

eZNS

enteliZONE

Network Sensor

Application Guide

Edition 1.41

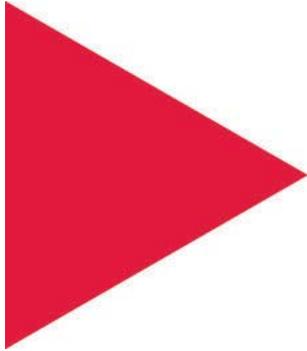
# enteliZONE Network Sensor (eZNS) Application Guide

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## Introduction

This document is intended for use with the Release version of the enteliZONE® Network Sensor (eZNS).

The DNS-24L has a similar function to the eZNS LINKnet sensor and both do not have MS/TP. The product functionality of the eZNS is compared to the DNS-24L throughout this document. Similar to DNS-24L, the eZNS is version independent and works with DAC/DSC, eZONE and enteliBUS® controllers running 3.30, 3.33 or 3.40 firmware.

## Important Information

Find these documents on the eZNS page of the George support site.

- enteliZONE Network Sensor Application Guide (this document)
- enteliZONE Network Sensor (eZNS-T100) Installation Guide
- enteliZONE Network Sensor Button Overlay Design Guide
- enteliZONE Network Sensor Button Overlay Selection Summary
- enteliZONE Network Sensor (eZNS-T100) Catalog Sheet
- enteliZONE Network Sensor Firmware Release Notes
- ORCAview Technical Reference Manual 3.40 Release
- Delta Controls Wiring and Installation Guidelines



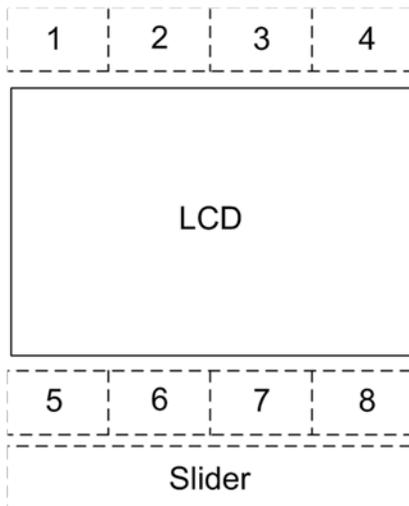
*Warning: These controllers are electrostatic-sensitive devices. Proper ESD protection (ground strap) should be used when installing this product so that damage to the product does not occur. Equipment damage or loss of data may occur if these procedures are not followed as specified.*



*Caution: Installations requiring CE conformance: All wiring for CE rated products must use a separated extra low voltage (SELV) or protective extra low voltage (PELV) transformer. Use safety-isolating transformers, (Class II transformer) per EN61558. The transformer must be rated for 100% duty cycle.*

## Configuration

When the enteliZONE Network Sensor (eZNS) is powered ON, it displays the LINKnet Address and the firmware build number on the screen. The following figure shows the available touch zones and slider areas of the display.



The quickest method to configure the eZNS is to use the eZNS NFC Stat Configurator app, however many of the settings can also be modified through the on-screen menu. The Configuration menu is displayed by pressing and holding touch area 8 and then pressing and holding touch area 4 until PIN displays. From the Configuration Menu, enter the four digit PIN code. See the 1. Configuration Menu Access topic in this section.



*The physical DIP switch is used to set the address of an eZNS without a display. If the DIP switch address is set to 0, it will use its NFC app configured address.*

## Device Configuration

Most of the internal configuration options, such as the LINKnet address, are best set through the NFC *Stat Configurator* Android App. See the links to download eZNS Apps on the [eZNS George Support page](#). Alternately, configurations settings can be modified from the eZNS screen Configuration Menu.

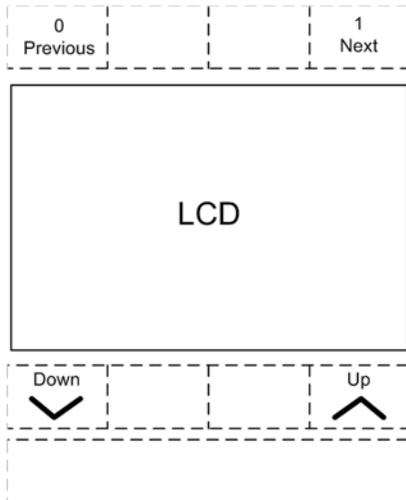
### 1. Configuration Menu Access

Access to the Configuration Menu is protected by an access code or PIN. You must enter the valid PIN before access is granted:

1. Press and hold Button 8. While holding touch area 8, press and hold touch area 4. Hold them both down for at least 5 seconds until PIN displays on the screen.
2. When the PIN number text displays, enter the valid PIN or access code. The PIN is a pre-configured 4-digit code that you must enter to gain access to the Configuration Menu. Button 1 maps to value 0 and button 4 maps to value 1. Press the proper button sequence to match the password.
3. The default PIN is **1011**. Note that the PIN access code, contained in AV31, can be changed when the eZNS is connected to a LINKnet network, but not through the keypad. If the eZNS is connected to a controller that has no PIN, then it reverts to the last PIN used to connect the eZNS.
4. When you entered the valid 4-digit code, the Configuration Menu appears. CFg displayed on the screen to indicate Configuration mode.  
If the entered code is invalid, the process aborts and the unit returns to normal display mode. If you do not press a button within about 10 seconds, the unit returns to normal display mode. In both these cases, the unit keeps the same PIN used when the last connection was made to the controller.
5. If you do not press a button within a 2 minute period, when in the Configuration Menu, the eZNS returns to normal display mode.

## 2. Button and Navigation Functions

The Button functions are as follows within the Configuration Menu:



Button	Description
Top Left 1	Represents a value of 0 when entering the PIN access code. PREVIOUS: Enter the current setting (and go backward in the menu).
Top Right 4	Represents a value of 1 when entering the PIN access code. NEXT: Enter the current setting (and go forward to the next item in the menu).
Bottom Left 5	Rotates downward through menu items and options. Decreases a numeric value with each button press.
Bottom Right 8	Rotates upward through menu items and options. Increases a numeric value with each button press.

Use the NEXT and PREVIOUS buttons to navigate through the menu options. Navigate to the item that you wish to display or change, use button 5 or 8 to make any necessary changes. When the changes are made or you wish to move on, press NEXT or PREVIOUS.

### 3. Configuration Menu Options

The Configuration Menu is a list of items which you can navigate through and make setup changes. Some of these options can be set and/or overridden via database LINKnet AVs. The Configuration Menu items are as follows:

Menu Item	Options	Description
<i>CFG</i>		Displayed momentarily to indicate you have successfully entered the Configuration Menu.
<i>Add</i>	1 - 12	The device Address, which is used internally as the MAC Address. On LINKnet, this address is the physical address for the device (limited to 1 to 12).
<i>bdr</i>	76.8 38.4 19.2 9.6	LINKnet Baud Rate in kbps.
<i>br 1</i>	1b 2b 3b 4b -b	Controls whether the top row is 1, 2, 3 or 4 buttons. If the top row is configured as neither of these, then -b displays.
<i>br 2</i>	1b 2b 3b 4b -b	Controls whether the bottom row is 1, 2, 3 or 4 buttons. If the bottom row is configured as neither of these, then -b displays.
<i>Ar 1</i>	oFF on on S	Touch arrow configuration for the top row. "oFF" means that the button arrows are off. "on" means that arrows are on when the buttons are touched. "on S" means that the button arrows are sticky and are turned off when another button is touched or through a write of 0 to AVx17.
<i>Ar 2</i>	oFF on on S	Touch arrow configuration for the bottom row. "oFF" means that the button arrows are off. "on" means that arrows are on when the buttons are touched. "on S" means that the button arrows are sticky and are turned off when another button is touched or through a write of 0 to AVx17.
<i>USB</i>	YES no	Turns on or off the service port connection through USB via a virtual COM port. This is also configurable via LINKnet AVx06.
<i>dEC</i>	. ,	Determines whether decimals on the display are shown using the "." (period NA) or a "," (comma EU) convention. This is also configurable via LINKnet AVx05.

Menu Item	Options	Description
<p><i>0cc</i></p>	<p>0-100%</p>	<p>Sets motion sensitivity. The default is 50% but may need adjustment based on the room size/layout. 0% is least sensitive but will likely miss motion at full range, while 100% is most sensitive but will likely generate false detections. LINKnet variable AVx09 provides another way to configure this value.</p>
<p><i>End</i></p>	<p>YES no</p>	<p>To exit the Configuration Menu (Yes or No). If you do not press a button within 2 minutes, the device automatically exits and returns to its normal display mode.</p>

## Database Object Mappings

The section provides information needed to determine object mappings.



Use the following table to determine object mappings. For LINKnet sensor 3, a temperature Sensor Input = AI301 on a parent DAC/DSC controller. For LINKnet sensor 2, Humidity Sensor Input = AI203 on parent DAC/DSC controller.

The equivalent object mapping for LINKnet sensor 2, Humidity Sensor Input on an eBUS controller would be AI202003 and AI2003 for an eZone controller.

### Table of LINKnet Mappings for DAC/DSC Controller Objects

Object	Mapping	R/W
<b>AI/BI</b>		
AIx01	Temperature Sensor	R
AIx02	Unused	R
AIx03	Humidity Sensor	R
AIx04	CO <sub>2</sub> Sensor	R
BIx05	Motion Sensor	R
AIx06	IP6- additional external 10kΩ input	R
<b>AV</b>		
AVx04	Keypad Value. Flag to indicate if any button is pressed. Value = 0 when no button pressed, value = 1 when and while any button pressed. Used in conjunction with LCDx.KeyPress to capture press and hold of a button.	R
AVx05	Decimal Type: 0 = '.', 1 = ','	R/W
AVx06	USB Service Port Enable: 0 = 'disabled', 1 = 'enabled'	R/W
AVx07	Button configuration: XY where X is the number of top row buttons and	R



Database Object Mappings:  
**Table of LINKnet Mappings for DAC/DSC Controller Objects**

Object	Mapping	R/W
AVx28	Backlight On Intensity 0-100% 0 = disable LED blink (No-Display models only)	R/W
AVx29	Backlight Color  0 = use RGB value from R = AVx26, G = AVx25, B = AVx24.  1 = WHITE (255, 255, 255)                      8 = LIGHT BLUE (0, 128, 255) 2 = RED (255, 0, 0)                                9 = GREEN BLUE (0, 255, 128) 3 = GREEN (0, 255, 0)                            10 = LIGHT GREEN (128, 255, 0) 4 = BLUE (0, 0, 255)                              11 = ORANGE (255, 128, 0) 5 = YELLOW (255, 255, 0)                      12 = FUSHIA (255, 0 128) 6 = MAGENTA (255, 0, 255)                    13 = VIOLET (128, 0, 255) 7 = CYAN (0, 255, 255)                        >= 14 is WHITE	R/W
AVx30	Auto-Backlight 0 = disable: Uses LCDxx.Backlight to set backlight according to either AVx28 On Brightness or AVx27 Off Brightness.  x > 0 = After a button/slider press, backlight is set to AVx28 On Brightness for x seconds, and then reverts back to AVx27 Off Brightness. The LCDxx.Backlight property is ignored.	R/W
AVx31	PIN for configuration menu. Using 0's and 1's, there are 16 combinations: from 0000 to 1111. If any digits are not a 0 or 1, access to the configuration menu will not be possible.	R/W



*The AV range Avx01 through Avx32 is for internal use to communicate with LINKnet devices. Unused Avs within this range are reserved for future use. Avoid creating an AV within this range as conflicts may occur in the future.*

## eZNS Local Variables

The Avs in the previous table are stored locally in non-volatile memory on the eZNS itself.

These local values can be modified in several ways:

- Use an Android NFC App (i.e. Stat Configurator or Chameleon). The eZNS does not need to be powered on and can even be inside its shipping box. It takes about 10 seconds to configure each controller and so this approach can save significant time in many cases.
- Configure properties through the onscreen eZNS Configuration Menu such as Motion Sensitivity or USB enable/disable.
- Change the AV objects in the parent controller database

In normal operation, when connected to a parent controller and the objects exist, the controller database values will match the local value stored on the eZNS.

- When changes are made from the database side, they are written to the local eZNS non-volatile memory. The exception to this is rapidly changing values. Write limitations are imposed to prevent excessive writes to the non-volatile memory (maximum 3 changes within 15 minutes). The value is still updated in the eZNS RAM, so even if the write limitations are reached, the eZNS still works normally.
- When changes are made from the NFC/Configuration Menu, they are written down to the controller database Avs. If NFC is used while the eZNS is not powered up, the next time it is connected to a controller, the changed values will get written to the database LINKnet variables. If the database Avs are in manual, or GCL is rewriting to that object, attempted changes made from the NFC/Config Menu may not actually occur.

When you load a database into a controller, the values in the database and the values in the non-volatile memory may differ. On power-up, an eZNS will attempt to write back its existing local value to the LINKnet Avs. If values such as On/Off brightness or USB Port access need to be set in database, these configuration Avs should be initiated and modified through GCL, or set to manual if they don't need to change.

## GCL Programming

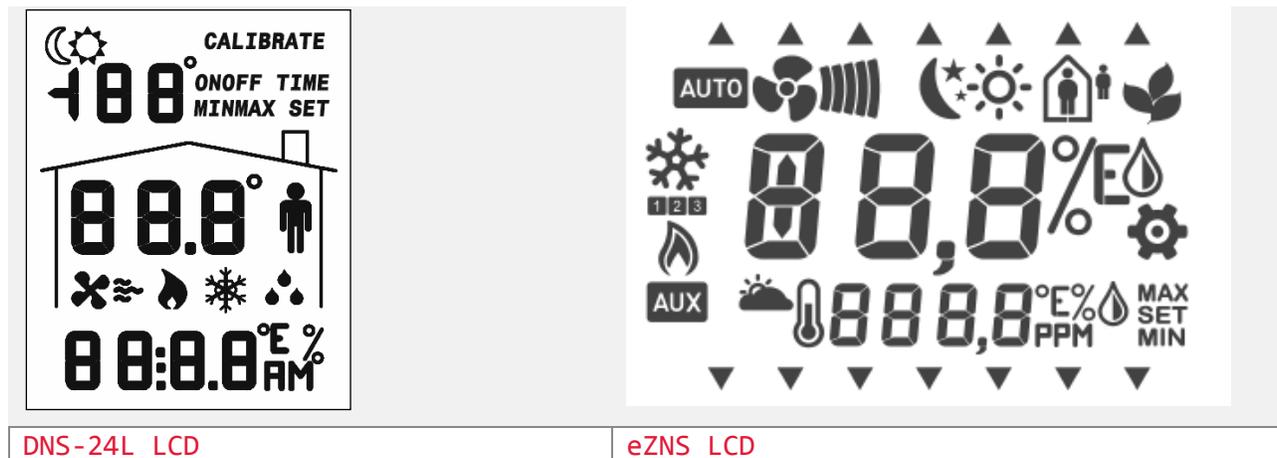
The eZNS is fully programmable through GCL. The display and button interactions are configured primarily by reading button presses from the LCDxx.Keypress property and writing to various display properties of the LCD object. Reading and writing to LINKnet AV eZNS database objects can adjust additional display characteristics such as color or brightness and also provides a way to simplify slider interaction.

### eZNS – Compatibility with DNS-24L

The enteliZONE Network Sensor (eZNS) product is envisioned as a drop-in replacement for a DNS-24L product with the capability to add more functionality if desired. The product is LINKnet only and has a temperature sensor (as well as additional optional sensors). The product behaves like a DNS-24L on LINKnet and the inputs are mapped as close as possible to a DNS-24L. The LCD and button inputs also match.

#### LCD Behavior

The LCD on the eZNS and the DNS-24L have different layouts.



The following table compares the LCD object behaviors for the DNS-24L and the eZNS products.

LCD Property Name	DNS-24L Behavior	eZNS Behavior
<b>Line1</b>	Sends a value to Line 1	Not displayed
<b>Line2</b>	Sends a value to Line 2, up to 3 digits and a single decimal place.	Sends a value to main display line, up to 3 digits with a single decimal place. Also supports '+' in the first character.
<b>Line3</b>	Sends a value to Line 3, up to 4 digits and a single decimal place.	Sends a value to secondary display line, up to 4 digits and a single decimal place.
<b>Line1Units</b>	0 = ° icon is turned off 1 = ° icon is turned on	Not displayed
<b>Line2Units</b>	0 = ° icon is turned off 1 = ° icon is turned on	Units for main display line 0 = No Unit icons 1 = ° icon only 2 = °C 3 = °F 4 = %
<b>Line3Units</b>	0 = No Unit icons 1 = ° icon only 2 = °C 3 = °F 4 = % 5 = AM 6 = PM	Units for secondary display line. AM/PM are not supported. 0 = No Unit icons 1 = ° icon only 2 = °C 3 = °F 4 = % 5 = AM (not supported) 6 = PM (not supported) 7 = PPM 8 = Lower humidity icon 9 = % and lower humidity icon
<b>Blink</b>	0 = Blinking is disabled 1 = Entire LCD display blinks	Same
<b>Occupancy</b>	0 = No House/Man (Disabled) 1 = House only (Unoccupancy) 2 = House & Man (Occupancy)	0 = No House/Man (Disabled) 1 = House and man outside (unoccupied) 2 = House & Man Inside (Occupancy)
<b>SunMoon</b>	0 = No Sun or Moon (Disabled)	Same

LCD Property Name	DNS-24L Behavior	eZNS Behavior
	1 = Moon only 2 = Sun only	
<b>Fan</b>	0 = No Fan icons – All turned off 1 = Fan icon only 2 = Fan with Air Flow Wave 1 3 = Fan with Wave 1 & Wave 2 4 = Fan with Wave 1, Wave 2, Wave 3	<b>FAN icon</b> Same 0-4 plus: 5 = Fan + Wave 1-4 6 = Fan + Wave 1-5  <b>AUTO icon:</b> Add 100 to above to enable 100 = AUTO icon on, Fan off 101 = AUTO icon and FAN icon 102-106 = AUTO icon and FAN icon and Increasing Waves 1-5
<b>Heating</b>	0 = Heating icon is turned off 1 = Heating icon is turned on	<b>Heating icon</b> 0 = Heating icon is turned off 1 = Heating icon is turned on 2 = Heating icon is on and “1” icon is on 3 = Heating icon is on and “2” icon is on 4 = Heating icon is on and “3” icon is on  <b>AUX icon:</b> Add 100 to above to enable 100 = AUX icon on, Heating icon off 101 = AUX icon and Heating icon on 102-104 = AUX icon and Heating icon and stages increasing: 1, 2, 3
<b>Cooling</b>	0 = Cooling icon is turned off 1 = Cooling icon is turned on	0 = Cooling icon is turned off 1 = Cooling icon is turned on 2 = Cooling icon is on and “1” icon is on 3 = Cooling icon is on and “2” icon is on 4 = Cooling icon is on and “3” icon is on
<b>Humidity</b>	0 = Humidity icon is turned off 1 = Humidity icon is turned on	Upper humidity Icon 0 = Upper humidity icon is turned off 1 = Upper humidity icon is turned on
<b>Calibrate</b>	0 = CALIBRATE text is turned off 1 = CALIBRATE text is turned on	Gear icon is used instead of calibrate text
<b>On</b>	0 = ON text is turned off	On LCD property is repurposed for

LCD Property Name	DNS-24L Behavior	eZNS Behavior
	1 = ON text is turned on	Earthright icon 0 = "Earthright" icon is off 1 = "Earthright" icon is on
<b>Off</b>	0 = OFF text is turned off 1 = OFF text is turned on	Off LCD property is repurposed for Thermometer icon 0 = "Thermometer" icon is off. 1 = "Thermometer" icon is on
<b>Time</b>	0 = TIME text is turned off 1 = TIME text is turned on	Time LCD property is repurposed for Cloud icon 0 = Cloud Icon Off 1 = Cloud Icon On
<b>Minimum</b>	0 = MIN text is turned off 1 = MIN text is turned on	Same
<b>Maximum</b>	0 = MAX text is turned off 1 = MAX text is turned on	Same
<b>Set</b>	0 = SET text is turned off 1 = SET text is turned on	Same
<b>Backlight</b>	Control backlight intensity 0-100%	Backlight off = 0, intensity controlled by Avx27 Backlight on = 1, intensity controlled by Avx28 Note: Avx30 (Auto-Backlighting) can override this property.

Some icons on the eZNS display are not directly controlled. This approach provides immediate feedback when a button is pressed.

- 14 Arrow Icons – these function automatically based on touches to the appropriate corresponding button and button CnF setting.

## Button Mapping

This section covers layout and configuration of buttons plus GCL interactions with buttons and the slider.

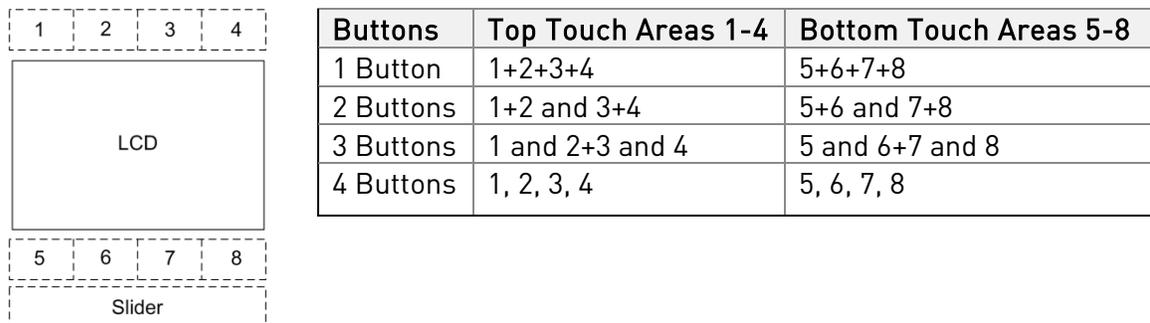
### Button Layout

The eZNS has 4 buttons above the LCD, 4 buttons below the LCD and a horizontal slider below that. Buttons on the eZNS can combine to form a single button. The top and bottom rows of buttons could be 4 separate buttons, 2 separate buttons (divided between the second and third), 3 separate buttons (divided between 1<sup>st</sup> and 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup>) or one large button. To simulate the DNS-24L, the top and bottom rows of buttons are configured to be 2 separate buttons and the slider would not be used. The button layout is factory set to match the overlay; however it can be modified through the onscreen Configuration Menu and/ or the NFC Stat Configurator Android App.

#### Button Config

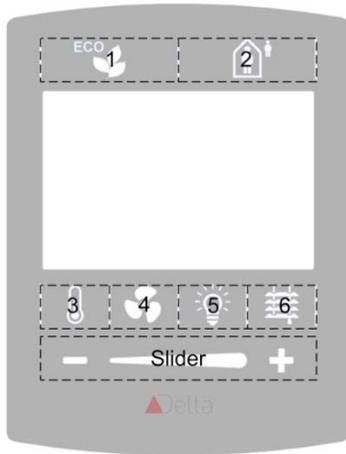
The button layout configuration is in the CFg menu. Mappings are made for each button to map the physical touch area to a logical button:

Each row of touch areas 1-4 and 5-8 can be configured internally as 1, 2, 3 or 4 buttons. This allows for larger areas to be treated as a single button to match the button overlay used.



The following figure shows the top row configured as 2 buttons: touch areas 1+2 combined for the ECO button, and touch areas 3+4 combined for Occupancy. The Bottom row has the 4 touch areas configured as 4 buttons, buttons 5 to 8 are each configured to an individual function.

The slider at the bottom of the display is used for slide to change and +/- operation.



When programming the button behavior through GCL, the buttons are read with the LCDx.Keypress property. Each button is internally represented in increasing order from Left to Right and Top to Bottom. For example with two buttons on the top and four buttons on the bottom, the top two buttons are read as Keypress 1 and 2 and the Bottom row of buttons are read as Keypress 3 through 6.

## Button GCL Control

The DNS-24L has four buttons that can read through GCL. The LCD object's KeyPress property is used to determine which DNS-24L button or 2-button combination was pressed. Where two buttons are pressed, the first button represents the hundreds digit and the second button represents the units digit of a 3 digit number.

On the eZNS, the available KeyPress values are expanded to include options for up to eight buttons (i.e. value from 1-8 for single button presses and from 102-807 for two button presses). For example pressing button 3+4 would give a Keypress value of 304. The order of pressing is important. Pressing 4+3 would give a Keypress value of 403.

## Slider GCL Control

There are two methods of reading values for the slider. Using local control, the eZNS is pre-sent the range and increment which allows the display to update with values as the user slides their finger. Periodically the current value is sent down to the application controller. This gives the illusion of the setpoint changing in real time. Although there is a delay in reading the changes before the application controller acts on it, to the end user it is less noticeable than remote control.

The second method is using remote control which allows reading the absolute start and stop position of the slider through the GCL Keypress property and using GCL to acting on it to perform some change such as adjusting a setpoint. The limitation with this approach is that the value is not read until you finish sliding and remove your finger, and requires additional programming. The advantage is to allow further flexibility on how the slider is used.

### *Local Control (Avx18=1) – Lower Display Line*

Local control takes over control of the lower display line based setting a number of variables:

- Avx19 – Minimum Value
- Avx20 – Maximum Value
- Avx21 – Slider increment
- Avx22 – Current display value being changed by the slider
- Avx23 – Units to display on the lower line

The logic on how one would use this is as follows:

1. Detect Button Press [e.g. light button pressed]
2. Set Min=30, Max=100, increment=10, Lower Units= 4 (%)
3. Set Slidevalue Avx22 to the current Lighting Setpoint
4. Set Avx18=1 for local control
  - Now the user can adjust the lighting setpoint from 30-100 by sliding or pressing on either end of the slider for incremental 10% increase/decrease.
5. As SlideValue is changed, set the Lighting Setpoint = new SlideValue
6. After some timeout (Keypress=0 for x Seconds) set back to remote control Avx18=0
  - The second display line now will revert back to using the LCD Line3Units and Line3 properties.

## Notes:

- When in remote control, LCD object Line3Units and Line3 properties are ignored. These display fields are controlled by the eZNS and Avx19-Avx23.
- The slider can recognize 10 different regions, which means that if your increment\*10 is less than your range, it will take multiple finger slides to move a setpoint between minimum and maximum values.
- Pressing and holding the ends allows repeat increment/decrement.

### ***Local Control (Avx18=2) – Main Display Line***

Local Control (Avx18=2) functions similar to Local Control (Avx18=1) but the slider setpoint value and units are displayed on the main LCD line (Line2) rather than the lower LCD line (Line3). While Avx18=2, the LCD properties Line2 and Line2Units are ignored, the main LCD display line is controlled from the slider using the values in Avx19-Avx23.

### ***Remote Control (Avx18=0)***

When in remote control, the slider is read similar to the buttons through the Keypress property. The value provided to GCL gives an indication of the initial finger position and the final finger position. These values are not sent to the application controller until the finger is released. Using remote control allows for further flexibility when it comes to interpreting how the slider will work.

The slider changes are represented in a higher range of values the Keypress property, 10000-19999. The first digit represents the slider (1), the next two digits represent the start position (00-99) and the last two digits represent the end position (00-99). For example pressing and dragging from 30% to 70% will give a keypress value of 13070. Pressing and dragging from 70% to 30% will give a keypress value of 17030.

## Input Mapping

In the eZNS, objects map as close as possible to the same locations as a DNS device uses. This approach allows the eZNS to replace DNS-24L/M24/Cxx24 sensors with minimum database changes in the master controller and minimum graphic changes in the user interfaces.

Object	Name	Description
Aix01	Temperature	Input 1 (Internal Temperature)
Aix02	Not Used	Not Used
Aix03	Humidity	Input 3 (Humidity – optional)
Aix04	CO <sub>2</sub>	Input 4 (CO <sub>2</sub> –optional)
Bix05	Motion	Input 5 (Motion – optional)
Aix06	IP1	External temperature 10K input

The eZNS temperature and humidity inputs require different AICs than what are used on DNS products. CO<sub>2</sub> sensors use the same AIC as the DNS-Cxx24.

### Analog Input Configuration (AIC) Objects

Download or create the following AICs to use with the eZNS.

**Build 31031 (31) and above:**

	Voltage (0-5 Volts)	Value	
Temperature AIC		°C	°F
	0.0586	125	257
	3.28	-40	-40
Humidity AIC		% RH	
	0	0	
	5	100	
CO <sub>2</sub> AIC		PPM	
	0	0	
	5	2000	

## Service Port (USB)

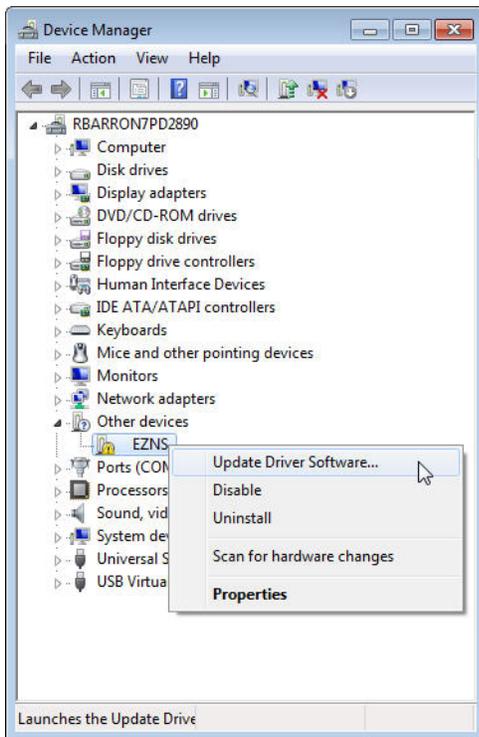
The Service port on the eZNS allows a PC to connect to the building BACnet network by using ORCAview® and a micro USB cable between the PC and eZNS.

The DNS-24L uses the CON-768BT to provide Service Port access. The eZNS does not need a CON-768BT adapter, a virtual COM port is created when the eZNS is connected to a PC and the eZNS USB driver file is installed.

The eZNS requires driver files to create the virtual COM port:

- eZNS\_ser.inf
- ezns\_ser.cat

Download the above files to install the driver for the virtual serial port. When the eZNS is plugged into the micro USB, the PC asks for a driver file. Choose to install from file location and browse to the location of the downloaded driver files. If the driver does not install automatically, open the Device Manager in windows (Start -> devmgmt.msc) and then find the device called 'EZNS. Right click on it and choose 'Upgrade Driver Software'. Select 'Browse my computer for driver software' and locate the directory where the driver files are located

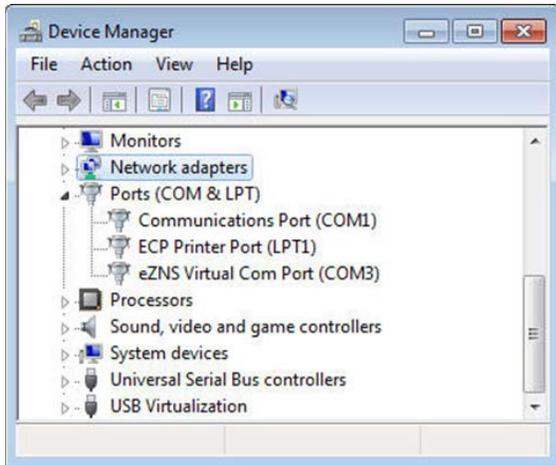


Service Port (USB):  
*Input Mapping*

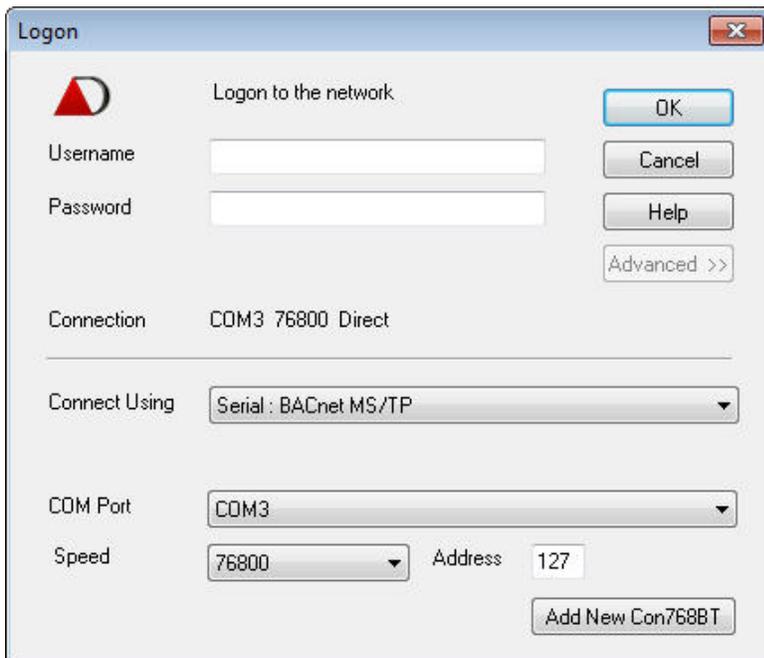


*Windows XP Note: The USB driver is not digitally signed for Windows XP however it can still be used. If installing in Windows XP, you can safely ignore the warning that states the driver 'has not passed Windows Logo testing to verify its compatibility with Windows XP'. Click 'Continue Anyways' to install.*

Once installed, a virtual Serial Port is created.

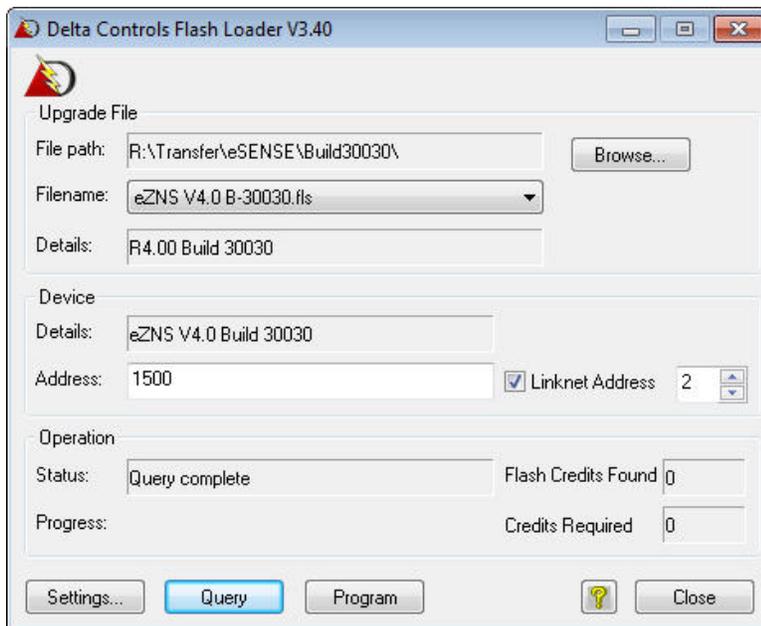
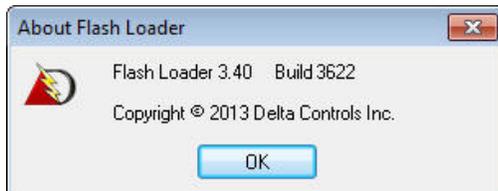


The eZNS Virtual Com Port (COM3 in this example) can be selected as a COM Port through the OWS Logon dialog via the Advanced – Connect Using dropdown option Serial: BACnet MS/TP.



## Flash Loading

When you use Flash Loader to upgrade an eZNS, use a 3.40 version built on or after July 12, 2013 (b3577). OWS 3.40 R3 (b3804) contains the correct Flash Loader. A swap-in loader.exe replacement is available to upgrade an existing 3.40 R1 or 3.40 R2 Flash Loader installation, however it is best to just upgrade to the latest 3.40 release.



Use the same procedure as for the current upgradeable DNS-24. Refer to the Flash BACstat II Controllers over a LINKnet Network topic in the Flash Loader help. This method requires flashing from a controller; it is not possible to upgrade with a direct connection using the eZNS USB port.

## Appendix A: eZNS OWS LCD Object Dialog

When an enteliZONE Network Sensor (eZNS) is connected over a LINKnet network, the LCD object is automatically created in the parent controller. On a DAC/DSC controller, the instance of the LCD object corresponds to the LINKnet address x of the eZNS appended by 01, i.e. 101 or 201. When eZNS is disconnected, the LCD object goes into Fault.

**[OWS 3.40 Release 3]** This OWS version contains the correct LCD dialog. The LCD dialog image should closely match the actual eZNS screen.

**[OWS 3.40 Release 2 Build 3473 and prior]** If the LCD screen does not correspond to the eZNS LCD and instead looks like a BACstat, you will need to manually copy in a new LCD dialog (vn8v3lcd.dlg) and corresponding graphics. LCD Dialog files are available for download on the [eZNS Support Page](https://support.deltacontrols.com/Products/EzNS). (<https://support.deltacontrols.com/Products/EzNS>)

**vn8v3lcd.dlg:** Vendor8 dialog folder. The default location is:

C:\Program Files (x86)\Delta Controls\3.40\Dialogs\Vendor8

**Graphics:** Media folder. The default location is:

C:\Program Files (x86)\Delta Controls\3.40\Media

## Appendix B: GCL Application Code

This section contains some GCL snippets that show button screen interaction.

RnDMeeting = LCD object for the eZNS.

### *Set a default screen*

```
//Timeout to a default display after no buttons touched for 8 seconds.
If (RnDMeeting.KeyPress = 0) OnFor 8S Then eZNS2_LCDMode = 0 End If

//Define default screen
If (eZNS2_LCDMode = 0) Then
  eZNS2_SliderMode = 0 //Avx18, allows GLC to control Line3
  RnDMeeting.Line2 = eZNS2_RT_AV //set Line2 to display room Temp
  RnDMeeting.Line2Units = 2 //set units to degC
  RnDMeeting.Line3 = " " //blank line3 and line3 units
  RnDMeeting.Line3Units = 0
  eZNS2_StickyArrow = 0 //Avx17, clear sticky arrow
End If
```

### *Read a one touch button (occupancy)*

Toggles an override BV which can then be used to turn on lights or change occupancy mode

```
//Read a press of the occupancy button (mapped as button 2)
IfOnce RnDMeeting.KeyPress = 2 Then
  eZNS2_OVR = Not eZNS2_OVR //toggle occupancy BV
  eZNS2_LCDMode = 0 //return to default screen
End If
```

### *Change Room Temperature Setpoint (using Local Slider control)*

```
//if temperature icon (button 4) pressed
IfOnce (RnDMeeting.KeyPress = 4) Then
  eZNS2_LCDMode = 3 // temperature adjust mode
End If

//if slider is pressed on default screen
IfOnce (RnDMeeting.KeyPress > 9999) And eZNS2_LCDMode = 0 Then
  eZNS2_LCDMode = 3 //temperature adjust mode
End If

If (eZNS2_LCDMode = 3) Then
  eZNS2_SliderUnits = 2 //Avx23 = °C, units while under local control
  eZNS2_SliderMode = 1 //Avx18 = local control, eZNS to controls line3 value&units
  eZNS2_SliderMin = eZNS2_RT_MIN_SP //Avx19 = min value
  eZNS2_SliderMax = eZNS2_RT_MAX_SP //Avx20 = max value
  eZNS2_SliderInc = 0.2 //Avx21, how much to increment/decrement
```

***Input Mapping***

```
//set initial value show to current temperature setpoint
IfOnce eZNS2_LCDMode = 3 Then eZNS2_SliderValue = eZNS2_RT_SP End If
If (eZNS2_LCDMode = 3) OnFor 2S Then
  If eZNS2_SliderValue Changed Then
    eZNS2_RT_SP = eZNS2_SliderValue //update temperature setpoint as value changes
    eZNS2_Occupied_SP = eZNS2_RT_SP
  End If
End If
End If
```

***Change FAN Setpoint (using Remote GCL control)***

```
//Fan Speed (button 5)
IfOnce (RnDMeeting.KeyPress = 5) Then
  If eZNS2_OVR = On Then
    eZNS2_LCDMode = 4 //Fan speed adjust only in Occupied
  Else
    eZNS2_LCDMode = 0
  End If
End If

If (eZNS2_LCDMode = 4) Then
  RnDMeeting.Line3 = "Fan" //display 'Fan' while adjusting fan speed
  RnDMeeting.Line3Units = 0
  eZNS2_SliderMode = 0 //local control
  If RnDMeeting.LastKeyPress > 4 Then
    If RnDMeeting.LastKeyPress Changed Then
      Val1 = (RnDMeeting.LastKeyPress Mod 10000) / 100 //retrieve first xx press
      position 1xxyy
      Val2 = RnDMeeting.LastKeyPress Mod 100 // retrieve second yy press position 1xxyy
      If Min (Val1, Val2) > 50 Then ValOut = 1 //are we tapping right?
      ElseIf Max (Val1, Val2) < 45 Then ValOut = - 1 // are we tapping left?
      ElseIf (Val2 - Val1) > 0 Then ValOut = Scale (Val2 - Val1, 0, 0, 1, 100, 6)
    //sliding right, scale amount
      ElseIf (Val2 - Val1) < 0 Then ValOut = Scale (Val2 - Val1, 0, - 99, - 6, 0, - 1)
    //sliding left, scale amount
      End If
      eZNS2_FanMode = eZNS2_FanMode + ValOut //adjust fan mode
    End If
  End If
End If
```

## Appendix C: 7 Segment Display

The eZNS uses a 7 segment LCD to display numbers and letters. However the limitation of 7 segments restricts how letters are displayed. The following table shows how lower and upper case letters are represented:

a / A	b / B	c / C	d / D	e / E	f / F	g / G	h / H	l / I	j / J
k / K	l / L	m / M	n / N	o / O	p / P	q / Q	r / R	s / S	t / T
u / U	v / V	w / W	x / X	y / Y	z / Z				

## Document Revision History

Document Edition Number	Date Published	Change Description
1.0	May 1, 2014	Updated for Release.
1.1	July 11, 2014	Update of label changes for IP 1-3 to IP 4-6. Did copy edits.
1.2	September 4, 2014	Updated for features added in firmware build 40040.
1.3	October 29, 2014	Added note to ignore USB driver signing warning with Windows XP. Replace alx05 with blx05 for Motion Sensor.
1.31	December 19, 2014	In Database Object Mappings, put AVx29 instead of AVx029.
1.4	May 29, 2016	Updated for Release 2/3.
1.41	January 6, 2016	Correct AVx27 Off Brightness and AVx28 On Brightness parameters in AVx30 Auto Backlight entry on page 11 in Table of LINKnet Mappings for DAC/DSC Controller Objects.



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