Technical Review

Viessmann Vitogate 300
Supplementary Documentation

KWE Technologies Group

Document Overview

Please ensure that these instructions are read and understood before commencing installation. Failure to comply with instructions listed below can cause product/ property damage, severe personal injury, and/or loss of life. Ensure all requirements are understood and fulfilled (including detailed information found in manual subsections).

IMPORTANT

This supplementary documentation is NOT intended or to be regarded as a substitute for the CSA certified technical support literature that is supplied with each Viessmann Vitogate 300 communications gateway.

Defaults:
IP address: 169.254.0.1
Netmask: 255.255.0.0
User name: vitogate
Password: viessmann

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Please visit:
www.viessmann.ca
www.viessmann.us

Modbus

Visit Modbus website for more information.

Please visit:
www.modbus.org

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For more information please visit:
www.bacnet.org
www.ashrea.org

Changing Computer IP Address-Windows XP

Open ‘Control Panel’ and open ‘Network Connections’.

Locate ‘Local Area Connection’ and double click it to open.

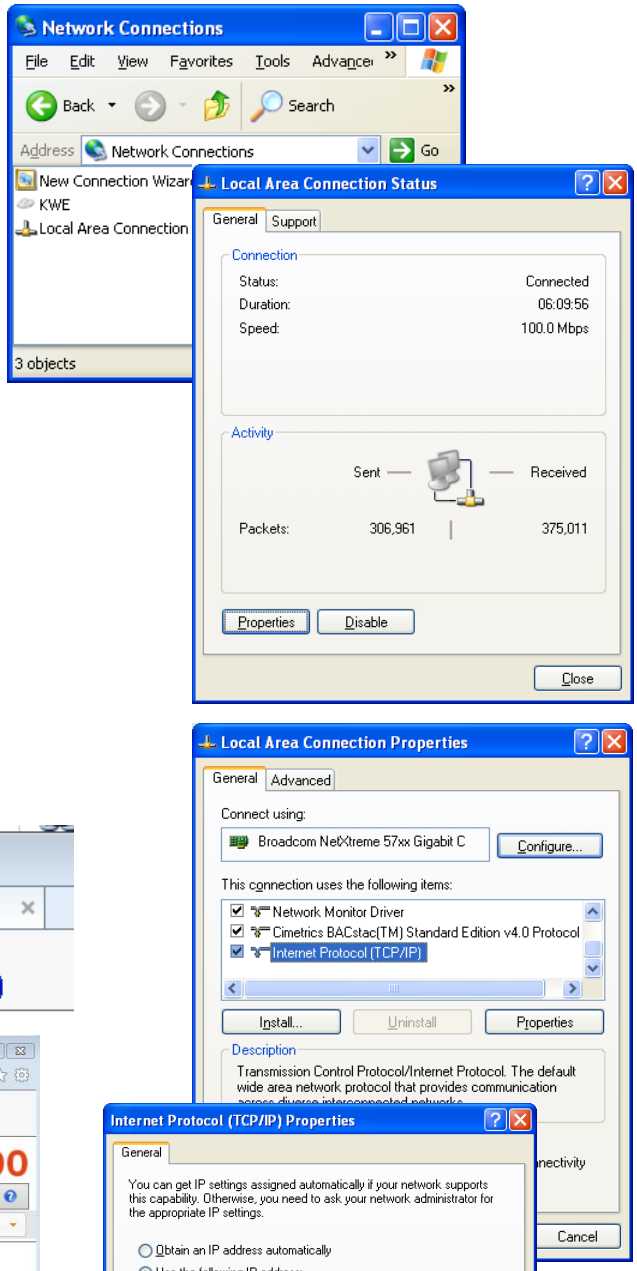
Select ‘Properties’ at the bottom of this window. Scroll to the bottom of items list, and find ‘Internet Protocol (TCP/IP)’, select this and then click on ‘properties’

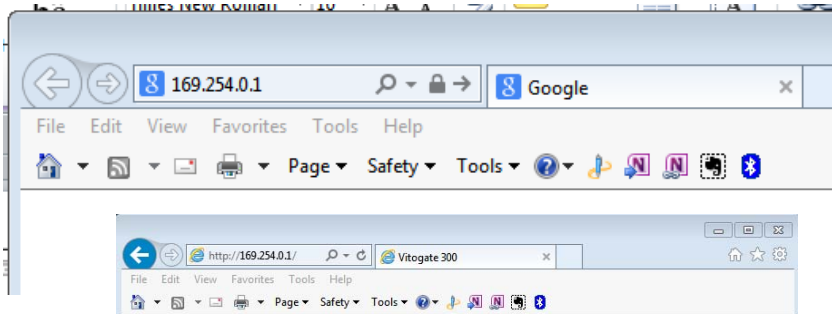
Select ‘Use the following IP address’ and enter and IP address of 169.254.0.20 (the ‘20’ may be substituted with any other number as long as it isn’t 1 since that is the Vitogate 300.

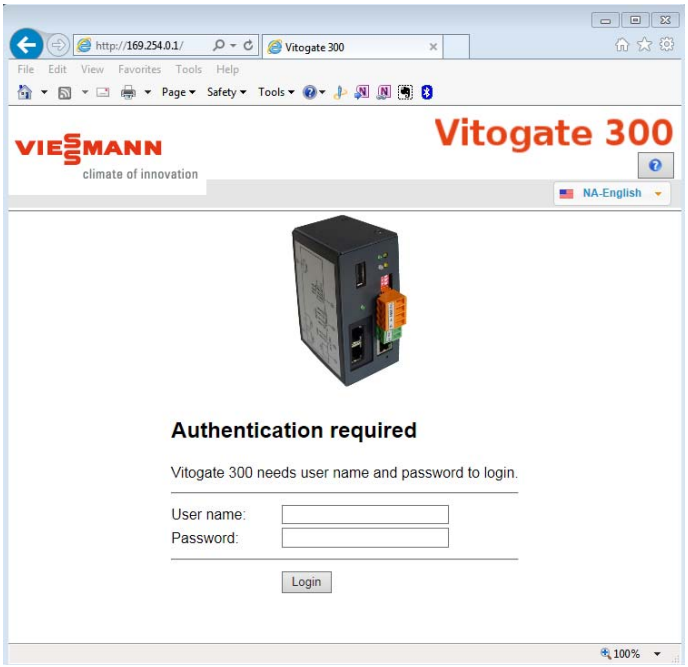
Click ‘OK’ to save the settings.

The Vitogate and Computer are now on the same network.

You can access the Vitogate 300 webpage by opening a browser webpage and entering the address 169.254.0.1 in the URL window.

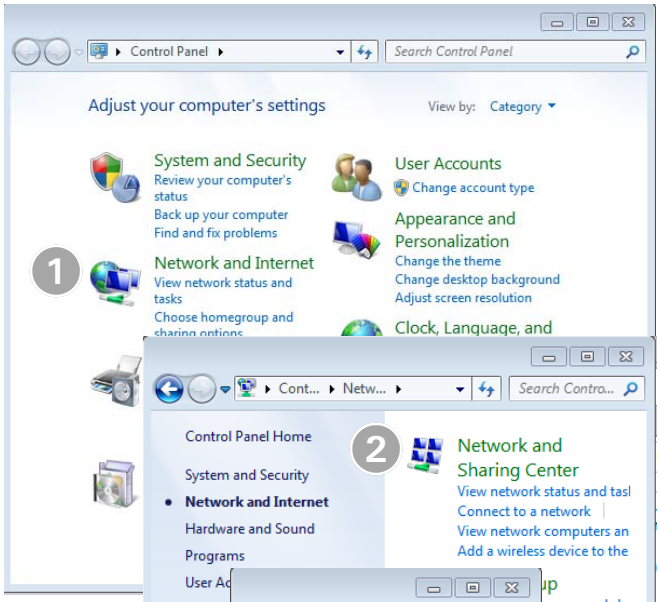


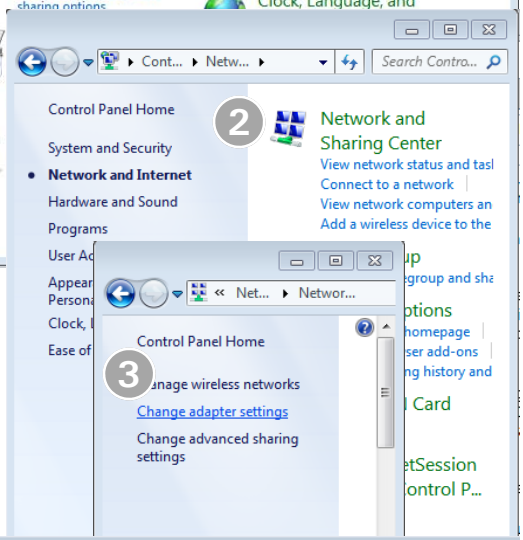


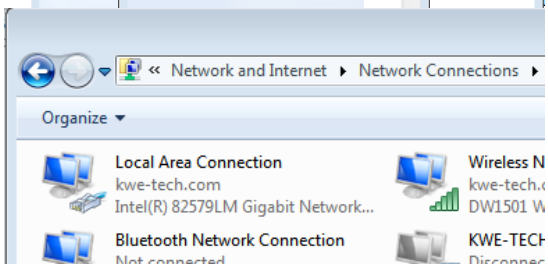


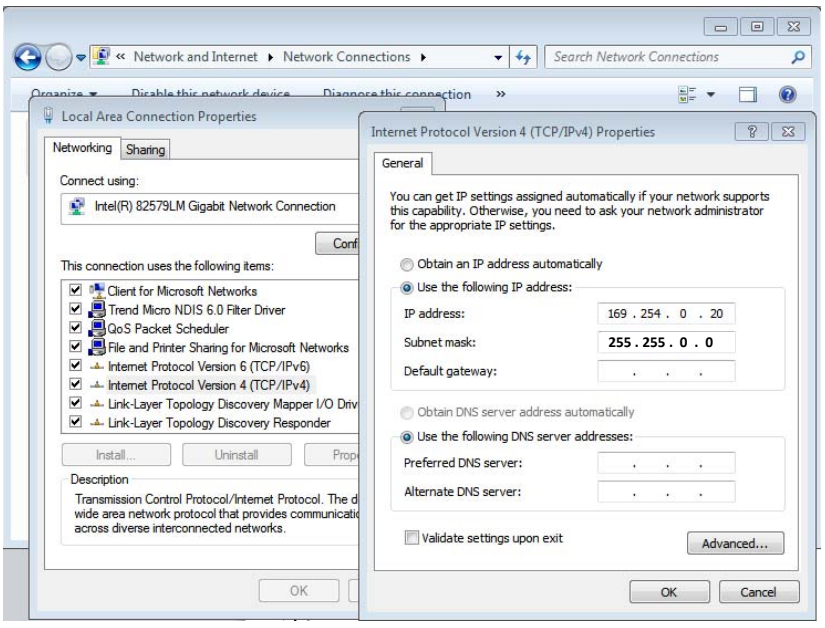
Changing Computer IP Address-Windows 7

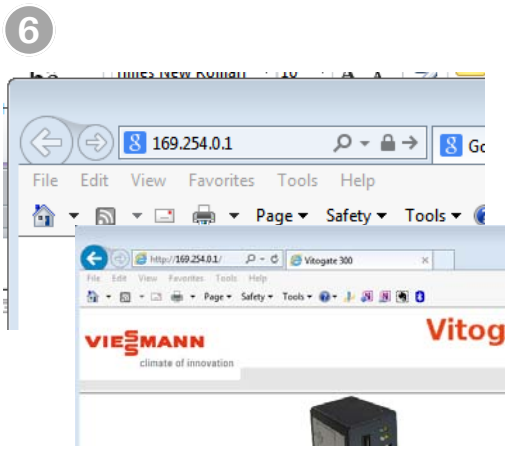
1. From the “start” button, open ‘Control Panel’ and open ‘Network and Internet’.
2. Locate ‘Network and Sharing Center’ and click it to open.
3. Locate “Change adapter settings’ and click to open.
4. Locate ‘Local Area Connection’ which is the connection between your computer and the Vitogate 300. Use a right click and select Properties of the Local Area Connection. Ensure that the LAN selected is correct for the computer to gateway network as there can be multiple LANs.
5. Find ‘Internet Protocol Version 4 (TCP/IP)’, select this and then click on ‘properties’. Select ‘Use the following IP address’ and enter and IP address of 169.254.0.20 (the ‘20’ may be substituted with any other number as long as it isn’t 1 since that is the Vitogate 300. Set the subnet mask of 255.255.0.0. Click ‘OK’ to save the settings. The Vitogate and Computer are now on the same network.
6. You can access the Vitogate 300 webpage by opening a browser webpage and entering the address 169.254.0.1 in the URL window.





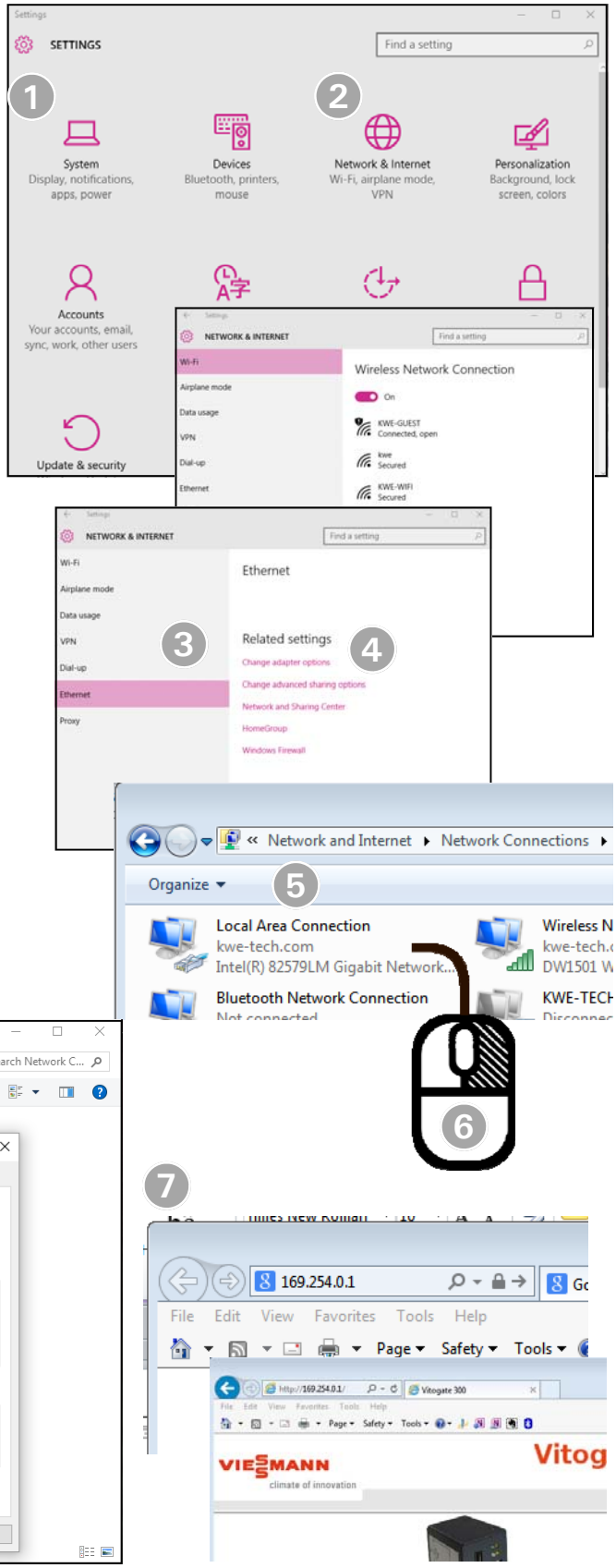






Changing Computer IP Address-Windows 10

1. From the “start” Windows button (typically the bottom left hand corner), select the “Settings” function. ‘Control Panel’ and open ‘Network and Internet’.
2. Locate ‘Network and Internet’ and click it to open.
3. Locate “Ethernet’ and select.
4. Locate ‘Change Adapter Options’ and select.
5. The Network Connections window will appear and allow you select the correct connection which is the Local Area Connection that the computer is using to communicate with the Vitogate. It cannot be a wireless network or Bluetooth connection.
6. Use a right click and select Properties of the Local Area Connection. Ensure that the LAN selected is correct for the computer to gateway network as there can be multiple LANs.
7. Find ‘Internet Protocol Version 4 (TCP/IP)’, select this and then click on ‘properties’. Select ‘Use the following IP address’ and enter and IP address of 169.254.0.20 (the ‘20’ may be substituted with any other number as long as it isn’t 1 since that is the Vitogate 300. Set the subnet mask of 255.255.0.0. Click ‘OK’ to save the settings. The Vitogate and Computer are now on the same network. You can access the Vitogate 300 webpage by opening a browser webpage and entering the address 169.254.0.1 in the URL window.



Changing Computer IP Address-MAC OS

1. Locate the “System Preferences” icon or access using the Launchpad access and select.

2. Locate ‘Network’ from System Preferences and click it to open.

3. Ensure that the Wifi is turned off and press the + to create a new “Service”.

4. Select a Thunderbolt Ethernet connection and press the Create button.

5. From the drop down selection, select “Manually” to Configure the IPv4.

   Enter the IP address of 169.254.0.20 (the ‘20’ may be substituted with any other number as long as it isn’t 1 since that is the Vitogate 300).

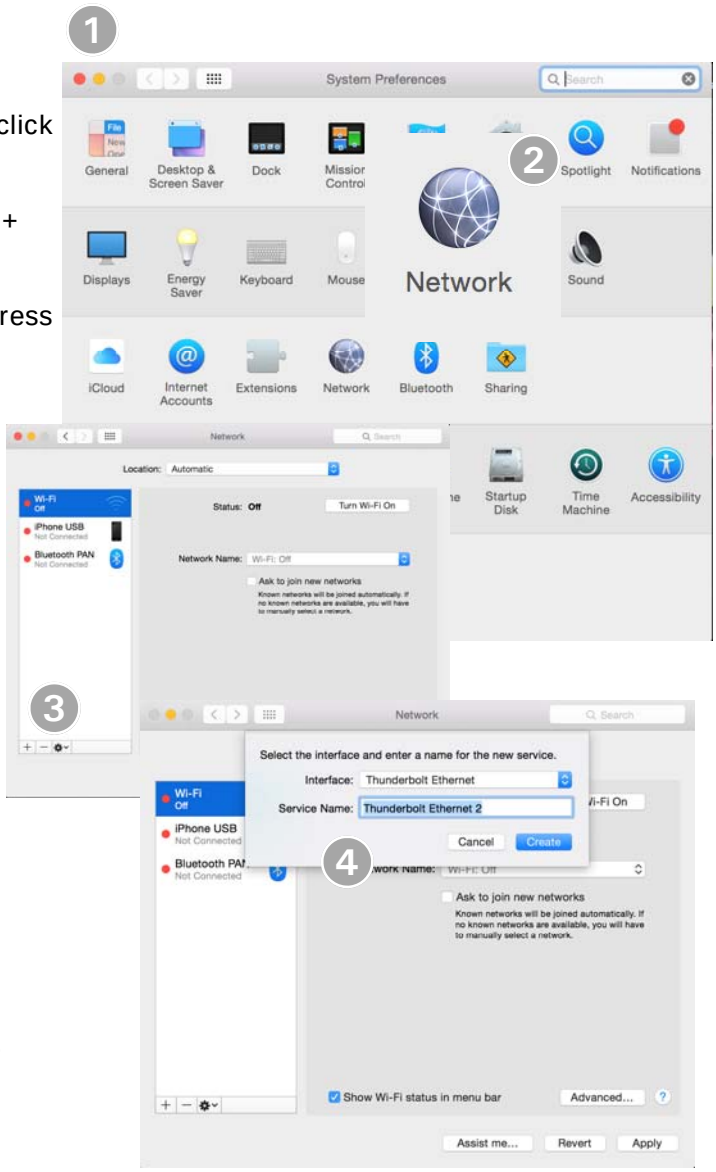
   Set the subnet mask of 255.255.0.0 and click on the Apply button.

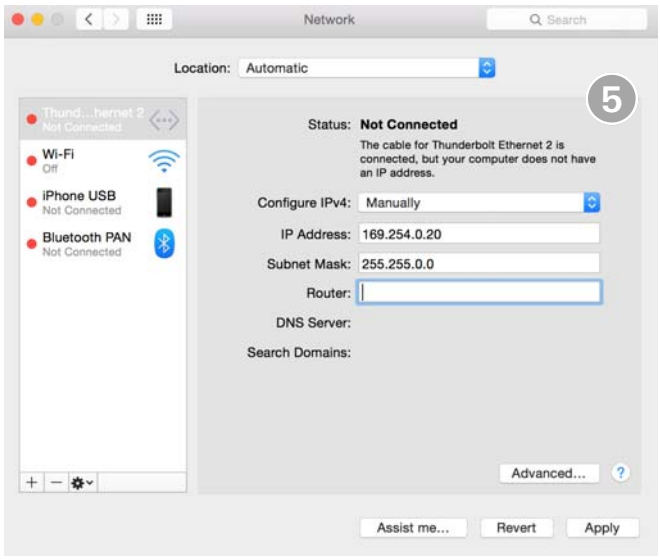
6. Open a new browser to access the Vitogate 300 webpage. Enter the IP address 169.254.0.1 in the URL window.

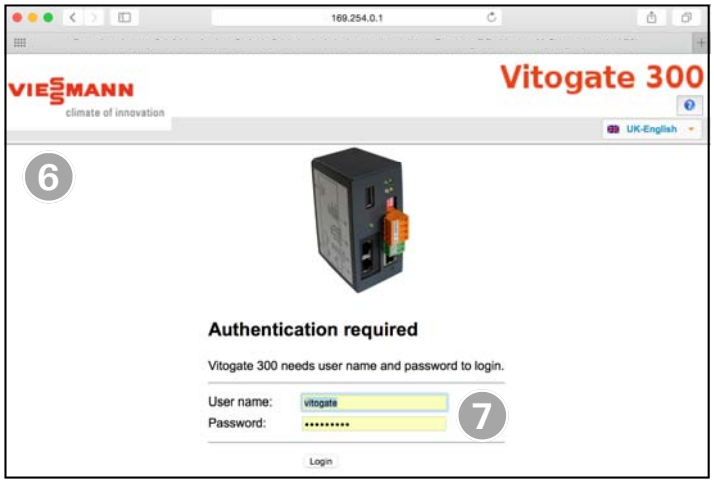
7. Enter:
   User name: vitogate
   Password: viessmann

   No caps are required

8. When finished this connection can be deleted or saved and Wifi can be re-enabled.



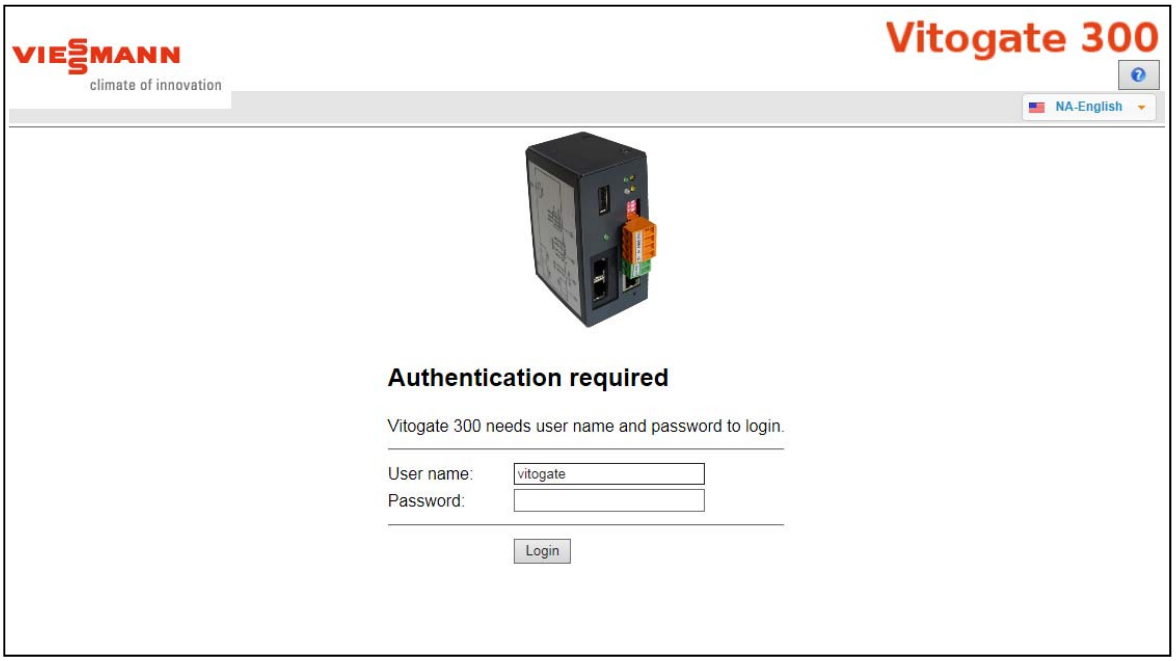




General—Overview

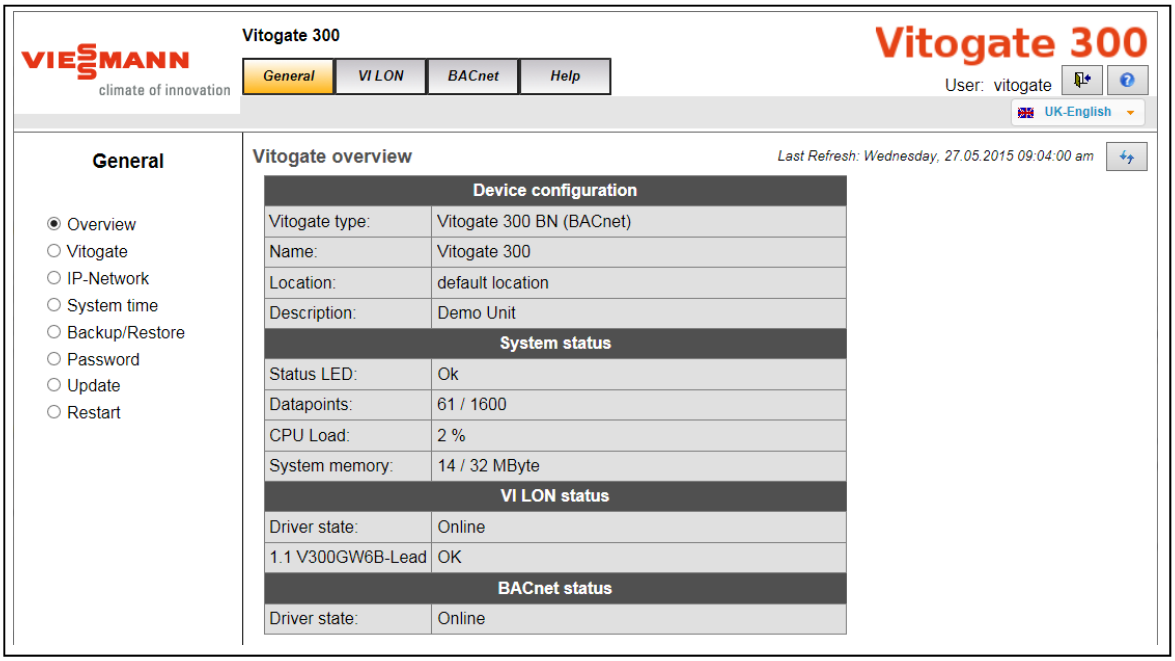
Open web page and go to address 169.254.0.1 which is a default address for the Vitogate 300.

This address can be changed later to suite the BMS system's needs.



General—Overview

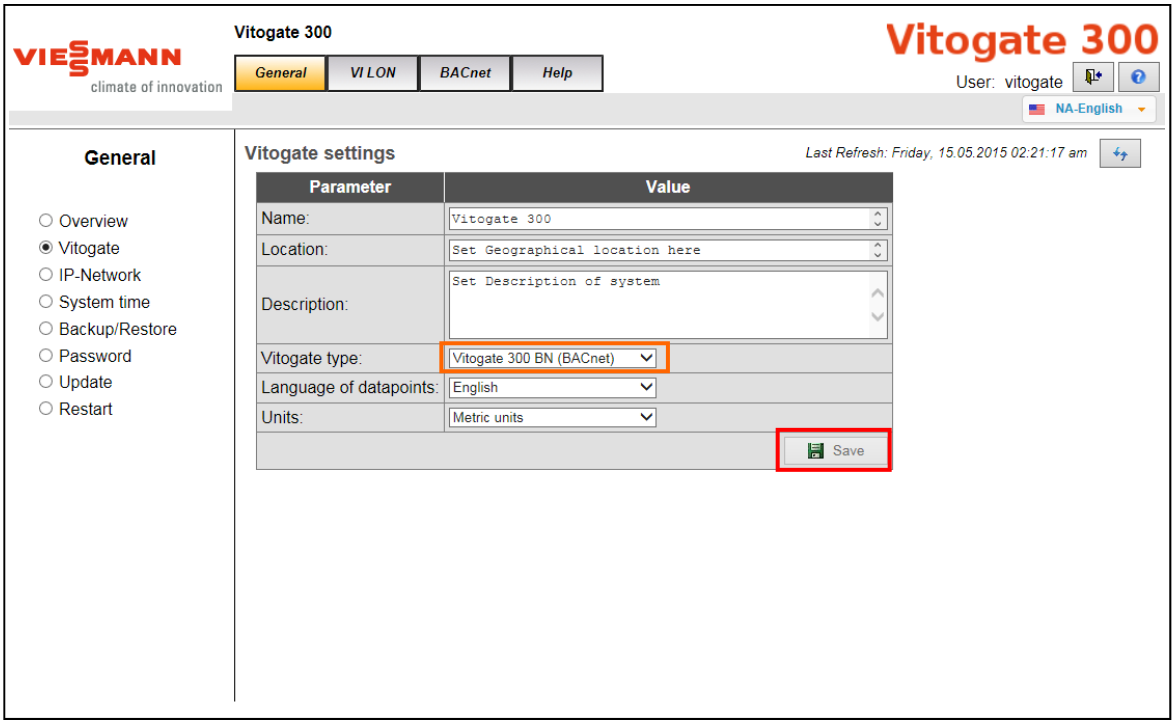
Provides an information overview of the gateway with respect to current faults, data points, operational mode as well as LON and BACnet driver states.



General—Vitogate

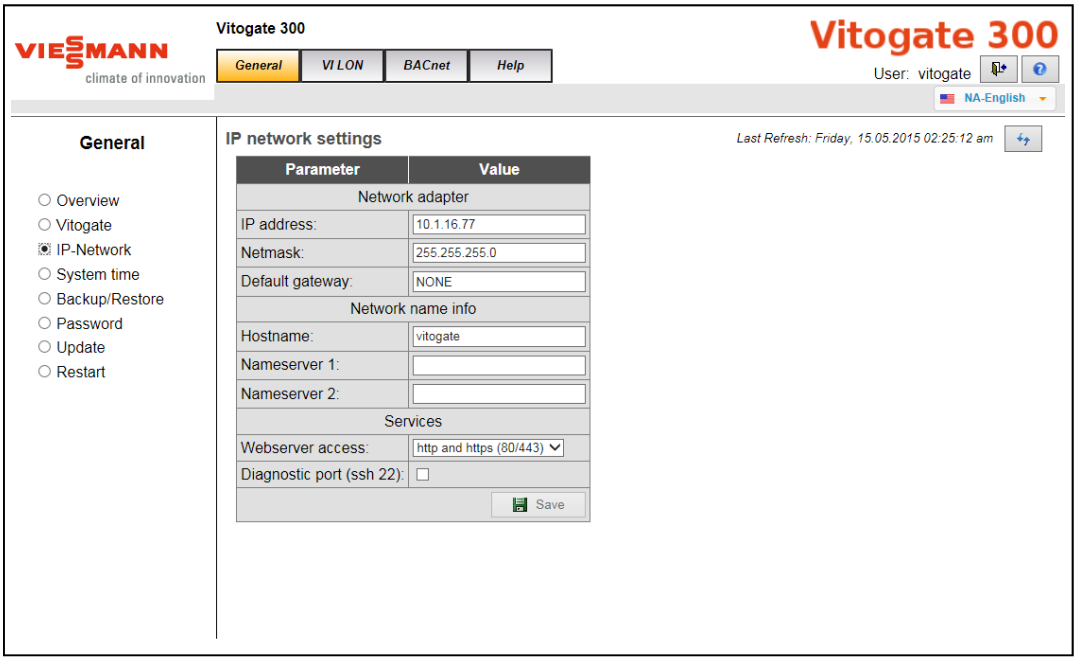
Allows field settings to name the gateway as well as providing a location should there be multiple gateways, Vitogate type, datapoint language and units.

Vitogate type can be selected here with BACnet as the default with Modbus being the alternate communication protocol. Finer details under BACnet/Modbus tab.



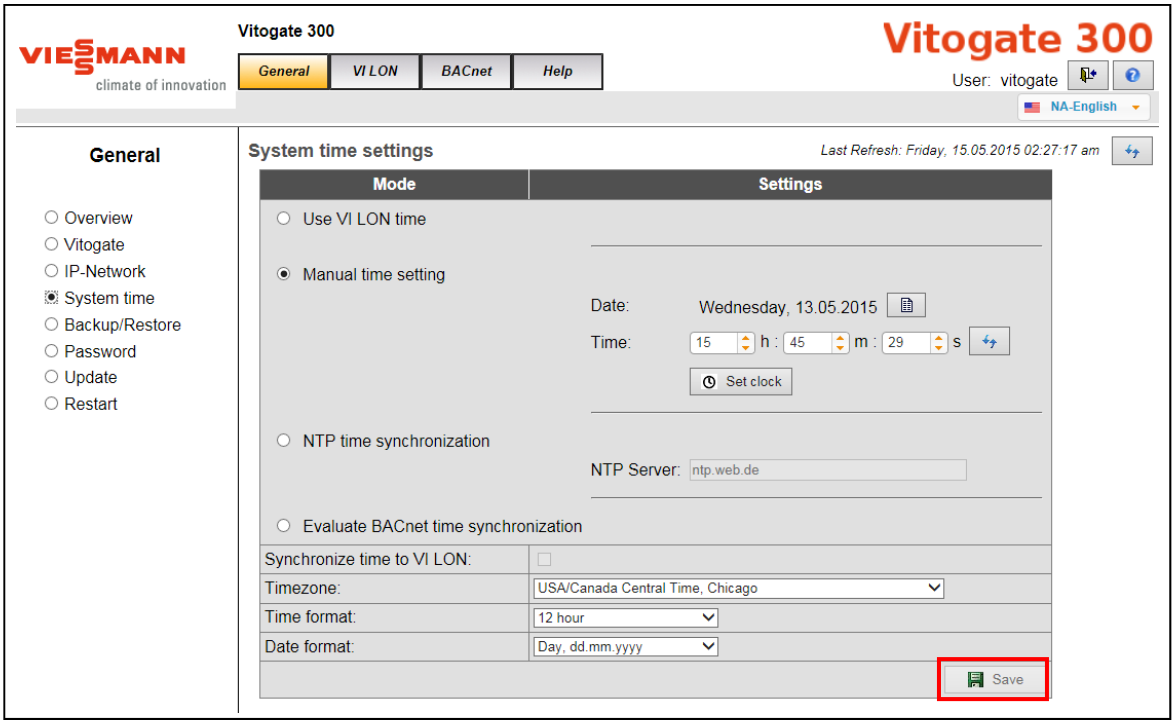
General—IP Network Settings

Vitogate IP Network Settings to allow IP communications with gateway



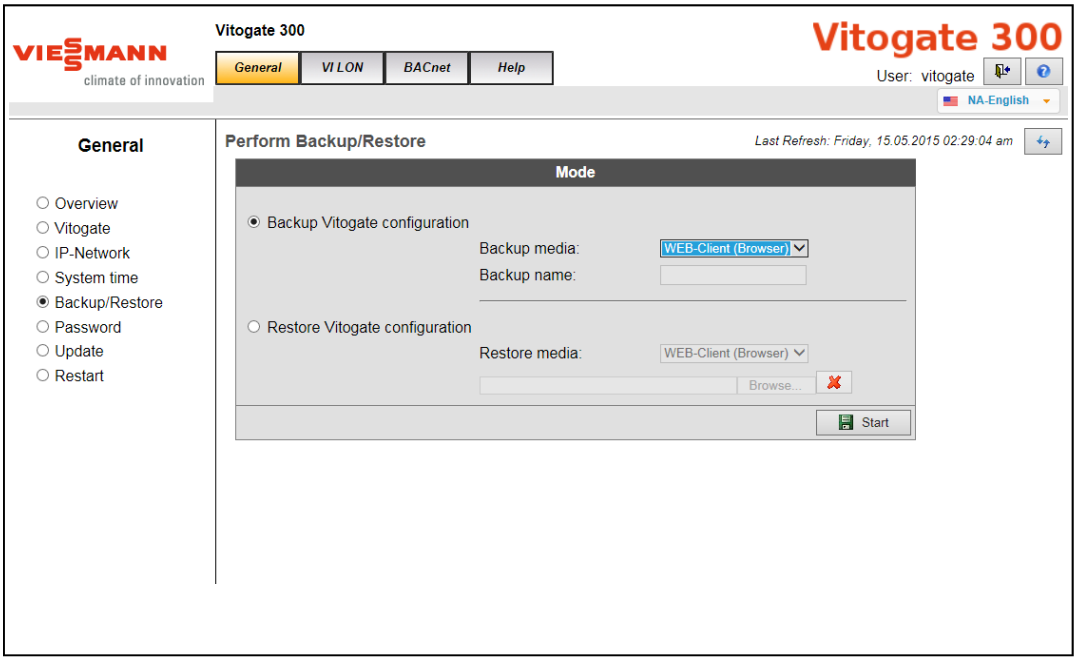
General—System Time

System Time Settings of the Vitogate



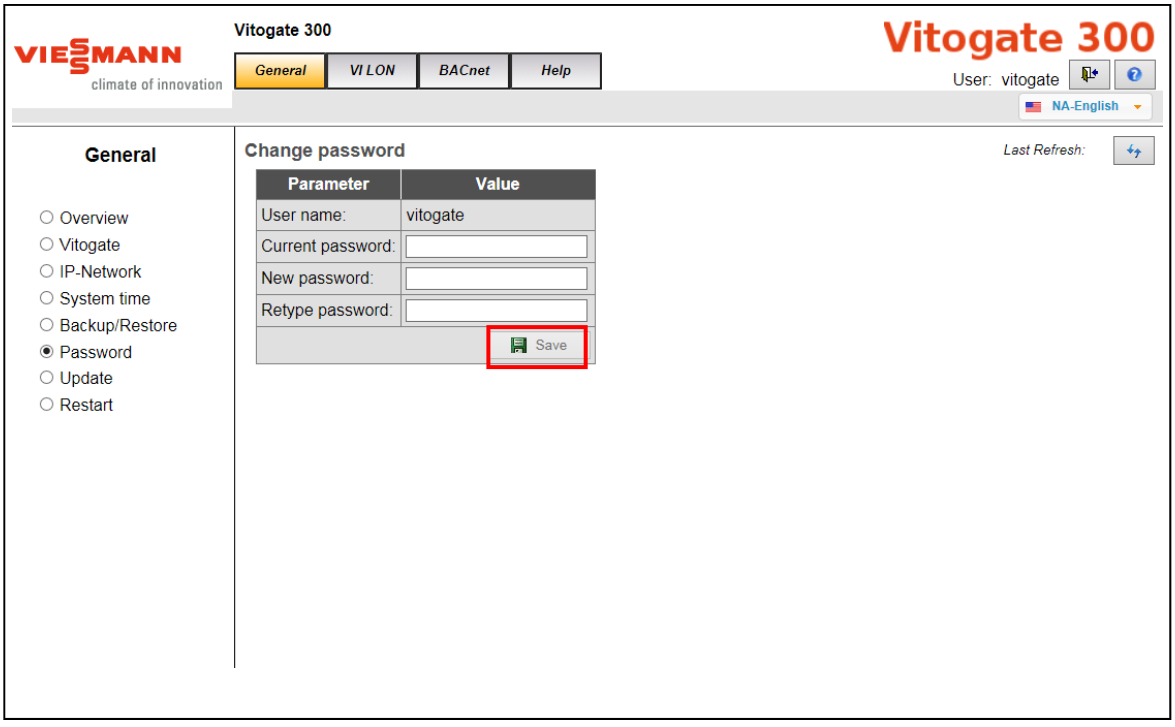
General—Backup / Restore

Allows backing up of gateway or restoring from back up/saved file. Can be done with either Web-client or USB stick. Select correct radio button to make selection.



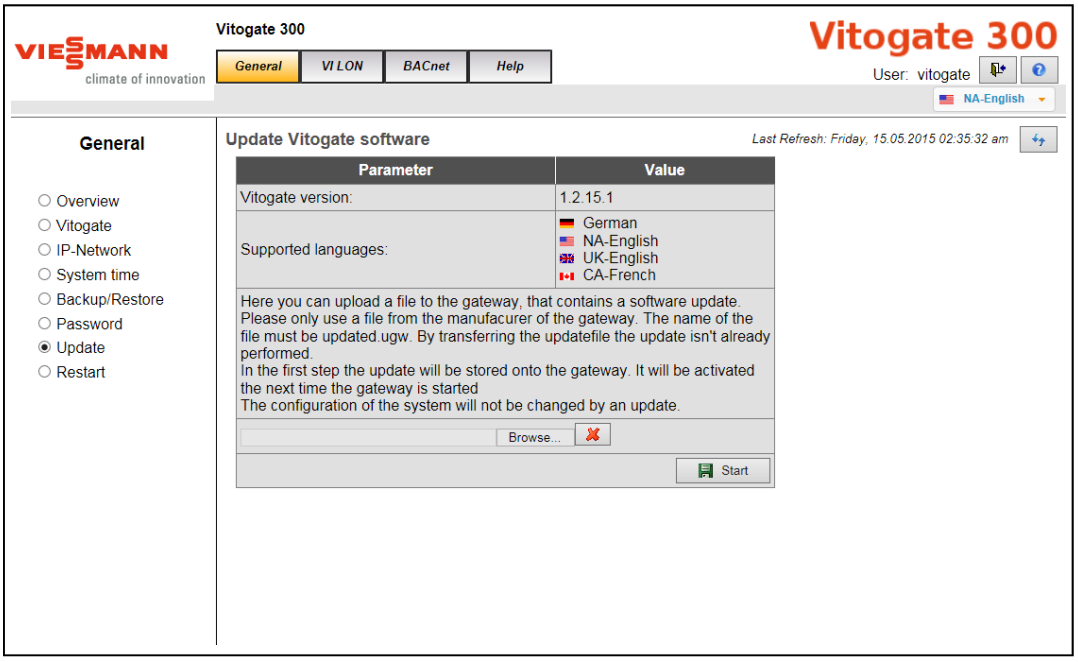
General—Password

Changing the current gateway password



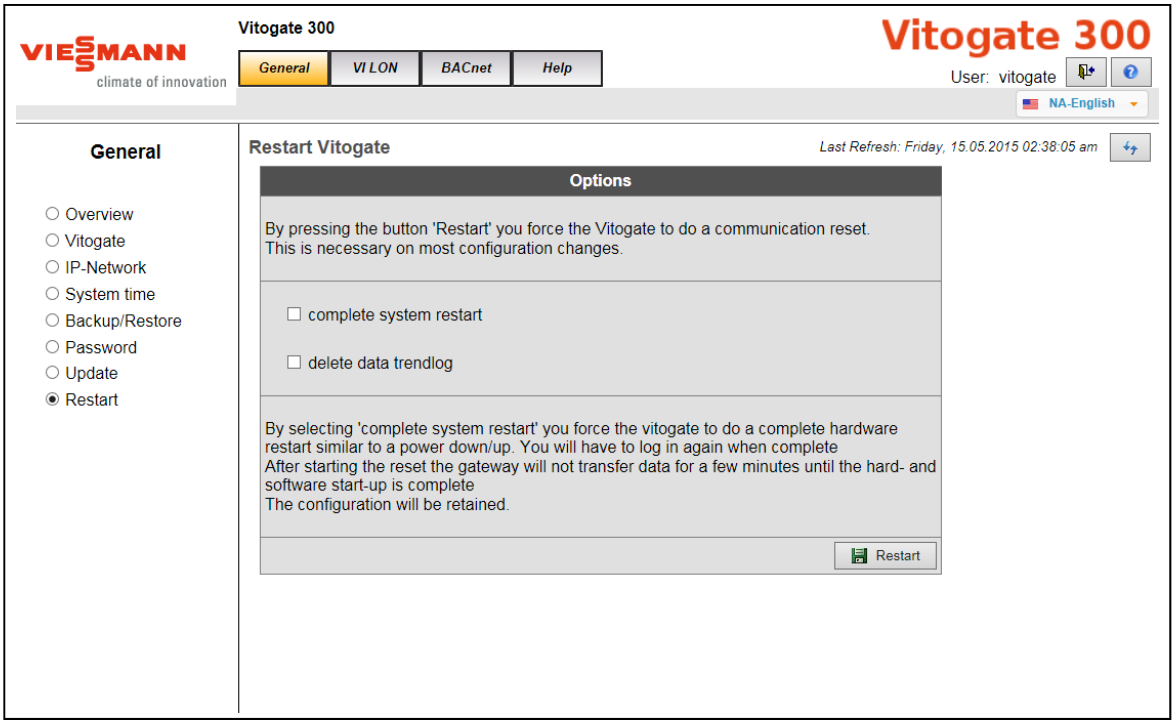
General—Update

Performing a gateway update. Pressing the browse button to select the desired update and press start.



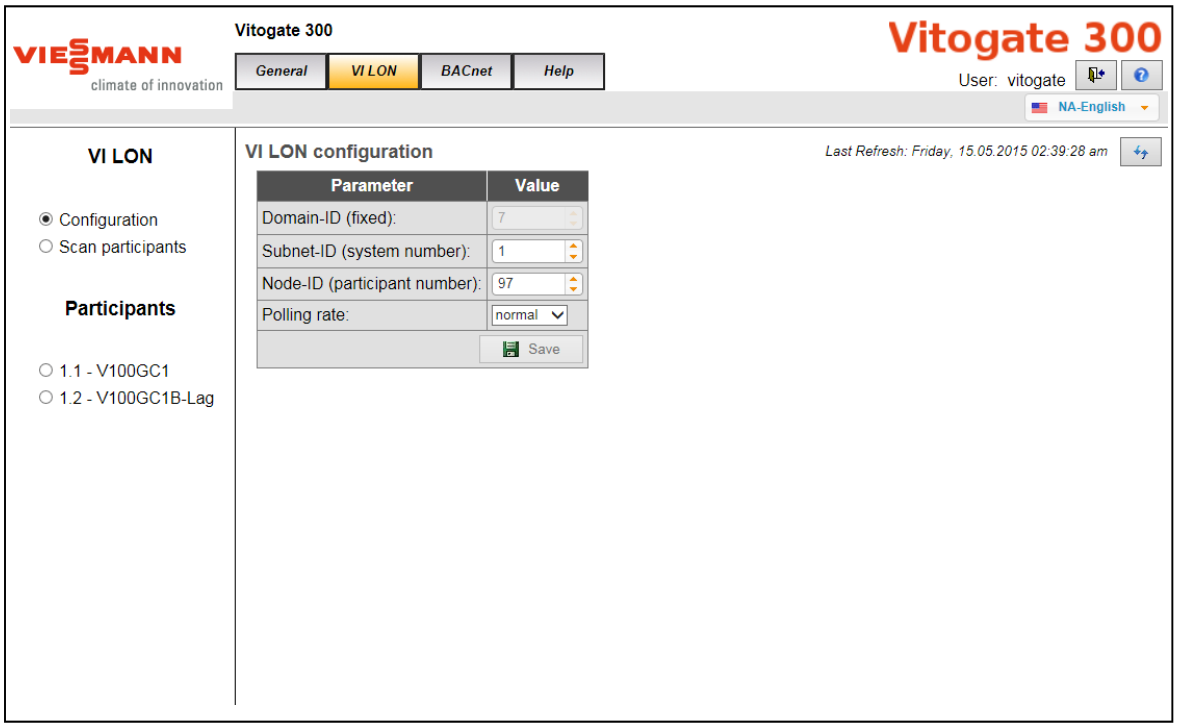
General—Restart

Restarting the gateway.



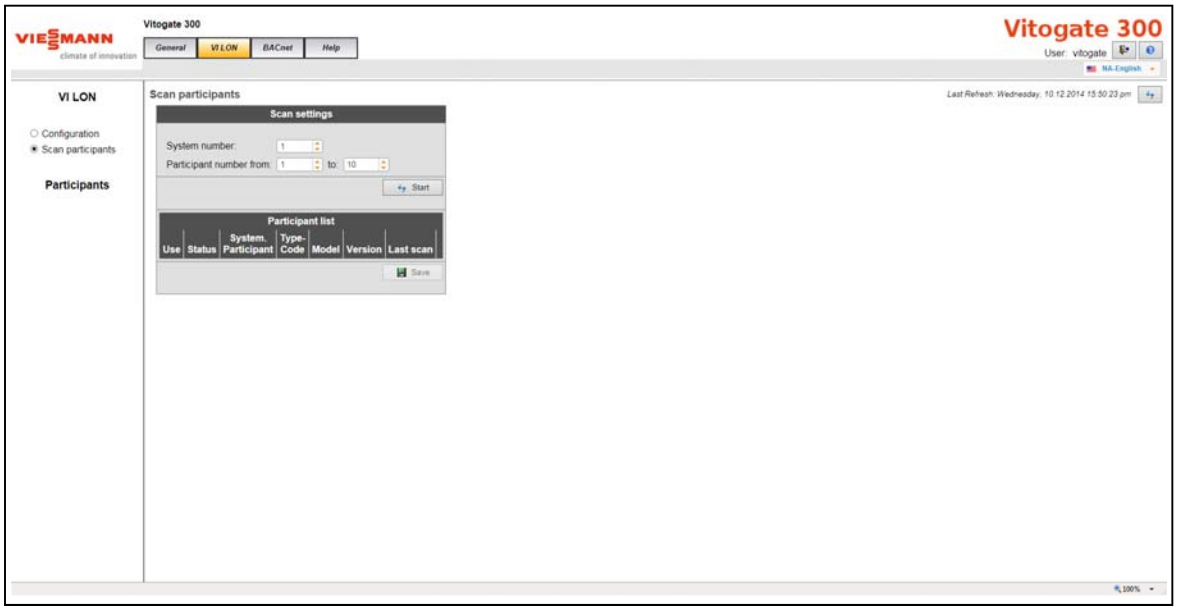
Vi LON—Configuration

Factory LON address (Node ID) default of gateway is 97. If a participant check is performed, the gateway will show 97 unless it has already been changed.



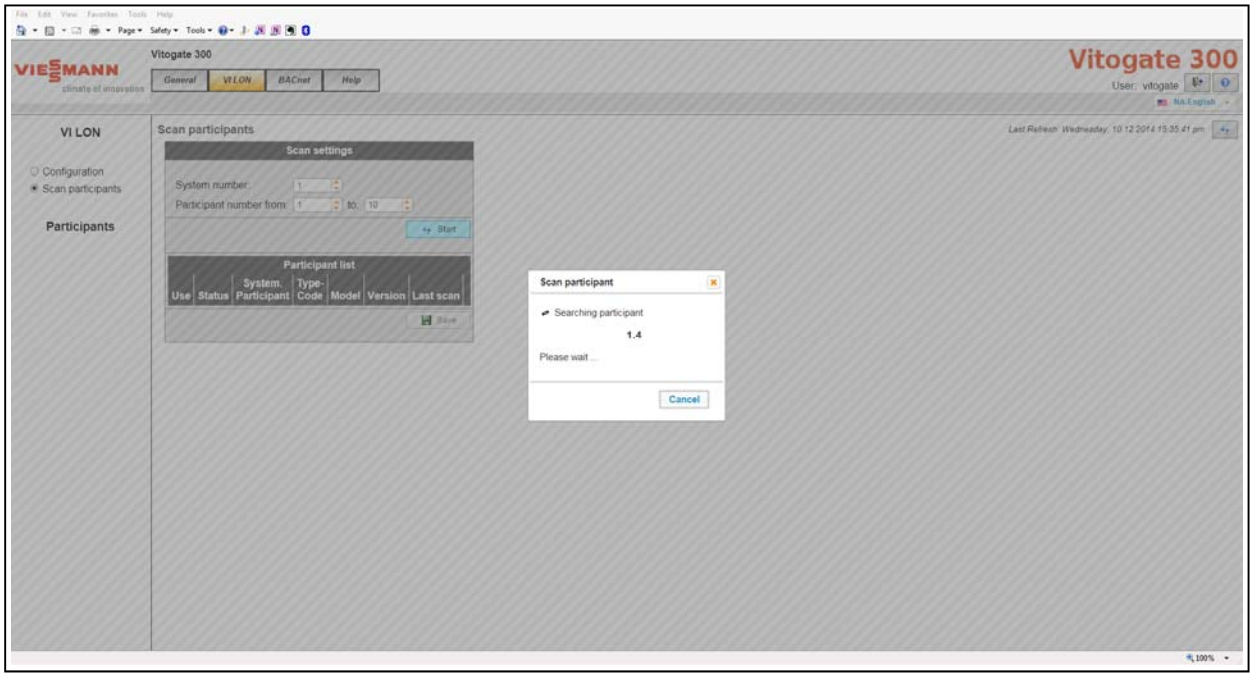
Vi LON—Scan Participants

Click on Vi-LON tab at top of screen and select Scan Participants



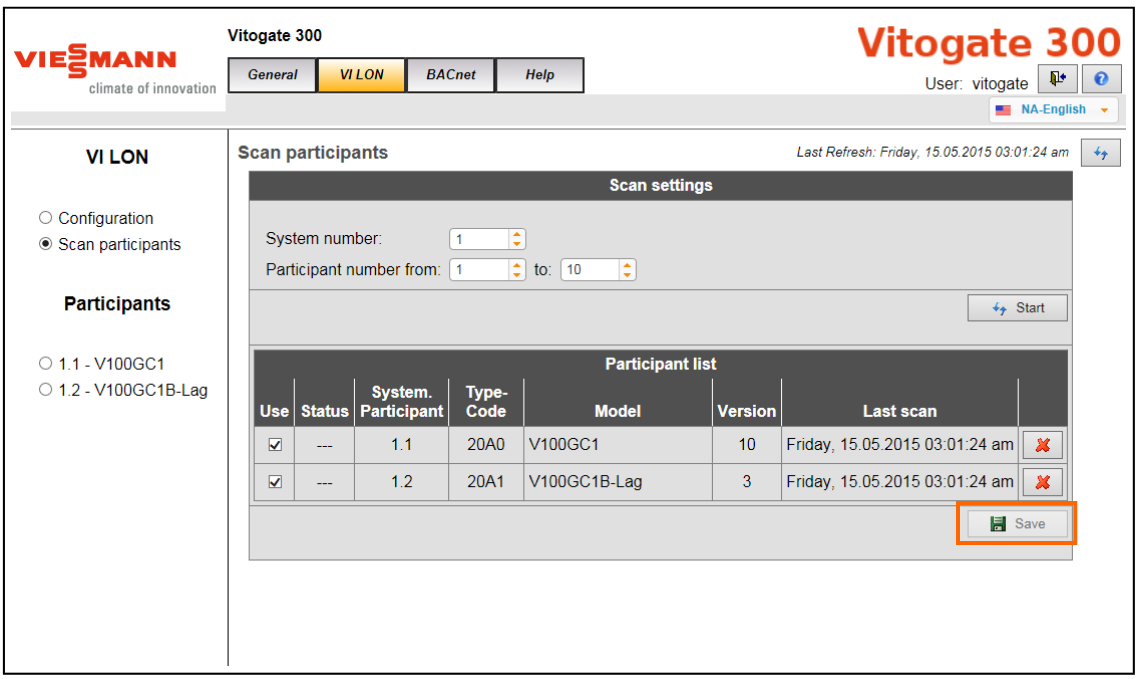
Vi—LON (Scanning participants)

Screen shot of the gateway looking for participants



The table should populate with participants. Note the LON addresses are shown at 1.X
SAVE must be pressed.

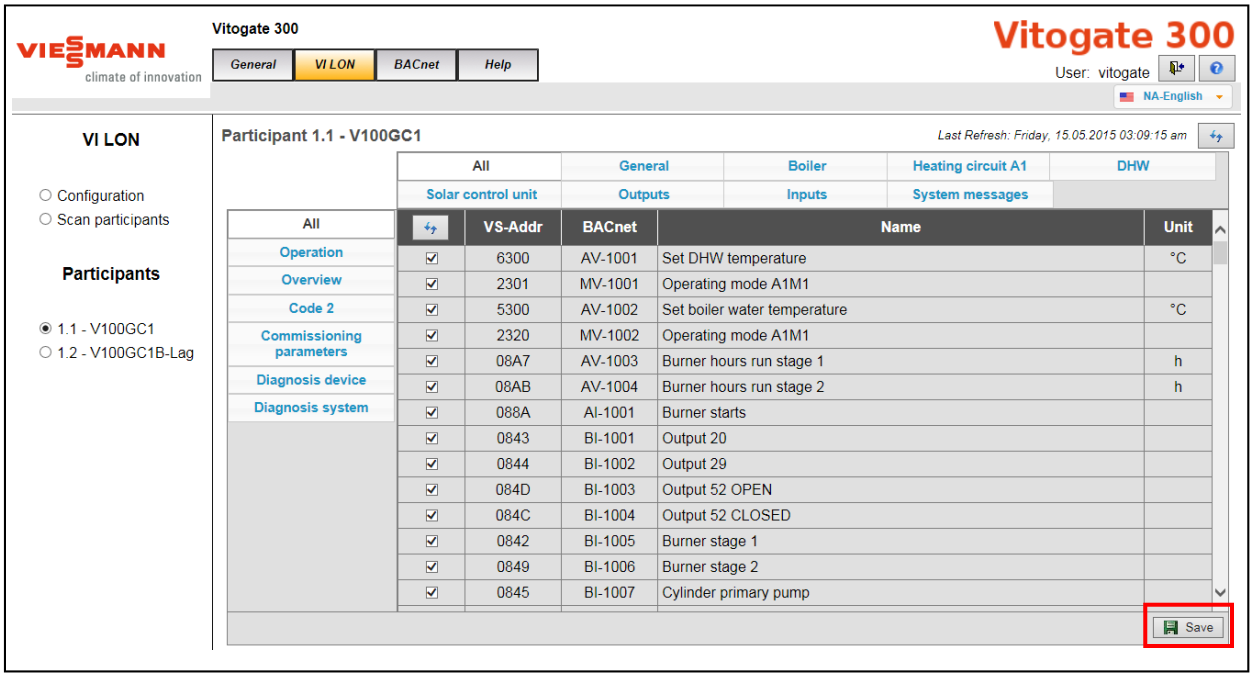
Note that in the upper right corner, it says Restart Required. Click on the General Tab and click on restart. Don't select either of the two square boxes, just press Restart.



Vi—LON Point Selection

Select the desired points for ***each*** control by ensuring that the checkmark is shown beside the desired point.

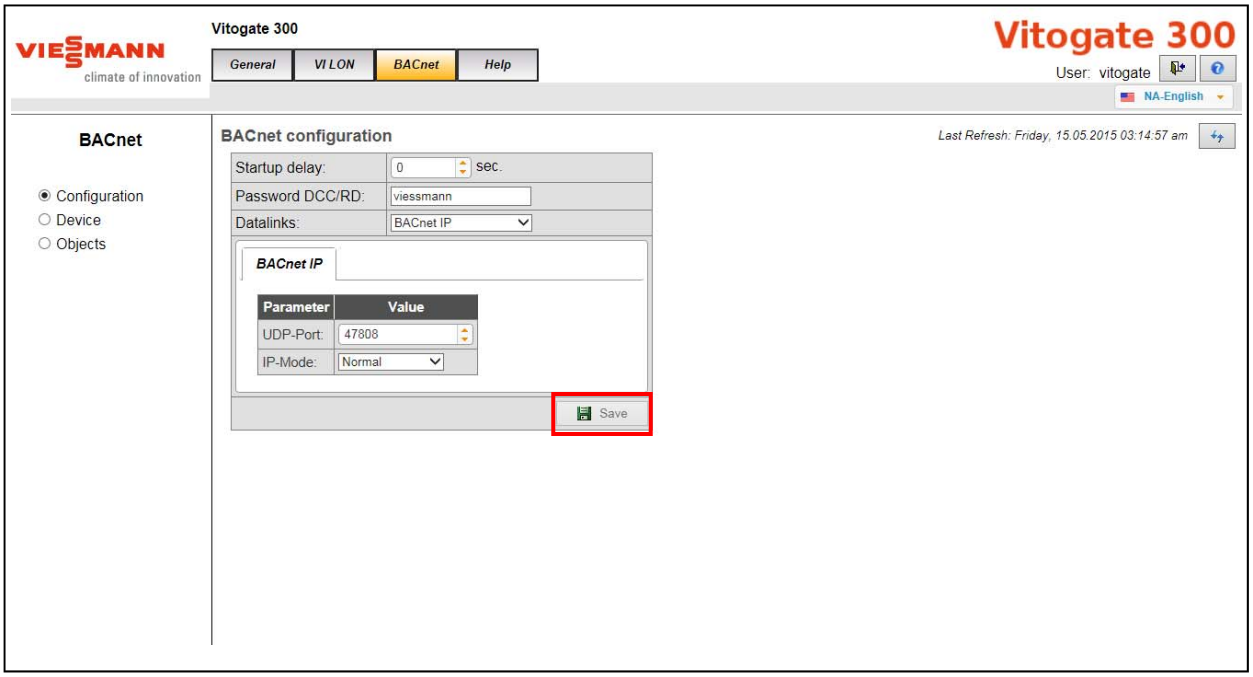
Once the selection is complete, press SAVE button at the bottom right and the database will be saved.



You can press the side and top tabs to narrow down points for a specific group, or press ALL for each and all of the points will be shown in the table.

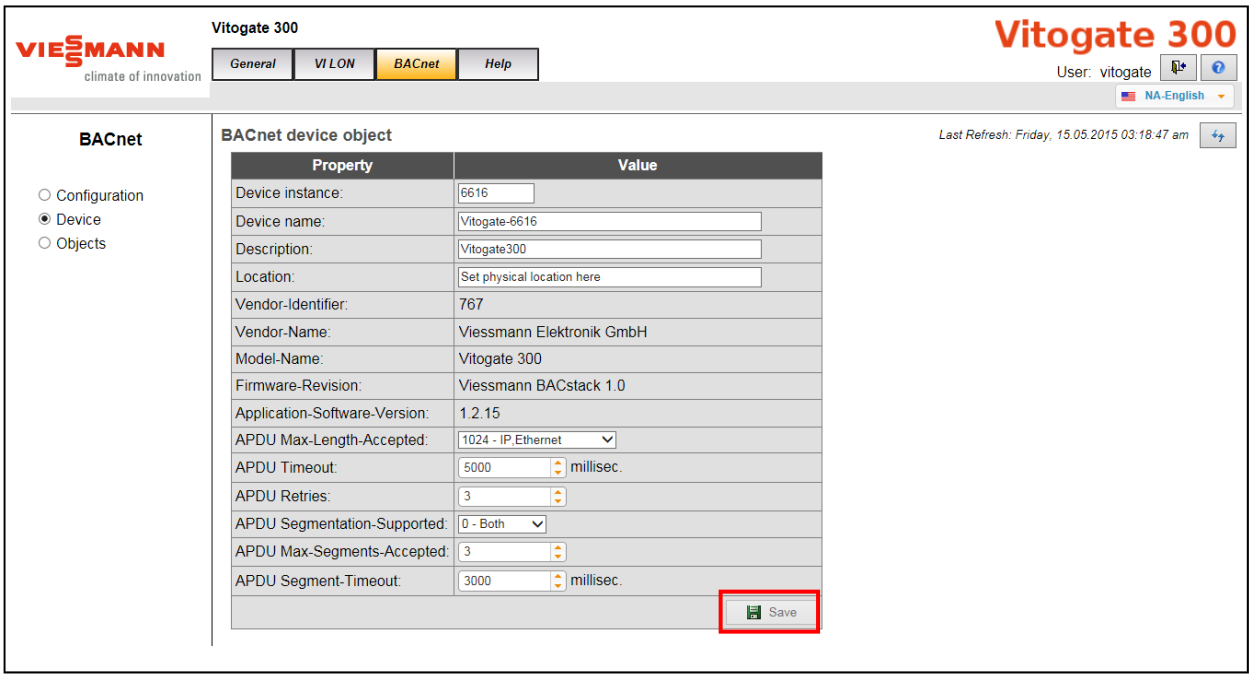
BACnet IP—Configuration

Enter BACnet configuration information



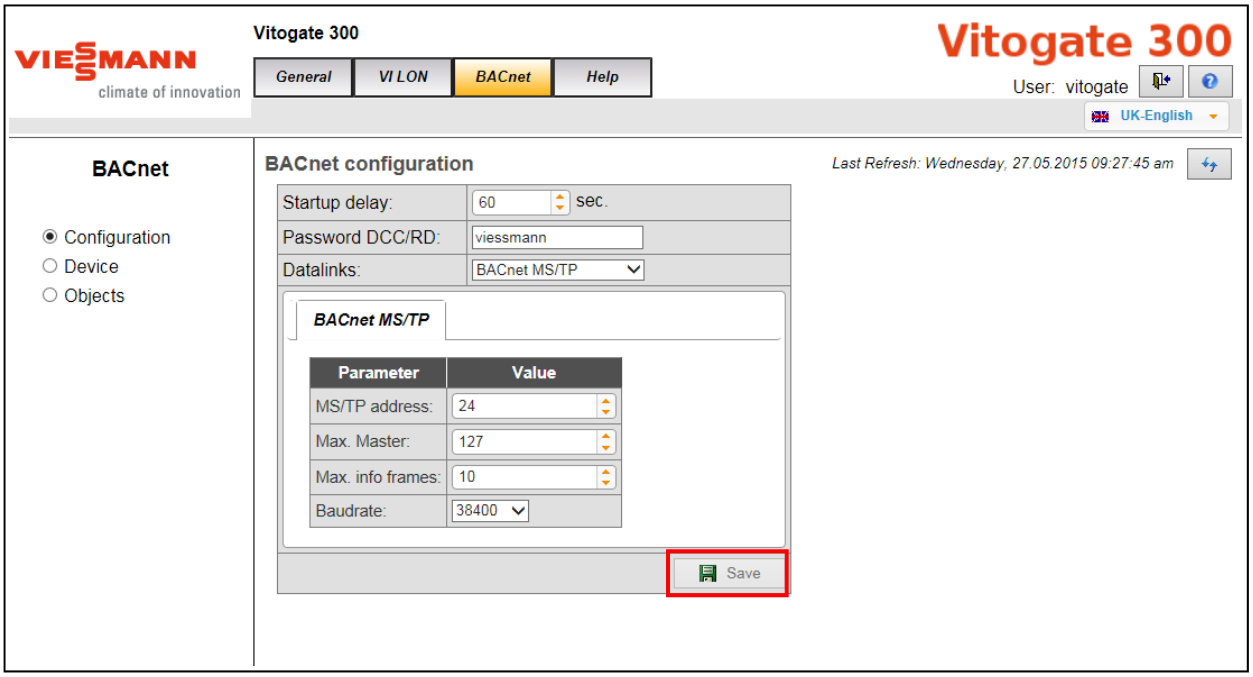
BACnet IP—Device

Entry of specific BACnet device object information



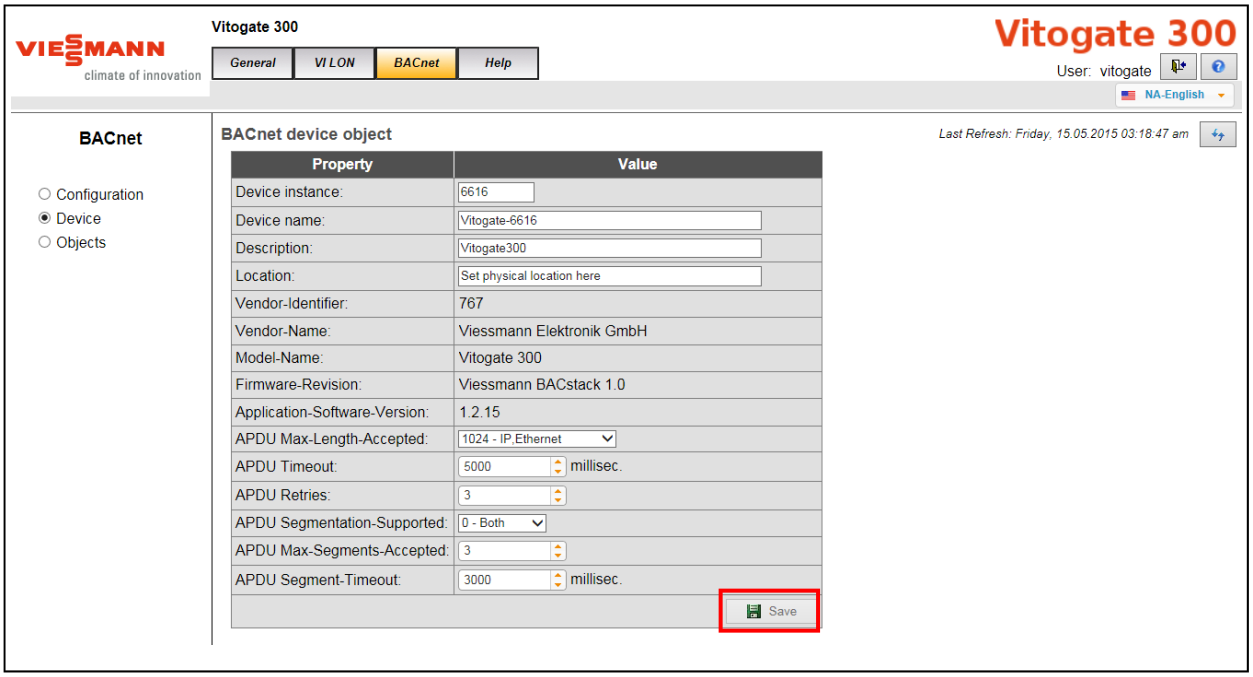
BACnet MSTP—Configuration

Enter BACnet MSTP configuration information



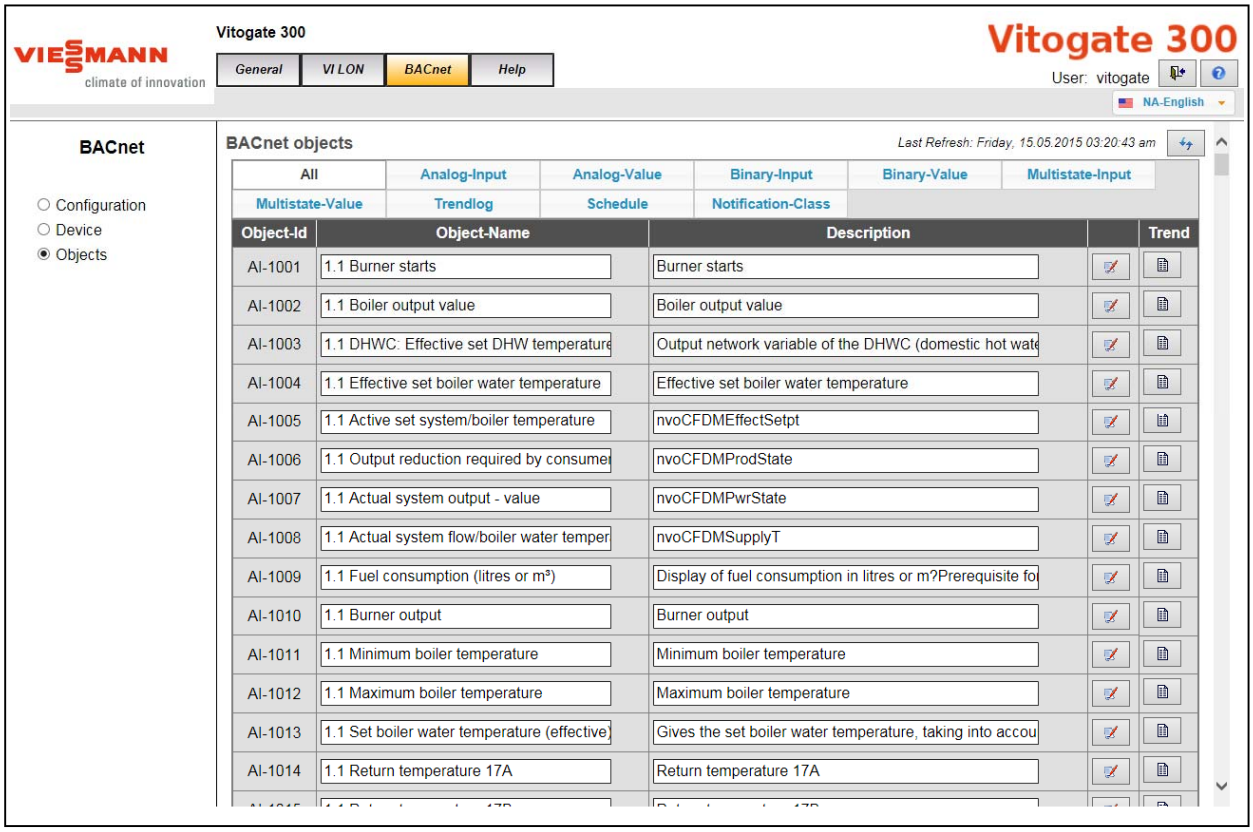
BACnet MSTP—Device

Entry of specific BACnet device object information



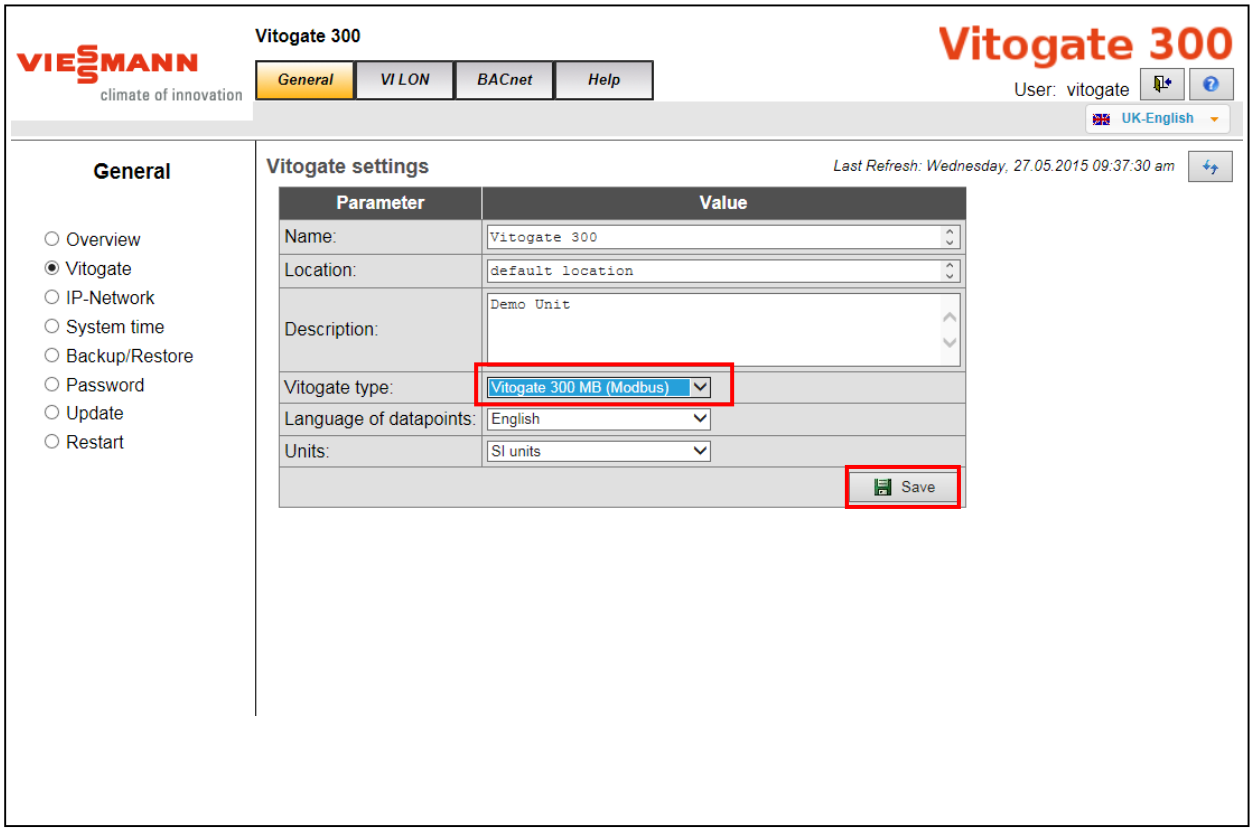
BACnet—Objects

Table of BACnet Objects based on the selection of the LON points selected after controls were discovered. It is possible to edit the Object Name and Description to allow BMS to show desired changes



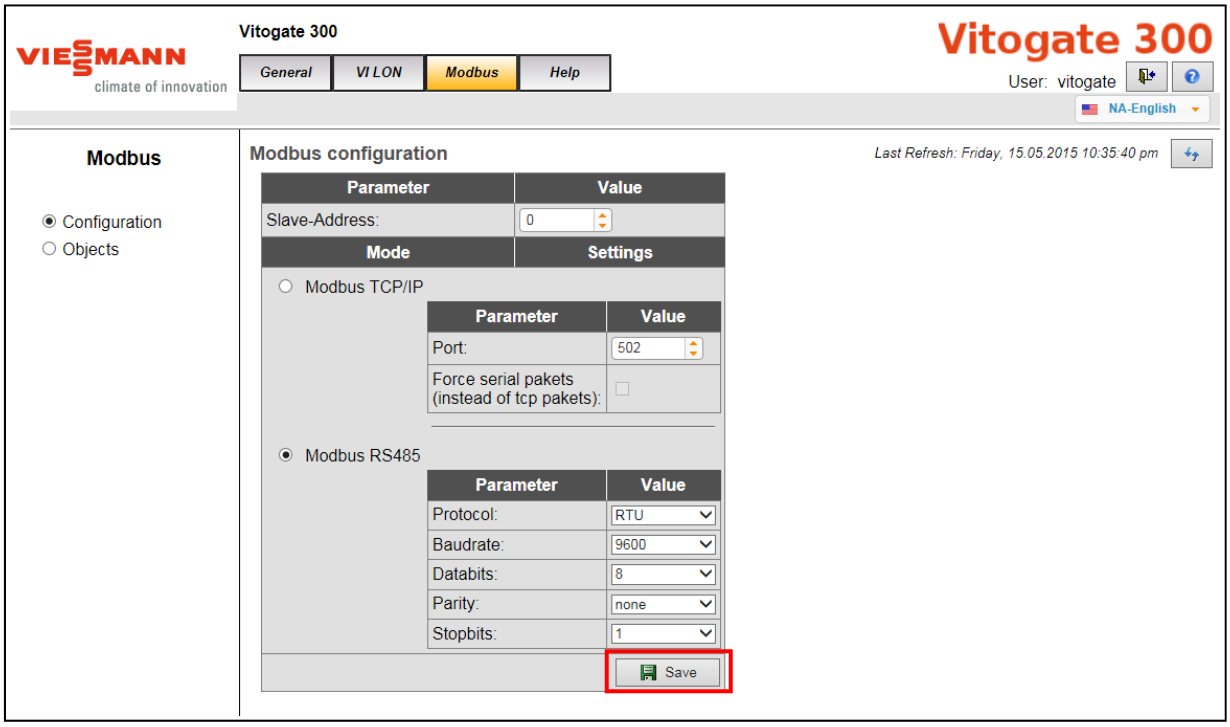
Modbus Gateway Communication Selection

From the General Menu, it is possible to reprogram the gateway to communicate via Modbus. Ensure that the Save button is pressed after the selection is made and the gateway will need to be Restarted.



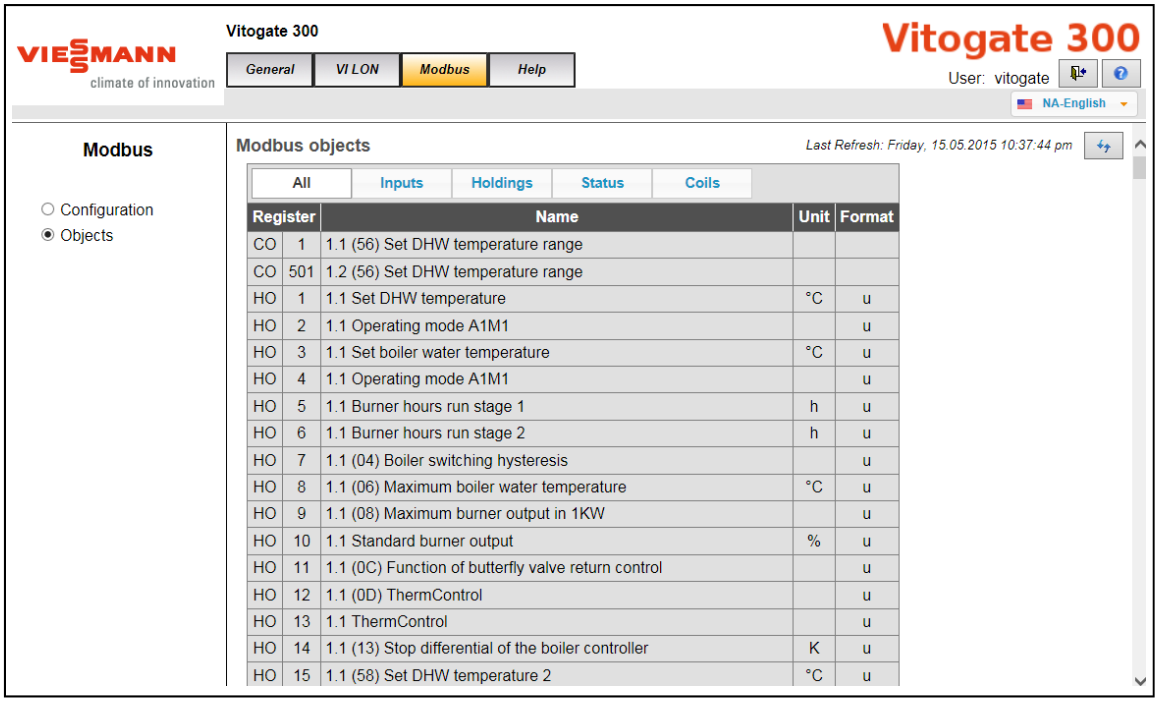
Modbus—Configuration

Enter Modbus configuration information



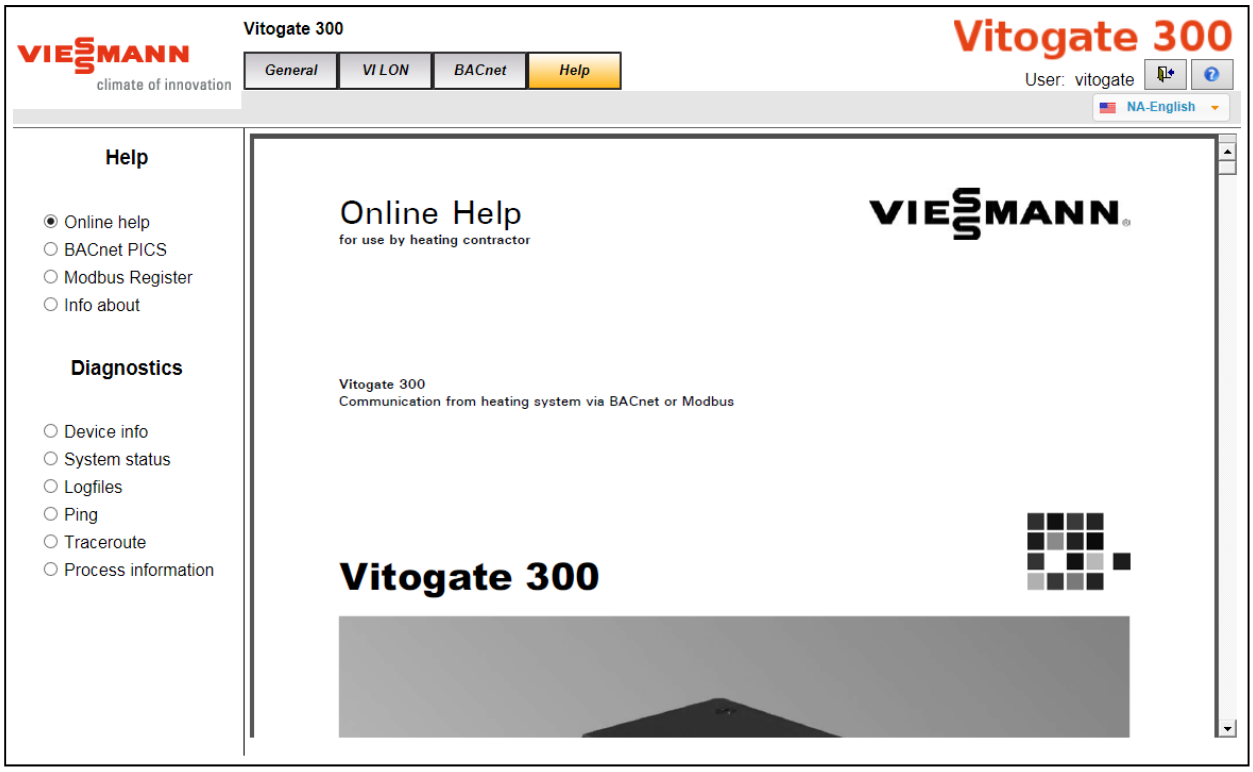
Modbus—Objects

Entry of specific BACnet device object information



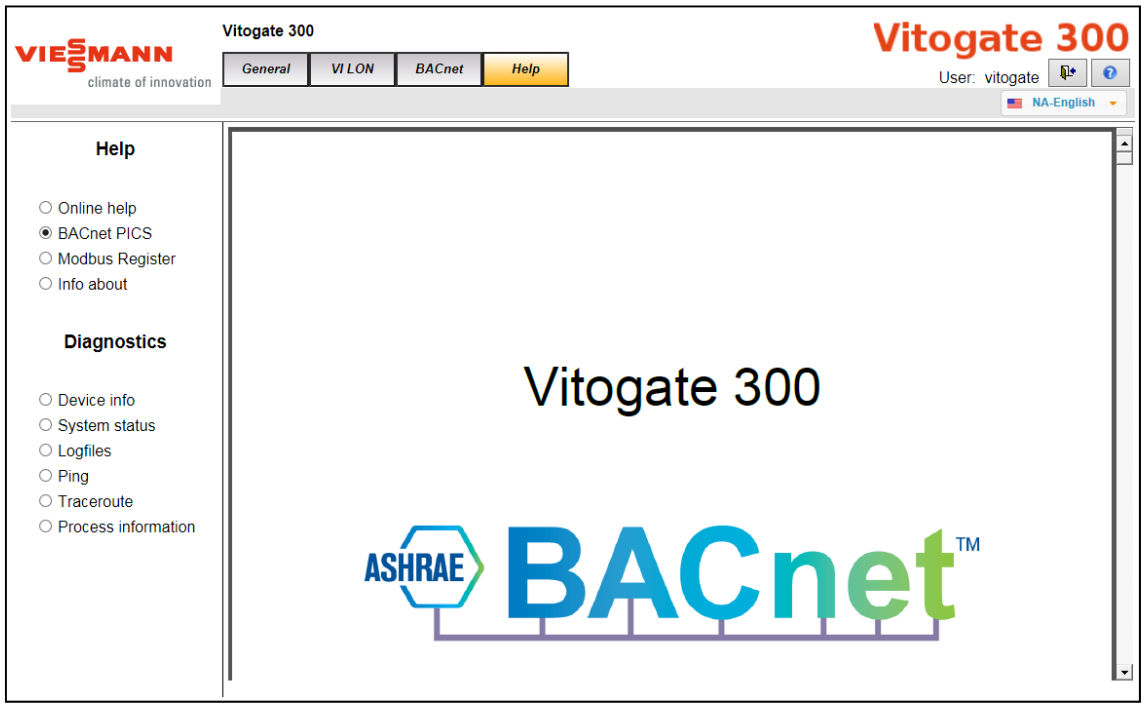
Help—Online Help

Help Manual



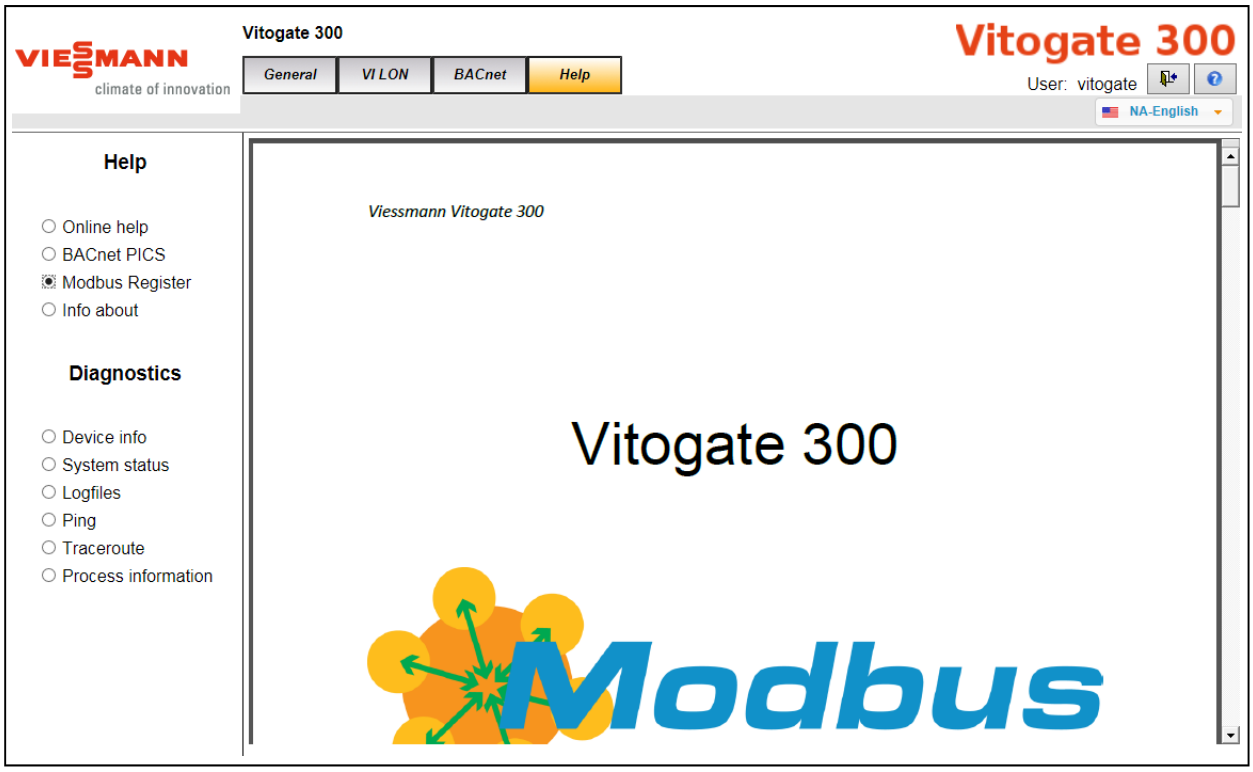
Help—BACnet PICS

PICS: Protocol Implementation Conformance Statement



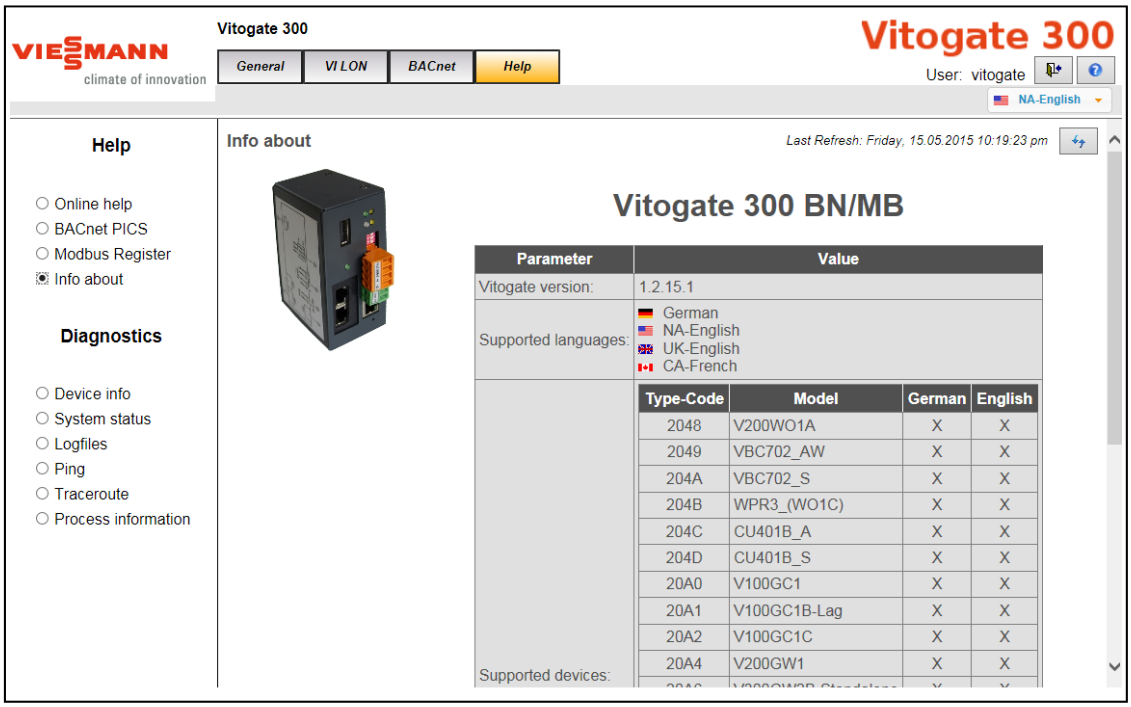
Help—Modbus Register

Help Manual



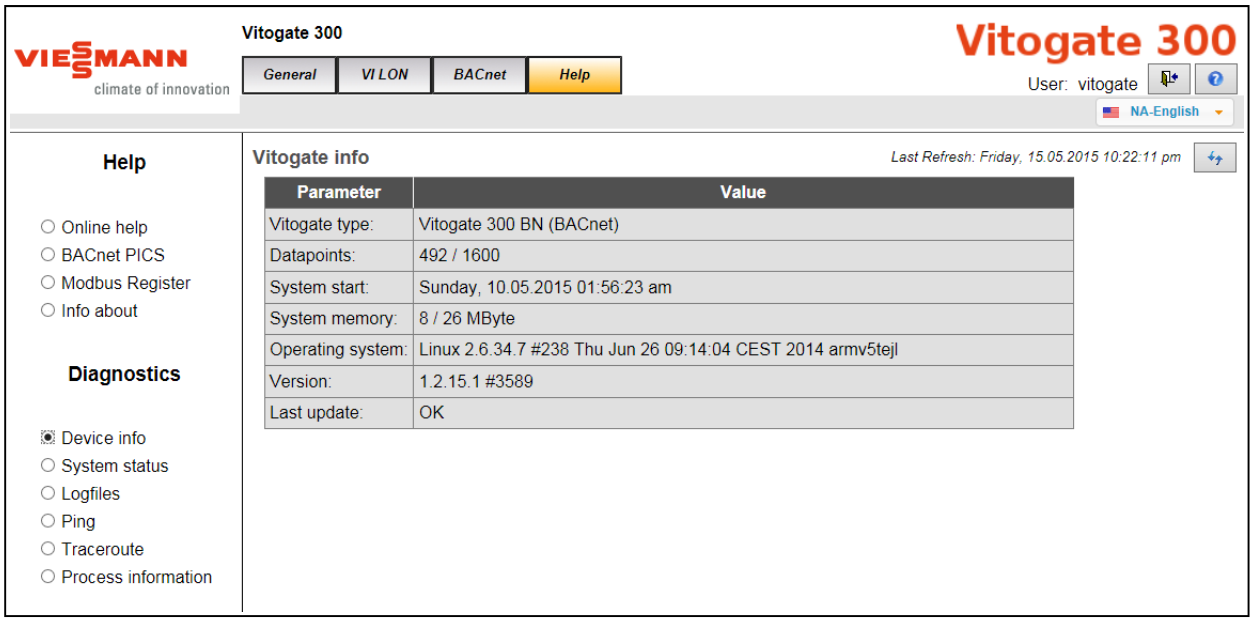
Help—Info About

Vitogate 300 supported controls



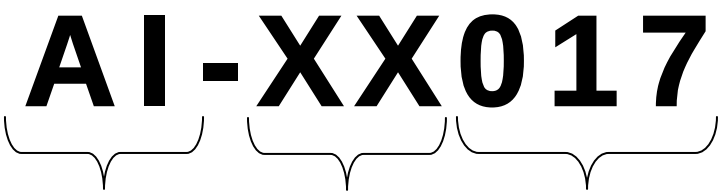
Diagnostics—Device Info

Information specific to device and set up



Parameter	Value
Vitogate type:	Vitogate 300 BN (BACnet)
Datapoints:	492 / 1600
System start:	Sunday, 10.05.2015 01:56:23 am
System memory:	8 / 26 MByte
Operating system:	Linux 2.6.34.7 #238 Thu Jun 26 09:14:04 CEST 2014 armv5tejl
Version:	1.2.15.1 #3589
Last update:	OK

BACnet Object ID Breakdown Overview



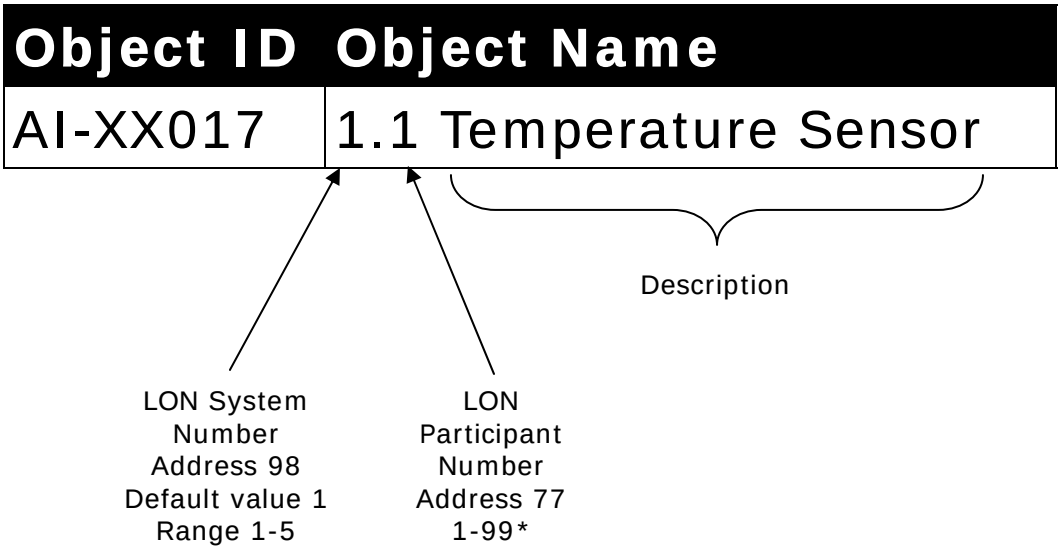
Object Type

Control LON Address value 77 (Range 1-99)

Object ID number as per list

AI=Analog Input (read)
AV=Analog Value (read/write)
BI=Binary Input (read)
BV=Binary Value (read/write)
MI=Multistate Input (read)
MV=Multistate Value (read/write)

BACnet Object Name Breakdown Overview



*Caution with setting of participant numbers to ensure no duplicates. Vitocom LON by default is Node Address 97

Modbus Overview

The VS Address is a number that Viessmann uses as an internal point in each control to define the points that are able to be taken from the device. It is this point that is selected when you configure the gateway for the points that you are looking for on either the Modbus or BACnet side of the BMS.

Modbus Point / Numbering Structure

It must be understood that there are some points in the Cascade / Lead boiler controls which are not available in lag boiler controls. However points between lag boilers will typically be consistent.

When register values are known, it is possible to add a value of 500, to calculate the next control assuming that address 77 values are consecutive.

Example:
Boiler 2 IN523 is Flue Gas Temperature
Boiler 3 IN1023 is Flue Gas Temperature
Boiler 4 IN 1523 is Flue Gas Temperature
.
.
.
Boiler 8 IN3523 is Flue Gas Temperature

Binary Information

CO=coil which is a Boolean/Digital point that is read/writeable

ST=Status is a Boolean/Digital point that is only readable

Analog Information

IN=analog input register which is a read only integer 16bit

HO=Holding is an analog output point which is read/writeable

Binary Register

Coils: *discrete output coils* (read-write Boolean, 1 Bit) Range/Register 1 – 9999

Status: *discrete input coils* (read-only Boolean, 1 Bit) Range/Register 10001 - 19999

Analog Register

Input: registers *analog input register* (read-only integer, 16 Bit) Range/Register 30001 – 39999

Holding: registers *analog output holding register* (read-write integer, 16 Bit) Range/ Register 40001 – 49999

The allocation of bits or registers have what meaning can only be established in the form of a data point list. Additional information such as the name of the information unit, limits or min / max information cannot be determined.

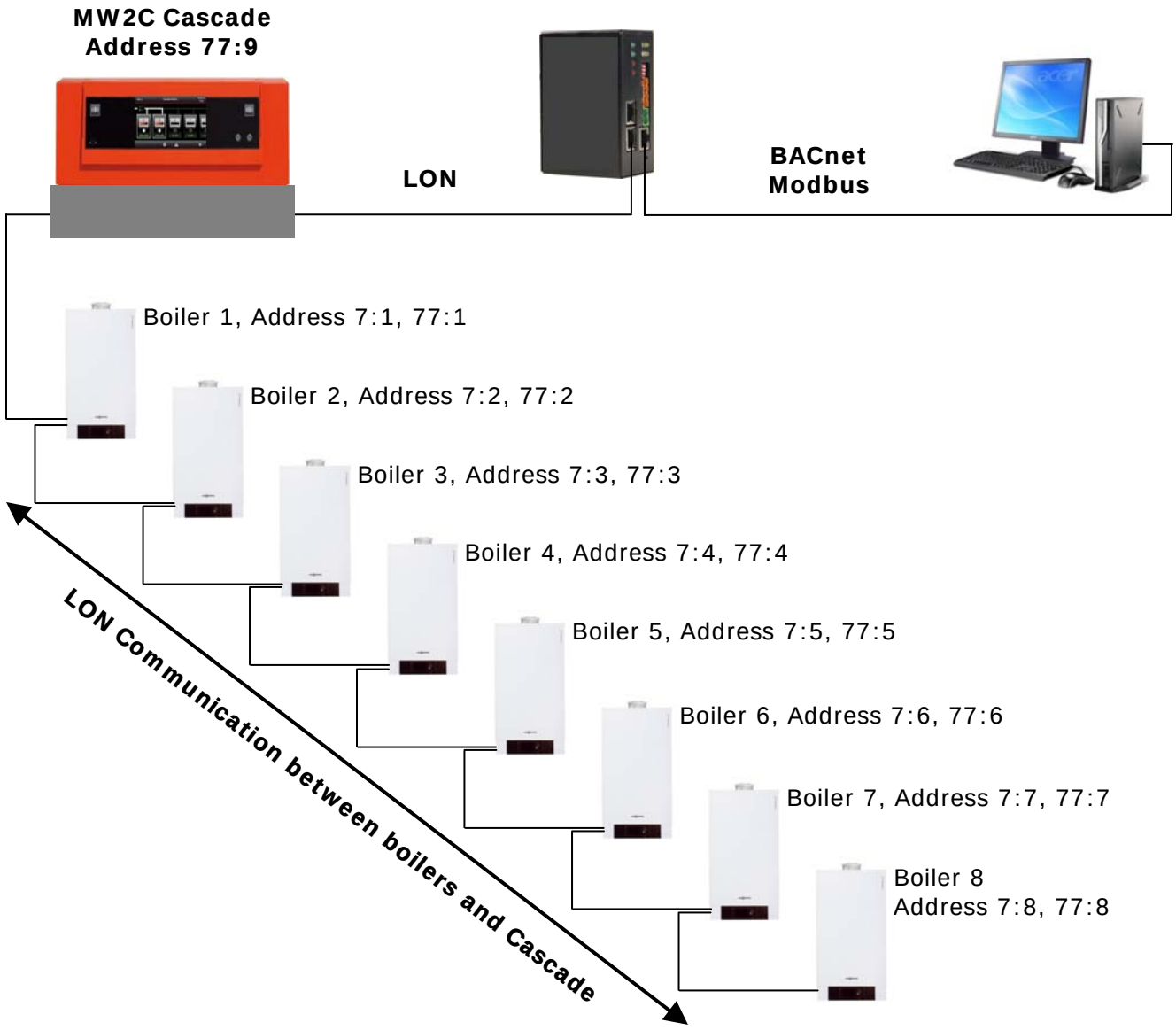
The 16-bit data registers may need to be scaled or converted. Vitogate used formats:

• Integer unsigned and signed (u - unsigned, s - signed)
• a factor of 10 (one decimal place) (ut, unsigned tenth, st - signed tenth)
• a factor of 100 (two decimal places) (uh, unsigned hundredths, sh - signed hundredths)
• Factor 1000 (three decimal places) (order, unsigned mega, sm - signed mega)
The conversion must be done on the master side (the client).
Supported function codes
In order to read or write the data from Vitogate following MODBUS function codes are supported:

§ 01 (0x01) Read Coils
§ 02 (0x02) Read Discrete Inputs
§ 03 (0x03) Read Holding Registers
§ 04 (0x04) Read Input Registers
§ 05 (0x05) Write Single Coil
§ 06 (0x06) Write Single Register

u: Numerical value without prefix is unsigned, cannot have negative values
s: Numerical value with prefix can have a negative value
t: Numerical value is one tenth of the value displayed
h: Numerical value is one hundredth of the value displayed
m: Numerical value is one thousandth of the value displayed

Control LON Addressing Best Practices
MW2C Cascade and Vitodens B2HA

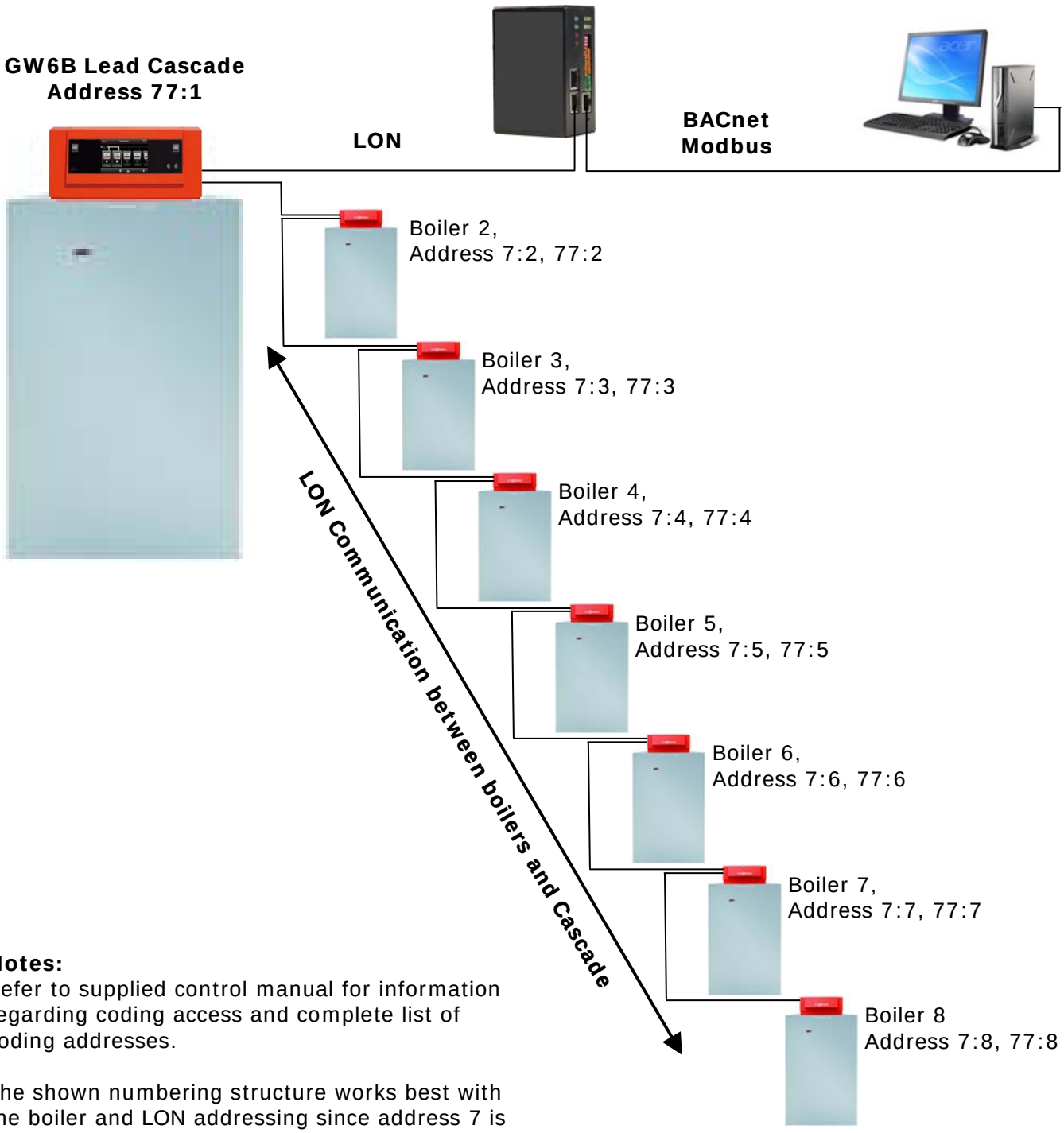


Notes:
Refer to supplied control manual for information regarding coding access and complete list of coding addresses.

The shown numbering structure works best with the boiler and LON addressing since address 7 is limited to values from 1 through 8.

Termination resistors are used at both ends of the Viessmann LON bus in the last boiler and the Vitogate 300.

Control LON Addressing Best Practices
GW6B Cascade and Lag controls



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