Network Communications Interface
for DC-DC Converters

This user's information manual is applicable for the following converter Models:

1605XT-xxx-xxx-xx-M4
1605XT-xxx-xxx-xx-M5
1760-xxx-xxx-xx-M4
1760-xxx-xxx-xx-M5

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NOTE: For physical setup and operational instructions see the user information manual that was included with your converter.

Network Communications Interface for DC-DC Converters

1 Network Communications Interface

The Wilmore Network Communications Interface allows you to monitor your Wilmore DC-DC converter through a web interface, SNMP (Simple Network Management Protocol), serial terminal port and web service API (Application Programming Interface). This unit uses a standard RJ45 Ethernet connection to allow monitoring through its web interface, SNMP, and web service API. Serial terminal monitoring is supported using an external USB port.

Overview of general information that can be monitored (via web interface, SNMP, serial terminal, and web service API):

- Unit Description
- Model Number
- Serial Number
- DC Input Voltage
- DC Output Voltage
- DC Output Current
- DC Output Power

Overview of warning information that can be monitored (via web interface, SNMP, serial terminal, and web service API):

- Low DC Input Voltage
- High DC Input Voltage
- Improper Output Voltage
- Output Overload
- Alarm State

1.1 Serial Port Drivers and Network Support

This chart details the current driver and features supported on the Wilmore Network Communications Interface for the Microsoft Windows and GNU Linux platforms.

Features and Application Support					
	Serial Terminal	Wilmore Configuration Application	Web Page	Web Service API	SNMP
Windows 7/8	* Requires Additional Drivers	* Requires Additional Drivers	✓	✓	✓
Windows 10/11	✓	✓	✓	✓	✓
Linux	✓	✗	✓	✓	✓

Requires a USB Connection   Requires a Network Connection

* Additional Drivers (Microsoft Windows 7 / 8 Only): ST Micro provides the COM port drivers for the module used in this unit which can be downloaded from the ST Micro website at: https://www.st.com/en/development-tools/stsw-stm32102.html.

1.1.1 Pre-Install Notes

Local Configuration Only: The Wilmore Network Communications Interface requires a **USB 2.0 Type B** to **USB 2.0 Type A** cable (physically connected to the unit) for initial setup and configuration.

Network Connection is for Remote Monitoring: The internal web interface and SNMP protocol are strictly for information monitoring only, configuration via these interfaces is not allowed.

Disconnect Serial port after Configuration: Wilmore encourages the removal of the USB connection after completing configuration to avoid unwanted configuration changes.

Offsite / Remote Access: It is recommended that this unit not be exposed directly on the internet. If you require an external offsite connection for monitoring, please consider using a VPN (Virtual Private Network) for a more secure connection.

1.2 Wilmore Communications Configuration Application

This unit should be configured using the Wilmore Communications Configuration application before monitoring information via the web interface, SNMP, or query the web service API. A Windows system is required for the initial configuration of this unit.

1.2.1 System Requirements

Table 1: System Requirements

Wilmore Communications Configuration Application System Requirements		
Operating System	Windows 7 Service Pack 1	Windows Server 2012
	Windows 8.1	Windows Server 2016
	Windows 10	Windows Server 2019
	Windows 11 (or later)	Windows Server 2022 (or later)
Physical Connections	An available USB 2.0 or 3.0 Type A port.	
	An available RJ45 network connection.	
Drivers	Installation of virtual COM port drivers (Windows 8.1 or later).	
Software	The .NET Framework Version 4.6.2 (or later)	
Processor	1 GHz (.NET framework minimum requirement)	
RAM	512 MB (.NET framework minimum requirement)	
Disk Space	4.5 GB (.NET framework minimum requirement)	

1.2.1.1 Installing the .NET Framework

The Microsoft .NET 4.8 Framework should already be installed if you are running a fully updated Windows 7, Windows 8.1, or Windows 10 system (or later). If the .NET 4.8 Framework is not installed via Windows update, it can be installed manually using the ".NET 4.8 Framework Offline Installer" available from Microsoft.

NOTE: To install the .NET 4.8 framework one of the following minimum Windows versions are required: Windows 7 SP1, Windows 8.1, or Windows 10 version 1607.

1.2.2 Installation of the Communications Configuration Application

The configuration application can be installed with the "Wilmore Communications Config Setup.msi" installer available on our website at: https://www.wilmoreelectronics.com/wilmore/support/downloads.php.

Figure 1: The Wilmore Communications Config Windows installer.
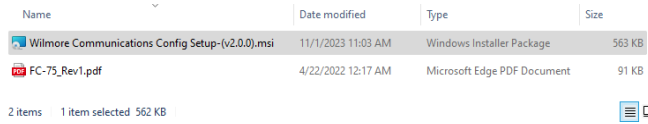
Figure 2: The Wilmore Communications Config setup wizard main window.
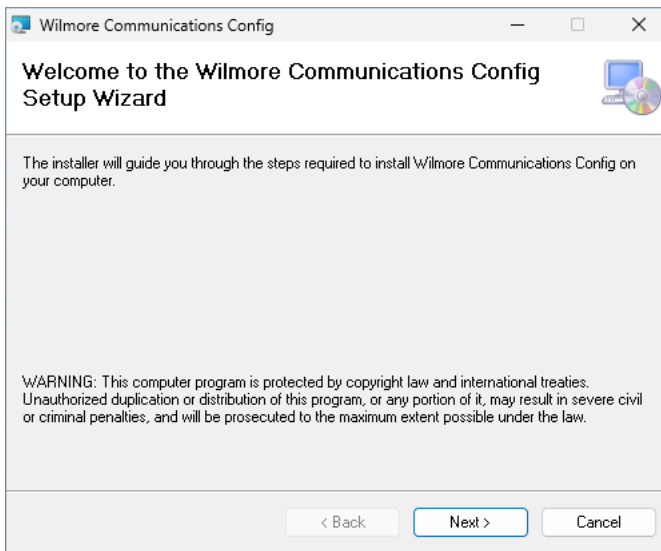
Figure 3: Select the installer location for the Wilmore Communications Config application.
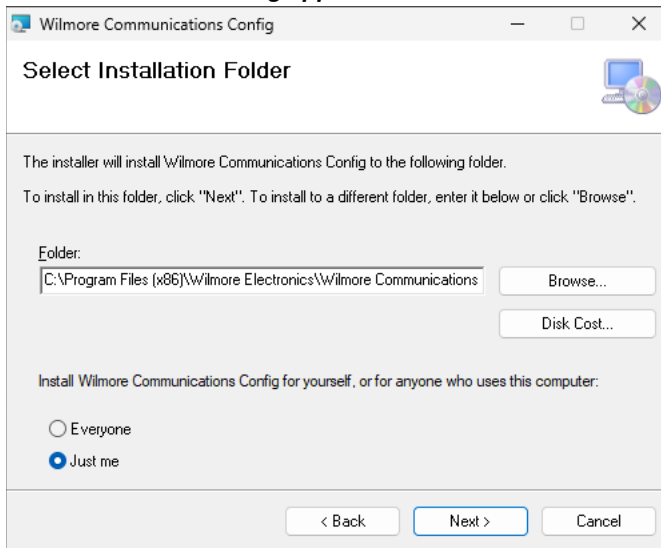
1. Download and extract the Wilmore Communications Configuration application (Wilmore-Communications-Config-Setup-(v2.×.×).zip) available on our website and start the installer (Wilmore Communications Config Setup.msi).

2. Click next to start the Wilmore Communications Config installation wizard.

3. Select the folder location where you would like to install the Wilmore Communications Config software.

Figure 4: Start installing the communications config files to the chosen location.
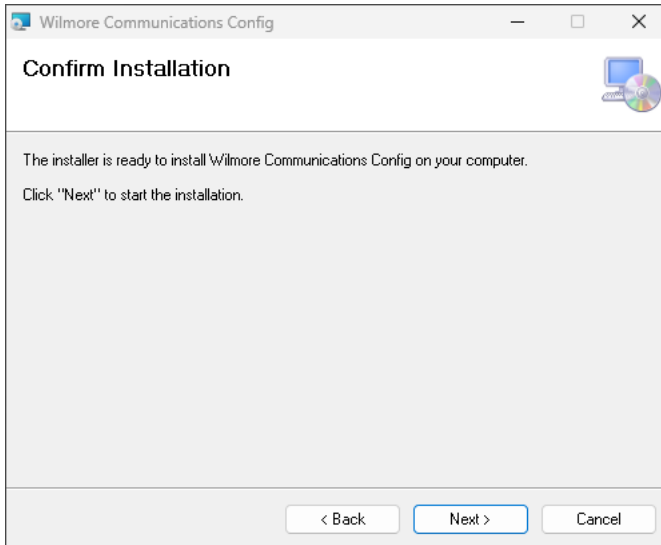
4. Click the next button to install the Wilmore Communications Config software to the desired location.

Figure 5: Finish the Wilmore Communications Config install wizard.
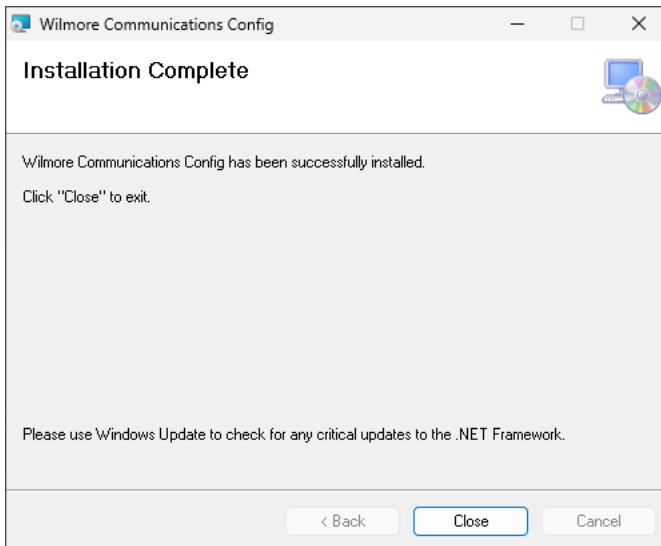
5. Click the close button to finish the installation wizard.

Figure 6: The Wilmore Communications Config application start menu entry.
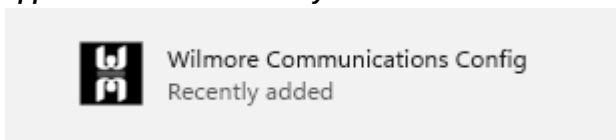
6. Start the Wilmore Communications Config application using the start menu search function or start menu entry.

Figure 7: The Wilmore Communications Configuration application main window populated with example values.
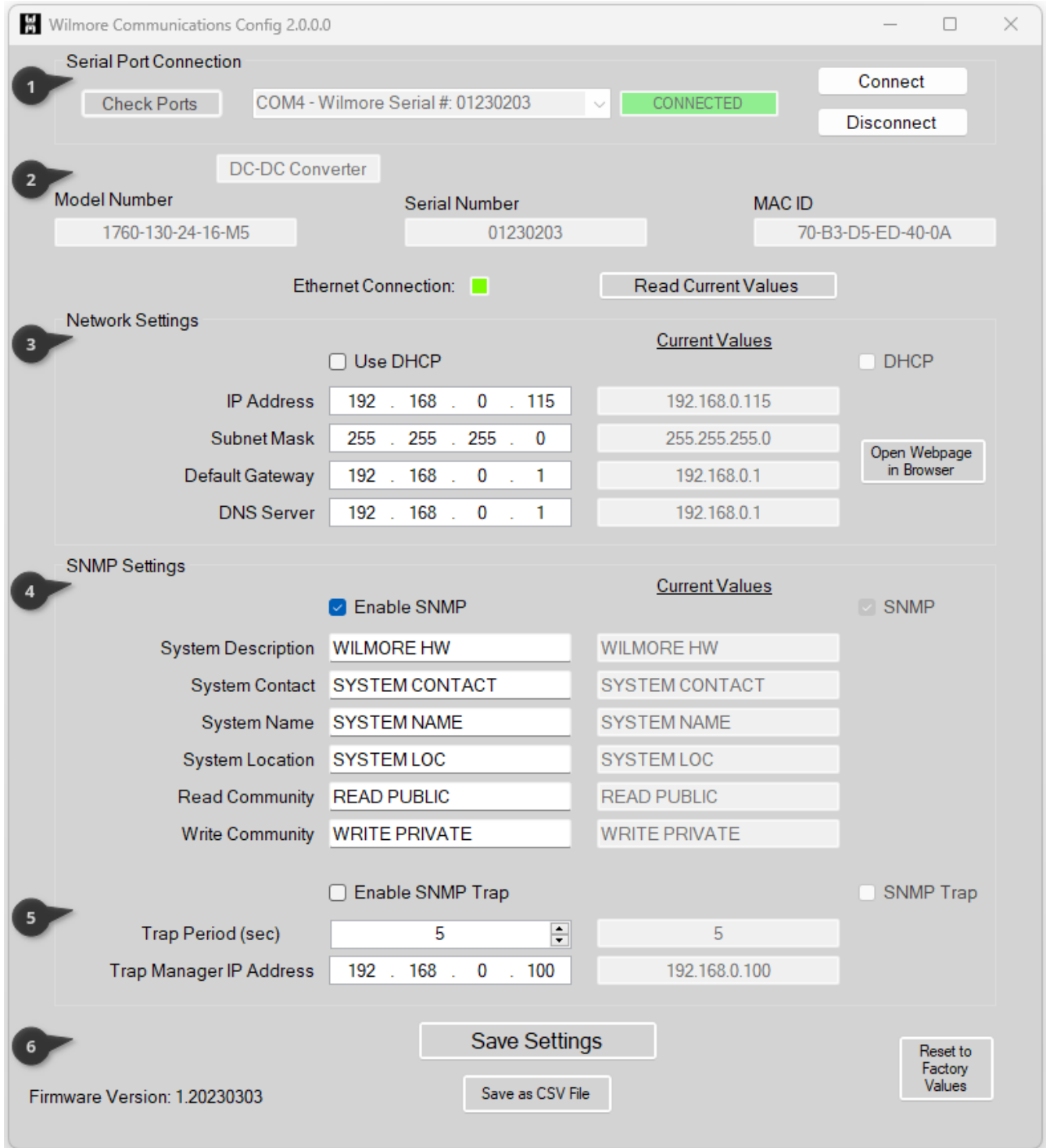
1.2.3 Configuration Options

*Table 2: This table defines the configuration options for the **Wilmore Communications Configuration** application.*

Configuration Setting	Description	Example Values
(1) Serial Port Connection Settings		
Check Ports	Button used to refresh the list of available serial port connections on this system.	N / A
Serial Port Selection List	A drop-down list of available Wilmore power conversion products connected to this system. Products will be listed by the (Windows assigned) serial COM port number followed by the Wilmore serial number.	COM4 – Wilmore Serial #: 01230203
Serial Connection Status	The connection status of the serial port on this system to the unit.	CONNECTED
Connect	Button used to initiate a connection to this unit.	N / A
Disconnect	Button used to stop the connection to this unit.	N / A
(2) General Information		
Wilmore Product Type	This will list the type of Wilmore power product that the application is connected to (DC-DC Converter or DC-AC Inverter).	DC-DC Converter
Model Number	The Wilmore assigned model number of this unit.	1760-130-24-16-M5
Serial Number	The Wilmore assigned serial number of this unit.	01230203
MAC ID	The Wilmore assigned MAC (Media Access Control) ID of this unit.	70-B3-D5-ED-40-0A
Read Current Values	Button used to populate the "Current Values" column with the most recent configuration values of this unit.	N / A
(3) Network Settings		
Ethernet Connection (Status)	This section displays the connection status of the Ethernet port on the Wilmore Converter. The status window will display green when an active Ethernet connection is detected and red when it is disconnected.	🟩
Use DHCP (Checkbox)	Enables or disables DHCP (Dynamic Host Control Protocol). (Disable if a static IP address is needed)	Disabled

Configuration Setting	Description	Example Values
IP Address	Displays user input of the IP address and its current value. (Only configurable if DHCP is disabled)	192.168.0.115
Subnet Mask	Displays user input of the subnet mask address and its current value. (Only configurable if DHCP is disabled)	255.255.255.0
Default Gateway	Displays user input of the default gateway and its current value. (Only configurable if DHCP is disabled)	192.168.0.1
DNS Server	Displays user input of the DNS server address and its current value. (Only configurable if DHCP is disabled)	192.168.0.1
Open Webpage in Browser	This button will open the web interface of the Wilmore power converter in your default web browser using the current IP address.	N / A
(4) SNMP Settings		
Enable SNMP (Checkbox)	Enables or disables Simple Network Management Protocol.	Enabled
System Description (optional)	An administrator defined text description of the unit. Maximum Field Length: 20 characters	DCDC Converter 1
System Contact (optional)	An administrator defined contact for the unit, including information on how to contact them. Maximum Field Length: 32 characters	John Smith username@example.com
System Name (optional)	An administrator defined hostname for this unit. Typically, the FQDN (Fully-Qualified Domain Name) of the unit. Maximum Field Length: 20 characters	hostname.example.com
System Location (optional)	The physical location of this unit. Maximum Field Length: 20 characters	Wiring closet, 1st floor
Read Community Name (required)	A password that allows read-only SNMP access to the device. Maximum Field Length: 20 characters	READ PUBLIC
Write Community Name (optional)	A password that allows SNMP write access to the device. Maximum Field Length: 20 characters	READ PRIVATE
(5) SNMP Trap Settings		
Enable SNMP Trap (Checkbox)	Enables or disables SNMP Traps.	Disabled

Configuration Setting	Description	Example Values
Trap Period (Sec)	The time in seconds in between trap messages. Minimum Value: 5 seconds Maximum Value: 86,400 seconds (approximately 24 hours)	5
Trap Manager IP Address	The IP address for the network management server where the SNMP trap message will be received.	192.168.0.100
(6) Configuration Settings		
Save Settings	Button that saves the user's network and SNMP configuration settings to this unit.	N / A
Save as CSV File	This button will save all configured settings to a CSV file. Additional entries are appended when they are saved to the same CSV file. This is useful when the user desires to save multiple unit configurations.	N / A
Reset to Factory Values	This button will reset all user configured settings back to the Wilmore Factory defaults. **Note: To make the factory reset permanent, you must click the save settings button.**	N / A
Firmware Version	The version number of the software currently installed on the Wilmore converter.	1.20230303

1.2.4 Network Communications Interface Initial Configuration

1.2.4.1 DHCP IP Address Configuration

This section describes the steps for configuring your Wilmore converter with DHCP (Dynamic Host Configuration Protocol).

NOTE: The DHCP address assigned to the converter may change on startup depending on the DHCP lease time configured on your DHCP server (typically 24 hours). However, you may configure your DHCP server to reserve a static DHCP lease (based on its MAC address) that will assign the same IP address every time to the converter.

Table 3: Required Materials for DHCP Configuration

Description	Quantity
Wilmore DC-DC Converter	1
Straight-through Ethernet Cable with T568A or T568B wiring standard	2
USB 2.0 A to B Cable (Included)	1
Network router or switch configured as a DHCP server.	1
Windows 7/8/10/11 PC	1
Wilmore Communications Configuration Application (Downloaded)	1

1. Download and install the Wilmore Communications Configuration application available on our website.

   Example Filename: Wilmore-Communications-Config-Setup-(v2.×.×).zip

   Download URL: https://www.wilmoreelectronics.com/wilmore/support/downloads.php.

   Skip this step if you have already installed the configuration application using the instructions in Section 1.2.2, page 6.

Figure 8: Wilmore DC – DC Converter Network and USB Connections
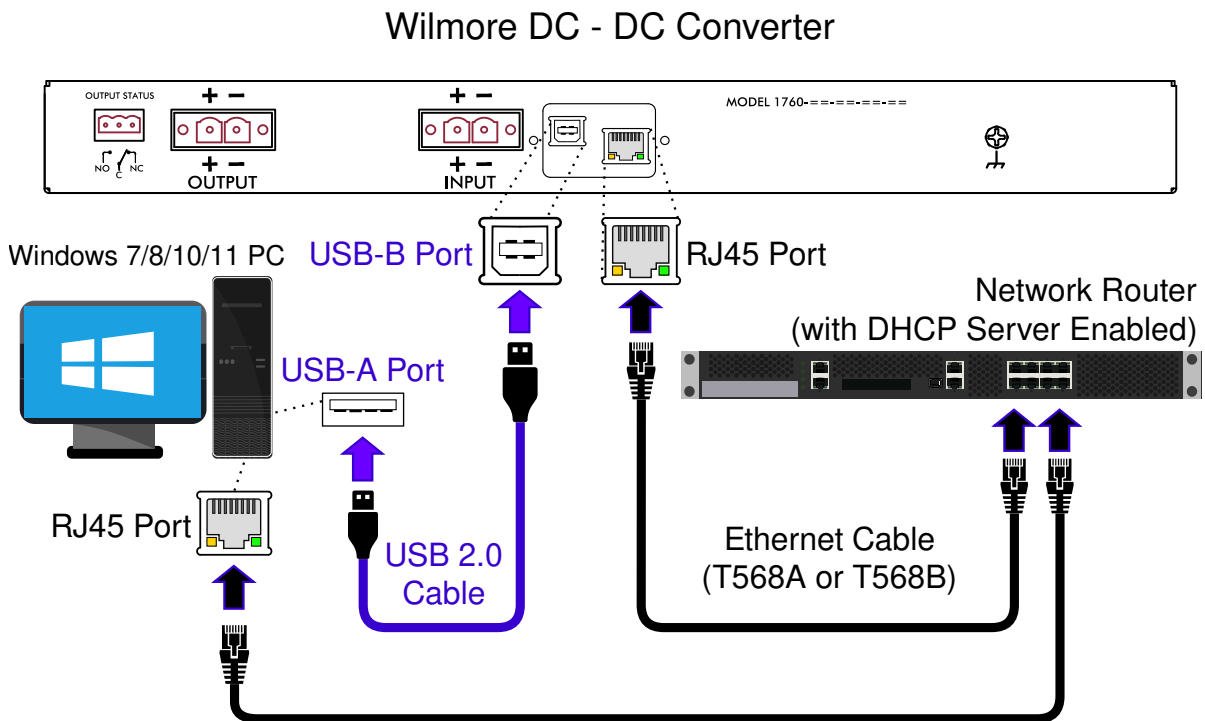
2. Make all USB and Ethernet connections according to the diagram above (Figure 8)

3. Connect the correct DC input power source according to the model of converter purchased (12, 24, 48, or 130 volts) to the Wilmore DC–DC Converter and power the unit on.

4. Open the Wilmore Communications Configuration application using the Windows start menu entry or start menu search function (Wilmore Communications Config).

Figure 9: Wilmore Configuration Application – Serial Port Connection

NOTE: The configuration application will automatically connect to the first Wilmore power product detected via the USB serial port. If you have multiple units connected you can select other units via the serial port drop down list.

The "Check Ports" button and serial port drop down list will only function while the application is disconnected.

5. In the Network Settings section, enable the "Use DHCP" checkbox (default: unchecked).

6. Click on the "Save Settings" button to write the network settings to the unit.

Allow 15 seconds for the settings to be saved to the unit.

The converter will save all network and SNMP settings entered and disconnect the serial interface.

7. Power-cycle the Wilmore converter and reconnect via the Wilmore Communications Configuration application to verify your settings have been saved.

8. Test connectivity to the unit by clicking on the "Open Webpage in Browser" button in the configuration application.

1.2.4.2 Static IP Address Configuration

This section describes the steps for configuring your Wilmore converter with a static network address configuration.

Table 4: Required Materials for Static IP Address Configuration

Description	Quantity
Wilmore DC-DC Converter	1
USB 2.0 A to B Cable (Included)	1
Network switch (Optional)	1
Straight-through Ethernet Cable with T568A or T568B wiring standard	2
Windows 7/8/10/11 PC	1
Wilmore Communications Configuration Application (Downloaded)	1

1. Download and install the Wilmore Communications Configuration application available on our website.

   Example Filename: Wilmore-Config-Setup-(v2.×.×).zip

   Download URL: https://www.wilmoreelectronics.com/wilmore/support/downloads.php.

   Skip this step if you have already installed the configuration application using the instructions in Section 1.2.2, page 6.

2. **Configure your network and USB connections using one of the following methods:**

   2.1 **Connect directly using an Ethernet cable (Figure 10):**

   Make all USB and Ethernet connections according to the diagram below (Figure 10)

Figure 10: Wilmore DC – DC Converter USB Connections and Network connections.

Wilmore DC - DC Converter
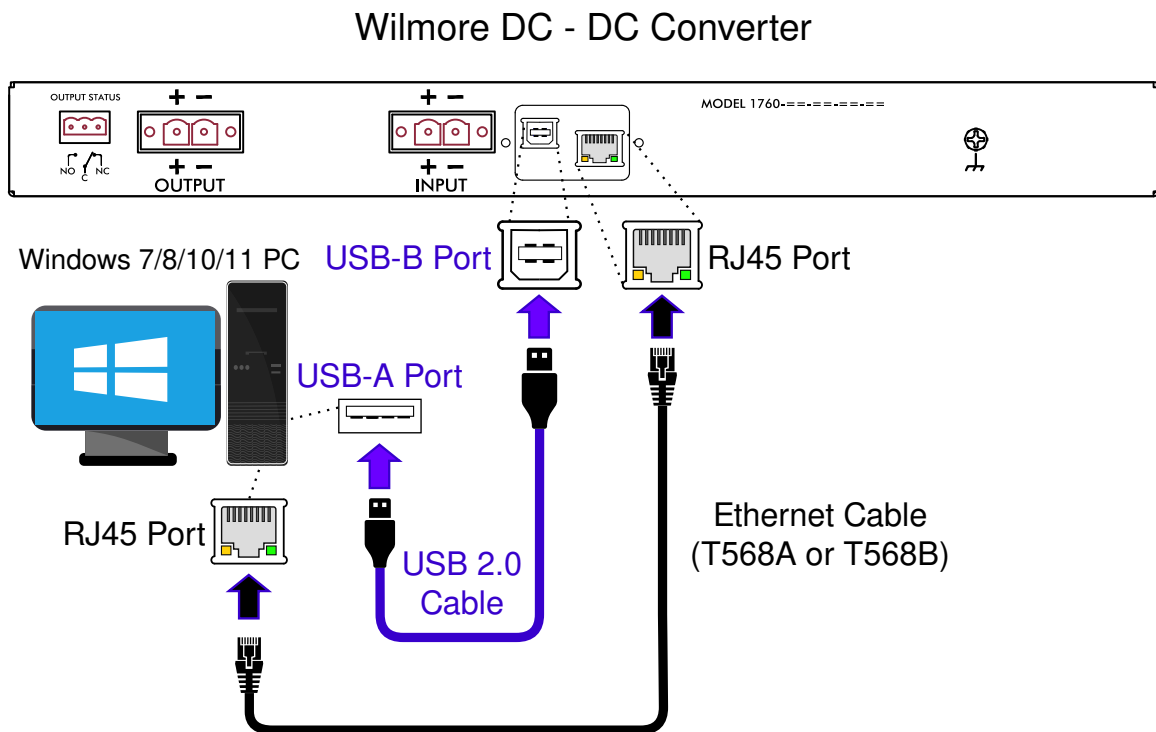
Ethernet Cable Requirements: The Wilmore Network Communications Interface supports *MDIX* (Medium Dependent Interface Crossover) and therefore does not require an Ethernet crossover cable.

2.2 **Connect using an Ethernet switch (Figure 11):**

Make all USB and Ethernet connections according to the diagram below (Figure 11).

Figure 11: Wilmore DC – DC Converter USB Connections and Network connections using an Ethernet switch.
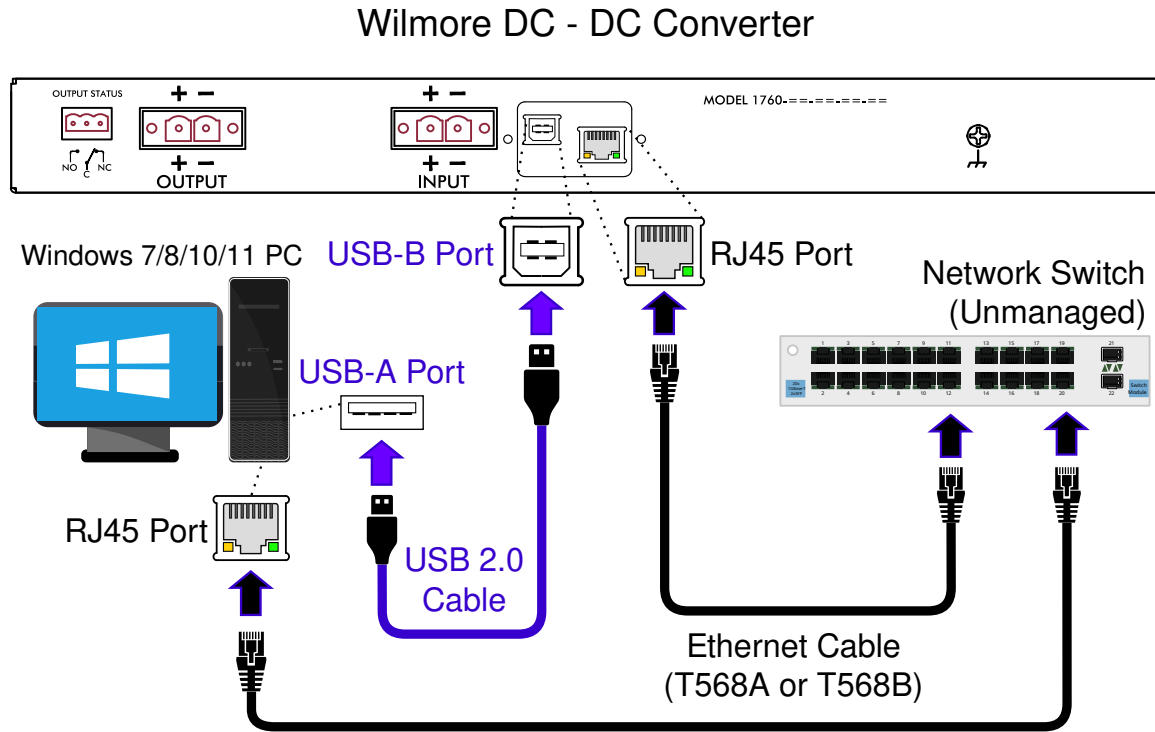
3. Connect the correct DC input power source according to the model of converter purchased (12, 24, 48, or 130 volts) to the Wilmore DC–DC Converter and power the unit on.

4. Open the Wilmore Communications Configuration application using the Windows start menu entry or start menu search function (Wilmore Communications Config).

Figure 12: Wilmore Configuration Application – Serial Port Connection
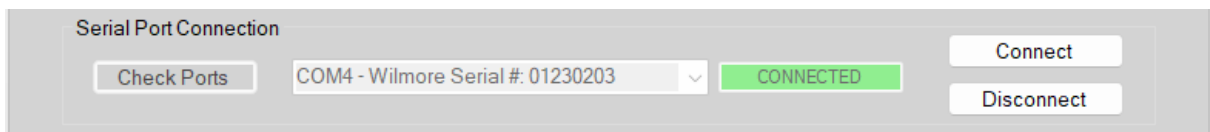
NOTE: The configuration application will automatically connect to the first Wilmore power product detected via the USB serial port. If you have multiple units connected you can select other units via the serial port drop down list.

The "Check Ports" button and serial port drop down list will only function while the application is disconnected.

Figure 13: Wilmore DC – DC Converter IP Address Configuration

DC - DC Converter Network Settings

IP Address:	192.168.0.115
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.0.1
DNS Server:	192.168.0.1

Windows PC Network Settings

IP Address:	192.168.0.100
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.0.1
DNS Server:	192.168.0.1

Wilmore DC - DC Converter

Ethernet Cable

Windows 7/8/10/11 PC

USB 2.0 Cable

5. In the example above (Figure 13), we are configuring the unit with a static IP address so the checkbox next to "Use DHCP" should be unchecked (default: unchecked).

   NOTE: If connecting the Ethernet cable directly from the Wilmore converter to the PC, you must assign a static IP address to the PC that is within the same n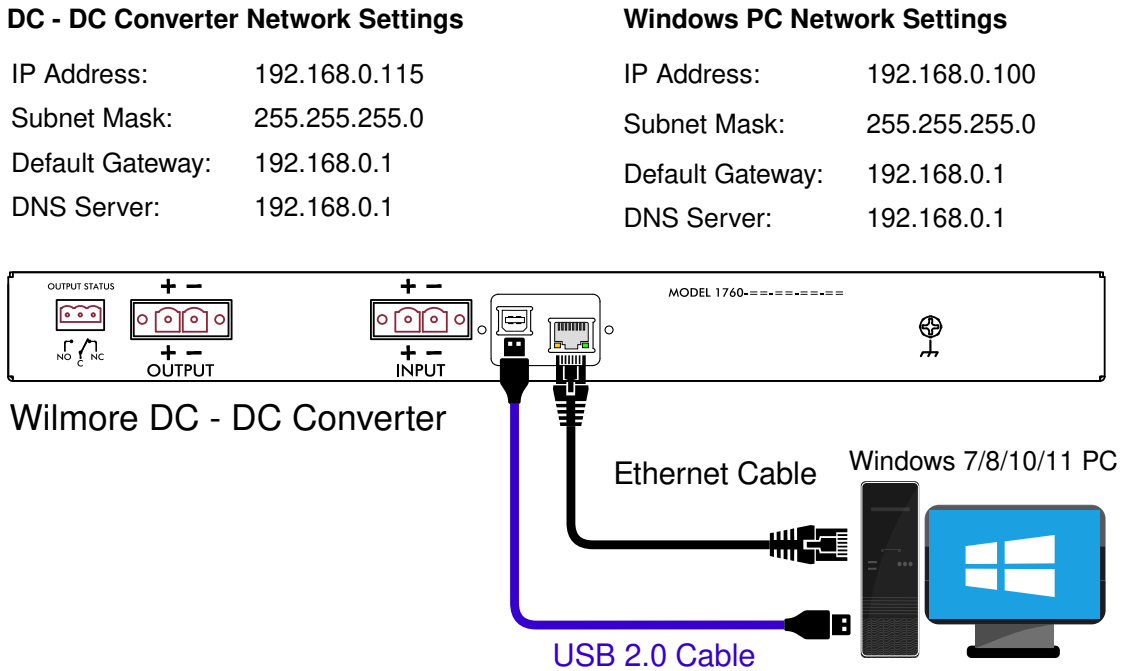etwork range that you assign to the DC converter. For example, an address within the range of 192.168.0.1 to 192.168.0.254 with a subnet mask of 255.255.255.0 is a valid IP address (as long as all connected devices have unique IP addresses).

   5.1 (Required) Enter a valid IP v4 address.

   5.2 (Required) Enter the subnet mask for your network.

   5.3 Enter the default gateway (typically your router's IP address).

   5.4 Enter a DNS server address (usually your router's IP address).

6. Click on the "Save Settings" button to write the network settings to the unit.

   Allow 15 seconds for the settings to be saved to the unit.

   The converter will save all network and SNMP settings entered and disconnect the serial interface.

7. Power-cycle the Wilmore converter and reconnect via the Wilmore Communications Configuration application to verify your settings have been saved.

8. Test connectivity to the unit by clicking on the "Open Webpage in Browser" button in the configuration application.

2 Web Interface Monitoring

The Wilmore Network Communications Interface allows for monitoring of key information via its web interface. Available information varies by model and type. In order to monitor information from the web interface, an Ethernet cable must be connected, and the unit must be configured with a valid IP v4 address.

The web interface is supported by most major browsers; including Firefox, Chrome, and Edge.

Figure 14: The web interface on a Wilmore Converter.

	DC-DC Converter	
Model Number	1760-130-24-16-M5	
Serial Number	01230203	
DC Input Voltage	129.9	V
DC Output Voltage	24.1	V
DC Output Current	7.0	A
Output Power	168.7	W

Ver. 1.20230303

WARNING TEXT IS DISPLAYED HERE

2.1 Web Interface Information

Table 5: Web Interface Information

Name	Description	Example Value *
General Information		
Version Number	Defines the firmware version number of this unit.	1.20230303
Unit Description	Defines the type of Wilmore power product.	DC-DC Converter
Model Number	The Wilmore assigned model number of this unit.	1760-130-24-16-M5
Serial Number	The Wilmore assigned serial number of this unit.	01230203
Electrical Information		
DC Input Voltage	The DC input voltage in real-time, displayed in volts (V).	129.9
DC Output Voltage	The DC output voltage in real-time, displayed in volts (V).	24.1
DC Output Current	The DC output current in real-time, displayed in amps (A).	7
Output Power	The output power in real-time, displayed in watts (W).	168.7

* Displayed values are for example purposes only. Actual general and electrical information values may vary.

2.2 Warnings and Alarms

The web interface displays the following warning messages and alarm when the unit has entered an abnormal state of operation.

A warning is displayed with a yellow border.

An alarm is displayed with a red border.

Table 6: Web Interface Warnings and Alarms

Name	Description
Warnings and Alarms	
Warning: Low DC Input Voltage	Warning text displays when the unit detects the DC input voltage approaching its lower limit.
Warning: High DC Input Voltage	Warning text displays when the unit detects the DC input voltage approaching its upper limit.
Warning: Improper Output Voltage	Warning text displays when the unit detects an improper DC output voltage. This warning will only appear when the DC output voltage is approaching its lower limit or when no DC output voltage is detected due to over/under voltage shutdown.
Warning: Output Overload	Warning text displays when the unit detects an apparent load that is above its rated capacity.
ALARM ACTIVE	Alarm text displays the state of OUTPUT STATUS connector (refer to User's Information Manual for additional information).

3 SNMP Monitoring

The Wilmore Network Communications Interface (NCI) supports network monitoring through SNMP (Simple Network Management Protocol) polling or traps. Polling allows the SNMP server to request information from the device at regular intervals, such as uptime or input voltage. When using a trap the unit will notify the SNMP server when it encounters certain error conditions.

This unit supports SNMP version 1.

3.1 SNMP Configuration

Figure 15: SNMP Configuration Settings

NOTE: The minimum requirements to configure SNMP are an IP address and a read community name.

1. Connect the correct DC input power source according to the model of converter purchased (12, 24, 48, or 130 volts) to the Wilmore DC–DC Converter and power the unit on.

2. Plug in the included USB-A to USB-B cable from the Wilmore converter to your Windows PC.

3. Open the Wilmore Communications Configuration application (Wilmore Communications Config) that was downloaded previously in Section 1.2.2, page 6.

4. Make sure the "Enable SNMP" box is checked (default: checked).

5. (Optional) Enter the desired "System Description" or a general text description of the unit.

   Maximum Field Length: 20 characters

6. (Optional) Enter the administrators "System Contact" information, the name of the system administrator and how to contact them (email, phone number etc…).

    Maximum Field Length: 32 characters

7. (Optional) Enter the "System Name", generally the hostname associated with the unit's IP address or fully qualified domain name of the unit.

    Maximum Field Length: 20 characters

8. (Optional) Enter the "System Location", the physical location of this unit (e.g. 'wiring closet, 1st floor').

    Maximum Field Length: 20 characters

9. (Required) Enter a "Read Community Name", the password for read-only SNMP access.

    Maximum Field Length: 20 characters

10. (Optional) Enter a "Write Community Name", the password for read-write SNMP access.

    Maximum Field Length: 20 characters

11. Click on the "Save Settings" button to write the SNMP settings to the unit.

    Allow 15 seconds for the settings to be saved to the unit.

    The converter will save all network and SNMP settings entered and disconnect the serial interface.

12. Power-cycle the Wilmore converter and reconnect via the Wilmore Communications Configuration application to verify your settings have been saved.

13. Test SNMP polling via any of the freely available SNMP browsers on the web.

3.1.1 SNMP Trap Configuration

Figure 16: The SNMP trap settings configuration window.
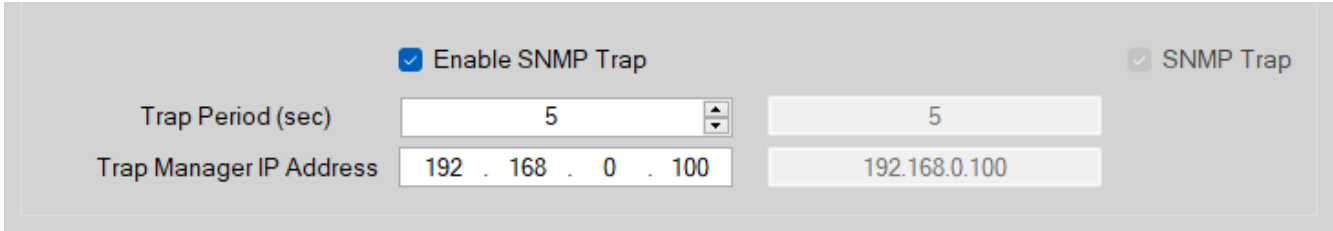
1. Connect the correct DC input power source according the to model of converter purchased (12, 24, 48, or 130 volts) to the Wilmore DC–DC Converter and power the unit on.

2. Plug in the included USB cable from the Wilmore converter to your Windows PC.

3. Open the Wilmore Communications Configuration application (WilmoreCommConfig.exe) that was downloaded previously in Section 1.2.2, page 6.

4. Make sure the "Enable SNMP Trap" box is checked (default: unchecked).

5. Enter the desired trap send period (in seconds).

   Minimum: 5 seconds.

   Maximum: 86,400 seconds (approximately 24 hours)

6. Enter your SNMP trap manager's IP address.

7. Click on the "Save Settings" button to write the SNMP settings to the unit.

   Allow 15 seconds for the settings to be saved to the unit.

   The converter will save all network and SNMP settings entered and disconnect the serial interface.

8. Power-cycle the Wilmore converter and reconnect via the Wilmore Communications Configuration application to verify your settings have been saved.

9. (Optional) Test the receipt of SNMP trap messages using an in-house SNMP trap receiver or via any of the freely available SNMP browsers on the web (section 3.2.6, pg. 28).

3.2 SNMP OIDs

SNMP OIDs (Object Identifiers) are numbers used to uniquely identify information that can be monitored on a device. The OID numbers for Wilmore DC-DC converters are listed in the tables below.

3.2.1 MIB Files

An MIB (Management Information Base) file is a text file that describes the properties of an SNMP device. This MIB file translates each OID to a user-friendly text description for each SNMP property.

We provide MIB files in two formats for all Wilmore power products that can be downloaded from our website at:

https://www.wilmoreelectronics.com/wilmore/support/downloads.php

Choose from one of the following MIB file formats:

SMIv1 Format: WILMORE-MIB-SMIv1.mib

SMIv2 Format: WILMORE-MIB.mib

NOTE: The SMIv1 format should work for most applications, we provide the SMIv2 format in case your application requires it.

3.2.2 System OIDs

Table 7: This table includes SNMP system OID information as defined in the RFC 1213 specification. These are standard OIDs included in the SNMP specification and are not assigned by Wilmore Electronics.

OID	MIB Variable	Description
.1.3.6.1.2.1.1.1	sysDescr	A textual description of the entity. Maximum Field Length: 20 characters
.1.3.6.1.2.1.1.2	sysObjectID	The vendor's authoritative identification of the network management subsystem contained in the entity.
.1.3.6.1.2.1.1.3	sysUpTime	The time (in hundredths of a second) since the network management portion of the system was last re-initialized.
.1.3.6.1.2.1.1.4	sysContact	The textual identification of the contact person for this managed node, together with information on how to contact this person. Maximum Field Length: 32 characters
.1.3.6.1.2.1.1.5	sysName	An administratively-assigned name for this managed node. By convention, the node's fully-qualified domain name. Maximum Field Length: 20 characters
.1.3.6.1.2.1.1.6	sysLocation	The physical location of this node (e.g., 'telephone closet, 3rd floor'). Maximum Field Length: 20 characters
.1.3.6.1.2.1.1.7	sysServices	A value which indicates the set of services that this entity primarily offers.

Table 8: This table includes the SNMP generic traps that are supported as defined in the [RFC 3418](#) specification.

OID	MIB Variable	Description
.1.3.6.1.6.3.1.1.5.1	coldStart	A cold start trap signifies that the SNMP entity, supporting a notification originator application, is re-initializing itself and that its configuration may have been altered.

3.2.3 Wilmore Root OID

Table 9: This table defines the root OID assigned to Wilmore Electronics by the Internet Assigned Numbers Authority (IANA).

OID	MIB Variable	Description
.1.3.6.1.4.1.54581	wilmoreElectronics	The root OID number assigned to Wilmore Electronics.

3.2.4 DC-DC Converter OIDs

Table 10: SNMP polling can be used to query the DC-DC converter for any of the values defined in this table.

OID	MIB Variable	Type	Description
System Information			
.1.3.6.1.4.1.54581.1.1.1	sysModelNumber	DisplayString	The Wilmore assigned model number of this unit.
.1.3.6.1.4.1.54581.1.1.2	sysSerialNumber	DisplayString	The Wilmore assigned serial number of this unit.
.1.3.6.1.4.1.54581.1.1.3	sysTrapFrequency	Integer32	The time in seconds in between trap messages. Minimum Value: 5 seconds Maximum Value: 86,400 seconds (approximately 24 hours)
.1.3.6.1.4.1.54581.1.1.4	sysTrapTargetIP	IPADDRESS	Displays the IP address for the network management server where the SNMP trap should be received.
Electrical Information			
.1.3.6.1.4.1.54581.1.2.1	pwrInputVoltage	Integer32	The most recent value of the DC input voltage ([1] Volts × 10).
.1.3.6.1.4.1.54581.1.2.4	pwrWarningText	DisplayString	A text listing of the most recent Warnings.

Electrical Information for DC-DC Converters

.1.3.6.1.4.1.54581.1.2.2.1	pwrOutputVoltage	Integer32	The most recent value of the DC output voltage ([1] Volts x 10).
.1.3.6.1.4.1.54581.1.2.2.2	pwrOutputCurrent	Integer32	The most recent value of the DC output current ([1] Amperes x 10).
.1.3.6.1.4.1.54581.1.2.2.3	pwrOutputPower	Integer32	The most recent value of the DC output power ([1] Watts x 10).
[1] SNMP does not support decimal values, all Integer values returned are multiplied by 10.			

3.2.5 Wilmore Specific Trap OIDs

Table 11: SNMP traps (or notifications) can be configured to notify a network monitoring server or MIB browser of the following events:

OID	MIB Variable	Type	Description
.1.3.6.1.4.1.54581.1.0.104	trapHighInputV	Enterprise	A trap message sent when the unit detects a DC input voltage approaching its upper limit.
.1.3.6.1.4.1.54581.1.0.105	trapLowInputV	Enterprise	A trap message sent when the unit detects a DC input voltage approaching its lower limit.
.1.3.6.1.4.1.54581.1.0.106	trapImproperOutput	Enterprise	A trap message sent when the unit detects an improper DC output voltage. This warning will only appear when the DC output voltage is approaching its lower limit or when no DC output voltage is detected due to over/under voltage shutdown.
.1.3.6.1.4.1.54581.1.0.107	trapOutputOverload	Enterprise	A trap message sent when the unit detects an apparent load that is above its rated capacity.
.1.3.6.1.4.1.54581.1.0.109	trapAlarm	Enterprise	A trap message sent when a DC-DC converter is in an alarm state.

3.2.6 MIB Browsers

In order to use an MIB file it must first be loaded into an MIB browser, an SNMP command line client, or an NMS (Network Monitoring Server). MIB browsers provide a user-friendly desktop application to query SNMP enabled devices and are suited for use on smaller networks. A few examples of MIB browsers are listed below.

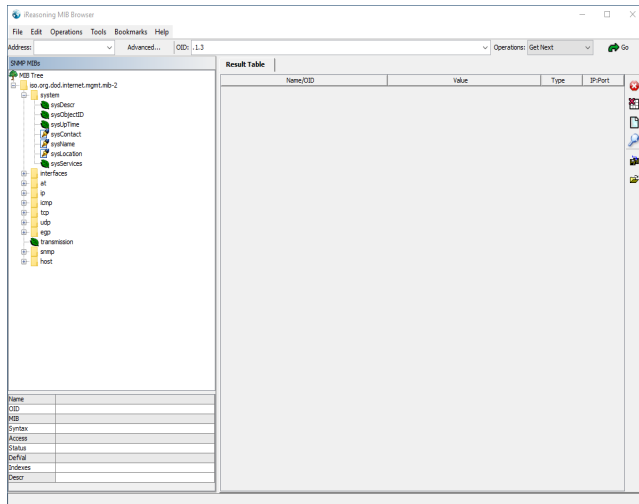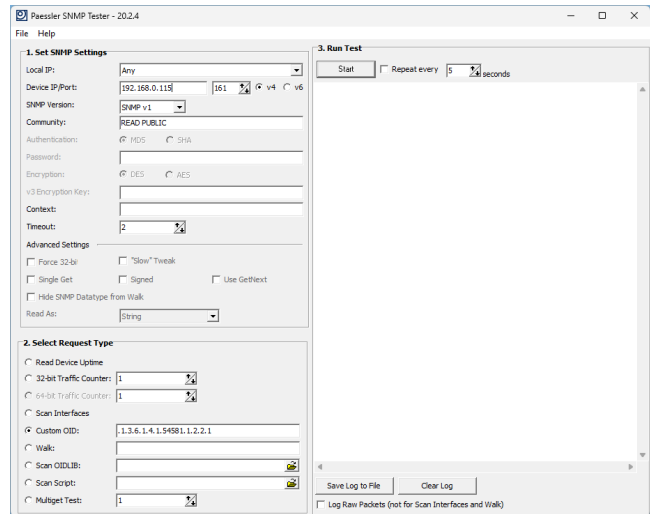*Figure 17: iReasoning MIB Browser*

Figure 18: Paessler SNMP Tester

3.2.7 Network Monitoring Servers

If you are monitoring multiple devices on a large network, a network monitoring server may be preferred over an MIB browser. Network monitoring servers allow you to receive alerts the instant your network connected devices encounter problems or stop responding. A few examples of network monitoring servers are listed below.
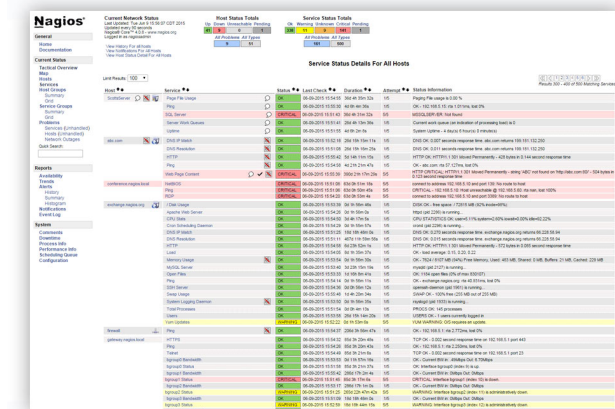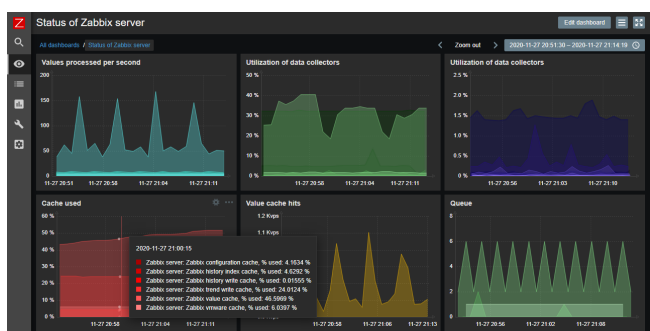
Figure 19: Nagios Core -NMS

Figure 20: Zabbix - NMS

3.3 SNMP Firewall Settings

If you are unable to reach the desired host (and a firewall exists in between the MIB browser or network monitoring server and this unit) you may need to open UDP port 161 on the firewall for SNMP polling support.

In order to receive any SNMP trap messages (or notifications), the PC or server running the MIB browser or network monitoring server must have UDP port 162 open on its firewall.

NOTE: It is not recommended to open the SNMP ports on your internet gateway's firewall to the world. If you require external access to this unit, consider routing SNMP traffic over a VPN connection.

Table 12: SNMP Firewall Settings

SNMP Notification Type	Port Type	Port Number
SNMP Polling	UDP	161
SNMP Traps	UDP	162

4 Serial Terminal Monitoring / Web Service Monitoring

The unit can monitor general information, electrical information and warning messages from the serial terminal console and web service API (Application Programming Interface). However, no configuration options can be set via the web service API, all configuration is done in the configuration application (WilmoreCommConfig.exe). It is recommended to remove serial connection to avoid unauthorized configuration changes.

For further information on the Wilmore web service see .

4.1 Default Terminal Settings

You may use any serial terminal program to connect to this unit. The default serial terminal settings to connect to Wilmore power products are listed in the table below:

Table 13: Default Terminal Settings

Configuration Option	Value
Port	COM8 (This should match the port detected in Section 1.2.4.1, pg. 14)
Speed (Baud)	115200
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None
New-Line Transmit	CR+LF
Local Echo	Enabled

4.2 Serial Terminal Connection with PuTTY
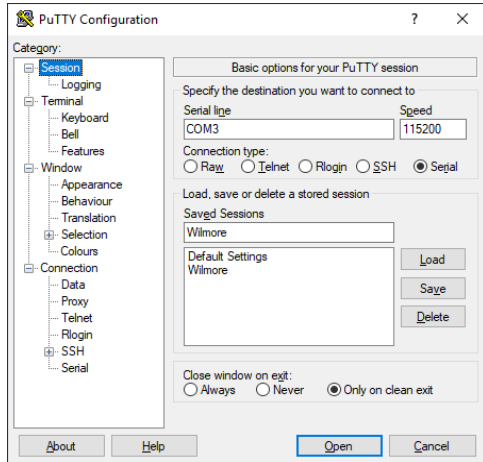
Figure 21: PuTTY Main Window
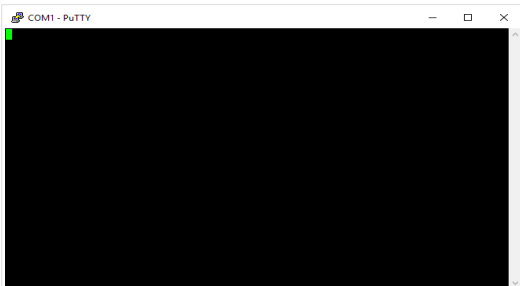
This section describes setting up a serial terminal session to the Wilmore converter with PuTTY. PuTTY is a free and open source multi-platform serial terminal application that can be downloaded from:

https://putty.org/

Figure 22: PuTTY Session Settings

1. Ensure your Wilmore power converter is powered on.

2. Plug in the included USB cable from the power converter to your Windows PC.

3. Launch the PuTTY serial terminal application.

4. On the session settings page, change the connection type to Serial.

5. Change the Serial line to the USB COM port of the unit, this should match the port detected in <u>Section 1.2.4.1, pg. 14</u>.

6. Change the speed (baud rate) to 115200.

Figure 23: PuTTY Terminal Settings
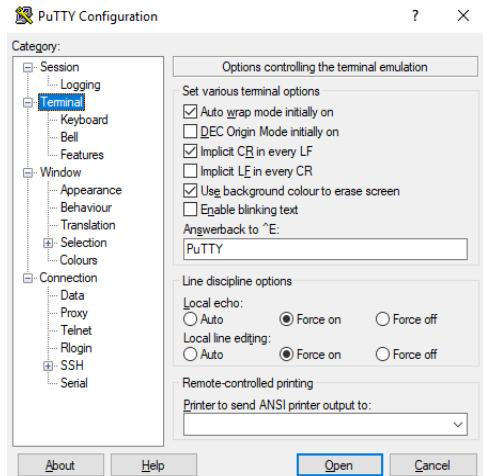
7. On the terminal settings page, enable the "Implicit CR in every LF option".

   NOTE: This option will force the cursor to return to the left side of the screen with every newline and prevent a stair stepping effect.

8. In the line discipline options section, change the "Local Echo" and "Local line editing" to "Force on".

   NOTE: The local echo option forces characters to be displayed in the local terminal as you type them. The local line editing option forces the terminal to send a command only when the enter key has been pressed.

Figure 24: PuTTY Serial Connection Settings
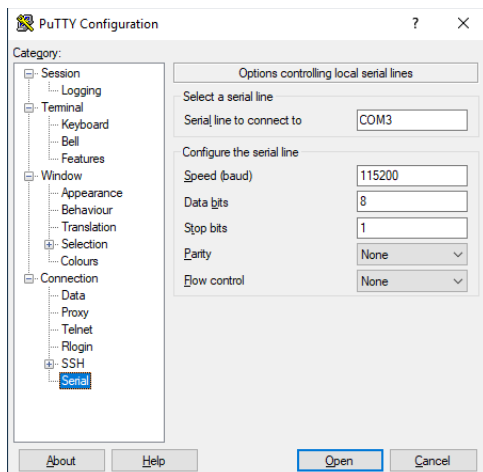
9. On the connection settings page under serial settings, ensure the "Speed (baud)" is set to 115200.

10. Click on the "Flow control" drop-down and select "None".

11. Return to the session settings page (**displayed in Figure 22**) and input a name for your saved session and click save. This will save your session settings for future use.

12. Click on the "Open" button to start the serial terminal session.

4.3 Serial Terminal Command Syntax

To query values using the serial terminal, the "!GETVALUE" command is used followed by any of the value names displayed in (Table 14: Serial Terminal / Web Service Values). You may query a single value or string multiple values together separated by commas.

Figure 25: The serial terminal command syntax.
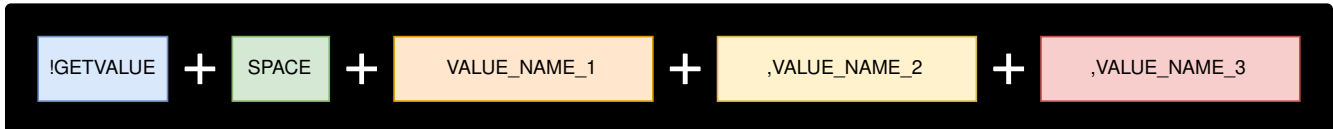

```
!GETVALUE SERIALNO,DCVIN,DCVOUT,DCIOUT,DCPOUT
```

The serial terminal command example displayed above will return the values in the format shown below (though the actual values displayed may vary).

```
[{"SERIALNO":"01230203","DCVIN":"129.9","DCVOUT":"24.1","DCIOUT":"7.0","DCPOUT":"168.7"}]
```

Responses are displayed as a single string of text in a JSON (JavaScript Object Notation) array.

4.4 Web Service API Syntax

This unit also provides a web service API (Application Programming Interface) to query for any of the values listed in Table 16: Serial Terminal / Web Service Values in <u>Section 4.5, pg. 34</u>.

The web service query commands must follow the command structure defined in figure 26. The minimum required information to query the web service is this unit's IP Address, the text string "`/WilmoreService?F=GETVALUE&KEY=`", and at least one value as defined in the serial terminal / web service values table. You may query a single value or multiple values from the web service. If you are requesting multiple values in a single query, the requested values must be comma separated.

NOTE: Do not include the "!GETVALUE" command in your web services query, this command is only used in serial terminal command queries.

Figure 26: The Wilmore web service API query syntax.


```
http://192.168.0.115/WilmoreService?F=GETVALUE&KEY=SERIALNO,DCVIN,DCVOUT,DCIOUT,DCPOUT
```

Figure 27: An example of the JSON output from a Wilmore web service API query. Example JSON was formatted in Visual Studio Code.

The above example command will return the information displayed in figure 27. The query is returned in JSON (*JavaScript Object Notation*) format and is displayed in a web browser as a single string.

The API query can be displayed in a custom-built web application or collected for later use in network logging software.

4.5 Serial Terminal / Web Service Values

Table 14: This table provides an overview of available serial terminal and web service values that can be queried for on a Wilmore converter.

Value Name	Description	Example Response *
General Information		
UNITDSC	Defines the type of Wilmore power product.	[{ "UNITDSC": "DC-DC Converter" }]
MODELNO	The Wilmore assigned model number of this unit.	[{ "MODELNO": "1760-130-24-16-M5" }]
SERIALNO	The Wilmore assigned serial number of this unit.	[{ "SERIALNO": "01230203" }]
MACID	The Wilmore assigned MAC Address of this unit.	[{ "MACID": "70-B3-D5-ED-40-0A" }]
STRTCNT	The startup count of this unit.	[{ "STRTCNT": "1" }]
SWVER	The version number of the software installed on this unit.	[{ "SWVER": "1.20230303" }]
Network Information		
USEDHCP	Denotes whether DHCP is enabled or disabled.	[{ "USEDHCP": "NO" }]
IPADD	The static or dynamic IP address assigned to this unit.	[{ "IPADD": "192.168.0.115" }]
SUBNET	This unit's assigned subnet mask address.	[{ "SUBNET": "255.255.255.0" }]
DFLTGTWY	This default gateway assigned to this unit.	[{ "DFLTGTWY": "192.168.0.1" }]
DNSADD	This DNS server address assigned to this unit.	[{ "DNSADD": "192.168.0.1" }]
SNMP Information		
USESNMP	Denotes whether SNMP is enabled or disabled.	[{ "USESNMP": "YES" }]
SYSDESC	An administrator defined text description of this unit.	[{ "SYSDESC": "WILMORE HW" }]
SYSOBID	ID that uniquely identifies Wilmore power products. (Not user Configurable)	[{ "SYSOBID": "1.3.6.1.4.1.54581.1" }]
UPTIME	System uptime since startup (in hundredths of a second).	[{ "UPTIME": "186446.38" }]
SYSCNTC	Displays the administrator's contact information for this unit, including information on how to contact them.	[{ "SYSCNTC": "username@example.com" }]

Value Name	Description	Example Response *
SYSNAME	Displays the hostname for this unit. Typically, the fully-qualified domain name (FQDN) of the unit.	`[{ "SYSNAME": "myhost.example.com" }]`
SYSLOC	Displays the physical location of the unit.	`[{ "SYSLOC": "Wiring closet, 1`st` floor" }]`
SYSSVCS	A value which indicates the set of services that this entity primarily offers.	`[{ "SYSSVCS": "72" }]`
Electrical Information		
DCVIN	The most recent value of the DC input voltage (Volt).	`[{ "DCVIN": "129.9" }]`
DCVOUT	The most recent value of the DC output voltage (Volt).	`[{ "DCVOUT": "24.1" }]`
DCIOUT	The most recent value of the DC output current (Ampere).	`[{ "DCVOUT": "7.0" }]`
DCPOUT	The most recent value of the DC output power (Watt).	`[{ "DCPOUT": "168.7" }]`
WARNING	A text listing of the most recent warnings.	`[{ "WARNING": "Output Overload" }]`
SNMP Trap Information		
USETRAP	Denotes whether SNMP traps are enabled or disabled.	`[{ "USETRAP": "NO" }]`
TRAPFRQ	The time in seconds in between trap messages. Minimum Value: 5 seconds Maximum Value: 86,400 seconds (approximately 24 hours)	`[{ "TRAPFRQ": "5" }]`
TRAPTGT	Displays the IP address for the network management server where the SNMP trap should be received.	`[{ "TRAPTGT": "192.168.0.100" }]`

* Displayed values are for example purposes only. Actual serial terminal command response values may vary.