCC will reset.
    - The blue pilot light (Vital LED) of the KT-NCC will blink quickly to signal that the controller is in reset mode.
    - The blue pilot light (Vital LED) of the KT-NCC will remain lit for 15 seconds to signal that the controller is in startup mode.
    - The blue pilot light (Vital LED) of the KT-NCC will blink 4 times to signal that the controller has reset but it is not yet registered on the EntraPass server. (Hard reset mode.)

Note: For details, refer to Hearbeat/ Vital LED Patterns on page 40.

8. Close the KT-NCC Web Configuration window. Once the KT-NCC is registered on the server, you will no longer be able to access the Web page.
9. Disconnect the cable of Ethernet port #2.
10. Connect the network cable on Ethernet port #1.
11. Register the KT-NCC in EntraPass Global Edition software (See instructions on page 21).

Configure the Gateway

1. In EntraPass Global Edition Workstation main window, move to the **Devices** tab and click **Gateway**.
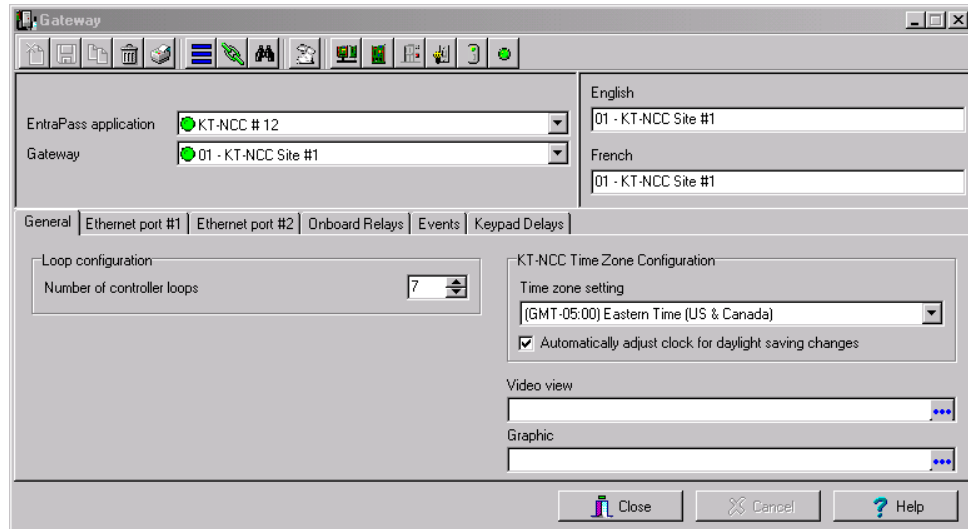

Figure 20 Gateway Dialog - General Tab Static IP Address

2. Click the down arrow next to the text box marked **Gateway** and scroll down the selection of gateways until you reach the KT-NCC gateway you have just saved. The KT-NCC gateway will appear along with a number on the right-hand side of the dialog.
   - You can rename the KT-NCC gateway in the **French** and **English** fields.
3. Click the **General** tab.
4. Select the **Number of controller loops** in the text box under **Loop Configuration**. The KT-NCC can physically support 7 controller loops.
5. In the **KT-NCC Time Zone configuration** area, you must select the appropriate **Time zone setting.**

Note: It is advisable to check with the Network Administrator if the site where you are installing the KT-NCC is situated in an area where daylight saving time is in effect.

6. Check the box underneath it if you want the system to **Automatically adjust the clock for daylight saving changes**.
7. When applicable select the **Graphic** or **Video View** that pertains to the KT-NCC.
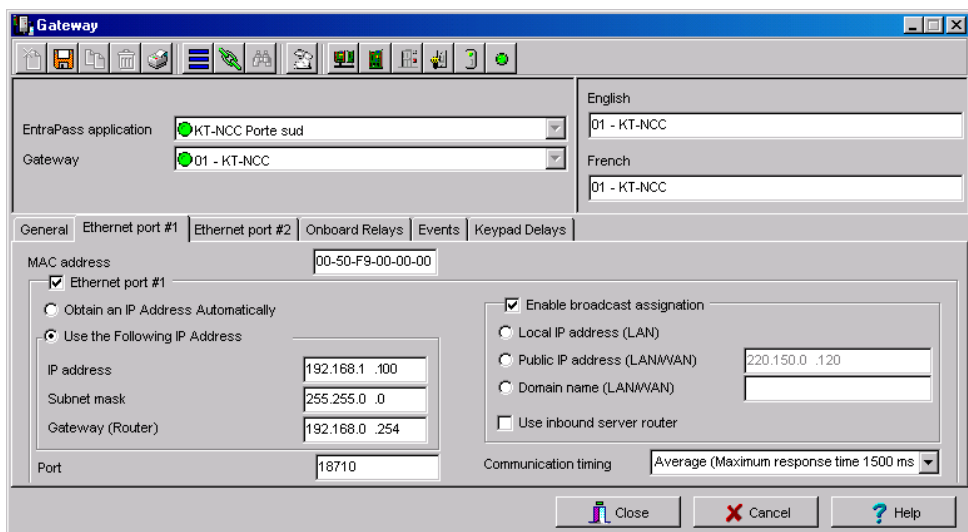8. Move to the **Ethernet #1** tab.

Figure 21. Gateway Window - Ethernet #1 Tab Static IP Address

9. Enter the KT-NCC **MAC address**. The first 6 numbers in the MAC address (00-50-F9) cannot be modified.

    Note: The MAC address can be found on the KT-NCC board, underneath the Ethernet #1 port. It is a 12-digit hexadecimal code, with each two digits separated by a dash (i.e. xx-xx-xx-xx-xx) Refer to Figure 25 on page 37 to locate the MAC address on the KT-NCC board.

10. Check the box **Ethernet port #1**.

11. Check the **Use the Following IP Address** option.

    • Select the option **Use the Following IP Address.**
    • Enter the **IP address** of the KT-NCC.
    • Enter the **Subnet mask** address.
    • When necessary, enter the KT-NCC **Gateway address** that the Network Administrator provided you.
    • Port **18710** is automatically assigned to the KT-NCC by default. It is advisable not to modify it.
    • The case **Enable broadcast assignation** is selected by default. Leave this option as is.

12. Click the **Save** icon and close the Gateway dialog.

13. Check the connection status (See instructions on page 35).

14. If you have more than one KT-NCC gateway, configure them all at this time.

Configuring a WAN Network

In this type of architecture the EntraPass Server site is distant from the KT-NCC site module and the two communicate through a public network.

After you have verified the port forwarding configuration with the Network Administration, connected the KT-NCC to the EntraPass network and registered the KT-NCC to EntraPass Global Edition Server, you will configure the server parameters.

Configure Server Parameters

1. In the EntraPass Global Edition - Server application, click the **Server Parameters** icon under the **Options** tab to open the Server parameters window.
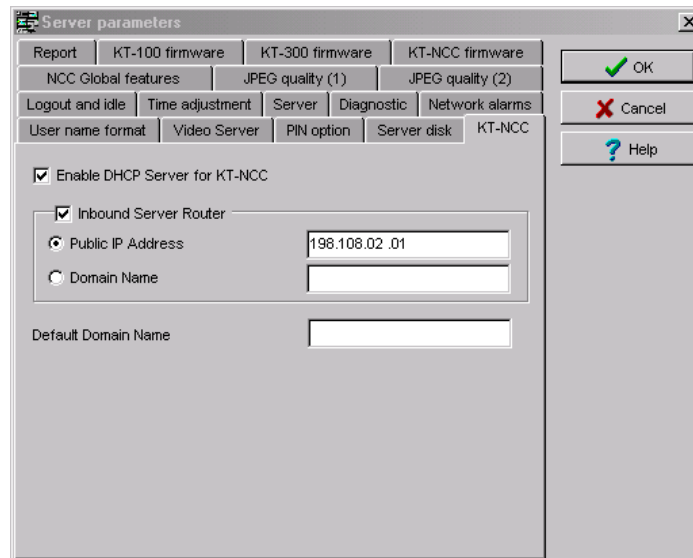

Figure 22 Server Parameters Dialog WAN

2. Select the **KT-NCC** tab.
3. Check the **Inbound Server Router** box.
4. Select the **Public IP Address** box.
5. Enter the **Public IP Address #1** of inbound router or the **Domain Name**. This address is assigned by the public network provider to whom you are connected.
6. Click **OK** to save the configuration and close the dialog.

Configuring the Gateway

1. In EntraPass Global Edition Workstation main window, move to the **Devices** tab and click **Gateway**.
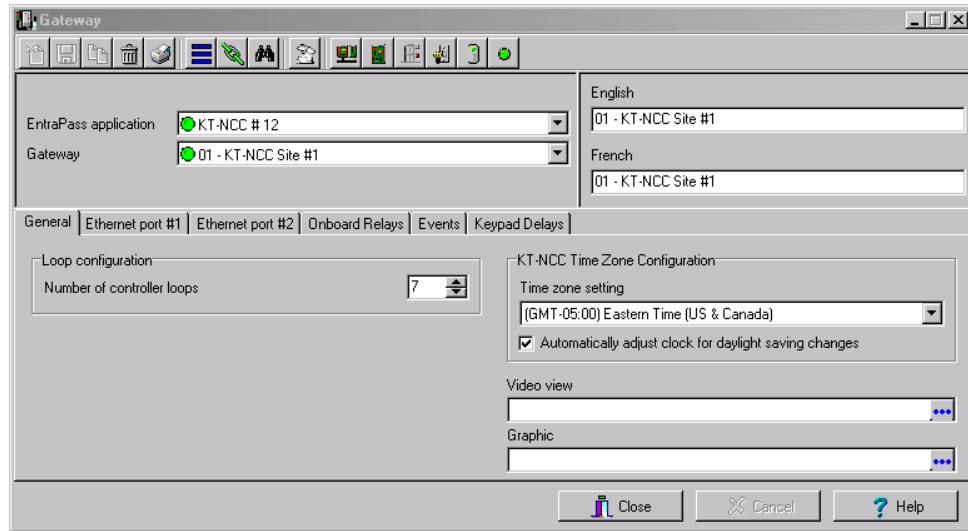

Figure 23 Gateway Dialog - General Tab - WAN

2. Click the down arrow next to the text box marked **Gateway** and scroll down the selection of gateways until you reach the KT-NCC gateway you have just saved. The KT-NCC gateway will appear along with a number on the right-hand side of the dialog.
   • You can rename the KT-NCC gateway in the **French** and **English** fields.
3. Click the **General** tab.
4. Select the **Number of controller loops** in the text box under **Loop Configuration**. The KT-NCC can physically support 7 controller loops.
5. In the **KT-NCC Time Zone configuration** area, you must select the appropriate **Time zone setting.**

Note: It is advisable to check with the Network Administrator if the site where you are installing the KT-NCC is situated in an area where daylight saving time is in effect.

6. Check the box underneath it if you want the system to **Automatically adjust the clock for daylight saving changes**.
7. When applicable, select the **Graphic** or **Video View** that pertains to the KT-NCC.
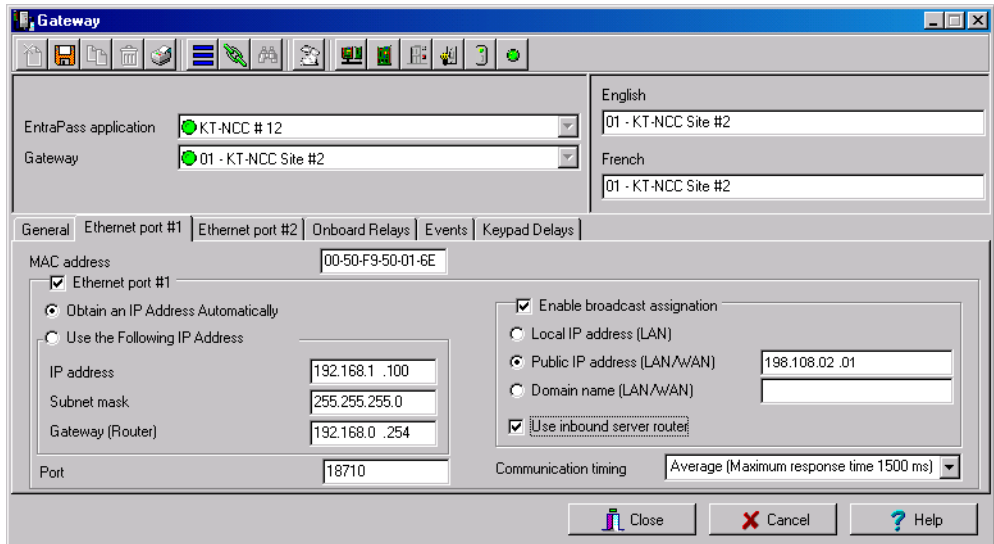8. Move to the **Ethernet #1** tab.

Figure 24. Gateway Window - Ethernet #1 Tab WAN

9. Enter the KT-NCC **MAC address**.

10. Check the **Ethernet port #1** box.

11. Select the **Obtain an IP Address Automatically** option.

12. Port **18710** is automatically assigned to KT-NCC by default. It is advisable not to modify it. However, if you have to configure several KT-NCCs, ensure that every KT-NCC has a unique port number. This is necessary when forwarding ports to an IP address.

13. The **Enable broadcast assignation** box is selected by default.

14. Select the **Public IP address (LAN/WAN)** option and enter the IP address.

15. Check the **Use inbound server router** option.

16. Select the appropriate **Communication timing** (Consult Table 4 on page 18).

17. Click the save icon.

18. Close the Gateway dialog.

19. Check the connection status (See instructions on page 35).

20. If you have more than one KT-NCC gateway, configure them all at this time.

Connection Status

The EntraPass Global Edition server application gives you access to a Connection list where you can monitor the controller's status at all time, but mostly right after you will have configured the gateway.

1. In the application EntraPass Global Edition - Server, click the **Connection** tab.
2. Check the connection status of the KT-NCC that you just saved.
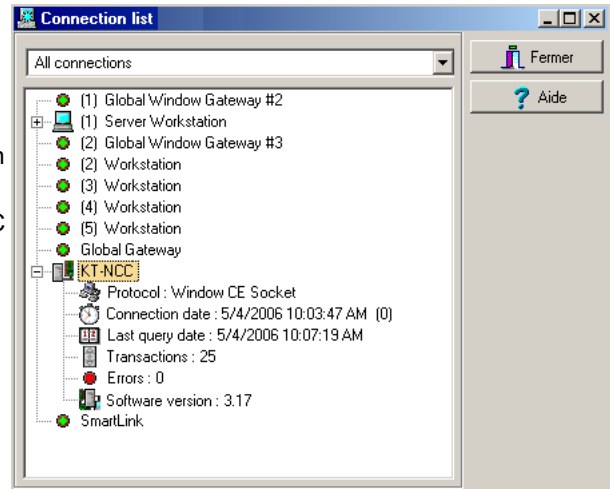
Upgrading Firmware

After installing a new version of EntraPass Global Edition software, and starting the application, the system will automatically verify that both software and hardware versions are similar. If this is not the case, the system will perform an update automatically. An event will be displayed in the Desktop Message list to indicate the progress of the upgrade.

Warning: Make sure that the AC Power and onboard battery remain connected during the firmware upgrade and until EntraPass sends a message that the firmware has been successfully reloaded.
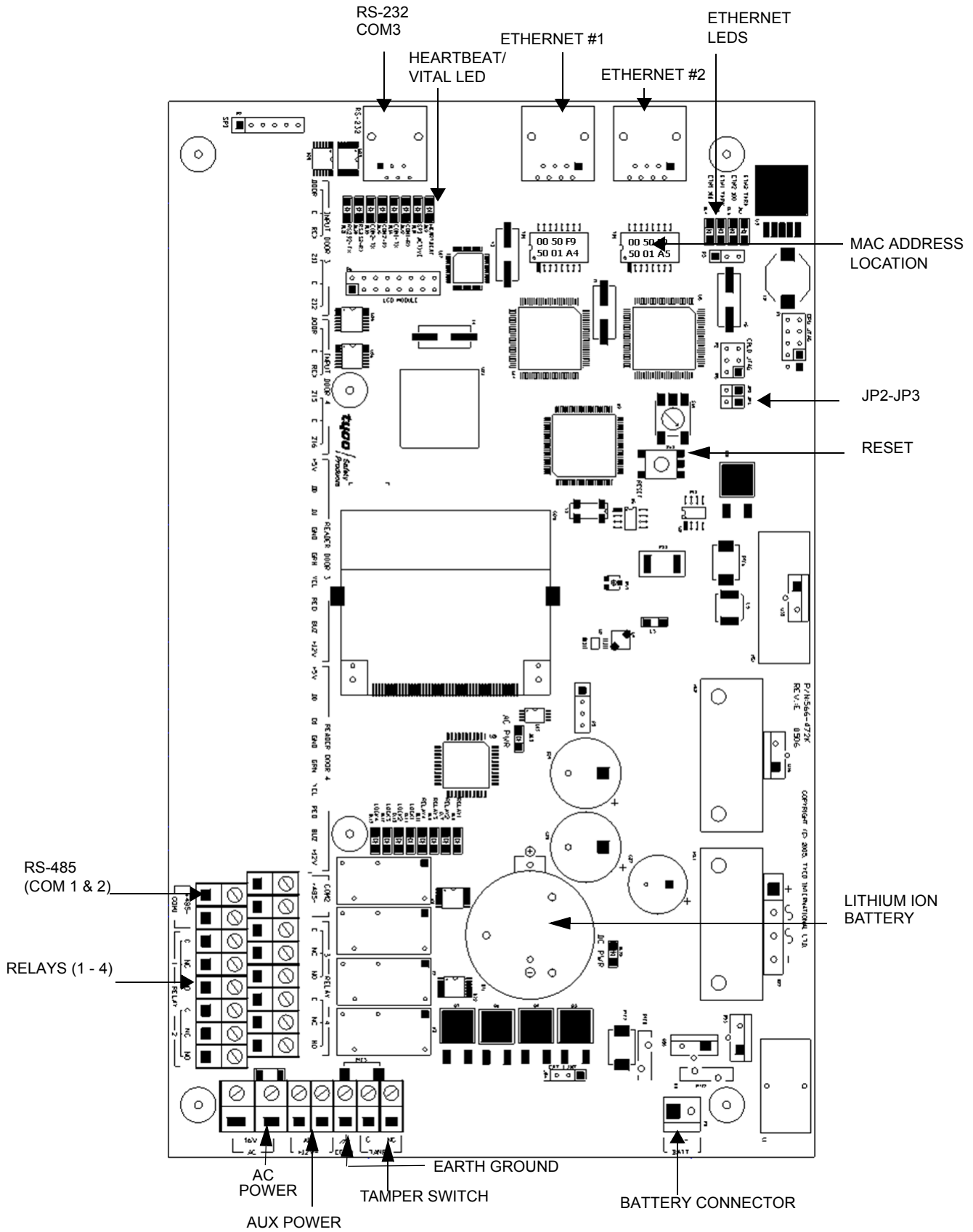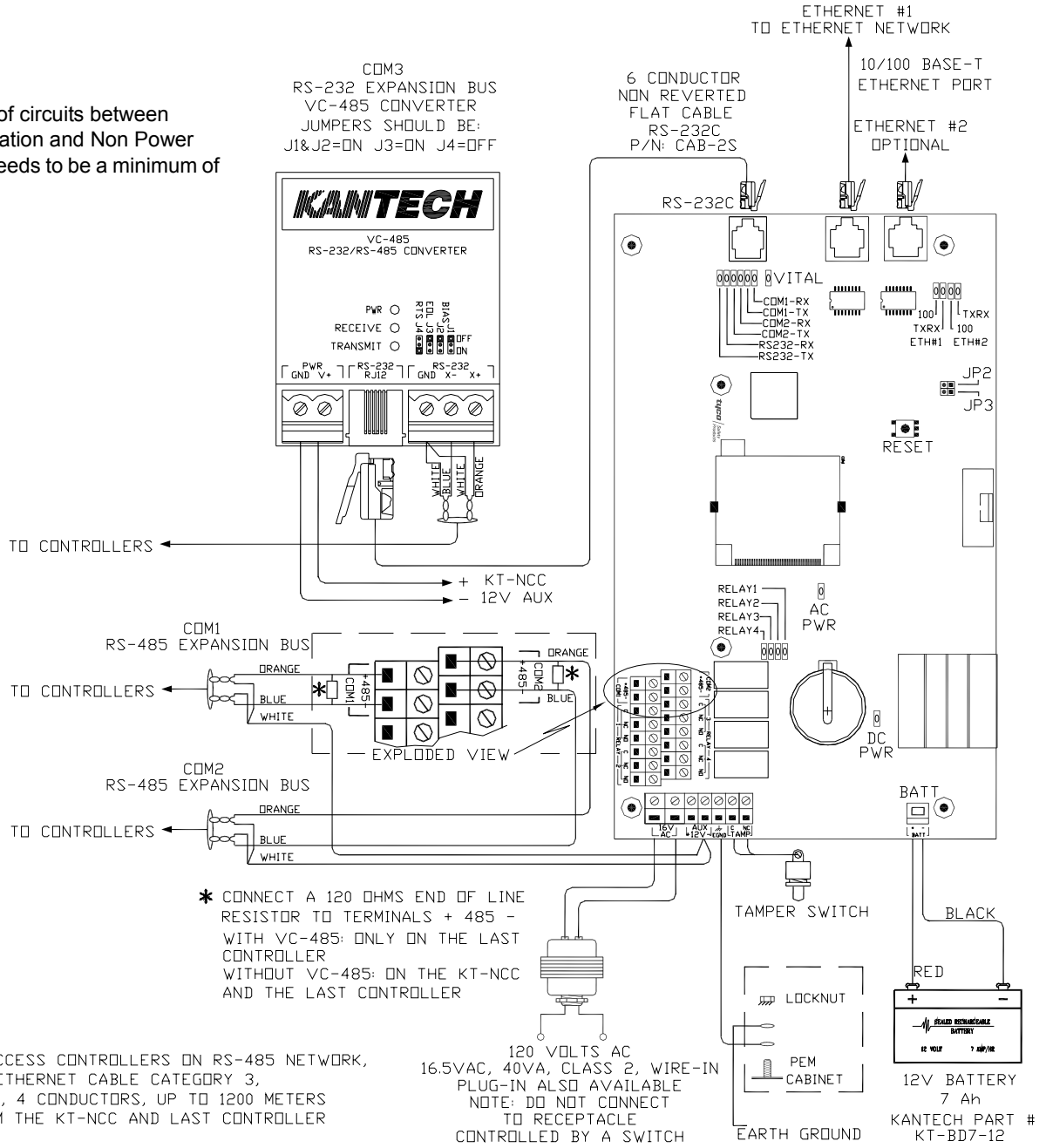
Figure 25 KT-NCC Board

Important:

Separation of circuits between Power Limitation and Non Power Limitation needs to be a minimum of 1/4 inch.

COM3
RS-232 EXPANSION BUS
VC-485 CONVERTER
JUMPERS SHOULD BE:
J1&J2=ON J3=ON J4=OFF

6 CONDUCTOR
NON REVERTED
FLAT CABLE
RS-232C
P/N: CAB-2S

ETHERNET #1
TO ETHERNET NETWORK

10/100 BASE-T
ETHERNET PORT

ETHERNET #2
OPTIONAL

KANTECH
VC-485
RS-232/RS-485 CONVERTER

PWR ○
RECEIVE ○
TRANSMIT ○

BIAS J1
EOL J2
RTS J4   OFF
          ON

PWR
GND V+

RS-232
RJ12

RS-232
GND X- X+

WHITE
BLUE
WHITE
ORANGE

TO CONTROLLERS ◄

+ KT-NCC
– 12V AUX

RS-232C

VITAL
COM1-RX
COM1-TX
COM2-RX
COM2-TX
RS232-RX
RS232-TX

100
TXRX   TXRX   100
ETH#1   ETH#2

JP2
JP3

RESET

RELAY1
RELAY2
RELAY3
RELAY4

AC
PWR

DC
PWR

BATT

COM1
RS-485 EXPANSION BUS

ORANGE

TO CONTROLLERS ◄

ORANGE
BLUE
WHITE

*485-
COM1

COM2
+485-

BLUE

*

EXPLODED VIEW

COM2
RS-485 EXPANSION BUS

ORANGE

TO CONTROLLERS ◄

BLUE
WHITE

16V
AC

AUX
+12V-GND-TAMP

* CONNECT A 120 OHMS END OF LINE
RESISTOR TO TERMINALS + 485 –
WITH VC-485: ONLY ON THE LAST
CONTROLLER
WITHOUT VC-485: ON THE KT-NCC
AND THE LAST CONTROLLER

TAMPER SWITCH

BLACK

RED

LOCKNUT

PEM
CABINET

SEALED RECHARGEABLE
BATTERY

12 VOLT   7 AMP/HR

UP TO 32 ACCESS CONTROLLERS ON RS-485 NETWORK,
ETHERNET CABLE CATEGORY 3,
UNSHIELDED, 4 CONDUCTORS, UP TO 1200 METERS
(4000') FROM THE KT-NCC AND LAST CONTROLLER

120 VOLTS AC
16.5VAC, 40VA, CLASS 2, WIRE-IN
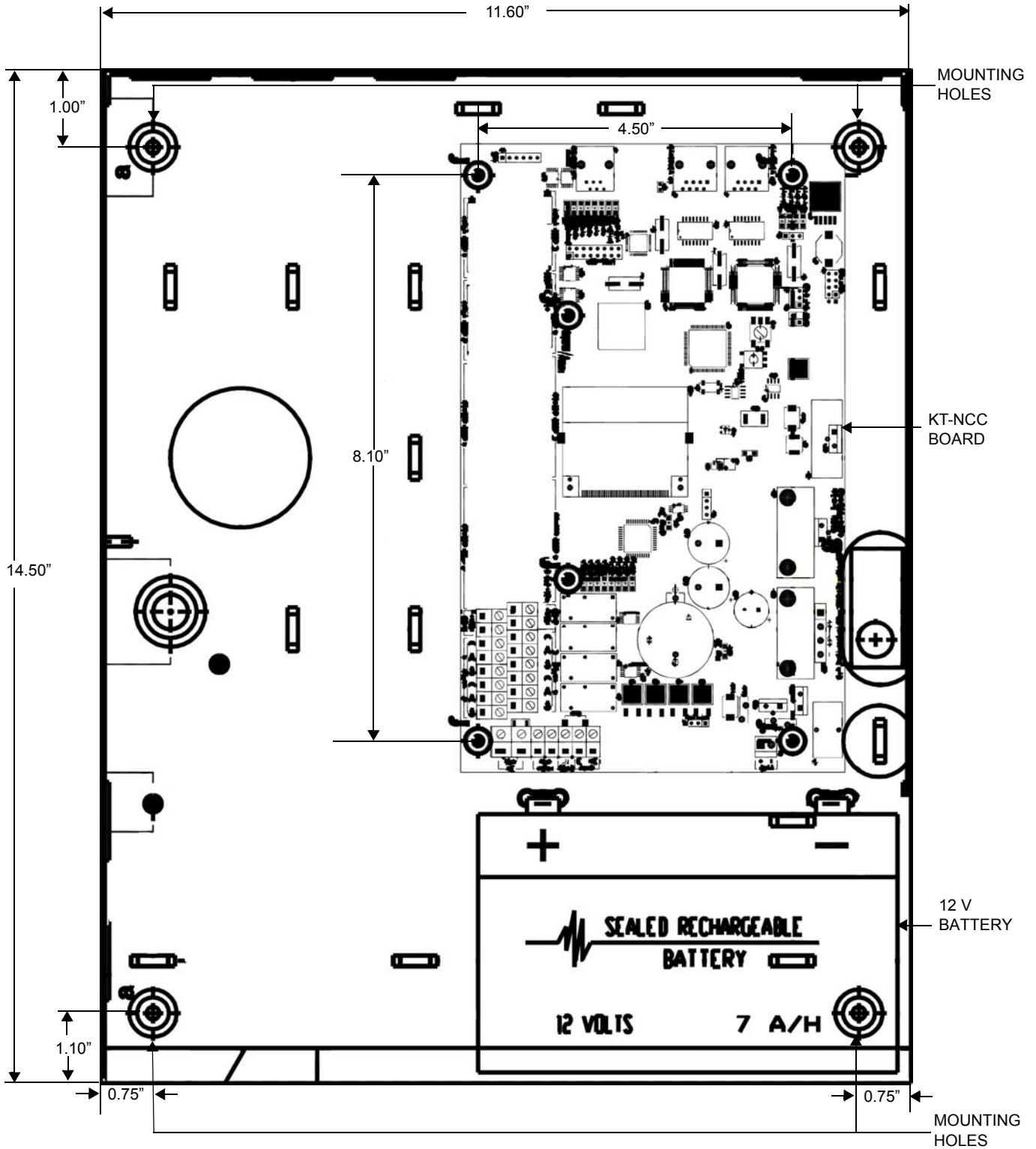PLUG-IN ALSO AVAILABLE
NOTE: DO NOT CONNECT
TO RECEPTACLE
CONTROLLED BY A SWITCH

EARTH GROUND

12V BATTERY
7 Ah
KANTECH PART #
KT-BD7-12

Figure 26. KT-NCC Wiring Diagram
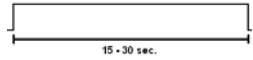
Figure 27. KT-NCC Board Mounted in Enclosure with Battery

Table 6 Hearbeat/ Vital LED Patterns

Pulses	Description	Patterns
1 flash/sec	KT-NCC is communicating with the server.	1 sec.
Fast flashes	KT-NCC is no longer communicating with the server.	4 pulses / sec
Steady on (15-30 sec)	KT-NCC is starting up.	15 - 30 sec.
Quick flashes (May last from 15-30 sec)	Preparing to reboot. DO NOT POWER DOWN OR RESET DURING THIS PROCESS.	10 pulses / sec
Quick flashes (May last up to 90 sec.)	Firmware update. DO NOT POWER DOWN OR RESET DURING THIS PROCESS.	5 pulses / sec.
1 long flash/sec	KT-NCC is in factory reset mode.	1 sec.
4 flashes on per sec and 1 sec steady off	KT-NCC is in hard reset mode.	1 sec.

KT-NCC Network Communications Controller

Configuration Information Sheet

Company Name:_____**Site Name:**_____

KT-NCC Controller Name: _____

Serial No.:_____

MAC Address #1:_____

IP Address #1:_____

IP Address is: ___Static   ___DHCP

MAC Address #2:_____

IP Address #2:_____

IP Address is: ___Static   ___DHCP (Reserved address recommended)

RS-485 Loop #1 Name:_____

RS-485 Loop #2 Name:_____

RS-232 Loop #3 Name:_____

IP Loop #4 Name:_____

IP Loop #5 Name:_____

IP Loop #6 Name:_____

IP Loop #7 Name:_____

Relay #1:_____

Relay #2:_____

Relay #3:_____

Relay #4:_____