

# **ANC-120e Compact USB to Data Highway Plus Adapter**

## **User Manual**

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### **About ANC-120e**

The ANC-120e allows you to connect a computer using a free USB port to a DH+ network and communicate with various DH+ enabled devices such as Allen Bradley's PLC5, SLC5/04, SLC5/05, ControlLogix series and other devices which might support Allen Bradley DH+ network connectivity. ANC-120e is designed to work utilizing the Ethernet/IP network driver available in most industrial communication software suites, such as Allen Bradley RSLinx Classic/Gateway/Enterprise and alike. And its auto-configuration features provide a quick and easy connection, as cable polarity, node number and baud rate can be auto-detected. For more information on properly configuring your software suite of choice to work with ANC-120e, please see the corresponding chapter of this manual.

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## ANC-120E COMPACT USB TO DATA HIGHWAY PLUS

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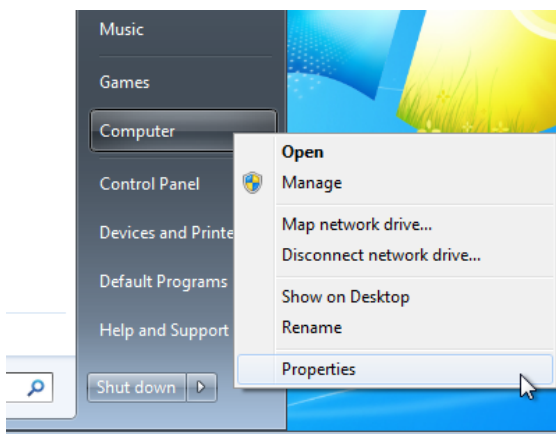
# First Time Driver Installation

**PLEASE NOTE:** ANC-120e is using a standard Microsoft RNDIS driver that is usually included with all Microsoft operating system versions. In rare case when the Microsoft RNDIS driver is not included with the operating system, please use the driver package available as a download on our support website. Driver installation for Windows 2000 and Windows XP are similar to the instructions below.

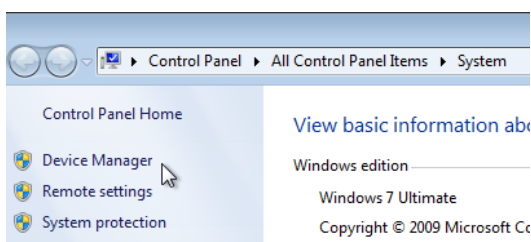
## Windows 7 Driver Installation

If the device driver is not installed automatically, please follow the procedure below:

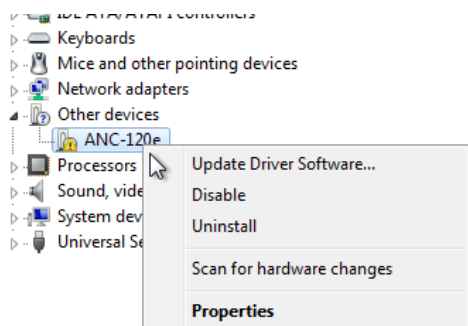
1. Click on Window's *"Start menu"*
2. Right click on *"Computer"* icon
3. Click on *"Properties"*



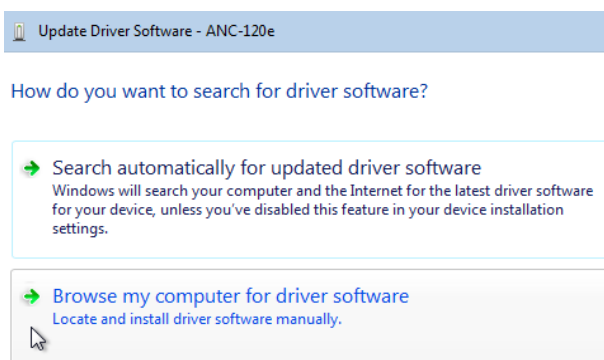
4. Click on *"Device Manager"* tab in the *"System"* window



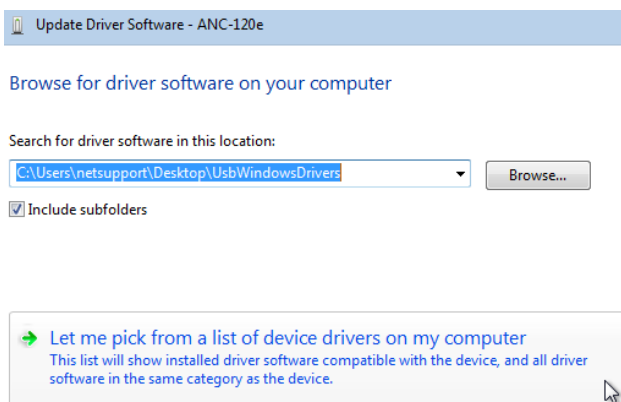
5. Under *"Other Devices"* category, locate the ANC-120e device with an attention symbol indicating that Windows was not able to find a correct driver
6. Right click on *"ANC-120e"* device icon
7. Click on *"Update Driver Software..."*



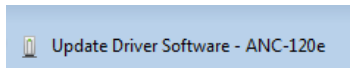
8. Click on *“Browse my computer for driver software”*



9. Click on *“Let me pick from a list of device drivers on my computer”*

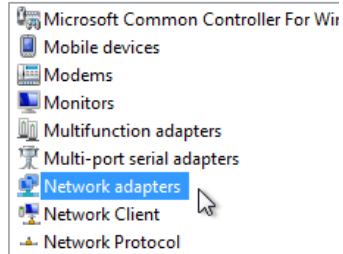


10. Click on *“Network adapters”*  
11. Click *“Next”*

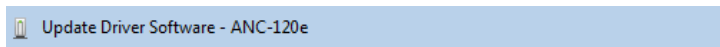


Select your device's type from th

Common hardware types:

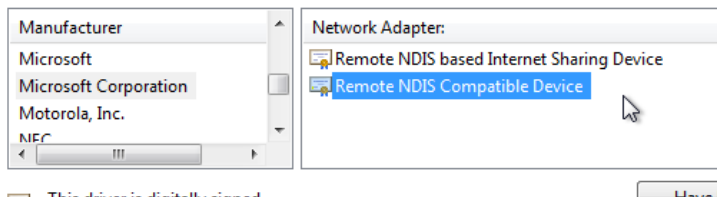


12. From the "Manufacturer" list, select "Microsoft Corporation"
13. From the "Network Adapter:" list, select "Remote NDIS Compatible Device"
14. Click "Next"

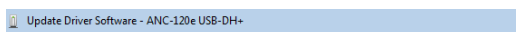


Select Network Adapter

Click the Network Adapter that matches your hardware, then click OK. If you have an installation disk for this feature, click Have Disk.

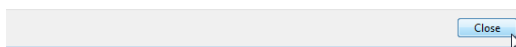
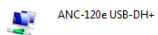


15. You might get a Warning message when installing the driver
16. Click "Yes" button to continue
17. Click "Close" button when the driver installation is finished

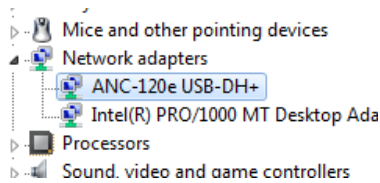


Windows has successfully updated your driver software

Windows has finished installing the driver software for this device:



18. Check the “*Device Manager*” window. Now ANC-120e should appear as a new network adapter under the “*Network adapters*” list



## Network Adapter Configuration

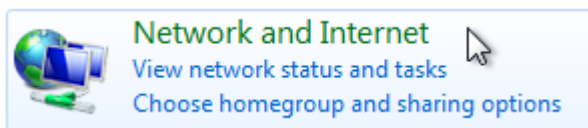
**IMPORTANT:** Before proceeding, make sure you already installed the ANC-120e driver and that the unit is connected to a USB port on your computer.

The RNDIS driver package supplied with ANC-120e, creates a new Ethernet network adapter which is used to communicate with the device over the USB port.

The default IP address of the device is set to 192.168.137.2.

The first time the device is used, it is required to configure the network adapter created by the driver to use a static IP address in order to access the ANC-120e web configuration interface.

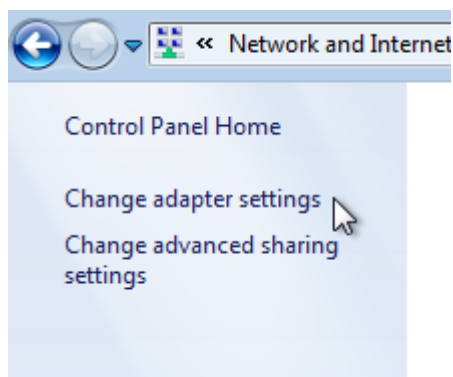
1. Open Window’s Control Panel
2. Click on “*Network and Internet*”



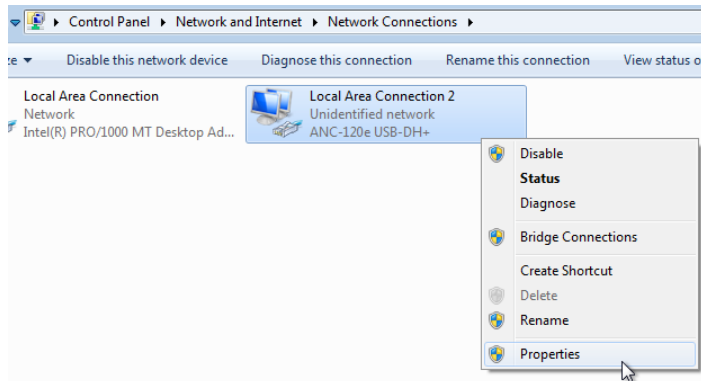
3. Click on “*Network and Sharing Center*”



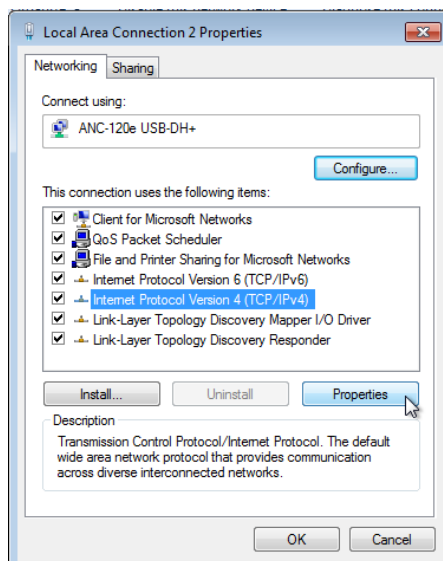
4. Click on “*Change adapter settings*”



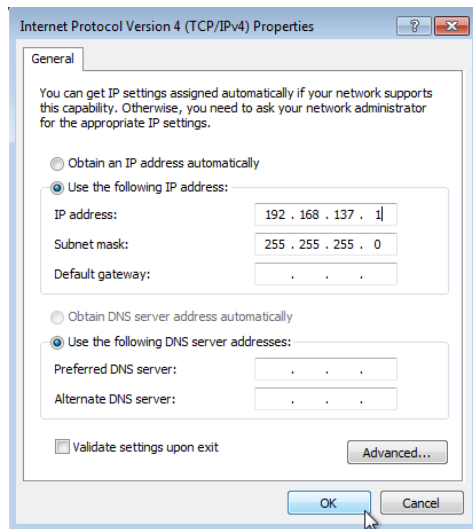
5. Locate a network adapter labeled “ANC-120e USB-DH+”. Please note, Windows OS can assign any number after “Local Area Connection” label, in our particular example, Windows OS had assigned a number 2 to our network adapter, hence it is displayed as “Local Area Connection 2”, but it can be different in your case
6. Right click on the corresponding network adapter
7. Click on “Properties”



8. From the list of items, select “Internet Protocol Version 4 (TCP/IPv4)”
9. Click “Properties” button



10. Select the option “Use the following IP address”
11. Configure the adapter to use following settings:  
IP address: 192.168.137.1  
Subnet Mask: 255.255.255.0
12. Leave the “Default gateway” and “DNS server” settings blank
13. Click “OK” button



14. Click “OK” button to close “Local Area Connection” properties window

**IMPORTANT:** If your ANC-120e IP address/mask has been already configured with different values, it will be necessary to adjust the Virtual Network adapter’s IP settings to match the IP settings of the device. Or reset the device to factory defaults.



# Using ANC-120e

## Connections

To connect ANC-120e device to your existing DH+ network or directly to another DH+ device, please use one of the connectors included with the product.

**IMPORTANT: Outer shield part of the DH+ cable is not used. Cable shield may be grounded if necessary using Allen-Bradley recommendations.**

1. Connect the DH+ cable to the ANC-120e. The polarity of the cable does not matter
2. Connect ANC-120e to the available USB port on the computer
3. The USB side light should blink intermittently for a moment
4. The DH+ light will blink every 3 seconds indicating that the device is connected and associated to a DH+ network

*Due to ANC-120e unique Polarity Detection feature, the way the individual conductors (1/2) are connected does not matter, since upon startup, ANC-120e will AutoDetect and configure itself to use the correct polarity for successful communication regarding of the conductor cables connection.*

## LED Diagnostics

ANC-120e is equipped with two LEDs used for visual status and diagnostic display.

The LED closest to the USB connector indicates the data exchange between the ANC-120e and the user PC. When the device sends/receives a packet to/from the PC, this LED blinks indicating packet exchange.

The LED closest to the DH+ connector indicates the current status of the DH+ network:

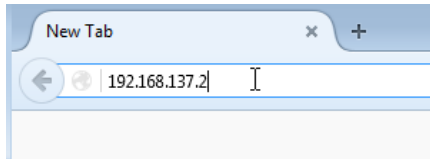
- “LED Off” indicates that the device is not currently associated with a DH+ network.
- “LED blinks regularly every 3 seconds” indicates that the device is associated with the DH+ network
- “LED blinks fast without any particular pattern” indicates that the device is associated with the DH+ network and there is ongoing communication taking place with other nodes on the network.

## Accessing ANC-120e User Interface

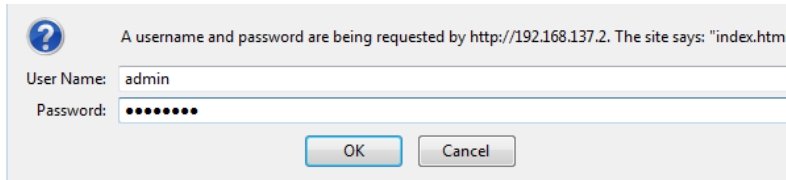
**IMPORTANT: Before proceeding, make sure that you have installed the ANC-120e driver and configured the Network adapter correctly. Also make sure the unit is connected to your computer.**

*In case the previously configured IP settings were forgotten or lost and connection to the device cannot be established anymore, please perform the factory reset described in chapter “Reset to Default Factory Settings” of this manual.*

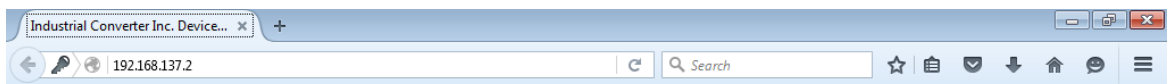
1. Open any web browser and enter the ANC-120e IP address in the address bar. Default IP address of the device is set to "192.168.137.2"
2. Press "Enter" key



3. Enter the username and password in the corresponding fields. By default, the username is set to "admin" and password to "password"
4. Click "OK" button.



5. If you entered the correct login credentials, you will be presented with the main configuration window.

A screenshot of the "ANC-120e Device Settings" page. The page has a navigation bar with "Device Settings", "Change Password", "Upgrade Firmware", and "Statistics". The "Device Settings" section is active. It contains the following fields: "Fw Version:" (16778531), "Serial #:" (110C02003), "IP Address:" (192.168.137.2), "IP Mask:" (255.255.255.0), "DH+ Node:" (11), and "DH+ Baud Rate:" (Auto). An "Apply" button is at the bottom left.

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# Configuration and Interface

## Device Settings

ANC-120e comes with several unique and innovative features designed to maximize the efficiency of the device usage under different scenarios. The paragraphs below explain those features in detail.

### *Automatic DH+ node assignment:*

When “Auto” is selected in the “DH+ Node” drop down menu, ANC-120e will scan the DH+ network it is currently connected to, and will assign itself a free, unused node on the network to be used for all further communication. This unique feature is very convenient when the user needs to communicate with different DH+ devices on different networks, and allows simple usage without the need to reconfigure the device using the web interface.

### *Automatic DH+ Baud Rate detection:*

When “Auto” is selected in the “DH+ Baud Rate” drop down menu, ANC-120e will scan the DH+ network it is currently connected to, and will automatically detect and configure itself to use the correct network Baud Rate. This unique feature is very convenient when the user needs to communicate with different DH+ devices moving between different networks, and allows simple usage without the need to reconfigure the device using the web interface.

### *Automatic Polarity detection*

This unique feature allows connecting a DH+ cable without worrying about correct cable polarity.

## Main Configuration Window

The following information is displayed in the main configuration window:

- “Fw Version:” field displays the current Firmware version of the device
- “Serial #:” field displays the unique serial number of the device
- “IP address:” field displays the current IP address of the device, and allows the user to modify it if desired
- “IP Mask:” field displays the current network mask of the device, and allows the user to modify it if desired
- “DH+ Node:” drop down menu displays the current DH+ node settings for the device, and allows the user to change it if desired. By default, device is set to automatic DH+ node assignment; please see the description of this feature at the beginning of this chapter
- “DH+ Baud Rate:” drop down menu displays the current DH+ network speed the device is configured to use, and allows the user to change it if desired. By default, device is set to automatic DH+ speed detection; please see the description of this feature at the beginning of this chapter

1. Select the desired settings on the main configuration page
2. Press the “Apply” button
3. The device will reboot automatically and new settings will take effect

The screenshot shows the 'Device Settings' page of the ANC-120e web interface. At the top, there are navigation tabs: 'Device Settings' (selected), 'Change Password', 'Upgrade Firmware', 'Statistics', and 'Language'. The main heading is 'ANC-120e Device Settings:'. Below this, there are several configuration fields: 'Fw Version:' with a text box containing '01.01.26', 'Serial #:' with a text box containing '110C02003', 'IP Address:' with a text box containing '192.168.137.2', 'IP Mask:' with a text box containing '255.255.255.0', 'DH+ Node:' with a dropdown menu set to 'Auto', and 'DH+ Baud Rate:' with a dropdown menu set to 'Auto'. At the bottom left of the settings area is an 'Apply' button.

**IMPORTANT:** ANC-120e IP address/mask settings must match the VirtualNetwork adapter’s IP settings. If you change the ANC-120e or the adapter’s IP settings, you also need to adjust its communication partner.

## Device Password

**IMPORTANT:** It is strongly recommended to change the default device password default value to prevent unauthorized access and reconfiguration of the device.

To change the default web interface login password, please follow the steps below:

1. Type in the current password of the device into the “*Current Password:*” field. The default password is set to “*password*” from the factory
2. Type in the desired new password into the “*New Password:*” field
3. Type in the same new password into the “*Confirm Password:*” field
4. Click on “*Apply*” button
5. The device will reboot automatically and the new password will take effect

The screenshot shows the 'Change Password' page of the ANC-120e web interface. At the top, there are navigation tabs: 'Device Settings', 'Change Password' (selected), 'Upgrade Firmware', 'Statistics', and 'Language'. The main heading is 'Change Password:'. Below this, there are three text input fields: 'Current Password:', 'New Password:', and 'Confirm Password:'. At the bottom left of the form area is an 'Apply' button.

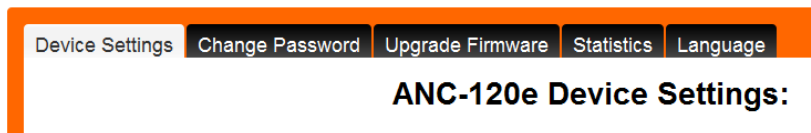
## Firmware Upgrade

**IMPORTANT:** Only upgrade the firmware with the firmware image provided by Automation Networks Inc. support staff and only when it is necessary to do so.

**Make sure that the unit is disconnected from the DH+ network by unplugging the cable from the unit before proceeding with the firmware upgrade.**

1. Open any web browser and enter the ANC-120e IP address in the address bar, default IP address of the device is set to "192.168.137.2"
2. Enter the username and password in the corresponding fields, by default, the username is set to "admin" and password is set to "password"
3. Click "OK" button

4. If you entered the correct login credentials, you will be presented with the main configuration window

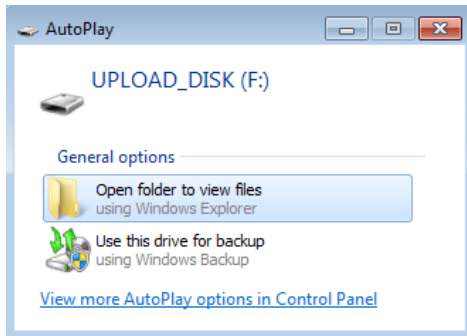


5. Navigate to the "Upgrade Firmware" tab
6. Click on the "Upgrade" Button
7. Wait approximately 5 seconds until the device reboots into firmware upgrade mode



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8. When device reboots into firmware upgrade mode, the device will appear as if it was a regular USB "memory stick" and will show up as another drive (in this example case the drive was assigned the letter "F:" by the Windows OS, however in your case it can be assigned any drive letter not currently used by Windows)
9. The drive labeled as "UPLOAD\_DISK" will be available in "My Computer" and in "Windows Explorer" main window



10. Click on *"Open folder to view files"* in the pop up *"Auto Play"* dialog
11. Alternatively, you can open *"Windows Explorer"* application and double click on the *"UPLOAD\_DISK"* drive to browse its content
12. Delete the currently stored file on the *"UPLOAD\_DISK"* drive like you would delete any other file
13. Copy the new firmware onto the *"UPLOAD\_DISK"* drive as you would copy any other file.
14. After the file is copied, the device will automatically reboot and start up in normal operation mode

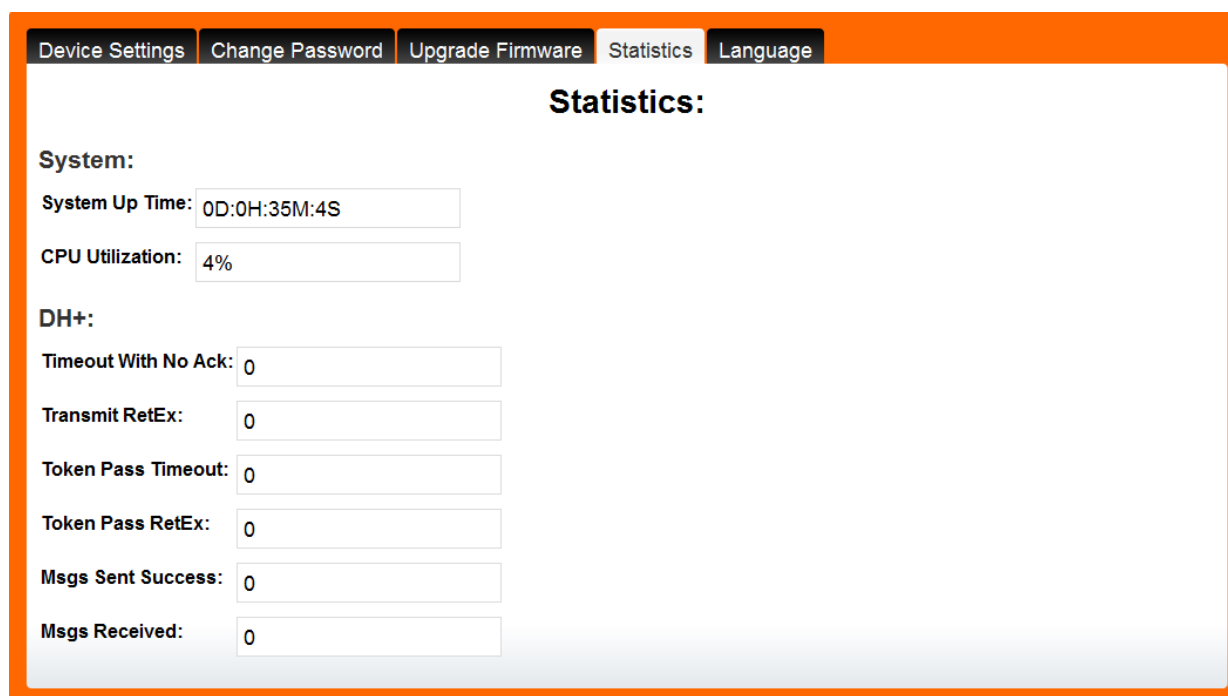
**IMPORTANT:** It is necessary to delete the file from the *"UPLOAD\_DISK"* drive before copying the new file!

**Make sure that you have a firmware file to program the unit when performing this operation. If you delete the file in the *"UPLOAD\_DISK"* without copying the new firmware file after, the device will not be able to work and the only available option will be a firmware upgrade.**

Firmware upgrades will ensure that all the currently configured device settings are preserved and there is no need to reconfigure the device after the firmware upgrade.

## Statistics

Statistics screen provides a real time statistics data about the health of the device and the network it is operating on.



The screenshot shows the 'Statistics' tab selected in the top navigation bar. The main content area is titled 'Statistics:' and contains two sections: 'System:' and 'DH+'.

**System:**

- System Up Time: 0D:0H:35M:4S
- CPU Utilization: 4%

**DH+:**

- Timeout With No Ack: 0
- Transmit RetEx: 0
- Token Pass Timeout: 0
- Token Pass RetEx: 0
- Msgs Sent Success: 0
- Msgs Received: 0

## Language

Language tab offers English or Spanish language for the web interface. Changing the current web interface language does not require a device reboot.



The screenshot shows the 'Language' tab selected in the top navigation bar. The main content area is titled 'Language:' and contains a dropdown menu for 'Language' set to 'English' and an 'Apply' button.

Language: English

Apply

## Reset to Default Factory Settings:

To reset the device to factory default settings:

1. Connect the device to an available USB port on the computer and wait approximately 5 seconds
2. Use a paper clip or similar to press and hold the reset button located under the little hole next to the DH+ LED indicator light
3. Release the button when both LEDs light up
4. Device will reboot restoring its factory default settings

**IMPORTANT: Factory default settings for the device are:**

<b>IP address</b>	192.168.137.2
<b>Network Mask</b>	255.255.255.0
<b>DH+ node</b>	AUTO
<b>DH+ speed</b>	AUTO
<b>Interface Language</b>	English
<b>Username</b>	admin
<b>Password</b>	password



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