NWC NETWORK Controller

NWC – Network Controller

NWC-USM-002-EN

User Manuel V1.1

NYX HEMERA Technologies Inc.

Intelligent Tunnel Lighting Control

NYX HEMERA Technologies Inc.
Intelligent Tunnel Lighting Control

109 Saint-Vallier Est, suite 100
Québec, QC, G1K 3N9, Canada

Phone : +1 418-977-7788 ou +1 844 997-7788
Fax : 418 977-7788
Web : www.nyx-hemera.com
Email: support@nyx-hemera.com

No.	Description	Date	Signatures
1.0	First release	2015/12/28	Gerrit Dogger
1.1	Revision et editing	2016/02/22	Line Lacroix

Table of Contents

List of tables

Introduction

Document Overview

This document is the user manual for the NWC. It covers the base information related to the NWC. It does not cover the TLACS as supplied by Nyx-Hemera Technologies. For detaiLED information related to the TLACS, please refer to the TLACS documentation. This document describes the following subjects:

- Front panel interface
- Base configuration steps
- Telnet interface and most important commands

Product Overview

The NWC is the central part of the Tunnel Lighting Addressable Control System (TLACS) made by Nyx-Hemera Technologies. The NWC is designed to monitor and control up to 1022 LPC devices. It is able to send individual or global commands to every LPC under its control. The communication between NWC and the LPCs takes place over a powerline. NWC also typically monitors and controls devices through RS-485 port. A typical case being reading cameras/sensors to control the lightning output of the TLACS system. NWC also has dry contacts which offer the option to connect switches or other inputs while the outputs can be used to drive panel selection switches for example.

The NWC can be used as a stand-alone system (single or redundant mode), but it can also be a part of larger system where it's linked by its Ethernet cable to various servers and other computer equipment. More details are available in the other NWC and TLACS manuals.

The LCAM has on-board temperature measuring. This parameter shows the current temperature measured inside the heated LCAM enclosure.

Glossary

LCD	Liquid-Crystal Display
LPC	Local Product Controller. Nyx Hemera Technologies' individual luminaire controller.
NWC	Network Controller. Nyx Hemera Technologies' central controller for the TLACS.
TLACS	Tunnel Lighting Addressable Control System. Nyx Hemera Technologies tunnel lighting control system.
VID	Visible Identifier Number used for commissioning.

Front Panel Interface

The NWC front panel has the following items:

- Reset button
- 2 Menu navigation button
- LCD character display
- NWC Status LEDs
- Ethernet connection and activity LEDs
- TLACS powerbus network activity LEDs
- 2xRS-232 ports
- RS-485 port activity LEDs

Figure 1*: NWC front panel*

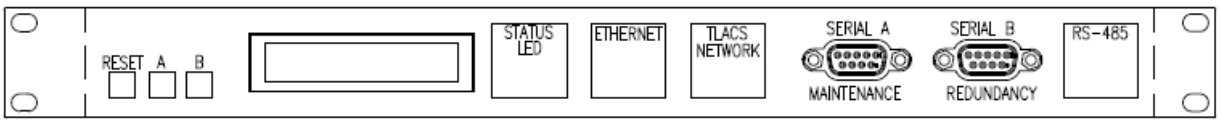

Figure 2*: NWC front drawing*

Reset Button

There are two way the reset button will reset the NWC:

1. Holding the reset button for 3 seconds (1 beep) will force a soft reset, only the application will be restarted.
2. Holding the reset button for 5 seconds (2 beeps) will force a hard reset, the complete NWC will be restarted.

Menu navigation and LCD display

The front LCD display shows base information about the NWC and its configuration. The buttons **A** and **B** are used to scroll through the information screens. The following information is available on the front panel display

- Asset Name / NWC IP address
- NWC Subnet mask
- Number of LPCs / Number of LPCs in error
- NWC firmware Build number (BSP)
- Internal LPC ST firmware version / Internal LPC Max firmware version
- NWC status (active or standby) / NWC Ping status (On or Off)
- Cluster IP
- Cluster Subnet mask
- NWC Visible ID
- NWC Temperature
- NWC Internal voltages

NWC Status LEDs

There are 3 Status LEDs on the front panel of the NWC:

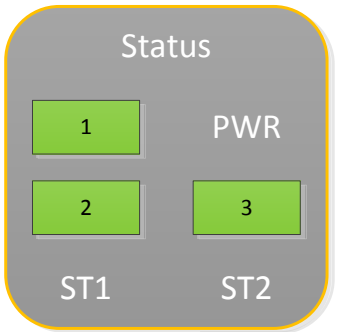

Figure 3 : NWC LED Status

Power LED: Green

1. ST1 LED: Green to indicate that the NWC is correctly started
2. ST2 LED: NWC redundant status: blue for stand-by; green for active.

Communication LEDs

The communication with the external system components is done through 3 different connections.

- Ethernet: communication over the Ethernet network
    - Activity LED: green blinking when there is activity on the Ethernet link
    - Link LED: orange, indicates that the NWC is connected to an Ethernet network.
- TLACS Network: communication over the powerline network
    - TX LED: blinks green when the NWC sends data.
    - RX LED: blinks red when the NWC receives data.
- RS-485: serial communication with the luminance and illuminance cameras
    - TX LED: blinks green when the NWC sends data
    - RX LED: blinks red when the NWC sends or receives data. When there is communication with the camera the RX LED blinks more frequently than the TX LED.

Serial Ports

There are 2 RS-232 serial ports with Transmit (TX) and Receive (TX) indications:

- A RS-232: this is the console port for debugging. Only to be used by Nyx-Hemera personnel.
- B RS-232: redundancy connection port. This port is used to connect 2 NWC in redundant mode.

Base Configuration Steps

This section describes how to setup the NWC using telnet, ftp interface and CMS. It does not describe how to create the configuration in CMS.
Setting up the NWC to a functional system is an easy process with limited steps to execute. There are 3 main steps with each 1 or more sub steps:

1. Base configuration using TELNET (see also the telnet interface section for command details)
    a. Set the **assetname**
    b. Set the **IP address** and **subnet mask**
    c. Set the **cluster IP address** and **subnet mask**
2. Load the webserver files to the NWC
    a. Open a ftp link to the NWC (use windows explorer and enter **FTP://AAA.BBB.CCC.DDD**)

b. Right-click and select **Login as**
c. Enter the username **admin** and the password **admin**
d. Copy the **WebServer files** to the Webserver folder in the root folder
e. Copy the **NWCConfig files** to the NWCConfig folder in the root folder

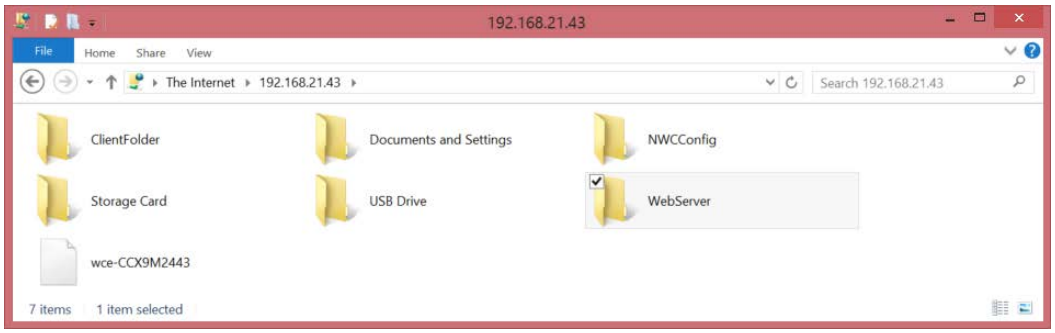

Figure 4 : Webserver file location

3. Load the site configuration using CMS
    a. Open **CMS**
    b. From the tree, select the **NWC** and **right-click**.
    c. Select: **Setup | Setup Network Controller**. This will send the configuration to the NWC.
    d. To setup the LPCs, select the NWC and right-click
    e. Select: **Setup | Start Branch Setup (automatic)**. This will configure all the LPCs configured in the system.

Telnet interface

Using the Telnet interface allows the user to enter the base configuration information. The information is saved in the system environment variables.

When the connection is established a login prompt will be displayed. Login as **admin** with the **Password admin**.

The variables are accessible using the **uboot_env** command. Entering the command without any parameters will display the command instructions.

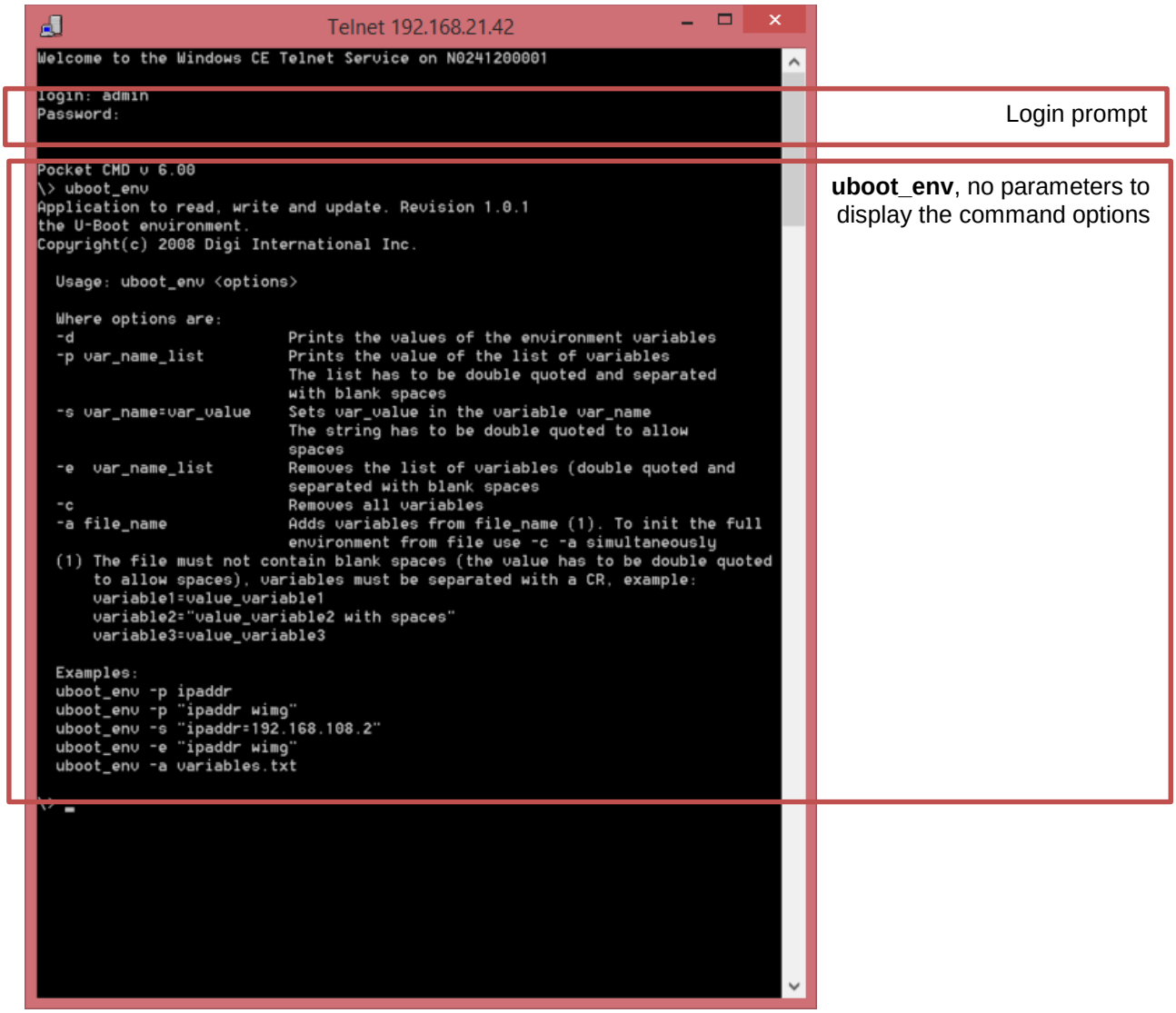

Figure 5 : Telnet Interface

To display the current environment variables the command with the option **–d** must be used: **uboot_env –d**

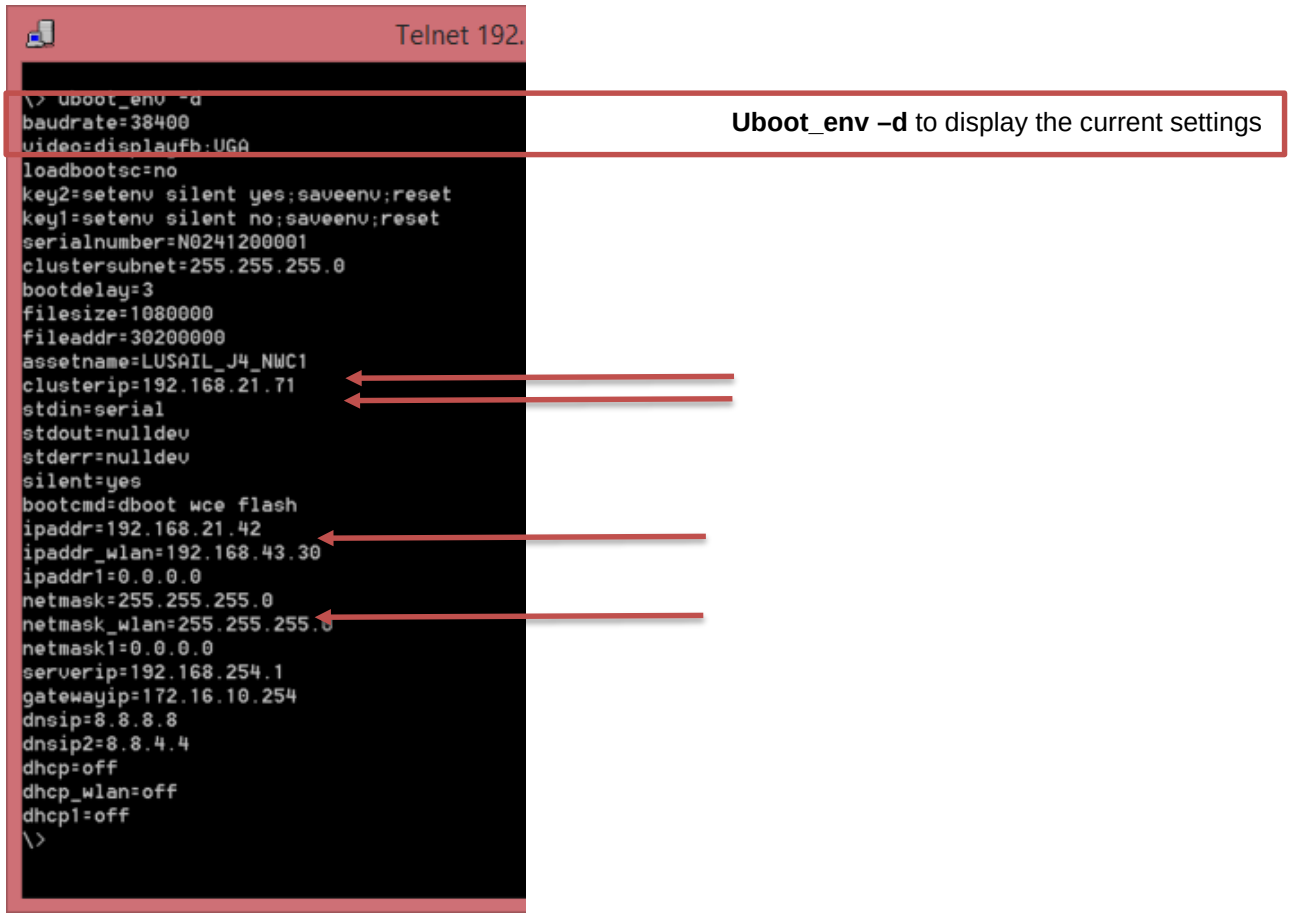

Figure 6 : Current environment variables

Now to set the environment the option **–s** must be used followed by the variable name and its value (using quotes and the = sign).

- **uboot_env –s "assetname=DEMO_SYSTEM"** (name of the system as displayed on the LCD)
- **uboot_env –s "ipaddress=192.168.21.42"** (address of the NWC on the Ethernet network)
- **uboot_env –s "netmask=255.255.255.0"** (NWC subnet mask on the Ethernet network)
- **uboot_env –s "clusterip=192.168.21.45"** (shared IP address of 2 NWCs in a redundant system)
- **uboot_env –s "clustersubnet=255.255.255.0"** (subnet mask for the cluster IP address)
- **reset** (to restart the NWC to activate the new environment variables)