KD Navien
The Leader in Condensing Technology

Installation & Operation Manual

LonWorks Gateway Start-up Guide

For Interfacing Navien Products:

To Building Automation Systems and SMC Cloud:

LonWorks

LONMARK 3.4

APPLICABILITY & EFFECTIVITY

Explains LonWorks Gateway and how to install it.

The instructions are effective for the above as of October 1, 2019.

Quick Start Guide

1. Record the information about the unit. (**Section 3.1**)
2. Set the device's COM settings and Node-ID for each of the devices that will connect to the gateway. (**Section 3.3**)
3. Connect the gateway 6 pin RS-485 connector to the RS-485 network that is connected to each of the devices. (**Section 4.2**)
4. **Connect the gateway** 2 pin LonWorks port to the field protocol cabling. (**Section 4.3**)
5. Connect power to the gateway 6 pin connector. (**Section 4.4**)
6. Use a web browser to access the gateway Web Configurator page to select the profiles of the devices attached to the gateway and enter any necessary device information. Once the devices are selected, the gateway automatically builds and loads the appropriate configuration. (**Section 5**)
7. The gateway must be commissioned on the LonWorks Network. This needs to be done by the LonWorks administrator using a LonWorks commissioning tool. (**Section 8**)

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1. CERTIFICATION

1.1 LonMark Certification

LonMark International is the recognized authority for certification, education, and promotion of interoperability standards for the benefit of manufacturers, integrators and end users. LonMark International has developed extensive product certification standards and tests to provide the integrator and user with confidence that products from multiple manufacturers utilizing LonMark devices work together. Sierra Monitor has more LonMark Certified gateways than any other gateway manufacturer, including the ProtoCessor, ProtoCarrier and gateway for OEM applications and the full featured, configurable gateways.

* LonWorks is a registered trademark of Echelon Corporation

2. INTRODUCTION

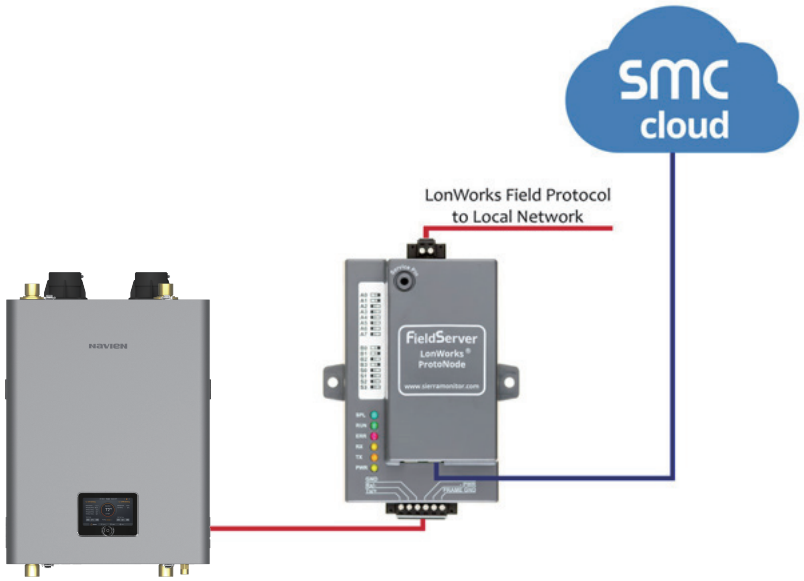
2.1 Gateway

The gateway is an external, high performance **building automation multi-protocol gateway** that is preconfigured to automatically communicate between Navien's products (hereafter called "device") connected to the gateway and automatically configures them for LonWorks®.

It is not necessary to download any configuration files to support the required applications. The gateway is pre-loaded with tested profiles/ configurations for the supported devices.

> **WARNING**
>
> Only use screws supplied by SMC in the holes found on the back of the unit when attaching the optional DIN rail bracket. Use of any other screws may damage the unit.

Gateway Connectivity Diagram:



The gateway can connect with Sierra Monitor's SMC Cloud. The SMC Cloud allows technicians, the OEM's support team and Sierra Monitor's support team to remotely connect to the gateway. The SMC Cloud provides the following capabilities for any registered devices in the field:

- Remotely monitor and control devices.
- Collect device data and view it on the SMC Cloud Dashboard and the SMC Smart Phone App.
- Create user defined device notifications (alarm, trouble and warning) via SMS and/or Email.
- Generate diagnostic captures (as needed for troubleshooting) without going to the site.

For more information about the SMC Cloud, refer to the SMC Cloud Start-up Guide.

3. SETUP FOR GATEWAY

3.1 Record Identification Data

Each gateway has a unique part number located on the side or the back of the unit. This number should be recorded, as it may be required for technical support. The numbers are as follows:

Model	Part Number
LonWorks Gateway	GXXX001933

Figure 1: Gateway Ports

- GXXX001933 units have the following 3 ports: LonWorks + Ethernet + RS-485

3.2 Point Count Capacity and Registers per Device

The total number of registers presented by the device(s) attached to the gateway cannot exceed:

Part Number	Total Registers
GXXX001933	5,000

Figure 2: Supported Point Count Capacity

Devices	Registers Per Device
NFB Single Boiler	118
NFB Main 1 Sub 1 - Sub 31	113 - 1013

Figure 3: Registers per Device

3.3 Configuring Device Communications

3.3.1 Input COM Settings on Any Serial Device Connected to the Gateway

- **Any connected serial device MUST have the same baud rate, data bits, stop bits, and parity settings as the gateway.**
- Figure 4 specifies the device serial port settings required to communicate with the gateway.

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

Figure 4: COM Settings

3.3.2 Set Node-ID for Any Device Attached to the Gateway

- Set Node-ID for any device attached to gateway. The Node-ID needs to be uniquely assigned between 1 and 255.

4. INTERFACING GATEWAY TO DEVICES

4.1 Gateway Connection Ports

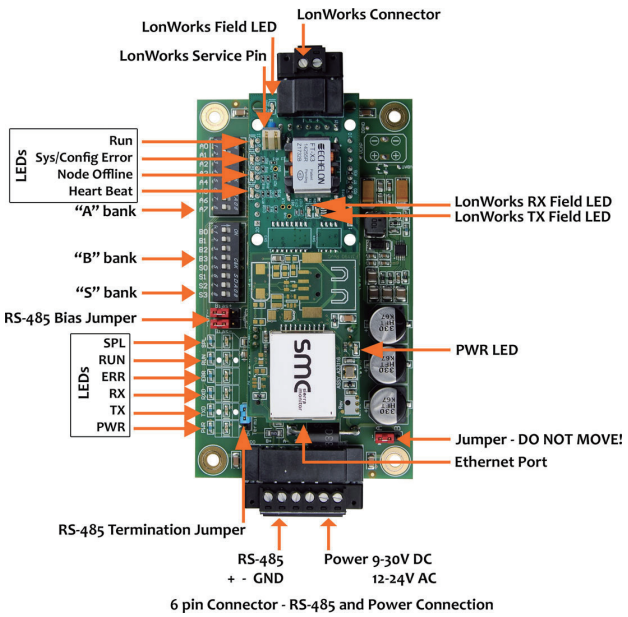


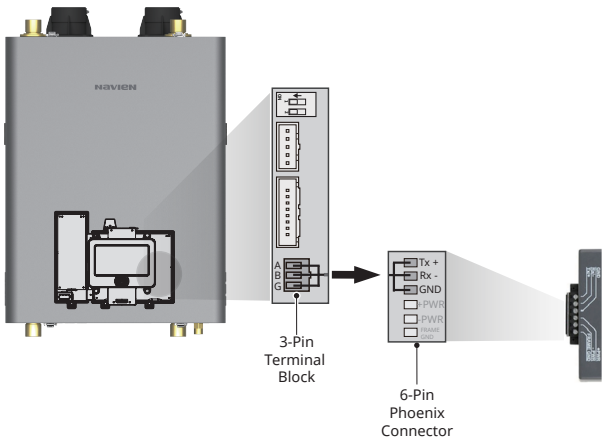
Figure 5: Gateway

4.2 NFB-301C/399C boiler Connections to Gateway

There are two ways to power the gateway. One method is to use the boiler PCB (printer circuit board). The other is to use the included power supply in the box.

Gateway 6 Pin Phoenix connector:

- The 6 pin Phoenix connector is the same for Gateway.
- Pins 1 through 3 are for RS-485 devices.
  - Use standard grounding principles for RS-485 GND.
- Pins 4 through 6 are for power. **Do not connect power until Section 4.4**.



Boiler (front panel)	Gateway Pin Terminals	Pin Assignment
A	Pin 1	RS-485 +
B	Pin 2	RS-485 -
G	Pin 3	RS-485 GND

Figure 6: RS-485 Connections to Boiler

Boiler Pins	Pin #	Gateway 6 Pin Terminal	Pin Assignment
Pin RS-485+	1	TX+	RS-485
Pin RS-485-	2	RX-	RS-485
In GND	3	GND	RS-485 GND
Power In (+)	4	+PWR	V+
Power In (-)	5	-PWR	V-
Frame Ground	6	FRAME GND	FRAME GND

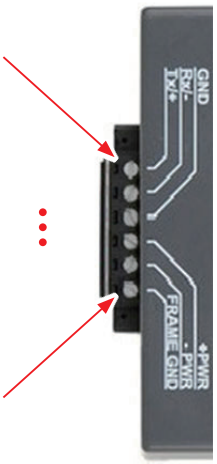


Figure 7: Pin and Power Connections

4.2.1 Biasing the RS-485 Device Network

- An RS-485 network with more than one device needs to have biasing to ensure proper communication. The biasing only needs to be done on one device.
- The gateway has 510 ohm resistors that can be used to set the biasing. The gateway's default positions from the factory for the biasing jumpers are OFF.
- The OFF position is when the 2 red biasing jumpers straddle the 4 pins closest to the outside of the board of the gateway. (Figure 8)
- **Only turn biasing ON:**
  - **IF the BMS cannot see more than one device connected to the gateway.**
  - **AND all the settings (COM settings, wiring, and DIP switches) have been checked.**
- To turn biasing ON, move the 2 red biasing jumpers to straddle the 4 pins closest to the inside of the board of the gateway.

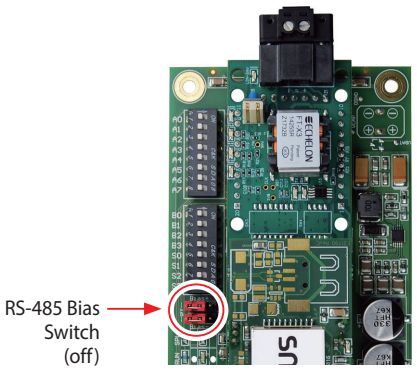


Figure 8: RS-485 Biasing Switch on the Gateway

4.2.2 End of Line Termination Switch for the RS-485 Device Network

- On long RS-485 cabling runs, the RS-485 trunk must be properly terminated at each end.
- The gateway has an end of line (EOL) blue jumper. The default setting for this blue EOL switch is OFF with the jumper straddling the pins closest to the inside of the board of the gateway.
  - On short cabling runs the EOL switch does not to need to be turned ON.
- **If the gateway is placed at one of the ends of the trunk, set the blue EOL jumper to the ON position straddling the pins closest to the outside of the board of the gateway.**
- **Always leave the single red jumper in the A position (default factory setting).**

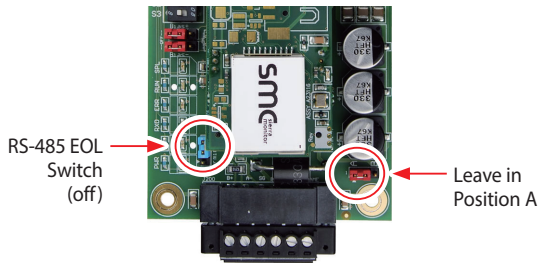


Figure 9: RS-485 End-Of-Line Termination Switch on the Gateway

4.3 Wiring LonWorks Devices to the LonWorks Terminal

- Wire the LonWorks device network to the LonWorks Gateway Terminal.
  - Use approved cable per the FT-10 installation guidelines.
- LonWorks has no polarity.

Figure 10: LonWorks Terminal

4.4 Power-Up Gateway

There are two ways to power the gateway. One method is to use the boiler PCB (printer circuit board). The other is to use the included power supply in the box.

Check power requirements in the table below:

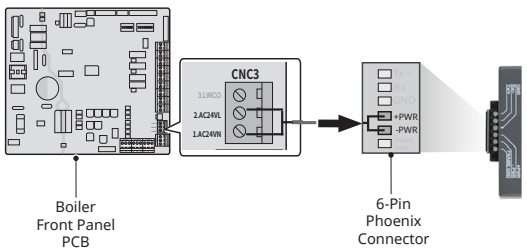
Power Requirement for Gateway External Gateway

Gateway	Current Draw Type		
Gateway Family	12 V DC/AC	24 V DC/AC	30 VDC
GXXX001933 (Typical)	210 mA	130 mA	90 mA
GXXX001933 (Maximum)	250 mA	170 mA	110 mA
Note These values are 'nominal' and a safety margin should be added to the power supply of the host system. A safety margin of 25% is recommended.			

Figure 11: Required Current Draw for the Gateway

Apply power to the gateway as shown below in Figure 12.

- Gateway accepts either 9-30 VDC or 12-24 VAC on pins 4 and 5.
- Frame GND should be connected.



Boiler (controller)	Gateway Pin Terminals	Pin Assignment
2. AC24VL	Pin 4	V +
1. AC24VN	Pin 5	V -
-	Pin 6	FRAME GND

Figure 12: Power Connections

- If using the external power supply provided, apply power to the gateway power terminal pins +L and -N as shown below.

Boiler Pins	Pin #	Gateway 6 Pin Terminal	Pin Assignment
Power In (+)	Pin 4	V+	White/Black
Power In (-)	Pin 5	V-	Black
Frame Ground	Pin 6	FRAME GND	NA

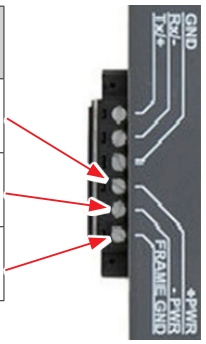


Figure 13: External Power Connections

5. USE THE GATEWAY WEB CONFIGURATOR TO SETUP THE GATEWAY

5.1 Connect the PC to the Gateway via the Ethernet Port

First, connect a Cat-5 Ethernet cable (straight through or cross-over) between the local PC and gateway.

Figure 14: Ethernet Port Location

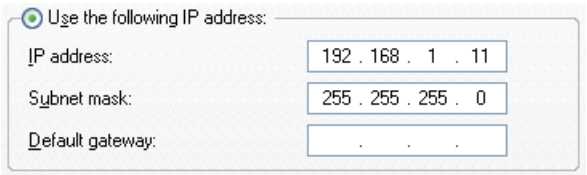
To access the gateway via Ethernet connection change the subnet of the connected PC (Section 5.1.1).

5.1.1 Changing the Subnet of the Connected PC

The default IP Address for the gateway is **192.168.1.24**, Subnet Mask is **255.255.255.0**. If the PC and gateway are on different IP networks, assign a static IP Address to the PC on the 192.168.1.xxx network.

For Windows 10:

1. Find the search field in the local computer's taskbar (usually to the right of the windows icon ( ) and type in "Control Panel".
2. Click "Control Panel", click "Network and Internet" and then click "Network and Sharing Center".
3. Click "Change adapter settings" on the left side of the window.
4. Right-click on "Local Area Connection" and select "Properties" from the dropdown menu.
5. Highlight ☑ Internet Protocol Version 4 (TCP/IPv4) and then click the Properties button.
6. Select and enter a static IP Address on the same subnet. For example:



7. Click the Okay button to close the Internet Protocol window and the Close button to close the Ethernet Properties window.

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6. CONFIGURE THE GATEWAY

6.1 Accessing the Gateway Web Configurator

1. Navigate to the IP Address of the gateway on the local PC using one of two methods:
   - Open a web browser and enter the IP Address of the gateway; the default Ethernet address is 192.168.1.24.
   - If using the FieldServer Toolbox (**Section 5.1.2**), click the Connect button.

   Note If the IP Address of the gateway has been changed, the IP Address can be discovered using the FS Toolbox utility. See **Appendix A.1** for instructions.

2. Once at the Web App splash page, click the Login button.

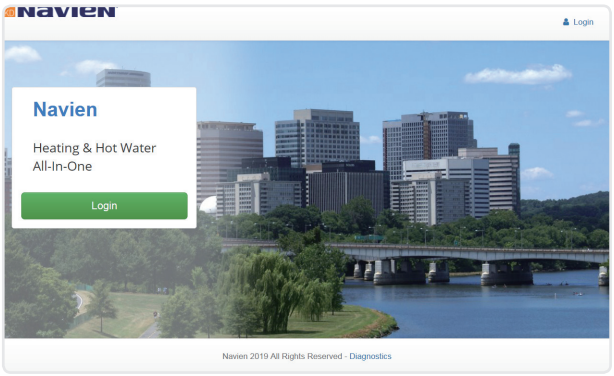


Figure 15: Web App Splash Page

3. Enter the previously set up or default username and password.

   Note The default username is "admin". The default password is "admin".

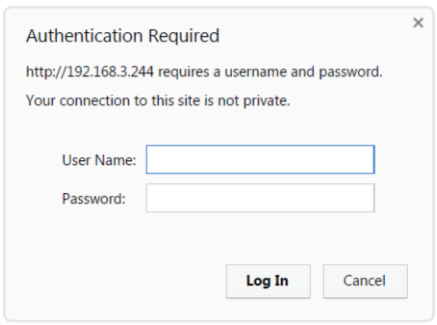


Figure 16: Login Window

4. From the Web App landing page (Figure 17), click the Configure tab.

Figure 17: Web App Landing Page

5. Then click the Profiles Configuration button to go to the Web Configurator page.

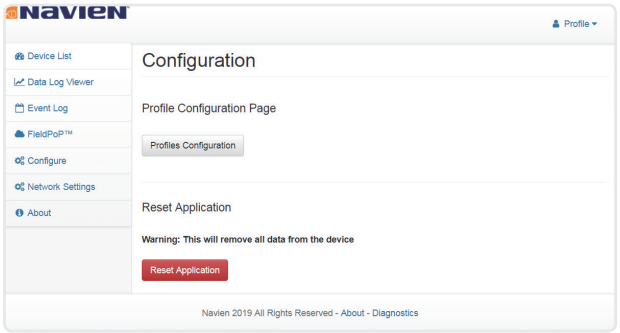


Figure 18: Configure Tab

Note

- The SMC Cloud™ tab (see Figure 18) allows users to connect to the SMC Cloud, Sierra Monitor's device cloud solution for IIoT. The SMC Cloud enables secure remote connection to field devices through a FieldServer and its local applications for configuration, management, maintenance. For more information about the SMC Cloud, refer to the SMC Cloud Start-up Guide.
- For Web App instructions to the System View, Historian and Event Logger functions, see the SMC Cloud Start-up Guide.

6.2 Selecting Profiles for Devices Connected to Gateway

1. In the Web Configurator, the Active Profiles are shown below the Configuration Parameters.

2. The Active Profiles section lists the currently active device profiles, including previous Web Configurator additions. This list is empty for new installations, or after clearing all configurations. (Figure 19)

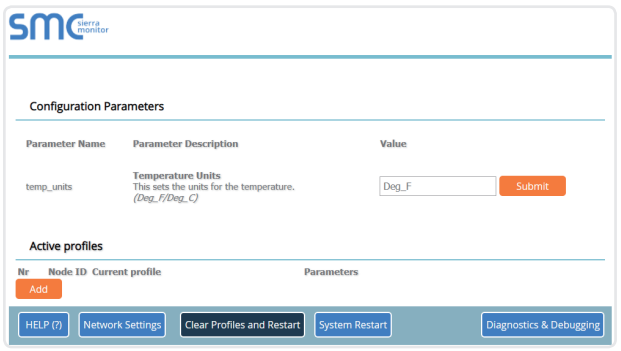


Figure 19: Web Configurator Showing no Active Profiles

3. To add an active profile to support a device, click the Add button under the Active Profiles heading. Select a profile from the drop-down menu field that appears underneath the Current profile column. (Figure 20)

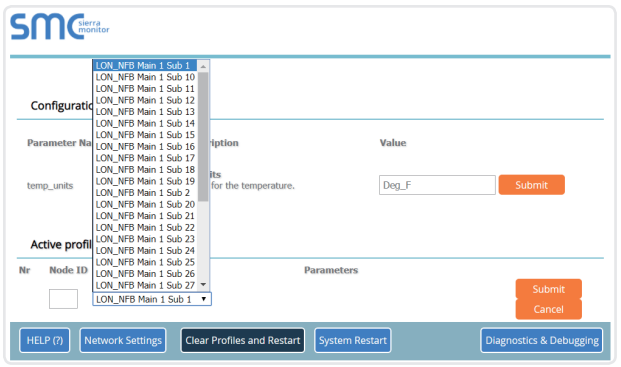


Figure 20: Profile Selection Menu

4. For every device that is added, assign a unique Node-ID. This specification must match the device's network settings.

5. Once the Profile for the device has been selected from the drop-down list, enter the value of the device's Node-ID which was assigned in **Section 3.3.2**.

6. Then press the "Submit" button to add the Profile to the list of devices to be configured.

7. Repeat this process until all the devices have been added.

8. Completed additions are listed under "Active profiles" as shown in Figure 21.

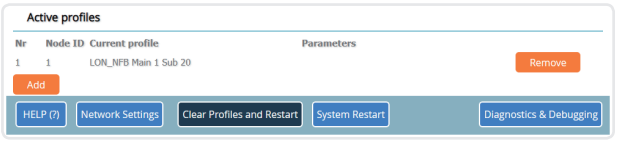


Figure 21: Web Configurator Showing Active Profile Additions

6.2.1 Verify Device Communications

1. **Check that TX and RX LEDs** are rapidly flashing. See **Appendix A.4** for information and images.

2. Confirm the software shows communication without errors. Go to **Appendix A.2** for instructions.

7. HOW TO START THE INSTALLATION OVER: CLEARING PROFILES

Follow the steps outlined in **Section 6.1** to access the gateway Web Configurator.

1. The Web Configurator is displayed as the landing page.
2. At the bottom-left of the page, click the "Clear Profiles and Restart" button.
3. Once restart is complete, all past profiles discovered and/or added via Web configurator are deleted. The unit can now be reinstalled.

8. COMMISSIONING GATEWAY ON A LONWORKS NETWORK

Commissioning may only be performed by the LonWorks administrator.

8.1 Commissioning Gateway on a LonWorks Network

During the commissioning process, the LonWorks administrator may prompt the user to hit the service pin on the gateway at a specific point (this step occurs at different points of the commissioning process for each LonWorks network management tool).

- If an XIF file is required, see steps in **Section 8.1.1** to generate XIF.

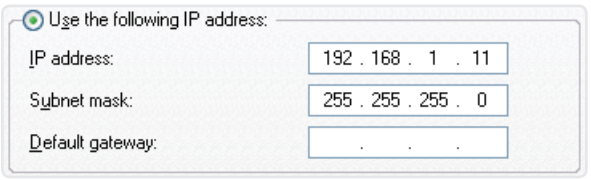
Figure 22: LonWorks Service Pin Location

8.1.1 Instructions to Upload XIF File from Gateway Using Browser

1. Connect a Cat-5 Ethernet cable (straight through or cross-over) between the PC and Gateway.
2. The default IP Address for the Gateway is **192.168.1.24**, Subnet Mask is **255.255.255.0**. If the PC and gateway are on different IP networks, assign a static IP Address to the PC on the 192.168.1.xxx network.

For Windows 10:

1. Find the search field in the local computer's taskbar (usually to the right of the windows icon ( ) and type in "Control Panel".
2. Click "Control Panel", click "Network and Internet" and then click "Network and Sharing Center".
3. Click "Change adapter settings" on the left side of the window.
4. Right-click on "Local Area Connection" and select "Properties" from the dropdown menu.
5. Highlight ☑ Internet Protocol Version 4 (TCP/IPv4) and then click the Properties button.
6. Select and enter a static IP Address on the same subnet. For example:



7. Click the Okay button to close the Internet Protocol window and the Close button to close the Ethernet Properties window.
8. Open a web browser and go to the following address: [IP Address of Gateway]/fserver.xif
   - Example: 192.168.1.24/fserver.xif
9. If the web browser prompts to save the file, save the file onto the PC. If the web browser displays the xif file as a web page, save the file onto the local PC as "fserver.xif".

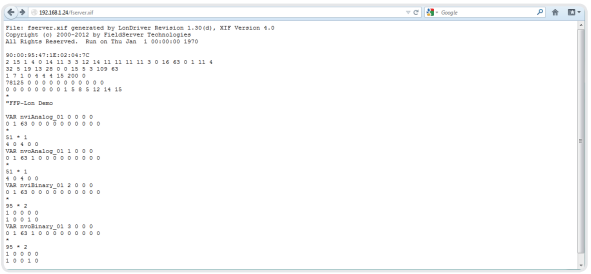


Figure 23: Sample of Fserver.XIF File Generated

9. SMC CLOUD USER SETUP, REGISTRATION AND LOGIN

9.1 User Setup

Request an invitation to SMC Cloud from the manufacturer's support team and follow the instructions below to set up login details:

1. The "Welcome to SMC Cloud" email will appear as shown below.

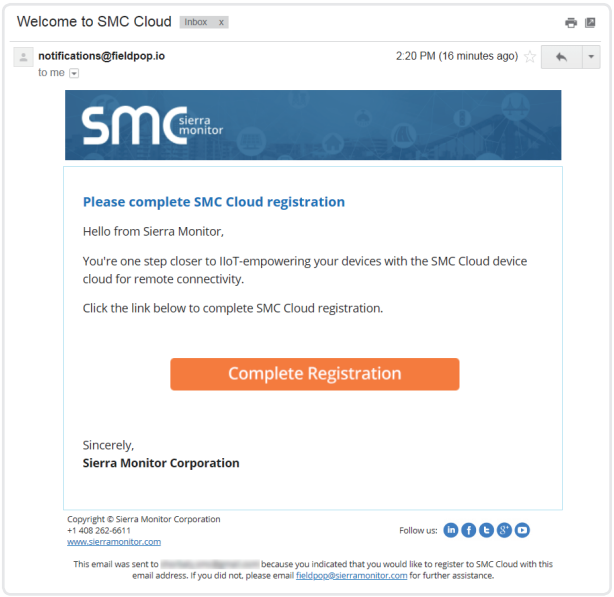


Figure 24: Welcome to SMC Cloud Email

Note If no SMC Cloud email was received, check the spam/junk folder for an email from notification@fieldpop.io. Contact the manufacturer's support team if the email cannot be found.

2. Click the "Complete Registration" button and fill in user details accordingly.

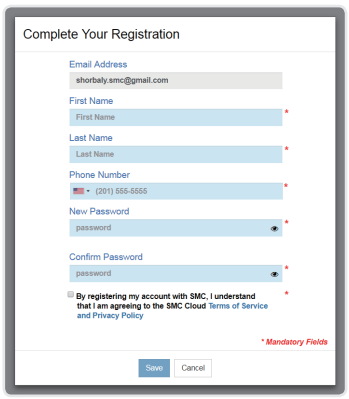


Figure 25: Setting User Details

3. Fill in the name, phone number, and password fields and check the checkbox to agree to the privacy policy and terms of service.
4. Click "Save" to save the user details.
5. Click "OK" on when the Success message appears.
6. Record the email account used and password for future use.

9.2 Registration Process

Once SMC Cloud user credentials have been generated, the gateway can be registered onto the SMC Cloud server.

1. Click on the SMC Cloud tab on the left-hand side of the screen.

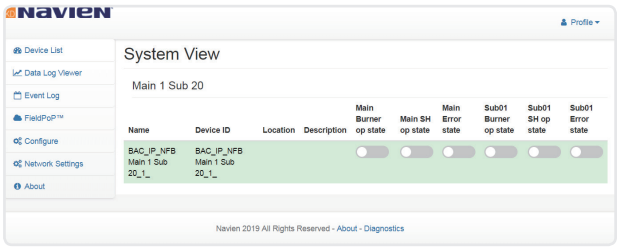


Figure 26: Web App Landing Page – SMC Cloud Tab

2. The following informational splash page will appear, click Close to view the registration page.

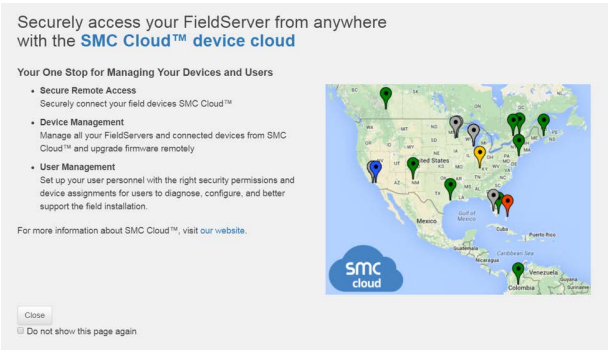


Figure 27: Registration Information Page

3. If a warning message appears instead of the splash page, follow the suggestion that appears on screen.

4. If the gateway cannot reach the SMC Cloud server, the following message will appear.

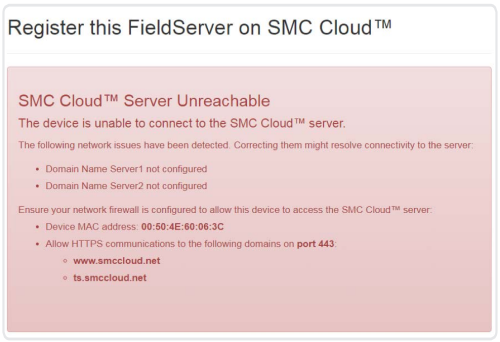


Figure 28: SMC Cloud Connection Problems Message

- Follow the directions presented in the warning message and check that the DNS settings are set up with the following Domain Name Server (DNS) settings:
  DNS1=8.8.8.8
  DNS2=8.8.4.4
- Ensure that the gateway is properly connected to the Internet.

Note If changes to the network settings are done, remember to click "Update IP Settings" and then power cycle the gateway.

5. On the registration page, fill in user credentials and all other device information fields for registration of each individual gateway in the field.

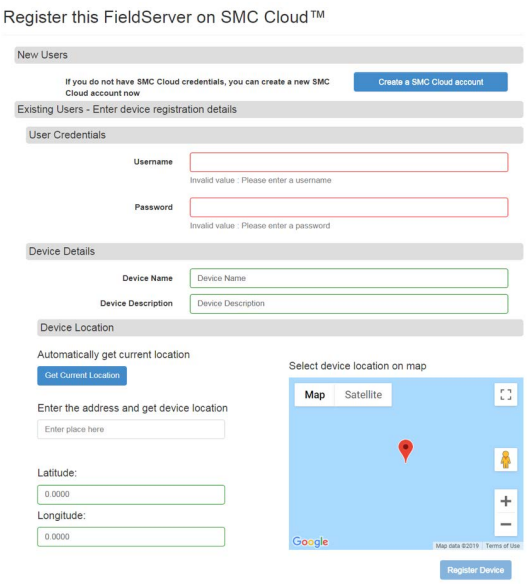


Figure 29: SMC Cloud Registration Page

6. To input the device location, do one of the following:
   - Enter the address in the address field.
   - Click the "Get Current Location" button to auto-populate.

     Note This button will only work if location services have been enabled on the local browser. If using the Chrome browser and connected via LAN, this method will not work.

   - Drop a location directly on the Google map.
   - Enter the latitude and longitude manually.
7. Click Register Device.
8. Once the device has successfully been registered, the following screen will appear listing the device details and additional information auto-populated by the gateway.

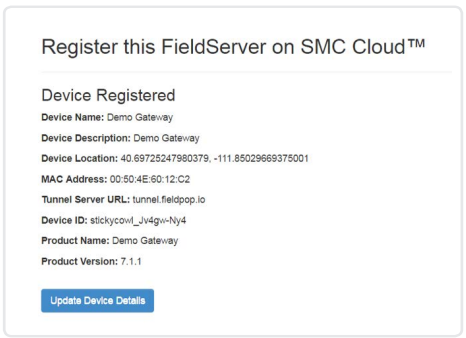


Figure 30: Device Registered for SMC Cloud

9.3 Login to SMC Cloud

After the gateway is registered, go to www.smccloud.net and type in the appropriate login information as per registration credentials.

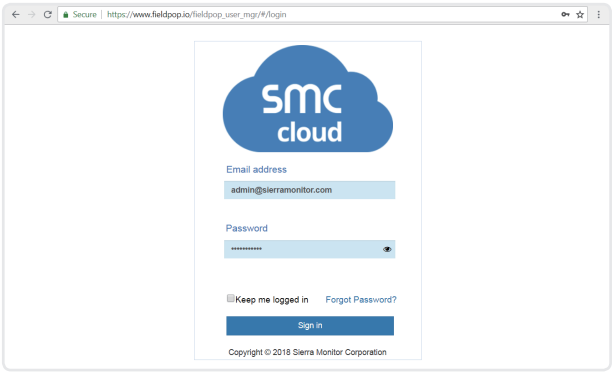


Figure 31: SMC Cloud Login Page

Note If the login password is lost, see the SMC Cloud Start-up Guide for recovery instructions.

On first login, the Privacy Policy window will appear. Read the Terms of Service, click the checkbox to accept the terms and then click the Continue button to access SMC Cloud.

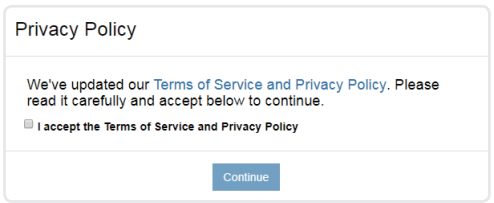


Figure 32: SMC Cloud Privacy Policy

Note For additional SMC Cloud instructions see the SMC Cloud Start-up Guide.

Figure 33: SMC Cloud Landing Page

Appendix A. Troubleshooting

Appendix A.1 Lost or Incorrect IP Address

1. Ensure that FieldServer Toolbox is loaded onto the local PC. Otherwise, download the FieldServer Toolbox.zip via the Sierra Monitor website's Software Downloads.
2. Extract the executable file and complete the installation.

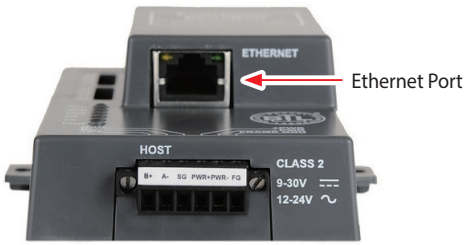
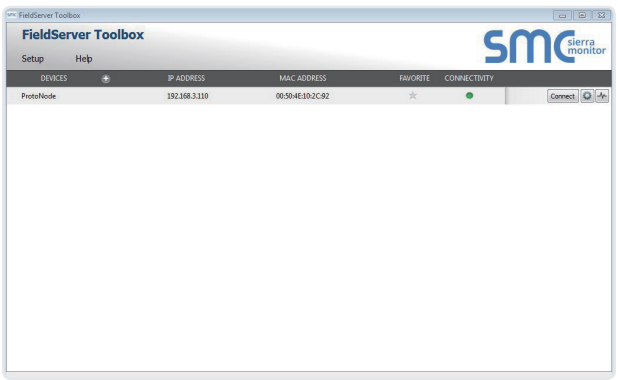


Figure 34: Ethernet Port Location

3. Connect a standard Cat-5 Ethernet cable between the user's PC and gateway.
4. Double click on the FS Toolbox Utility and click Discover Now on the splash page.
5. Check for the IP Address of the desired gateway.



6. If correcting the IP Address of the gateway: click the settings icon on the same row as the gateway, then click Network Settings, change the IP Address and click Update IP Settings to save.

Appendix A.2 Viewing Diagnostic Information

1. Type the IP Address of the gateway into the web browser or use the FieldServer Toolbox to connect to the gateway.
2. Click on Diagnostics and Debugging Button, then click on view, and then on connections.
3. If there are any errors showing on the Connection page, refer to **Appendix A.3** for the relevant wiring and settings.

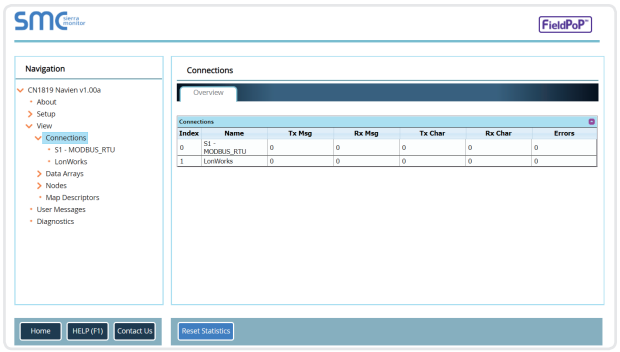


Figure 35: Error Messages Screen

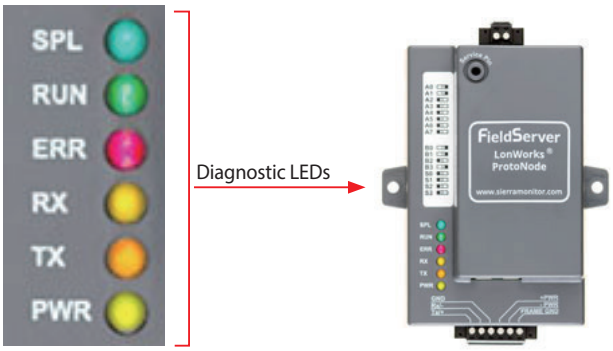
Appendix A.3 Check Wiring and Settings

- No COMS on Modbus RTU side. If the Tx/Rx LEDs are not flashing rapidly then there is a COM issue. To fix this, check the following:
  - Visual observations of LEDs on the gateway (**Appendix A.4**).
  - Check baud rate, parity, data bits, stop bits.
  - Check device address.
  - Verify wiring.
  - Verify device is connected to the same subnet as the gateway.
  - Verify the Modbus device(s) were listed in the Web Configurator (**Section 6.2**).
- Field COM problems:
  - If Ethernet protocols are used, observe Ethernet LEDs on the gateway (**Appendix A.4**).
  - Check dipswitch settings (using correct baud rate and device instance).
  - Verify IP Address setting.
  - Verify wiring.

Note If the problem persists, a Diagnostic Capture needs to be taken and sent to support. (**Appendix A.5**)

Appendix A.4 LED Diagnostics for Communications Between Gateway and Boilers

See the diagram below for gateway LED Locations.



Tag	Description
SPL	The SPL LED will light if the unit is not getting a response from one or more of the configured devices. **For LonWorks units**, LED will light until the unit is commissioned on the LonWorks network.
RUN	The RUN LED will start flashing 20 seconds after power indicating normal operation.
ERR	A steady red light will indicate there is a system error on the unit. If this occurs, immediately report the related "system error" shown in the error screen of the FS-GUI interface to support for evaluation.
RX	The RX LED will flash when a message is received on the serial port on the 6-pin connector. **If the serial port is not used**, this LED is non-operational.
TX	The TX LED will flash when a message is sent on the serial port on the 6-pin connector. **If the serial port is not used**, this LED is non-operational.
PWR	This is the power light. It should always show a steady green light when powered.

Figure 36: Diagnostic LEDs

Appendix A.5 Take a FieldServer Diagnostic Capture

When there is a problem on-site that cannot easily be resolved, perform a diagnostic capture before contacting support so that support can quickly solve the problem. There are two methods for taking diagnostic captures:

- **FieldServer Toolbox:**

  This method requires installation of the FS Toolbox program. A FS Toolbox diagnostic capture takes a snapshot of the loaded configuration files and a log of all the communications on the serial ports over a specified period of time. If the problem occurs over an Ethernet connection, then take a Wire Shark capture.

- **Gateway's FS-GUI Page:**

  This method doesn't require downloading software. The diagnostic capture utilities are embedded in the FS-GUI web interface. Starting a diagnostic capture takes a snapshot of the loaded configuration files and a log of all the communications over a specified period of time. This works for both serial and Ethernet connections.

Note The information in the zipped files contains everything support needs to quickly resolve problems that occur on-site.

Appendix A.5.1 Using the FieldServer Toolbox

Once the Diagnostic Capture is complete, email it to technical support. The Diagnostic Capture will accelerate diagnosis of the problem.

1. Ensure that FieldServer Toolbox is loaded onto the local PC. Otherwise, download the FieldServer Toolbox.zip via the Sierra Monitor website's Software Downloads.

2. Extract the executable file and complete the installation.

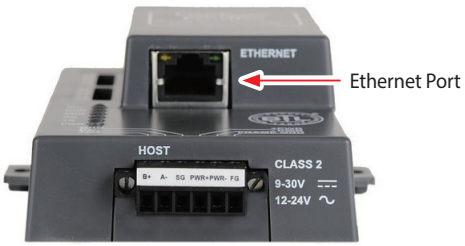
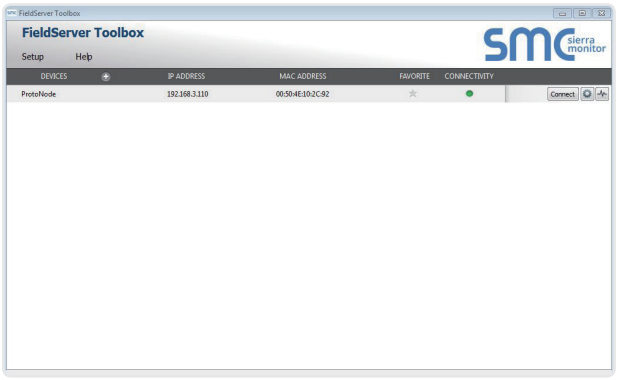


Figure 37: Ethernet Port Location

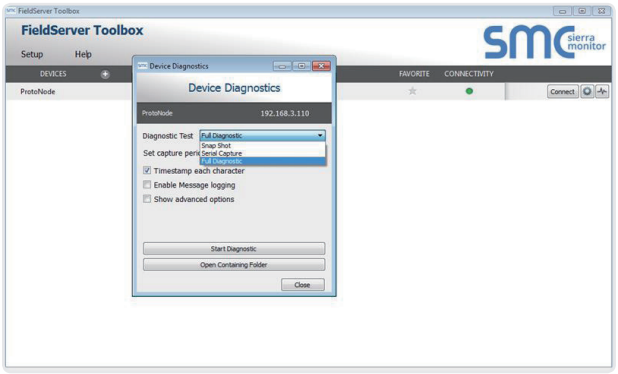
3. Connect a standard Cat-5 Ethernet cable between the PC and gateway.

4. Double click on the FS Toolbox Utility.

5. **Step 1**: Take a Log.
   a. Click on the diagnose icon of the desired device.

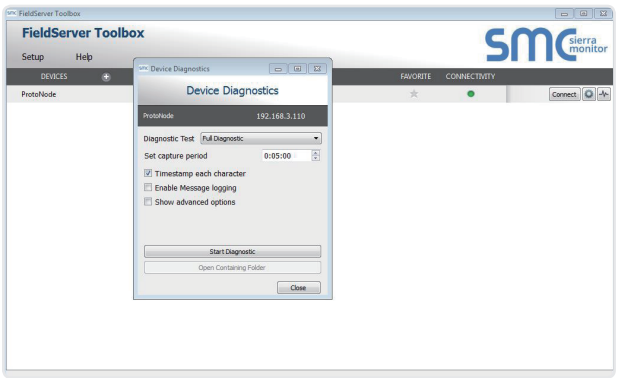


   b. Ensure "Full Diagnostic" is selected (this is the default).



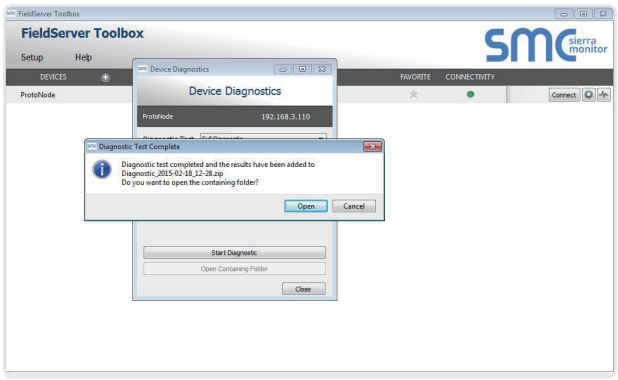
Note If desired, the default capture period can be changed.

   c. Click on "Start Diagnostic".



   d. When the capture period is finished, the "Diagnostic Test Complete" window will appear.

6. **Step 2**: Send Log
   a. Once the diagnostic test is complete, a .zip file is saved on the PC.



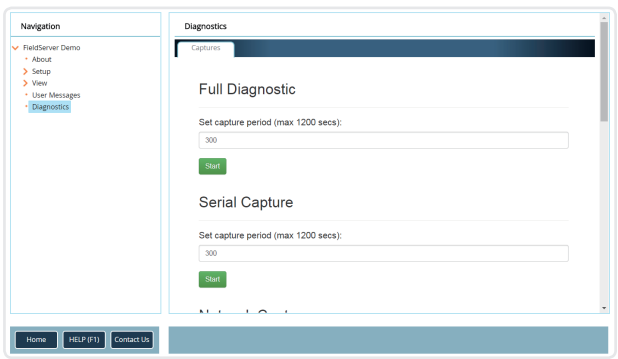
   b. Choose "Open" to launch explorer and have it point directly at the correct folder.
   c. Send the diagnostic zip file to technical support.

Appendix A.5.2 Using FS-GUI

Diagnostic Capture via FS-GUI is only available on FieldServers with a bios updated/released on November 2017 or later. Completing a Diagnostic Capture through the FieldServer allows network connections (such as Ethernet) to be captured.

Once the Diagnostic Capture is complete, email it to technical support. The Diagnostic Capture will accelerate diagnosis of the problem.

1. Open the FieldServer FS-GUI page.
2. Click on Diagnostics in the Navigation panel.



3. Go to Full Diagnostic and select the capture period.
4. Click the Start button under the Full Diagnostic heading to start the capture.
   - When the capture period is finished, a Download button will appear next to the Start button.

5. Click Download for the capture to be downloaded to the local PC.
6. Send the diagnostic zip file to technical support.

Appendix B. Additional Information

Appendix B.1 Update Firmware

To load a new version of the firmware, follow these instructions:

1. Extract and save the new file onto the local PC.
2. Open a web browser and type the IP Address of the FieldServer in the address bar.
   - Default IP Address is 192.168.1.24
   - Use the FS Toolbox utility if the IP Address is unknown (**Appendix A.1**).
3. Click on the "Diagnostics & Debugging" button.
4. In the Navigation Tree on the left hand side, do the following:
   a. Click on "Setup".
   b. Click on "File Transfer".
   c. Click on the "General" tab.
5. In the General tab, click on "Choose Files" and select the web.img file extracted in step 1.
6. Click on the orange "Submit" button.
7. When the download is complete, click on the "System Restart" button.

Appendix B.2 Securing Gateway with Passwords

Access to the gateway can be restricted by enabling a password on the FS-GUI Passwords page – click Setup and then Passwords in the navigation panel. There are 2 access levels defined by 2 account names: Admin and User.

- The Admin account has unrestricted access to the gateway.
- The User account can view any gateway information but cannot make any changes or restart the gateway.

The password needs to be a minimum of eight characters and **is case sensitive**.

If the password is lost, click cancel on the password authentication popup window, and email the password recovery token to technical support to receive a temporary password from the support team. Access the gateway to set a new password.

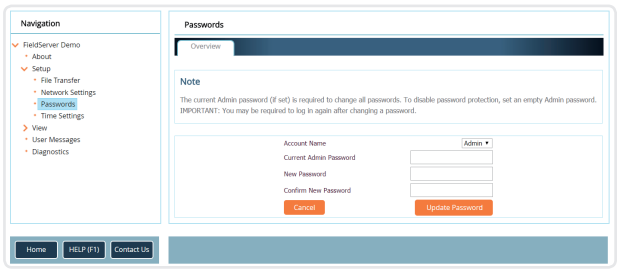


Figure 38: FS-GUI Passwords Page

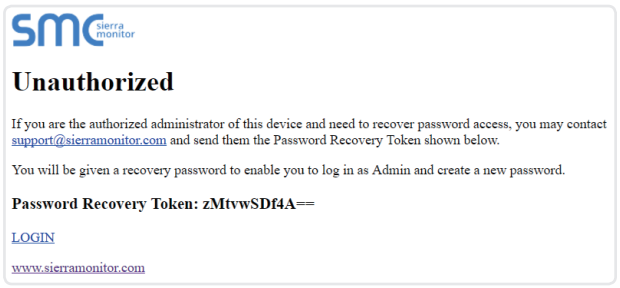


Figure 39: Password Recovery Page

Appendix C. Vendor Information – Navien

Appendix C.1 NFB-C Single Boiler Modbus RTU Mappings to LonWorks

Point Name	LonWorks Name	LonWorks SNVT
SH operation on/off control	nviSH_OpOnOC_XXX	SNVT_switch
Outdoor reset curve usage enable	nviOtRsCrUsE_XXX	SNVT_switch
WWSD enable	nviWWSD_Enbl_XXX	SNVT_switch
DHW operation ON/OFF control	nviDHWOpOnOC_XXX	SNVT_switch
Burner operation state	nvoBrnrOpSt_XXX	SNVT_switch
SH operation state	nvoSH_OpSt_XXX	SNVT_switch
DHW tank mode operation state	nvoDHWTkMdOS_XXX	SNVT_switch
Error state	nvoErrState_XXX	SNVT_switch
Boiler enable status	nvoBlrEnSta_XXX	SNVT_switch
Boiler pump Operation Status	nvoBlrPmOpSt_XXX	SNVT_switch
DHW/Zone1 pump Operation Status	nvoDHWZ1PmSt_XXX	SNVT_switch
Zone2 pump status Operation Status	nvoZ2PmStOpS_XXX	SNVT_switch
System/Zone3 pump Operation Status	nvoSyZ3PmOpS_XXX	SNVT_switch
SH1 Thermostat input Status	nvoSH1ThmInS_XXX	SNVT_switch
SH2 Thermostat input Status	nvoSH2ThmInS_XXX	SNVT_switch
SH3 Thermostat input Status	nvoSH3ThmInS_XXX	SNVT_switch
DHW call signal	nvoDHW_ClSig_XXX	SNVT_switch
DHW Thermostat input Status	nvoDHWThmInS_XXX	SNVT_switch
LWCO input status	nvoLWCO_InSt_XXX	SNVT_switch
Frozen protection mode	nvoFrzProMde_XXX	SNVT_switch
Main Error code	nvoMnErrCde_XXX	SNVT_count_f
Sub Error code	nvoSbErrCde_XXX	SNVT_count_f
Current Heat capacity	nvoCurrHtCap_XXX	SNVT_lev_percent
Supply temperature	nvoSupTmp_XXX	SNVT_temp_p
Return temperature	nvoRetTmp_XXX	SNVT_temp_p
System Supply temperature	nvoSysSupTmp_XXX	SNVT_temp_p
System Return temperature	nvoSysRetTmp_XXX	SNVT_temp_p
Water pressure	nvoWtrPrs_XXX	SNVT_count_f
Exhaust temperature	nvoExhTmp_XXX	SNVT_temp_p
DHW Tank temperature	nvoDHWTnkTmp_XXX	SNVT_temp_p
Outdoor temperature	nvoOutdrTmp_XXX	SNVT_temp_p
Boiler Operation Status	nvoBlrOpSta_XXX	SNVT_count_f
Maximum Heat capacity	nvoMaxHtCap_XXX	SNVT_count_f

Point Name	LonWorks Name	LonWorks SNVT
Total time of CH operation	nvoTotTmCHOp_XXX	SNVT_time_hour
Number of CH operation	nvoNumCHOp_XXX	SNVT_count_f
Total time after installation	nvoTotTmeIns_XXX	SNVT_count_f
Maximum outdoor temperature status	nvoMxOtTmpSt_XXX	SNVT_temp_p
Minimum outdoor temperature status	nvoMnOtTmpSt_XXX	SNVT_temp_p
CH supply minimum temperature	nvoCHSupMnTp_XXX	SNVT_temp_p
CH supply maximum temperature	nvoCHSupMxTp_XXX	SNVT_temp_p
CH return minimum temperature	nvoCHRetMnTp_XXX	SNVT_temp_p
CH return maximum temperature	nvoCHRetMxTp_XXX	SNVT_temp_p
DHW minimum temperature	nvoDHWMinTp_XXX	SNVT_temp_p
DHW maximum temperature	nvoDHWMaxTp_XXX	SNVT_temp_p
SH control method	nvoSH_CtrMth_XXX	SNVT_count_f
DHW control method	nvoDHW_CtMth_XXX	SNVT_count_f
Gas type	nvoGasType_XXX	SNVT_count_f
Current amount of gas	nvoCurAmtGas_XXX	SNVT_count_f
Total amount of gas	nvoTotAmtGas_XXX	SNVT_count_f
Boiler On/Off command	nviBlOnOfCmd_XXX	SNVT_count_f
SH supply setpoint setting	nviSHSupSPSt_XXX	SNVT_temp_p
SH return setpoint setting	nviSHRetSPSt_XXX	SNVT_temp_p
DHW setpoint setting	nviDHW_SP_St_XXX	SNVT_temp_p
Error reset command	nviErrResCmd_XXX	SNVT_count_f
Boiler setpoint in DHW operation	nviBlSPDHWOp_XXX	SNVT_temp_p
Outdoor reset curve heatload setting	nviOtRsCvHtS_XXX	SNVT_count_f
Maximum outdoor temperature setting	nviMxOtTmpSt_XXX	SNVT_temp_p
Minimum outdoor temperature setting	nviMnOtTmpSt_XXX	SNVT_temp_p
WWSD temperature setting	nviWWSDTmpSt_XXX	SNVT_temp_p
WWSD On differential setting	nviWWSDOnDif_XXX	SNVT_temp_p
Boost interval time setting	nviBstIntTme_XXX	SNVT_time_min
Cascade Initial op units setting	nviCsInOpUnt_XXX	SNVT_count_f
CH supply min temperature setting	nviCHSupMnTp_XXX	SNVT_temp_p
CH supply max temperature setting	nviCHSupMxTp_XXX	SNVT_temp_p
CH return min temperature setting	nviCHRetMnTp_XXX	SNVT_temp_p
CH return max temperature setting	nviCHRetMxTp_XXX	SNVT_temp_p

Appendix C.2 NFB-C Main 1 Sub 1 - Sub 31 Modbus RTU Mappings to LonWorks

Point Name	LonWorks Name	LonWorks SNVT
SH operation on/off control	nviSH_OpOnOC_XXX	SNVT_switch
Outdoor reset curve usage enable	nviOtRsCrUsE_XXX	SNVT_switch
WWSD enable	nviWWSD_Enbl_XXX	SNVT_switch
DHW operation ON/OFF control	nviDHWOpOnOC_XXX	SNVT_switch
Cascade system enable state	nviCsSysEnSt_XXX	SNVT_switch
Cascade burning state	nvoCsBrnSt_XXX	SNVT_switch
Cascade SH operation state	nvoCsSH_OpSt_XXX	SNVT_switch
Main Burner op state	nvoMnBrnOpSt_XXX	SNVT_switch
Main Frozen protection mode	nvoMnFrzPrMd_XXX	SNVT_switch
Main Error state	nvoMnErrSt_XXX	SNVT_switch
Main Boiler enable status	nvoMnBlEnSta_XXX	SNVT_switch
Main Boiler pump op Status	nvoMnBlPmOpS_XXX	SNVT_switch
Sub01 Burner op state	nvo01BrnOpSt_XXX	SNVT_switch
Sub01 Frozen protection mode	nvo01FrzPrMd_XXX	SNVT_switch
Sub01 Error state	nvo01ErrSt_XXX	SNVT_switch
Sub01 Boiler enable status	nvo01BlEnSta_XXX	SNVT_switch
Sub01 Boiler pump op Status	nvo01BlPmOpS_XXX	SNVT_switch
Sub02 Burner op state	nvo02BrnOpSt_XXX	SNVT_switch
Sub02 Frozen protection mode	nvo02FrzPrMd_XXX	SNVT_switch
Sub02 Error state	nvo02ErrSt_XXX	SNVT_switch
Sub02 Boiler enable status	nvo02BlEnSta_XXX	SNVT_switch
Sub02 Boiler pump op Status	nvo02BlPmOpS_XXX	SNVT_switch
Sub03 Burner op state	nvo03BrnOpSt_XXX	SNVT_switch
Sub03 Frozen protection mode	nvo03FrzPrMd_XXX	SNVT_switch
Sub03 Error state	nvo03ErrSt_XXX	SNVT_switch
Sub03 Boiler enable status	nvo03BlEnSta_XXX	SNVT_switch
Sub03 Boiler pump op Status	nvo03BlPmOpS_XXX	SNVT_switch
Sub04 Burner op state	nvo04BrnOpSt_XXX	SNVT_switch
Sub04 Frozen protection mode	nvo04FrzPrMd_XXX	SNVT_switch
Sub04 Error state	nvo04ErrSt_XXX	SNVT_switch
Sub04 Boiler enable status	nvo04BlEnSta_XXX	SNVT_switch
Sub04 Boiler pump op Status	nvo04BlPmOpS_XXX	SNVT_switch
Sub05 Burner op state	nvo05BrnOpSt_XXX	SNVT_switch
Sub05 Frozen protection mode	nvo05FrzPrMd_XXX	SNVT_switch

Point Name	LonWorks Name	LonWorks SNVT
Sub05 Error state	nvo05ErrSt_XXX	SNVT_switch
Sub05 Boiler enable status	nvo05BlEnSta_XXX	SNVT_switch
Sub05 Boiler pump op Status	nvo05BlPmOpS_XXX	SNVT_switch
Sub06 Burner op state	nvo06BrnOpSt_XXX	SNVT_switch
Sub06 Frozen protection mode	nvo06FrzPrMd_XXX	SNVT_switch
Sub06 Error state	nvo06ErrSt_XXX	SNVT_switch
Sub06 Boiler enable status	nvo06BlEnSta_XXX	SNVT_switch
Sub06 Boiler pump op Status	nvo06BlPmOpS_XXX	SNVT_switch
Sub07 Burner op state	nvo07BrnOpSt_XXX	SNVT_switch
Sub07 Frozen protection mode	nvo07FrzPrMd_XXX	SNVT_switch
Sub07 Error state	nvo07ErrSt_XXX	SNVT_switch
Sub07 Boiler enable status	nvo07BlEnSta_XXX	SNVT_switch
Sub07 Boiler pump op Status	nvo07BlPmOpS_XXX	SNVT_switch
Sub08 Burner op state	nvo08BrnOpSt_XXX	SNVT_switch
Sub08 Frozen protection mode	nvo08FrzPrMd_XXX	SNVT_switch
Sub08 Error state	nvo08ErrSt_XXX	SNVT_switch
Sub08 Boiler enable status	nvo08BlEnSta_XXX	SNVT_switch
Sub08 Boiler pump op Status	nvo08BlPmOpS_XXX	SNVT_switch
Sub09 Burner op state	nvo09BrnOpSt_XXX	SNVT_switch
Sub09 Frozen protection mode	nvo09FrzPrMd_XXX	SNVT_switch
Sub09 Error state	nvo09ErrSt_XXX	SNVT_switch
Sub09 Boiler enable status	nvo09BlEnSta_XXX	SNVT_switch
Sub09 Boiler pump op Status	nvo09BlPmOpS_XXX	SNVT_switch
Sub10 Burner op state	nvo10BrnOpSt_XXX	SNVT_switch
Sub10 Frozen protection mode	nvo10FrzPrMd_XXX	SNVT_switch
Sub10 Error state	nvo10ErrSt_XXX	SNVT_switch
Sub10 Boiler enable status	nvo10BlEnSta_XXX	SNVT_switch
Sub10 Boiler pump op Status	nvo10BlPmOpS_XXX	SNVT_switch
Sub11 Burner op state	nvo11BrnOpSt_XXX	SNVT_switch
Sub11 Frozen protection mode	nvo11FrzPrMd_XXX	SNVT_switch
Sub11 Error state	nvo11ErrSt_XXX	SNVT_switch
Sub11 Boiler enable status	nvo11BlEnSta_XXX	SNVT_switch
Sub11 Boiler pump op Status	nvo11BlPmOpS_XXX	SNVT_switch
Sub12 Burner op state	nvo12BrnOpSt_XXX	SNVT_switch
Sub12 Frozen protection mode	nvo12FrzPrMd_XXX	SNVT_switch
Sub12 Error state	nvo12ErrSt_XXX	SNVT_switch

Point Name	LonWorks Name	LonWorks SNVT
Sub12 Boiler enable status	nvo12BlEnSta_XXX	SNVT_switch
Sub12 Boiler pump op Status	nvo12BlPmOpS_XXX	SNVT_switch
Sub13 Burner op state	nvo13BrnOpSt_XXX	SNVT_switch
Sub13 Frozen protection mode	nvo13FrzPrMd_XXX	SNVT_switch
Sub13 Error state	nvo13ErrSt_XXX	SNVT_switch
Sub13 Boiler enable status	nvo13BlEnSta_XXX	SNVT_switch
Sub13 Boiler pump op Status	nvo13BlPmOpS_XXX	SNVT_switch
Sub14 Burner op state	nvo14BrnOpSt_XXX	SNVT_switch
Sub14 Frozen protection mode	nvo14FrzPrMd_XXX	SNVT_switch
Sub14 Error state	nvo14ErrSt_XXX	SNVT_switch
Sub14 Boiler enable status	nvo14BlEnSta_XXX	SNVT_switch
Sub14 Boiler pump op Status	nvo14BlPmOpS_XXX	SNVT_switch
Sub15 Burner op state	nvo15BrnOpSt_XXX	SNVT_switch
Sub15 Frozen protection mode	nvo15FrzPrMd_XXX	SNVT_switch
Sub15 Error state	nvo15ErrSt_XXX	SNVT_switch
Sub15 Boiler enable status	nvo15BlEnSta_XXX	SNVT_switch
Sub15 Boiler pump op Status	nvo15BlPmOpS_XXX	SNVT_switch
Sub16 Burner op state	nvo16BrnOpSt_XXX	SNVT_switch
Sub16 Frozen protection mode	nvo16FrzPrMd_XXX	SNVT_switch
Sub16 Error state	nvo16ErrSt_XXX	SNVT_switch
Sub16 Boiler enable status	nvo16BlEnSta_XXX	SNVT_switch
Sub16 Boiler pump op Status	nvo16BlPmOpS_XXX	SNVT_switch
Sub17 Burner op state	nvo17BrnOpSt_XXX	SNVT_switch
Sub17 Frozen protection mode	nvo17FrzPrMd_XXX	SNVT_switch
Sub17 Error state	nvo17ErrSt_XXX	SNVT_switch
Sub17 Boiler enable status	nvo17BlEnSta_XXX	SNVT_switch
Sub17 Boiler pump op Status	nvo17BlPmOpS_XXX	SNVT_switch
Sub18 Burner op state	nvo18BrnOpSt_XXX	SNVT_switch
Sub18 Frozen protection mode	nvo18FrzPrMd_XXX	SNVT_switch
Sub18 Error state	nvo18ErrSt_XXX	SNVT_switch
Sub18 Boiler enable status	nvo18BlEnSta_XXX	SNVT_switch
Sub18 Boiler pump op Status	nvo18BlPmOpS_XXX	SNVT_switch
Sub19 Burner op state	nvo19BrnOpSt_XXX	SNVT_switch
Sub19 Frozen protection mode	nvo19FrzPrMd_XXX	SNVT_switch
Sub19 Error state	nvo19ErrSt_XXX	SNVT_switch

Point Name	LonWorks Name	LonWorks SNVT
Sub19 Boiler enable status	nvo19BlEnSta_XXX	SNVT_switch
Sub19 Boiler pump op Status	nvo19BlPmOpS_XXX	SNVT_switch
Sub20 Burner op state	nvo20BrnOpSt_XXX	SNVT_switch
Sub20 Frozen protection mode	nvo20FrzPrMd_XXX	SNVT_switch
Sub20 Error state	nvo20ErrSt_XXX	SNVT_switch
Sub20 Boiler enable status	nvo20BlEnSta_XXX	SNVT_switch
Sub20 Boiler pump op Status	nvo20BlPmOpS_XXX	SNVT_switch
Sub21 Burner op state	nvo21BrnOpSt_XXX	SNVT_switch
Sub21 Frozen protection mode	nvo21FrzPrMd_XXX	SNVT_switch
Sub21 Error state	nvo21ErrSt_XXX	SNVT_switch
Sub21 Boiler enable status	nvo21BlEnSta_XXX	SNVT_switch
Sub21 Boiler pump op Status	nvo21BlPmOpS_XXX	SNVT_switch
Sub22 Burner op state	nvo22BrnOpSt_XXX	SNVT_switch
Sub22 Frozen protection mode	nvo22FrzPrMd_XXX	SNVT_switch
Sub22 Error state	nvo22ErrSt_XXX	SNVT_switch
Sub22 Boiler enable status	nvo22BlEnSta_XXX	SNVT_switch
Sub22 Boiler pump op Status	nvo22BlPmOpS_XXX	SNVT_switch
Sub23 Burner op state	nvo23BrnOpSt_XXX	SNVT_switch
Sub23 Frozen protection mode	nvo23FrzPrMd_XXX	SNVT_switch
Sub23 Error state	nvo23ErrSt_XXX	SNVT_switch
Sub23 Boiler enable status	nvo23BlEnSta_XXX	SNVT_switch
Sub23 Boiler pump op Status	nvo23BlPmOpS_XXX	SNVT_switch
Sub24 Burner op state	nvo24BrnOpSt_XXX	SNVT_switch
Sub24 Frozen protection mode	nvo24FrzPrMd_XXX	SNVT_switch
Sub24 Error state	nvo24ErrSt_XXX	SNVT_switch
Sub24 Boiler enable status	nvo24BlEnSta_XXX	SNVT_switch
Sub24 Boiler pump op Status	nvo24BlPmOpS_XXX	SNVT_switch
Sub25 Burner op state	nvo25BrnOpSt_XXX	SNVT_switch
Sub25 Frozen protection mode	nvo25FrzPrMd_XXX	SNVT_switch
Sub25 Error state	nvo25ErrSt_XXX	SNVT_switch
Sub25 Boiler enable status	nvo25BlEnSta_XXX	SNVT_switch
Sub25 Boiler pump op Status	nvo25BlPmOpS_XXX	SNVT_switch
Sub26 Burner op state	nvo26BrnOpSt_XXX	SNVT_switch
Sub26 Frozen protection mode	nvo26FrzPrMd_XXX	SNVT_switch
Sub26 Error state	nvo26ErrSt_XXX	SNVT_switch

Point Name	LonWorks Name	LonWorks SNVT
Sub26 Boiler enable status	nvo26BlEnSta_XXX	SNVT_switch
Sub26 Boiler pump op Status	nvo26BlPmOpS_XXX	SNVT_switch
Sub27 Burner op state	nvo27BrnOpSt_XXX	SNVT_switch
Sub27 Frozen protection mode	nvo27FrzPrMd_XXX	SNVT_switch
Sub27 Error state	nvo27ErrSt_XXX	SNVT_switch
Sub27 Boiler enable status	nvo27BlEnSta_XXX	SNVT_switch
Sub27 Boiler pump op Status	nvo27BlPmOpS_XXX	SNVT_switch
Sub28 Burner op state	nvo28BrnOpSt_XXX	SNVT_switch
Sub28 Frozen protection mode	nvo28FrzPrMd_XXX	SNVT_switch
Sub28 Error state	nvo28ErrSt_XXX	SNVT_switch
Sub28 Boiler enable status	nvo28BlEnSta_XXX	SNVT_switch
Sub28 Boiler pump op Status	nvo28BlPmOpS_XXX	SNVT_switch
Sub29 Burner op state	nvo29BrnOpSt_XXX	SNVT_switch
Sub29 Frozen protection mode	nvo29FrzPrMd_XXX	SNVT_switch
Sub29 Error state	nvo29ErrSt_XXX	SNVT_switch
Sub29 Boiler enable status	nvo29BlEnSta_XXX	SNVT_switch
Sub29 Boiler pump op Status	nvo29BlPmOpS_XXX	SNVT_switch
Sub30 Burner op state	nvo30BrnOpSt_XXX	SNVT_switch
Sub30 Frozen protection mode	nvo30FrzPrMd_XXX	SNVT_switch
Sub30 Error state	nvo30ErrSt_XXX	SNVT_switch
Sub30 Boiler enable status	nvo30BlEnSta_XXX	SNVT_switch
Sub30 Boiler pump op Status	nvo30BlPmOpS_XXX	SNVT_switch
Sub31 Burner op state	nvo31BrnOpSt_XXX	SNVT_switch
Sub31 Frozen protection mode	nvo31FrzPrMd_XXX	SNVT_switch
Sub31 Error state	nvo31ErrSt_XXX	SNVT_switch
Sub31 Boiler enable status	nvo31BlEnSta_XXX	SNVT_switch
Sub31 Boiler pump op Status	nvo31BlPmOpS_XXX	SNVT_switch
Cascade total units	nvoCsTotUnit_XXX	SNVT_count_f
Cascade Operating units	nvoCsOpUnit_XXX	SNVT_count_f
Cascade On/Off state	nvoCsOnOffSt_XXX	SNVT_count_f
CC Average Heating capacity	nvoCCAvgHtCp_XXX	SNVT_lev_percent
CC Maximum Heating capacity	nvoCCMaxHtCp_XXX	SNVT_count_f
Primary total flow	nvoPriTotFlw_XXX	SNVT_count_f
Average primary Supply temperature	nvoAvPrSupTp_XXX	SNVT_temp_p
Average primary return temperature	nvoAvPrRetTp_XXX	SNVT_temp_p

Point Name	LonWorks Name	LonWorks SNVT
System Supply temperature	nvoSysSupTmp_XXX	SNVT_temp_p
System Return temperature	nvoSysRetTmp_XXX	SNVT_temp_p
Error occurrence unit number	nvoErOcUntNm_XXX	SNVT_count_f
Main Error code	nvoMainErrCd_XXX	SNVT_count_f
Main Operation Status	nvoMnOpStat_XXX	SNVT_count_f
Main Error code	nvoMnMnErrCd_XXX	SNVT_count_f
Main Current Heat capacity	nvoMnCurHtCp_XXX	SNVT_lev_percent
Main Supply temperature	nvoMnSupTmp_XXX	SNVT_temp_p
Main Return temperature	nvoMnRetTmp_XXX	SNVT_temp_p
Main Maximum Heat capacity	nvoMnMaxHtCp_XXX	SNVT_count_f
Main Exhaust temperature	nvoMnExhTmp_XXX	SNVT_temp_p
Main Total time after installation	nvoMnTotTmIn_XXX	SNVT_count_f
Main Number of CH operation	nvoMnNmCH_Op_XXX	SNVT_count_f
Main Total time of CH operation	nvoMnTotTmCH_XXX	SNVT_time_hour
Main Current amount of gas	nvoMnCurGas_XXX	SNVT_count_f
Main Total amount of gas	nvoMnTotGas_XXX	SNVT_count_f
Sub01 Operation Status	nvo01OpStat_XXX	SNVT_count_f
Sub01 Main Error code	nvo01MnErrCd_XXX	SNVT_count_f
Sub01 Current Heat capacity	nvo01CurHtCp_XXX	SNVT_lev_percent
Sub01 Supply temperature	nvo01SupTmp_XXX	SNVT_temp_p
Sub01 Return temperature	nvo01RetTmp_XXX	SNVT_temp_p
Sub01 Maximum Heat capacity	nvo01MaxHtCp_XXX	SNVT_count_f
Sub01 Exhaust temperature	nvo01ExhTmp_XXX	SNVT_temp_p
Sub01 Total time after installation	nvo01TotTmIn_XXX	SNVT_count_f
Sub01 Number of CH operation	nvo01NmCH_Op_XXX	SNVT_count_f
Sub01 Total time of CH operation	nvo01TotTmCH_XXX	SNVT_time_hour
Sub01 Current amount of gas	nvo01CurGas_XXX	SNVT_count_f
Sub01 Total amount of gas	nvo01TotGas_XXX	SNVT_count_f
Sub02 Operation Status	nvo02OpStat_XXX	SNVT_count_f
Sub02 Main Error code	nvo02MnErrCd_XXX	SNVT_count_f
Sub02 Current Heat capacity	nvo02CurHtCp_XXX	SNVT_lev_percent
Sub02 Supply temperature	nvo02SupTmp_XXX	SNVT_temp_p
Sub02 Return temperature	nvo02RetTmp_XXX	SNVT_temp_p
Sub02 Maximum Heat capacity	nvo02MaxHtCp_XXX	SNVT_count_f
Sub02 Exhaust temperature	nvo02ExhTmp_XXX	SNVT_temp_p
Sub02 Total time after installation	nvo02TotTmIn_XXX	SNVT_count_f

Point Name	LonWorks Name	LonWorks SNVT
Sub02 Number of CH operation	nvo02NmCH_Op_XXX	SNVT_count_f
Sub02 Total time of CH operation	nvo02TotTmCH_XXX	SNVT_time_hour
Sub02 Current amount of gas	nvo02CurGas_XXX	SNVT_count_f
Sub02 Total amount of gas	nvo02TotGas_XXX	SNVT_count_f
Sub03 Operation Status	nvo03OpStat_XXX	SNVT_count_f
Sub03 Main Error code	nvo03MnErrCd_XXX	SNVT_count_f
Sub03 Current Heat capacity	nvo03CurHtCp_XXX	SNVT_lev_percent
Sub03 Supply temperature	nvo03SupTmp_XXX	SNVT_temp_p
Sub03 Return temperature	nvo03RetTmp_XXX	SNVT_temp_p
Sub03 Maximum Heat capacity	nvo03MaxHtCp_XXX	SNVT_count_f
Sub03 Exhaust temperature	nvo03ExhTmp_XXX	SNVT_temp_p
Sub03 Total time after installation	nvo03TotTmIn_XXX	SNVT_count_f
Sub03 Number of CH operation	nvo03NmCH_Op_XXX	SNVT_count_f
Sub03 Total time of CH operation	nvo03TotTmCH_XXX	SNVT_time_hour
Sub03 Current amount of gas	nvo03CurGas_XXX	SNVT_count_f
Sub03 Total amount of gas	nvo03TotGas_XXX	SNVT_count_f
Sub04 Operation Status	nvo04OpStat_XXX	SNVT_count_f
Sub04 Main Error code	nvo04MnErrCd_XXX	SNVT_count_f
Sub04 Current Heat capacity	nvo04CurHtCp_XXX	SNVT_lev_percent
Sub04 Supply temperature	nvo04SupTmp_XXX	SNVT_temp_p
Sub04 Return temperature	nvo04RetTmp_XXX	SNVT_temp_p
Sub04 Maximum Heat capacity	nvo04MaxHtCp_XXX	SNVT_count_f
Sub04 Exhaust temperature	nvo04ExhTmp_XXX	SNVT_temp_p
Sub04 Total time after installation	nvo04TotTmIn_XXX	SNVT_count_f
Sub04 Number of CH operation	nvo04NmCH_Op_XXX	SNVT_count_f
Sub04 Total time of CH operation	nvo04TotTmCH_XXX	SNVT_time_hour
Sub04 Current amount of gas	nvo04CurGas_XXX	SNVT_count_f
Sub04 Total amount of gas	nvo04TotGas_XXX	SNVT_count_f
Sub05 Operation Status	nvo05OpStat_XXX	SNVT_count_f
Sub05 Main Error code	nvo05MnErrCd_XXX	SNVT_count_f
Sub05 Current Heat capacity	nvo05CurHtCp_XXX	SNVT_lev_percent
Sub05 Supply temperature	nvo05SupTmp_XXX	SNVT_temp_p
Sub05 Return temperature	nvo05RetTmp_XXX	SNVT_temp_p
Sub05 Maximum Heat capacity	nvo05MaxHtCp_XXX	SNVT_count_f
Sub05 Exhaust temperature	nvo05ExhTmp_XXX	SNVT_temp_p

Point Name	LonWorks Name	LonWorks SNVT
Sub05 Total time after installation	nvo05TotTmIn_XXX	SNVT_count_f
Sub05 Number of CH operation	nvo05NmCH_Op_XXX	SNVT_count_f
Sub05 Total time of CH operation	nvo05TotTmCH_XXX	SNVT_time_hour
Sub05 Current amount of gas	nvo05CurGas_XXX	SNVT_count_f
Sub05 Total amount of gas	nvo05TotGas_XXX	SNVT_count_f
Sub06 Operation Status	nvo06OpStat_XXX	SNVT_count_f
Sub06 Main Error code	nvo06MnErrCd_XXX	SNVT_count_f
Sub06 Current Heat capacity	nvo06CurHtCp_XXX	SNVT_lev_percent
Sub06 Supply temperature	nvo06SupTmp_XXX	SNVT_temp_p
Sub06 Return temperature	nvo06RetTmp_XXX	SNVT_temp_p
Sub06 Maximum Heat capacity	nvo06MaxHtCp_XXX	SNVT_count_f
Sub06 Exhaust temperature	nvo06ExhTmp_XXX	SNVT_temp_p
Sub06 Total time after installation	nvo06TotTmIn_XXX	SNVT_count_f
Sub06 Number of CH operation	nvo06NmCH_Op_XXX	SNVT_count_f
Sub06 Total time of CH operation	nvo06TotTmCH_XXX	SNVT_time_hour
Sub06 Current amount of gas	nvo06CurGas_XXX	SNVT_count_f
Sub06 Total amount of gas	nvo06TotGas_XXX	SNVT_count_f
Sub07 Operation Status	nvo07OpStat_XXX	SNVT_count_f
Sub07 Main Error code	nvo07MnErrCd_XXX	SNVT_count_f
Sub07 Current Heat capacity	nvo07CurHtCp_XXX	SNVT_lev_percent
Sub07 Supply temperature	nvo07SupTmp_XXX	SNVT_temp_p
Sub07 Return temperature	nvo07RetTmp_XXX	SNVT_temp_p
Sub07 Maximum Heat capacity	nvo07MaxHtCp_XXX	SNVT_count_f
Sub07 Exhaust temperature	nvo07ExhTmp_XXX	SNVT_temp_p
Sub07 Total time after installation	nvo07TotTmIn_XXX	SNVT_count_f
Sub07 Number of CH operation	nvo07NmCH_Op_XXX	SNVT_count_f
Sub07 Total time of CH operation	nvo07TotTmCH_XXX	SNVT_time_hour
Sub07 Current amount of gas	nvo07CurGas_XXX	SNVT_count_f
Sub07 Total amount of gas	nvo07TotGas_XXX	SNVT_count_f
Sub08 Operation Status	nvo08OpStat_XXX	SNVT_count_f
Sub08 Main Error code	nvo08MnErrCd_XXX	SNVT_count_f
Sub08 Current Heat capacity	nvo08CurHtCp_XXX	SNVT_lev_percent
Sub08 Supply temperature	nvo08SupTmp_XXX	SNVT_temp_p
Sub08 Return temperature	nvo08RetTmp_XXX	SNVT_temp_p
Sub08 Maximum Heat capacity	nvo08MaxHtCp_XXX	SNVT_count_f

Point Name	LonWorks Name	LonWorks SNVT
Sub08 Exhaust temperature	nvo08ExhTmp_XXX	SNVT_temp_p
Sub08 Total time after installation	nvo08TotTmIn_XXX	SNVT_count_f
Sub08 Number of CH operation	nvo08NmCH_Op_XXX	SNVT_count_f
Sub08 Total time of CH operation	nvo08TotTmCH_XXX	SNVT_time_hour
Sub08 Current amount of gas	nvo08CurGas_XXX	SNVT_count_f
Sub08 Total amount of gas	nvo08TotGas_XXX	SNVT_count_f
Sub09 Operation Status	nvo09OpStat_XXX	SNVT_count_f
Sub09 Main Error code	nvo09MnErrCd_XXX	SNVT_count_f
Sub09 Current Heat capacity	nvo09CurHtCp_XXX	SNVT_lev_percent
Sub09 Supply temperature	nvo09SupTmp_XXX	SNVT_temp_p
Sub09 Return temperature	nvo09RetTmp_XXX	SNVT_temp_p
Sub09 Maximum Heat capacity	nvo09MaxHtCp_XXX	SNVT_count_f
Sub09 Exhaust temperature	nvo09ExhTmp_XXX	SNVT_temp_p
Sub09 Total time after installation	nvo09TotTmIn_XXX	SNVT_count_f
Sub09 Number of CH operation	nvo09NmCH_Op_XXX	SNVT_count_f
Sub09 Total time of CH operation	nvo09TotTmCH_XXX	SNVT_time_hour
Sub09 Current amount of gas	nvo09CurGas_XXX	SNVT_count_f
Sub09 Total amount of gas	nvo09TotGas_XXX	SNVT_count_f
Sub10 Operation Status	nvo10OpStat_XXX	SNVT_count_f
Sub10 Main Error code	nvo10MnErrCd_XXX	SNVT_count_f
Sub10 Current Heat capacity	nvo10CurHtCp_XXX	SNVT_lev_percent
Sub10 Supply temperature	nvo10SupTmp_XXX	SNVT_temp_p
Sub10 Return temperature	nvo10RetTmp_XXX	SNVT_temp_p
Sub10 Maximum Heat capacity	nvo10MaxHtCp_XXX	SNVT_count_f
Sub10 Exhaust temperature	nvo10ExhTmp_XXX	SNVT_temp_p
Sub10 Total time after installation	nvo10TotTmIn_XXX	SNVT_count_f
Sub10 Number of CH operation	nvo10NmCH_Op_XXX	SNVT_count_f
Sub10 Total time of CH operation	nvo10TotTmCH_XXX	SNVT_time_hour
Sub10 Current amount of gas	nvo10CurGas_XXX	SNVT_count_f
Sub10 Total amount of gas	nvo10TotGas_XXX	SNVT_count_f
Sub11 Operation Status	nvo11OpStat_XXX	SNVT_count_f
Sub11 Main Error code	nvo11MnErrCd_XXX	SNVT_count_f
Sub11 Current Heat capacity	nvo11CurHtCp_XXX	SNVT_lev_percent
Sub11 Supply temperature	nvo11SupTmp_XXX	SNVT_temp_p
Sub11 Return temperature	nvo11RetTmp_XXX	SNVT_temp_p

Point Name	LonWorks Name	LonWorks SNVT
Sub11 Maximum Heat capacity	nvo11MaxHtCp_XXX	SNVT_count_f
Sub11 Exhaust temperature	nvo11ExhTmp_XXX	SNVT_temp_p
Sub11 Total time after installation	nvo11TotTmIn_XXX	SNVT_count_f
Sub11 Number of CH operation	nvo11NmCH_Op_XXX	SNVT_count_f
Sub11 Total time of CH operation	nvo11TotTmCH_XXX	SNVT_time_hour
Sub11 Current amount of gas	nvo11CurGas_XXX	SNVT_count_f
Sub11 Total amount of gas	nvo11TotGas_XXX	SNVT_count_f
Sub12 Operation Status	nvo12OpStat_XXX	SNVT_count_f
Sub12 Main Error code	nvo12MnErrCd_XXX	SNVT_count_f
Sub12 Current Heat capacity	nvo12CurHtCp_XXX	SNVT_lev_percent
Sub12 Supply temperature	nvo12SupTmp_XXX	SNVT_temp_p
Sub12 Return temperature	nvo12RetTmp_XXX	SNVT_temp_p
Sub12 Maximum Heat capacity	nvo12MaxHtCp_XXX	SNVT_count_f
Sub12 Exhaust temperature	nvo12ExhTmp_XXX	SNVT_temp_p
Sub12 Total time after installation	nvo12TotTmIn_XXX	SNVT_count_f
Sub12 Number of CH operation	nvo12NmCH_Op_XXX	SNVT_count_f
Sub12 Total time of CH operation	nvo12TotTmCH_XXX	SNVT_time_hour
Sub12 Current amount of gas	nvo12CurGas_XXX	SNVT_count_f
Sub12 Total amount of gas	nvo12TotGas_XXX	SNVT_count_f
Sub13 Operation Status	nvo13OpStat_XXX	SNVT_count_f
Sub13 Main Error code	nvo13MnErrCd_XXX	SNVT_count_f
Sub13 Current Heat capacity	nvo13CurHtCp_XXX	SNVT_lev_percent
Sub13 Supply temperature	nvo13SupTmp_XXX	SNVT_temp_p
Sub13 Return temperature	nvo13RetTmp_XXX	SNVT_temp_p
Sub13 Maximum Heat capacity	nvo13MaxHtCp_XXX	SNVT_count_f
Sub13 Exhaust temperature	nvo13ExhTmp_XXX	SNVT_temp_p
Sub13 Total time after installation	nvo13TotTmIn_XXX	SNVT_count_f
Sub13 Number of CH operation	nvo13NmCH_Op_XXX	SNVT_count_f
Sub13 Total time of CH operation	nvo13TotTmCH_XXX	SNVT_time_hour
Sub13 Current amount of gas	nvo13CurGas_XXX	SNVT_count_f
Sub13 Total amount of gas	nvo13TotGas_XXX	SNVT_count_f
Sub14 Operation Status	nvo14OpStat_XXX	SNVT_count_f
Sub14 Main Error code	nvo14MnErrCd_XXX	SNVT_count_f
Sub14 Current Heat capacity	nvo14CurHtCp_XXX	SNVT_lev_percent
Sub14 Supply temperature	nvo14SupTmp_XXX	SNVT_temp_p

Point Name	LonWorks Name	LonWorks SNVT
Sub14 Return temperature	nvo14RetTmp_XXX	SNVT_temp_p
Sub14 Maximum Heat capacity	nvo14MaxHtCp_XXX	SNVT_count_f
Sub14 Exhaust temperature	nvo14ExhTmp_XXX	SNVT_temp_p
Sub14 Total time after installation	nvo14TotTmIn_XXX	SNVT_count_f
Sub14 Number of CH operation	nvo14NmCH_Op_XXX	SNVT_count_f
Sub14 Total time of CH operation	nvo14TotTmCH_XXX	SNVT_time_hour
Sub14 Current amount of gas	nvo14CurGas_XXX	SNVT_count_f
Sub14 Total amount of gas	nvo14TotGas_XXX	SNVT_count_f
Sub15 Operation Status	nvo15OpStat_XXX	SNVT_count_f
Sub15 Main Error code	nvo15MnErrCd_XXX	SNVT_count_f
Sub15 Current Heat capacity	nvo15CurHtCp_XXX	SNVT_lev_percent
Sub15 Supply temperature	nvo15SupTmp_XXX	SNVT_temp_p
Sub15 Return temperature	nvo15RetTmp_XXX	SNVT_temp_p
Sub15 Maximum Heat capacity	nvo15MaxHtCp_XXX	SNVT_count_f
Sub15 Exhaust temperature	nvo15ExhTmp_XXX	SNVT_temp_p
Sub15 Total time after installation	nvo15TotTmIn_XXX	SNVT_count_f
Sub15 Number of CH operation	nvo15NmCH_Op_XXX	SNVT_count_f
Sub15 Total time of CH operation	nvo15TotTmCH_XXX	SNVT_time_hour
Sub15 Current amount of gas	nvo15CurGas_XXX	SNVT_count_f
Sub15 Total amount of gas	nvo15TotGas_XXX	SNVT_count_f
Sub16 Operation Status	nvo16OpStat_XXX	SNVT_count_f
Sub16 Main Error code	nvo16MnErrCd_XXX	SNVT_count_f
Sub16 Current Heat capacity	nvo16CurHtCp_XXX	SNVT_lev_percent
Sub16 Supply temperature	nvo16SupTmp_XXX	SNVT_temp_p
Sub16 Return temperature	nvo16RetTmp_XXX	SNVT_temp_p
Sub16 Maximum Heat capacity	nvo16MaxHtCp_XXX	SNVT_count_f
Sub16 Exhaust temperature	nvo16ExhTmp_XXX	SNVT_temp_p
Sub16 Total time after installation	nvo16TotTmIn_XXX	SNVT_count_f
Sub16 Number of CH operation	nvo16NmCH_Op_XXX	SNVT_count_f
Sub16 Total time of CH operation	nvo16TotTmCH_XXX	SNVT_time_hour
Sub16 Current amount of gas	nvo16CurGas_XXX	SNVT_count_f
Sub16 Total amount of gas	nvo16TotGas_XXX	SNVT_count_f
Sub17 Operation Status	nvo17OpStat_XXX	SNVT_count_f
Sub17 Main Error code	nvo17MnErrCd_XXX	SNVT_count_f
Sub17 Current Heat capacity	nvo17CurHtCp_XXX	SNVT_lev_percent

Point Name	LonWorks Name	LonWorks SNVT
Sub17 Supply temperature	nvo17SupTmp_XXX	SNVT_temp_p
Sub17 Return temperature	nvo17RetTmp_XXX	SNVT_temp_p
Sub17 Maximum Heat capacity	nvo17MaxHtCp_XXX	SNVT_count_f
Sub17 Exhaust temperature	nvo17ExhTmp_XXX	SNVT_temp_p
Sub17 Total time after installation	nvo17TotTmIn_XXX	SNVT_count_f
Sub17 Number of CH operation	nvo17NmCH_Op_XXX	SNVT_count_f
Sub17 Total time of CH operation	nvo17TotTmCH_XXX	SNVT_time_hour
Sub17 Current amount of gas	nvo17CurGas_XXX	SNVT_count_f
Sub17 Total amount of gas	nvo17TotGas_XXX	SNVT_count_f
Sub18 Operation Status	nvo18OpStat_XXX	SNVT_count_f
Sub18 Main Error code	nvo18MnErrCd_XXX	SNVT_count_f
Sub18 Current Heat capacity	nvo18CurHtCp_XXX	SNVT_lev_percent
Sub18 Supply temperature	nvo18SupTmp_XXX	SNVT_temp_p
Sub18 Return temperature	nvo18RetTmp_XXX	SNVT_temp_p
Sub18 Maximum Heat capacity	nvo18MaxHtCp_XXX	SNVT_count_f
Sub18 Exhaust temperature	nvo18ExhTmp_XXX	SNVT_temp_p
Sub18 Total time after installation	nvo18TotTmIn_XXX	SNVT_count_f
Sub18 Number of CH operation	nvo18NmCH_Op_XXX	SNVT_count_f
Sub18 Total time of CH operation	nvo18TotTmCH_XXX	SNVT_time_hour
Sub18 Current amount of gas	nvo18CurGas_XXX	SNVT_count_f
Sub18 Total amount of gas	nvo18TotGas_XXX	SNVT_count_f
Sub19 Operation Status	nvo19OpStat_XXX	SNVT_count_f
Sub19 Main Error code	nvo19MnErrCd_XXX	SNVT_count_f
Sub19 Current Heat capacity	nvo19CurHtCp_XXX	SNVT_lev_percent
Sub19 Supply temperature	nvo19SupTmp_XXX	SNVT_temp_p
Sub19 Return temperature	nvo19RetTmp_XXX	SNVT_temp_p
Sub19 Maximum Heat capacity	nvo19MaxHtCp_XXX	SNVT_count_f
Sub19 Exhaust temperature	nvo19ExhTmp_XXX	SNVT_temp_p
Sub19 Total time after installation	nvo19TotTmIn_XXX	SNVT_count_f
Sub19 Number of CH operation	nvo19NmCH_Op_XXX	SNVT_count_f
Sub19 Total time of CH operation	nvo19TotTmCH_XXX	SNVT_time_hour
Sub19 Current amount of gas	nvo19CurGas_XXX	SNVT_count_f
Sub19 Total amount of gas	nvo19TotGas_XXX	SNVT_count_f
Sub20 Operation Status	nvo20OpStat_XXX	SNVT_count_f
Sub20 Main Error code	nvo20MnErrCd_XXX	SNVT_count_f

Point Name	LonWorks Name	LonWorks SNVT
Sub20 Current Heat capacity	nvo20CurHtCp_XXX	SNVT_lev_percent
Sub20 Supply temperature	nvo20SupTmp_XXX	SNVT_temp_p
Sub20 Return temperature	nvo20RetTmp_XXX	SNVT_temp_p
Sub20 Maximum Heat capacity	nvo20MaxHtCp_XXX	SNVT_count_f
Sub20 Exhaust temperature	nvo20ExhTmp_XXX	SNVT_temp_p
Sub20 Total time after installation	nvo20TotTmIn_XXX	SNVT_count_f
Sub20 Number of CH operation	nvo20NmCH_Op_XXX	SNVT_count_f
Sub20 Total time of CH operation	nvo20TotTmCH_XXX	SNVT_time_hour
Sub20 Current amount of gas	nvo20CurGas_XXX	SNVT_count_f
Sub20 Total amount of gas	nvo20TotGas_XXX	SNVT_count_f
Sub21 Operation Status	nvo21OpStat_XXX	SNVT_count_f
Sub21 Main Error code	nvo21MnErrCd_XXX	SNVT_count_f
Sub21 Current Heat capacity	nvo21CurHtCp_XXX	SNVT_lev_percent
Sub21 Supply temperature	nvo21SupTmp_XXX	SNVT_temp_p
Sub21 Return temperature	nvo21RetTmp_XXX	SNVT_temp_p
Sub21 Maximum Heat capacity	nvo21MaxHtCp_XXX	SNVT_count_f
Sub21 Exhaust temperature	nvo21ExhTmp_XXX	SNVT_temp_p
Sub21 Total time after installation	nvo21TotTmIn_XXX	SNVT_count_f
Sub21 Number of CH operation	nvo21NmCH_Op_XXX	SNVT_count_f
Sub21 Total time of CH operation	nvo21TotTmCH_XXX	SNVT_time_hour
Sub21 Current amount of gas	nvo21CurGas_XXX	SNVT_count_f
Sub21 Total amount of gas	nvo21TotGas_XXX	SNVT_count_f
Sub22 Operation Status	nvo22OpStat_XXX	SNVT_count_f
Sub22 Main Error code	nvo22MnErrCd_XXX	SNVT_count_f
Sub22 Current Heat capacity	nvo22CurHtCp_XXX	SNVT_lev_percent
Sub22 Supply temperature	nvo22SupTmp_XXX	SNVT_temp_p
Sub22 Return temperature	nvo22RetTmp_XXX	SNVT_temp_p
Sub22 Maximum Heat capacity	nvo22MaxHtCp_XXX	SNVT_count_f
Sub22 Exhaust temperature	nvo22ExhTmp_XXX	SNVT_temp_p
Sub22 Total time after installation	nvo22TotTmIn_XXX	SNVT_count_f
Sub22 Number of CH operation	nvo22NmCH_Op_XXX	SNVT_count_f
Sub22 Total time of CH operation	nvo22TotTmCH_XXX	SNVT_time_hour
Sub22 Current amount of gas	nvo22CurGas_XXX	SNVT_count_f
Sub22 Total amount of gas	nvo22TotGas_XXX	SNVT_count_f

Point Name	LonWorks Name	LonWorks SNVT
Sub23 Operation Status	nvo23OpStat_XXX	SNVT_count_f
Sub23 Main Error code	nvo23MnErrCd_XXX	SNVT_count_f
Sub23 Current Heat capacity	nvo23CurHtCp_XXX	SNVT_lev_percent
Sub23 Supply temperature	nvo23SupTmp_XXX	SNVT_temp_p
Sub23 Return temperature	nvo23RetTmp_XXX	SNVT_temp_p
Sub23 Maximum Heat capacity	nvo23MaxHtCp_XXX	SNVT_count_f
Sub23 Exhaust temperature	nvo23ExhTmp_XXX	SNVT_temp_p
Sub23 Total time after installation	nvo23TotTmIn_XXX	SNVT_count_f
Sub23 Number of CH operation	nvo23NmCH_Op_XXX	SNVT_count_f
Sub23 Total time of CH operation	nvo23TotTmCH_XXX	SNVT_time_hour
Sub23 Current amount of gas	nvo23CurGas_XXX	SNVT_count_f
Sub23 Total amount of gas	nvo23TotGas_XXX	SNVT_count_f
Sub24 Operation Status	nvo24OpStat_XXX	SNVT_count_f
Sub24 Main Error code	nvo24MnErrCd_XXX	SNVT_count_f
Sub24 Current Heat capacity	nvo24CurHtCp_XXX	SNVT_lev_percent
Sub24 Supply temperature	nvo24SupTmp_XXX	SNVT_temp_p
Sub24 Return temperature	nvo24RetTmp_XXX	SNVT_temp_p
Sub24 Maximum Heat capacity	nvo24MaxHtCp_XXX	SNVT_count_f
Sub24 Exhaust temperature	nvo24ExhTmp_XXX	SNVT_temp_p
Sub24 Total time after installation	nvo24TotTmIn_XXX	SNVT_count_f
Sub24 Number of CH operation	nvo24NmCH_Op_XXX	SNVT_count_f
Sub24 Total time of CH operation	nvo24TotTmCH_XXX	SNVT_time_hour
Sub24 Current amount of gas	nvo24CurGas_XXX	SNVT_count_f
Sub24 Total amount of gas	nvo24TotGas_XXX	SNVT_count_f
Sub25 Operation Status	nvo25OpStat_XXX	SNVT_count_f
Sub25 Main Error code	nvo25MnErrCd_XXX	SNVT_count_f
Sub25 Current Heat capacity	nvo25CurHtCp_XXX	SNVT_lev_percent
Sub25 Supply temperature	nvo25SupTmp_XXX	SNVT_temp_p
Sub25 Return temperature	nvo25RetTmp_XXX	SNVT_temp_p
Sub25 Maximum Heat capacity	nvo25MaxHtCp_XXX	SNVT_count_f
Sub25 Exhaust temperature	nvo25ExhTmp_XXX	SNVT_temp_p
Sub25 Total time after installation	nvo25TotTmIn_XXX	SNVT_count_f
Sub25 Number of CH operation	nvo25NmCH_Op_XXX	SNVT_count_f
Sub25 Total time of CH operation	nvo25TotTmCH_XXX	SNVT_time_hour

Point Name	LonWorks Name	LonWorks SNVT
Sub25 Current amount of gas	nvo25CurGas_XXX	SNVT_count_f
Sub25 Total amount of gas	nvo25TotGas_XXX	SNVT_count_f
Sub26 Operation Status	nvo26OpStat_XXX	SNVT_count_f
Sub26 Main Error code	nvo26MnErrCd_XXX	SNVT_count_f
Sub26 Current Heat capacity	nvo26CurHtCp_XXX	SNVT_lev_percent
Sub26 Supply temperature	nvo26SupTmp_XXX	SNVT_temp_p
Sub26 Return temperature	nvo26RetTmp_XXX	SNVT_temp_p
Sub26 Maximum Heat capacity	nvo26MaxHtCp_XXX	SNVT_count_f
Sub26 Exhaust temperature	nvo26ExhTmp_XXX	SNVT_temp_p
Sub26 Total time after installation	nvo26TotTmIn_XXX	SNVT_count_f
Sub26 Number of CH operation	nvo26NmCH_Op_XXX	SNVT_count_f
Sub26 Total time of CH operation	nvo26TotTmCH_XXX	SNVT_time_hour
Sub26 Current amount of gas	nvo26CurGas_XXX	SNVT_count_f
Sub26 Total amount of gas	nvo26TotGas_XXX	SNVT_count_f
Sub27 Operation Status	nvo27OpStat_XXX	SNVT_count_f
Sub27 Main Error code	nvo27MnErrCd_XXX	SNVT_count_f
Sub27 Current Heat capacity	nvo27CurHtCp_XXX	SNVT_lev_percent
Sub27 Supply temperature	nvo27SupTmp_XXX	SNVT_temp_p
Sub27 Return temperature	nvo27RetTmp_XXX	SNVT_temp_p
Sub27 Maximum Heat capacity	nvo27MaxHtCp_XXX	SNVT_count_f
Sub27 Exhaust temperature	nvo27ExhTmp_XXX	SNVT_temp_p
Sub27 Total time after installation	nvo27TotTmIn_XXX	SNVT_count_f
Sub27 Number of CH operation	nvo27NmCH_Op_XXX	SNVT_count_f
Sub27 Total time of CH operation	nvo27TotTmCH_XXX	SNVT_time_hour
Sub27 Current amount of gas	nvo27CurGas_XXX	SNVT_count_f
Sub27 Total amount of gas	nvo27TotGas_XXX	SNVT_count_f
Sub28 Operation Status	nvo28OpStat_XXX	SNVT_count_f
Sub28 Main Error code	nvo28MnErrCd_XXX	SNVT_count_f
Sub28 Current Heat capacity	nvo28CurHtCp_XXX	SNVT_lev_percent
Sub28 Supply temperature	nvo28SupTmp_XXX	SNVT_temp_p
Sub28 Return temperature	nvo28RetTmp_XXX	SNVT_temp_p
Sub28 Maximum Heat capacity	nvo28MaxHtCp_XXX	SNVT_count_f
Sub28 Exhaust temperature	nvo28ExhTmp_XXX	SNVT_temp_p
Sub28 Total time after installation	nvo28TotTmIn_XXX	SNVT_count_f
Sub28 Number of CH operation	nvo28NmCH_Op_XXX	SNVT_count_f

Point Name	LonWorks Name	LonWorks SNVT
Sub28 Total time of CH operation	nvo28TotTmCH_XXX	SNVT_time_hour
Sub28 Current amount of gas	nvo28CurGas_XXX	SNVT_count_f
Sub28 Total amount of gas	nvo28TotGas_XXX	SNVT_count_f
Sub29 Operation Status	nvo29OpStat_XXX	SNVT_count_f
Sub29 Main Error code	nvo29MnErrCd_XXX	SNVT_count_f
Sub29 Current Heat capacity	nvo29CurHtCp_XXX	SNVT_lev_percent
Sub29 Supply temperature	nvo29SupTmp_XXX	SNVT_temp_p
Sub29 Return temperature	nvo29RetTmp_XXX	SNVT_temp_p
Sub29 Maximum Heat capacity	nvo29MaxHtCp_XXX	SNVT_count_f
Sub29 Exhaust temperature	nvo29ExhTmp_XXX	SNVT_temp_p
Sub29 Total time after installation	nvo29TotTmIn_XXX	SNVT_count_f
Sub29 Number of CH operation	nvo29NmCH_Op_XXX	SNVT_count_f
Sub29 Total time of CH operation	nvo29TotTmCH_XXX	SNVT_time_hour
Sub29 Current amount of gas	nvo29CurGas_XXX	SNVT_count_f
Sub29 Total amount of gas	nvo29TotGas_XXX	SNVT_count_f
Sub30 Operation Status	nvo30OpStat_XXX	SNVT_count_f
Sub30 Main Error code	nvo30MnErrCd_XXX	SNVT_count_f
Sub30 Current Heat capacity	nvo30CurHtCp_XXX	SNVT_lev_percent
Sub30 Supply temperature	nvo30SupTmp_XXX	SNVT_temp_p
Sub30 Return temperature	nvo30RetTmp_XXX	SNVT_temp_p
Sub30 Maximum Heat capacity	nvo30MaxHtCp_XXX	SNVT_count_f
Sub30 Exhaust temperature	nvo30ExhTmp_XXX	SNVT_temp_p
Sub30 Total time after installation	nvo30TotTmIn_XXX	SNVT_count_f
Sub30 Number of CH operation	nvo30NmCH_Op_XXX	SNVT_count_f
Sub30 Total time of CH operation	nvo30TotTmCH_XXX	SNVT_time_hour
Sub30 Current amount of gas	nvo30CurGas_XXX	SNVT_count_f
Sub30 Total amount of gas	nvo30TotGas_XXX	SNVT_count_f
Sub31 Operation Status	nvo31OpStat_XXX	SNVT_count_f
Sub31 Main Error code	nvo31MnErrCd_XXX	SNVT_count_f
Sub31 Current Heat capacity	nvo31CurHtCp_XXX	SNVT_lev_percent
Sub31 Supply temperature	nvo31SupTmp_XXX	SNVT_temp_p
Sub31 Return temperature	nvo31RetTmp_XXX	SNVT_temp_p
Sub31 Maximum Heat capacity	nvo31MaxHtCp_XXX	SNVT_count_f
Sub31 Exhaust temperature	nvo31ExhTmp_XXX	SNVT_temp_p
Sub31 Total time after installation	nvo31TotTmIn_XXX	SNVT_count_f

Point Name	LonWorks Name	LonWorks SNVT
Sub31 Number of CH operation	nvo31NmCH_Op_XXX	SNVT_count_f
Sub31 Total time of CH operation	nvo31TotTmCH_XXX	SNVT_time_hour
Sub31 Current amount of gas	nvo31CurGas_XXX	SNVT_count_f
Sub31 Total amount of gas	nvo31TotGas_XXX	SNVT_count_f
Boiler On/Off command	nviBlOnOfCmd_XXX	SNVT_count_f
SH supply setpoint setting	nviSHSupSPSt_XXX	SNVT_temp_p
SH return setpoint setting	nviSHRetSPSt_XXX	SNVT_temp_p
DHW setpoint setting	nviDHW_SP_St_XXX	SNVT_temp_p
Error reset command	nviErrResCmd_XXX	SNVT_count_f
Boiler setpoint in DHW operation	nviBlSPDHWOp_XXX	SNVT_temp_p
Outdoor reset curve heatload setting	nviOtRsCvHtS_XXX	SNVT_count_f
Maximum outdoor temperature setting	nviMxOtTmpSt_XXX	SNVT_temp_p
Minimum outdoor temperature setting	nviMnOtTmpSt_XXX	SNVT_temp_p
WWSD temperature setting	nviWWSDTmpSt_XXX	SNVT_temp_p
WWSD On differential setting	nviWWSDOnDif_XXX	SNVT_temp_p
Boost interval time setting	nviBstIntTme_XXX	SNVT_time_min
Cascade Initial op units setting	nviCsInOpUnt_XXX	SNVT_count_f
CH supply min temperature setting	nviCHSupMnTp_XXX	SNVT_temp_p
CH supply max temperature setting	nviCHSupMxTp_XXX	SNVT_temp_p
CH return min temperature setting	nviCHRetMnTp_XXX	SNVT_temp_p
CH return max temperature setting	nviCHRetMxTp_XXX	SNVT_temp_p

Appendix D. Reference

Appendix D.1 Specifications

	Gateway Part Number GXXX001933
Electrical Connections	One 6-pin Phoenix connector with: RS-485 port (+ / - / gnd) Power port (+ / - / Frame-gnd) One 2-pin Phoenix connector with: One FTT-10 LonWorks port One Ethernet 10/100 BaseT port
Approvals	CE certified; UL 916 approved; WEEE compliant; EN 60950-1, EN 50491-3 and CSA C22-2 standards; FCC Class A Part 15; RoHS compliant; CSA 205 approved LonMark Certified
Power Requirements	9-30 VDC or 12 - 24 VAC
Physical Dimensions	11.5 cm L x 8.3 cm W x 4.1 cm H (4.5 x 3.2 x 1.6 in.)
Weight	0.2 kg (0.4 lbs)
Operating Temperature	-40°C to 75°C (-40°F to167°F)
Surge Suppression	EN61000-4-2 ESD EN61000-4-3 EMC EN61000-4-4 EFT
Humidity	5 - 90% RH (non-condensing)

(Specifications subject to change without notice)

Figure 40: Specifications

Appendix D.1.1 Compliance with UL Regulations

For UL compliance, the following instructions must be met when operating gateway.

- The units shall be powered by listed LPS or Class 2 power supply suited to the expected operating temperature range.
- The interconnecting power connector and power cable shall:
  - Comply with local electrical code
  - Be suited to the expected operating temperature range
  - Meet the current and voltage rating for gateway
- Furthermore, the interconnecting power cable shall:
  - Be of length not exceeding 3.05 m (118.3")
  - Be constructed of materials rated VW-1, FT-1 or better
- If the unit is to be installed in an operating environment with a temperature above 65°C, it should be installed in a Restricted Access Area requiring a key or a special tool to gain access.
- This device must not be connected to a LAN segment with outdoor wiring.

Appendix E. Limited 2 Year Warranty

Sierra Monitor Corporation warrants its products to be free from defects in workmanship or material under normal use and service for two years after date of shipment. Sierra Monitor Corporation will repair or replace any equipment found to be defective during the warranty period. Final determination of the nature and responsibility for defective or damaged equipment will be made by Sierra Monitor Corporation personnel.

All warranties hereunder are contingent upon proper use in the application for which the product was intended and do not cover products which have been modified or repaired without Sierra Monitor Corporation's approval or which have been subjected to accident, improper maintenance, installation or application, or on which original identification marks have been removed or altered. This Limited Warranty also will not apply to interconnecting cables or wires, consumables or to any damage resulting from battery leakage.

In all cases Sierra Monitor Corporation's responsibility and liability under this warranty shall be limited to the cost of the equipment. The purchaser must obtain shipping instructions for the prepaid return of any item under this warranty provision and compliance with such instruction shall be a condition of this warranty.

Except for the express warranty stated above, Sierra Monitor Corporation disclaims all warranties with regard to the products sold hereunder including all implied warranties of merchantability and fitness and the express warranties stated herein are in lieu of all obligations or liabilities on the part of Sierra Monitor Corporation for damages including, but not limited to, consequential damages arising out of/or in connection with the use or performance of the product.

Memo

Memo

Installation & Operation Manual

LonWorks Gateway Start-up Guide

Part Number GXXX001933

Technical Support

Thank you for purchasing the Navien building automation system interface designed to convert boiler performance data to LonWorks protocols.

For technical support please contact us at 800-519-8794.

Version: 1.0 (October 1, 2019)

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800.519.8794 | www.NavienInc.com
20 Goodyear Irvine, CA 92618