

Leonard Valve Method of Configuration

Preprogrammed BMS ProtoCessors

Method of Configuration:

- Web-Configurator for interfacing the Valve to BACnet IP, BACnet MS/TP, Modbus TCP/IP, Modbus RTU, Metasys N2 and Ethernet/IP



BACnet IP
Modbus TCP/IP
Ethernet/IP

BACnet MS/TP
Modbus RTU
Metasys N2
RS-485

Questions You Must Ask Integrator

- **For BACnet MS/TP Networks:**
 - What is the BACnet MS/TP MAC address?
 - What is BACnet Device Instance # being used?
 - What is the baud rate on the BACnet MS/TP on RS485 network?
- **For BACnet/IP Networks:**
 - What is BACnet Device Instance # being used?
 - What network IP address should be used for the ProtoCessor?
 - What subnet mask should be used for the ProtoCessor?
 - What IP gateway should be used for the ProtoCessor?
- **For Modbus TCP Networks:**
 - What network IP address should be used for the ProtoCessor?
 - What subnet mask should be used for the ProtoCessor?
 - What IP gateway should be used for the ProtoCessor?
- **For Metasys N2 Networks:**
 - What Metasys N2 device address should be used for the ProtoCessor?
- **For Ethernet/IP Networks:**
 - What network IP address should be used for the ProtoCessor?
 - What subnet mask should be used for the ProtoCessor?
 - What IP gateway should be used for the ProtoCessor?

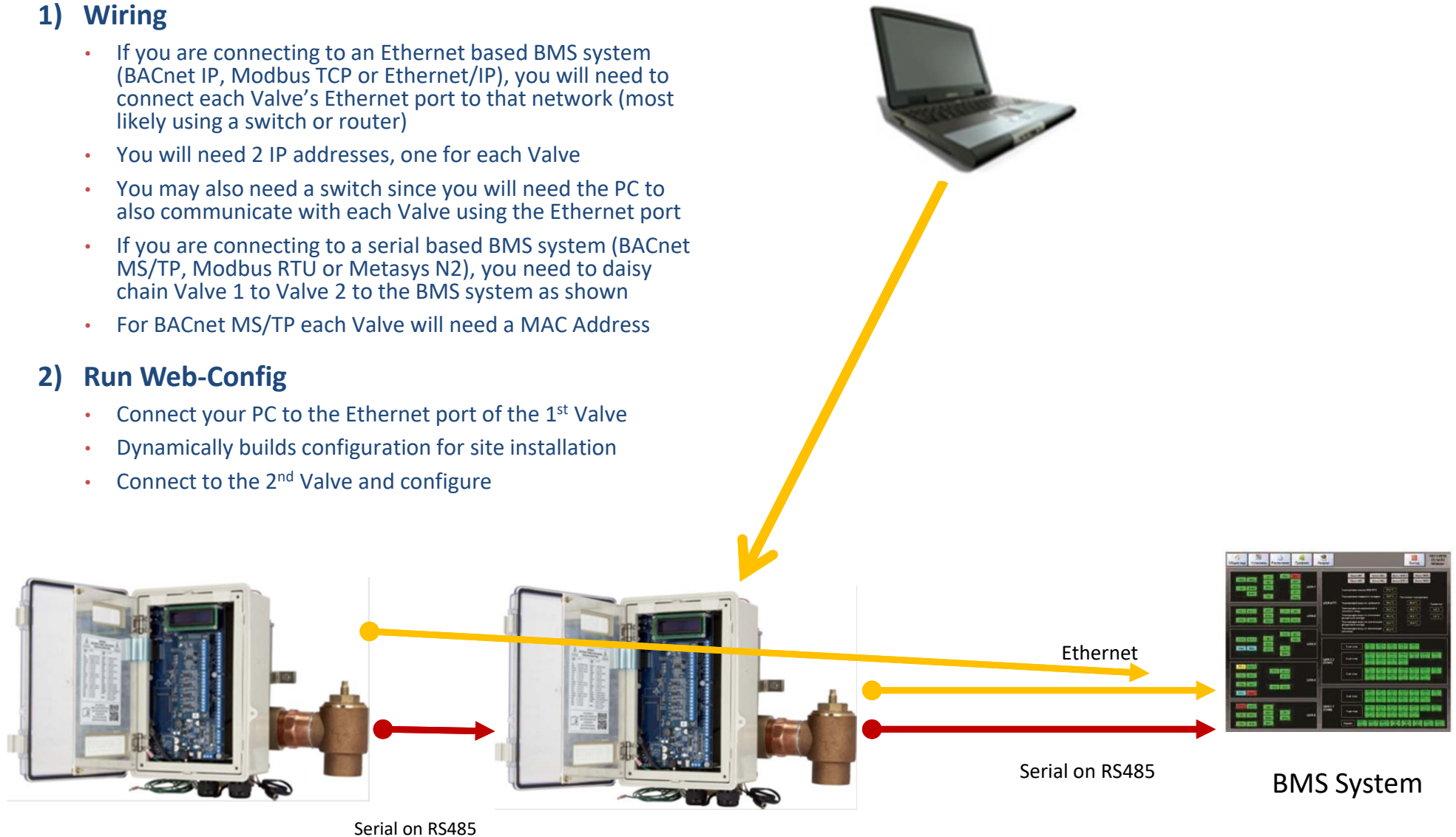
Installation: 2 Nucleus

1) Wiring

- If you are connecting to an Ethernet based BMS system (BACnet IP, Modbus TCP or Ethernet/IP), you will need to connect each Valve's Ethernet port to that network (most likely using a switch or router)
- You will need 2 IP addresses, one for each Valve
- You may also need a switch since you will need the PC to also communicate with each Valve using the Ethernet port
- If you are connecting to a serial based BMS system (BACnet MS/TP, Modbus RTU or Metasys N2), you need to daisy chain Valve 1 to Valve 2 to the BMS system as shown
- For BACnet MS/TP each Valve will need a MAC Address

2) Run Web-Config

- Connect your PC to the Ethernet port of the 1st Valve
- Dynamically builds configuration for site installation
- Connect to the 2nd Valve and configure



Web Configuration



Installation:

- Set PC to Static IP address
 - Default ProtoCessor IP Address = 192.168.1.24
 - Set PC to 192.168.1.XXX Subnet Mask = 255.255.255.0

Use the following IP address:

IP address:	192 . 168 . 1 . 11
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	. . .

- Connect PC to Valve's Ethernet port
- Open up a browser and go to 192.168.1.24



Setting The IP Address

Run Web-Config

- From the FS-GUI landing page, click on Setup, then select Network Settings
- Now you can change the IP Address and Netmask and Gateway if necessary
- Click System Restart



The screenshot displays the SMC web configuration interface. On the left is a navigation menu with the following items: 'Navigation', 'CN1145 Leonard Valve v2.00a', 'About', 'Setup' (expanded), 'File Transfer', 'Network Settings' (highlighted), 'Passwords', 'Time Settings', 'View', and 'User Messages'. The main content area is titled 'Network Settings' and contains a sub-section 'IP Settings'. A 'Note' box states: 'Updated settings only take effect after a System Restart. If the IP Address is changed you will need to direct your browser to the new IP Address after the System Restart.' Below this, there are input fields for: 'N1 IP Address' (192.168.3.13), 'N1 Netmask' (255.255.255.0), 'N1 DHCP Client State' (DISABLED), 'Default Gateway' (192.168.3.1), 'Domain Name Server1' (8.8.8.8), and 'Domain Name Server2' (8.8.4.4). There are 'Cancel' and 'Update IP Settings' buttons. Below the IP settings is a 'MAC Address' section showing 'N1 MAC Address: 00:50:4E:11:7C:F6'. At the bottom of the interface, there are buttons for 'Home', 'HELP (F1)', 'Contact Us', and 'System Restart'.

Web Configuration



Configuration Parameters

Parameter Name	Parameter Description	Value
protocol_select	Protocol Selector Set to 1 for BACnet IP Set to 2 for BACnet MSTP Set to 3 for Metasys N2 Set to 4 for Modbus TCP/Modbus RTU Set to 5 for Ethernet IP	<input type="text" value="4"/> <input type="button" value="Submit"/>
mod_baud_rate	Modbus RTU Baud Rate This sets the Modbus RTU baud rate. (9600/19200/38400/57600)	<input type="text" value="9600"/> <input type="button" value="Submit"/>
mod_parity	Modbus RTU Parity This sets the Modbus RTU parity. (None/Even/Odd)	<input type="text" value="None"/> <input type="button" value="Submit"/>
mod_data_bits	Modbus RTU Data Bits This sets the Modbus RTU data bits. (7 or 8)	<input type="text" value="8"/> <input type="button" value="Submit"/>
mod_stop_bits	Modbus RTU Stop Bits This sets the Modbus RTU stop bits. (1 or 2)	<input type="text" value="1"/> <input type="button" value="Submit"/>

Active profiles

Nr	Node ID	Current profile	Parameters
<input type="button" value="Add"/>			

HELP (?)

Network Settings

Clear Profiles and Restart

System Restart

Diagnostics & Debugging

Web-Configurator:

- The Valve must use Web-Config
- The Profile for the Valve is stored in the ProtoCessor

Leonard Valve Method of Configuration

Preprogrammed BMS ProtoCessors

1 Method of Configuration:

- Web-Configurator
- But first, the ProtoCessor is installed in the Valve control at the factory

Port Setting	Device
Protocol	PSP
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1

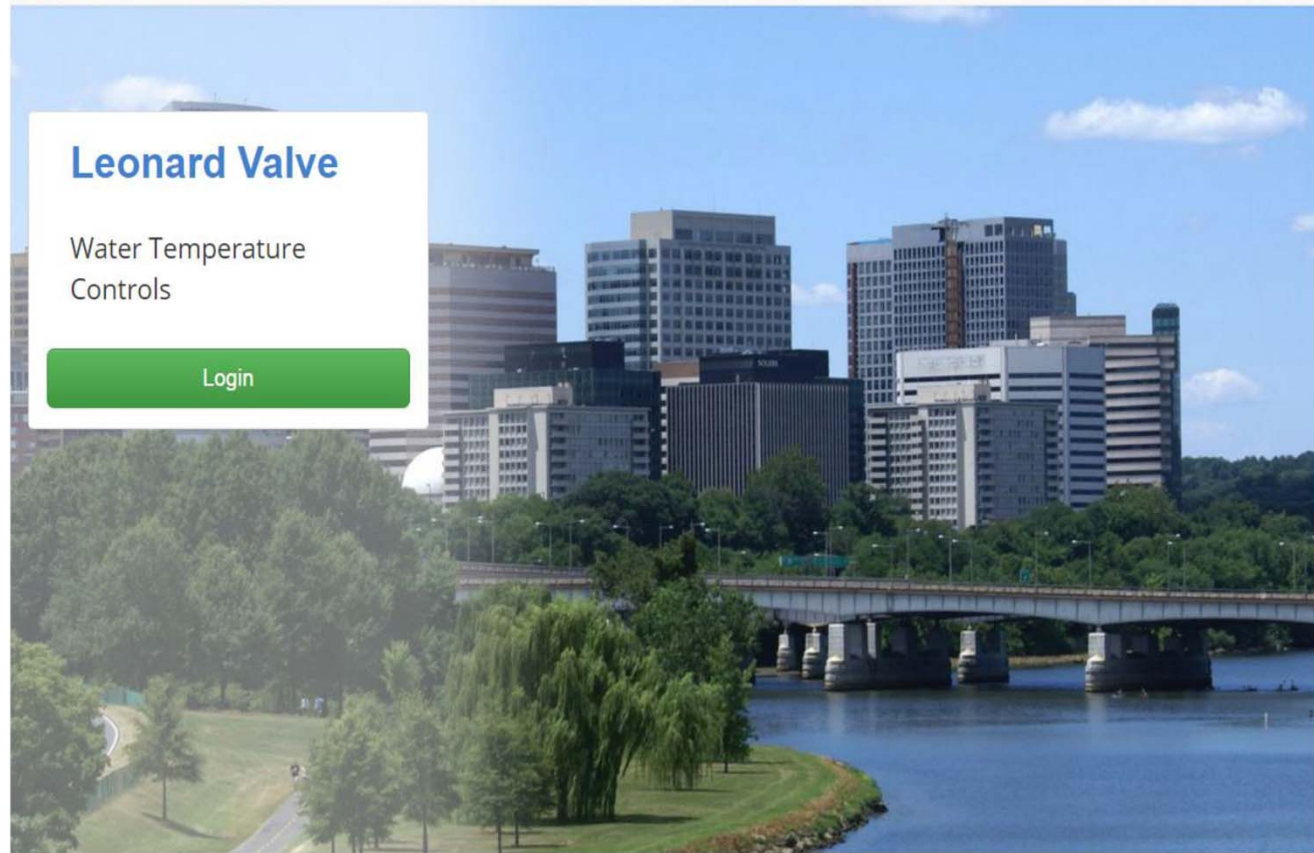
Installation: Overview

Run Web-Config

- This is the Web Config landing page
- Login – default username is “admin”
- Default password is “admin” OR it is located inside of the controller on a white sticker just above the Ethernet port



Login



Leonard Valve 2017 All Rights Reserved - Diagnostics

Installation: Overview

Run Web-Config

- This is the Web App landing page
- Click on Configure on the left
- Then click the Profiles Configuration button

The screenshot shows the Leonard Water Temperature Controls web application. The top header features the Leonard logo and a 'Profile' dropdown menu. A left sidebar contains navigation options: System View, Historian, Event Logger, FieldPoP™, Configure, and About. The main content area is titled 'System View' and includes a 'Sensors' tab. Below the tab is a table with the following data:

Address	Location	TempOut	TempHotIn
1		0	0

At the bottom of the page, there is a footer with the text: 'Leonard Valve 2017 All Rights Reserved - About - Diagnostics'.

The screenshot shows the Leonard Water Temperature Controls web application in the 'Configuration' section. The top header features the Leonard logo and a 'Profile' dropdown menu. The left sidebar contains navigation options: System View, Historian, Event Logger, FieldPoP™, Configure, and About. The main content area is titled 'Configuration' and includes a 'Profile Configuration Page' section with a 'Profiles Configuration' button. Below this is a 'Reset Application' section with a warning: 'Warning: This will remove all data from the device' and a red 'Reset Application' button. At the bottom of the page, there is a footer with the text: 'Leonard Valve 2017 All Rights Reserved - About - Diagnostics'.

Web Configuration Landing Page

Run Web-Config

- On the Web Configurator page, the first parameter is the Protocol Selector
- Enter the correct Protocol number and click Submit
- Follow the prompt to restart the system
- The parameters for that Protocol will appear below the Selector
- This example shows Modbus



Configuration Parameters		
Parameter Name	Parameter Description	Value
protocol_select	Protocol Selector Set to 1 for BACnet IP Set to 2 for BACnet MSTP Set to 3 for Metasys N2 Set to 4 for Modbus TCP/Modbus RTU Set to 5 for Ethernet IP	<input type="text" value="4"/> <input type="button" value="Submit"/>
mod_baud_rate	Modbus RTU Baud Rate This sets the Modbus RTU baud rate. (9600/19200/38400/57600)	<input type="text" value="9600"/> <input type="button" value="Submit"/>
mod_parity	Modbus RTU Parity This sets the Modbus RTU parity. (None/Even/Odd)	<input type="text" value="None"/> <input type="button" value="Submit"/>
mod_data_bits	Modbus RTU Data Bits This sets the Modbus RTU data bits. (7 or 8)	<input type="text" value="8"/> <input type="button" value="Submit"/>
mod_stop_bits	Modbus RTU Stop Bits This sets the Modbus RTU stop bits. (1 or 2)	<input type="text" value="1"/> <input type="button" value="Submit"/>

Active profiles		
Nr	Node ID	Current profile
		<input type="button" value="Add"/>

<input type="button" value="HELP (?)"/>	<input type="button" value="Network Settings"/>	<input type="button" value="Clear Profiles and Restart"/>	<input type="button" value="System Restart"/>	<input type="button" value="Diagnostics & Debugging"/>
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Installation: Overview

Run Web-Config

- This example shows BACnet IP
- The Active Profiles section lists the currently active device profiles (if any)
- To add an Active Profile to support a Valve, click the ADD button
- Enter the Modbus Node-ID and click Submit (1-255)



Configuration Parameters

Parameter Name	Parameter Description	Value
protocol_select	Protocol Selector Set to 1 for BACnet IP Set to 2 for BACnet MSTP Set to 3 for Metasys N2 Set to 4 for Modbus TCP/Modbus RTU Set to 5 for Ethernet IP	<input type="text" value="1"/> <input type="button" value="Submit"/>
network_nr	BACnet Network Number This sets the BACnet network number of the Gateway. (1 - 65535)	<input type="text" value="50"/> <input type="button" value="Submit"/>
node_offset	BACnet Node Offset This is used to set the BACnet device instance. The device instance will be sum of the Modbus device address and the node offset. (0 - 4194303)	<input type="text" value="50000"/> <input type="button" value="Submit"/>
bac_ip_port	BACnet IP Port This sets the BACnet IP port of the Gateway. The default is 47808. (1 - 65535)	<input type="text" value="47808"/> <input type="button" value="Submit"/>
bac_cov_option	BACnet COV This enables or disables COVs for the BACnet connection. Use COV_Enable to enable. Use COV_Disable to disable. (COV_Enable/COV_Disable)	<input type="text" value="COV_Disable"/> <input type="button" value="Submit"/>
bac_bbmd_option	BACnet BBMD This enables BBMD on the BACnet IP connection. Use BBMD to enable. Use - to disable. The bdt.ini files also needs to be downloaded. (BBMD/-)	<input type="text" value="-"/> <input type="button" value="Submit"/>
bac_virt_nodes	BACnet Virtual Server Nodes Set to NO if the unit is only converting 1 device to BACnet. Set to YES if the unit is converting multiple devices. (No/Yes)	<input type="text" value="No"/> <input type="button" value="Submit"/>

Active profiles

Nr	Node ID	Current profile	Parameters
<input type="button" value="Add"/>			

Installation: Overview

Run Web-Config

- You should then be able to see the Valve under the Active Profiles section
- You can also change the BACnet Node Offset here if needed



Configuration Parameters

Parameter Name	Parameter Description	Value
protocol_select	Protocol Selector Set to 1 for BACnet IP Set to 2 for BACnet MSTP Set to 3 for Metasys N2 Set to 4 for Modbus TCP/Modbus RTU Set to 5 for Ethernet IP	<input type="text" value="1"/> <input type="button" value="Submit"/>
network_nr	BACnet Network Number This sets the BACnet network number of the Gateway. (1 - 65535)	<input type="text" value="50"/> <input type="button" value="Submit"/>
node_offset	BACnet Node Offset This is used to set the BACnet device instance. The device instance will be sum of the Modbus device address and the node offset. (0 - 4194303)	<input type="text" value="50000"/> <input type="button" value="Submit"/>
bac_ip_port	BACnet IP Port This sets the BACnet IP port of the Gateway. The default is 47808. (1 - 65535)	<input type="text" value="47808"/> <input type="button" value="Submit"/>
bac_cov_option	BACnet COV This enables or disables COVs for the BACnet connection. Use COV_Enable to enable. Use COV_Disable to disable. (COV_Enable/COV_Disable)	<input type="text" value="COV_Disable"/> <input type="button" value="Submit"/>
bac_bbmd_option	BACnet BBMD This enables BBMD on the BACnet IP connection. Use BBMD to enable. Use - to disable. The bdt.ini files also needs to be downloaded. (BBMD/-)	<input type="text" value="-"/> <input type="button" value="Submit"/>
bac_virt_nodes	BACnet Virtual Server Nodes Set to NO if the unit is only converting 1 device to BACnet. Set to YES if the unit is converting multiple devices. (No/Yes)	<input type="text" value="No"/> <input type="button" value="Submit"/>

Active profiles

Nr	Node ID	Current profile	Parameters
1	1	BAC_IP_Valve	<input type="button" value="Remove"/>

Installation: Overview



Run Web-Config

- For BACnet MS/TP you can enter the MAC Address (1-127 only), Baud Rate and other parameters after you choose that as the protocol

Configuration Parameters		
Parameter Name	Parameter Description	Value
protocol_select	Protocol Selector Set to 1 for BACnet IP Set to 2 for BACnet MSTP Set to 3 for Metasys N2 Set to 4 for Modbus TCP/Modbus RTU Set to 5 for Ethernet IP	<input type="text" value="2"/> <input type="button" value="Submit"/>
network_nr	BACnet Network Number This sets the BACnet network number of the Gateway. (1 - 65535)	<input type="text" value="50"/> <input type="button" value="Submit"/>
node_offset	BACnet Node Offset This is used to set the BACnet device instance. The device instance will be sum of the Modbus device address and the node offset. (0 - 4194303)	<input type="text" value="50000"/> <input type="button" value="Submit"/>
bac_mac_addr	BACnet MSTP Mac Address This sets the BACnet MSTP MAC address. (1 - 127)	<input type="text" value="127"/> <input type="button" value="Submit"/>
bac_baud_rate	BACnet MSTP Baud Rate This sets the BACnet MSTP baud rate. (9600/19200/38400/76800)	<input type="text" value="38400"/> <input type="button" value="Submit"/>
bac_max_master	BACnet MSTP Max Master This sets the BACnet MSTP max master. (1 - 127)	<input type="text" value="127"/> <input type="button" value="Submit"/>
bac_cov_option	BACnet COV This enables or disables COVs for the BACnet connection. Use COV_Enable to enable. Use COV_Disable to disable. (COV_Enable/COV_Disable)	<input type="text" value="COV_Disable"/> <input type="button" value="Submit"/>
bac_virt_nodes	BACnet Virtual Server Nodes Set to NO if the unit is only converting 1 device to BACnet. Set to YES if the unit is converting multiple devices. (No/Yes)	<input type="text" value="No"/> <input type="button" value="Submit"/>

Active profiles

Nr	Node ID	Current profile	Parameters
<input type="button" value="Add"/>			

Installation: Overview

Run Web-Config

- For any Ethernet based network – BACnet/IP, Modbus TCP or Ethernet/IP – you will need to change the IP Address of the ProtoCessor to match what was given before the installation
- To do this, click on Diagnostics & Debugging (bottom right)



Configuration Parameters

Parameter Name	Parameter Description	Value
protocol_select	Protocol Selector Set to 1 for BACnet IP Set to 2 for BACnet MSTP Set to 3 for Metasys N2 Set to 4 for Modbus TCP/Modbus RTU Set to 5 for Ethernet IP	<input type="text" value="5"/> <input type="button" value="Submit"/>

Active profiles

Nr	Node ID	Current profile	Parameters
<input type="button" value="Add"/>			

HELP (?)

Network Settings

Clear Profiles and Restart

System Restart

Diagnostics & Debugging

Setting The IP Address

Run Web-Config

- From the FS-GUI landing page, click on Setup, then select Network Settings
- Now you can change the IP Address and Netmask and Gateway if necessary
- Click System Restart



The screenshot shows the 'Network Settings' page in the web configuration interface. On the left is a 'Navigation' sidebar with a tree view containing 'CN1145 Leonard Valve v2.00a', 'About', 'Setup' (with sub-items 'File Transfer', 'Network Settings', 'Passwords', 'Time Settings'), 'View', and 'User Messages'. The 'Network Settings' section is active, showing a 'Note' that settings only take effect after a system restart. Below the note are input fields for 'N1 IP Address' (192.168.3.13), 'N1 Netmask' (255.255.255.0), 'N1 DHCP Client State' (DISABLED), 'Default Gateway' (192.168.3.1), 'Domain Name Server1' (8.8.8.8), and 'Domain Name Server2' (8.8.4.4). There are 'Cancel' and 'Update IP Settings' buttons. At the bottom, a 'MAC Address' section shows 'N1 MAC Address: 00:50:4E:11:7C:F6'. A footer bar contains 'Home', 'HELP (F1)', 'Contact Us', and 'System Restart' buttons.

Navigation

- ✓ CN1145 Leonard Valve v2.00a
 - About
 - ✓ Setup
 - File Transfer
 - Network Settings
 - Passwords
 - Time Settings
 - View
 - User Messages

Network Settings

IP Settings

Note

Updated settings only take effect after a System Restart. If the IP Address is changed you will need to direct your browser to the new IP Address after the System Restart.

N1 IP Address	<input type="text" value="192.168.3.13"/>
N1 Netmask	<input type="text" value="255.255.255.0"/>
N1 DHCP Client State	<input type="text" value="DISABLED"/>
Default Gateway	<input type="text" value="192.168.3.1"/>
Domain Name Server1	<input type="text" value="8.8.8.8"/>
Domain Name Server2	<input type="text" value="8.8.4.4"/>

MAC Address

N1 MAC Address: 00:50:4E:11:7C:F6