Windows OS drivers for GW DEVICE SERVER…

Installation and configuration of drivers for Windows operating system and GW DEVICE SERVER… protocol converters

Technical note
3843_en_A

1   Description

The GW DEVICE SERVER… Windows Driver creates native COM ports on the host Windows operating system directly linked to the serial ports on a remote GW DEVICE SERVER… and is the recommended software for any timing-sensitive applications requiring true COM port communication and/or secure connections.

The GW DEVICE SERVER Windows driver consists of two applications, the Driver Installation Wizard and the Driver Management Console. The Driver Installation Wizard installs, updates, or removes drivers corresponding to GW DEVICE SERVER… modules. The Driver Management Console provides the ability to customize the connection settings between the driver and GW DEVICE SERVER…

This software is for use with:

2702758	GW DEVICE SERVER 1E/1DB9
2702760	GW DEVICE SERVER 1E/2DB9
2702761	GW DEVICE SERVER 2E/2DB9
2702763	GW DEVICE SERVER 2E/4DB9

It is compatible with the following operating systems:

Operating system	
Windows 7	Service pack 1
Windows 8/8.1/10	All service packs
Windows Server 2008 R2	Service pack 1
Windows Server 2012	All service packs
Windows Server 2012 R2	All service packs

Make sure you always use the latest documentation.
It can be downloaded at phoenixcontact.net/products.

2   Installation

The GW DEVICE SERVER… driver software installation uses a wizard to guide you through the installation process.

1. Download the software from
   phoenixcontact.net/products
   and save the file to an appropriate location.
2. Double-click the
   "GW_DEVICE_SERVER_Windows_Driver.exe" file to start the installation wizard.

Figure 1   "Welcome" screen

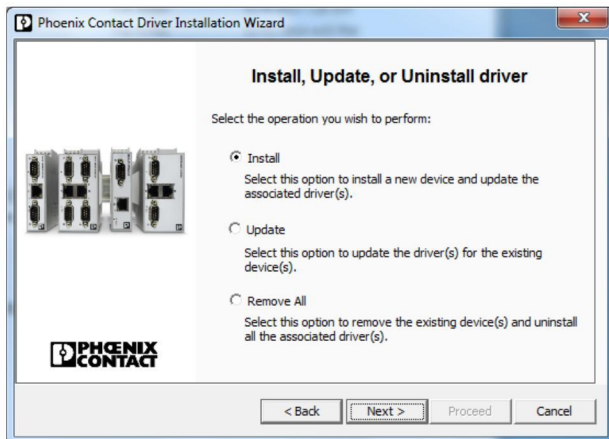3. Click the "Next" button on the "Welcome" screen.

Figure 2   "Install, Update, or Uninstall driver" screen

4. Click the button next to the desired operation.
   – Install
   – Update
   – Remove All
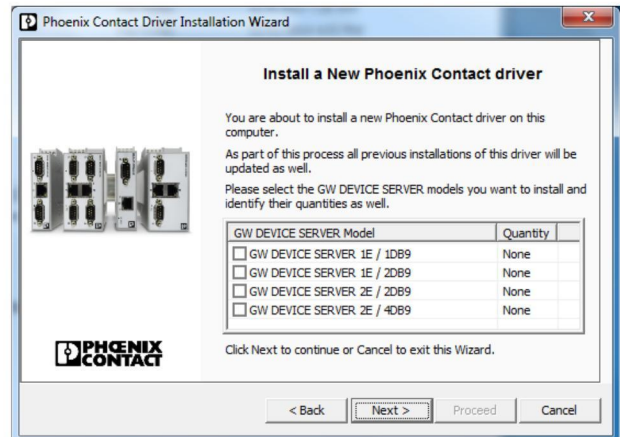   Then click the "Next" button.

Figure 3   "Driver selection" screen

5. Click the button next to the module installed. A popup window appears prompting for the number of modules of that type.
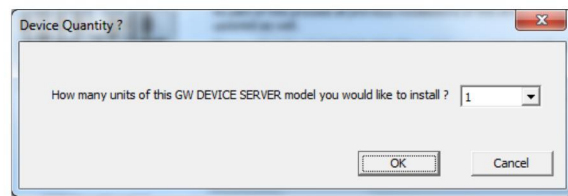

Figure 4   "Device Quantity" popup window

Select the number of modules using the drop-down menu, and then click the "OK" button. You will return to the "Driver selection" screen where different types of modules may be selected.

When all the desired modules are selected, click the "Next" button.

Figure 5   "Summary" screen

6. A "Summary" screen displays the total number of
    GW DEVICE SERVER… drivers selected.

> **NOTE:**
> Make sure all active serial port connections and
> applications are closed to prevent data loss.

    If all items are correct, click the "Proceed" button.

7. The installation process will run for a few minutes.
    When complete, the "Summary" screen will indicate the
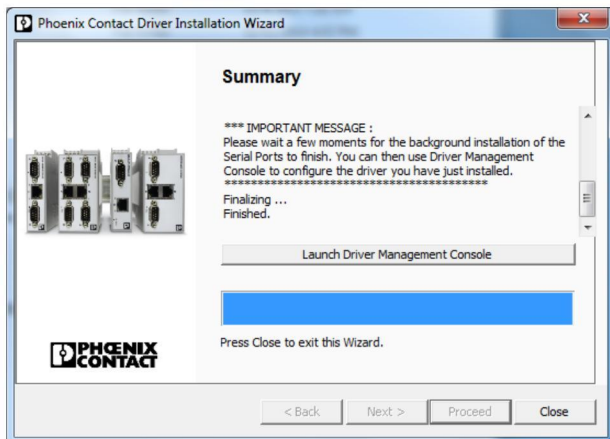   process is finished.

Figure 6   "Summary" screen showing finished message

8. To configure the driver settings, click the "Launch Driver
    Management Console" button on the "Summary"
    screen.

3   Driver configuration

The configuration options can be accessed by clicking the "Start" button and navigating to Phoenix Contact/GW DEVICE SERVER/Driver Management Console. Each installed module may be configured, as well as individual ports of the installed modules.

3.1   Module configuration

Highlight the desired module in the left pane to display the configuration information about that module. The "General" tab displays the network and device settings. The "Advanced" tab displays network statistics between the NIC card and GW DEVICE SERVER….
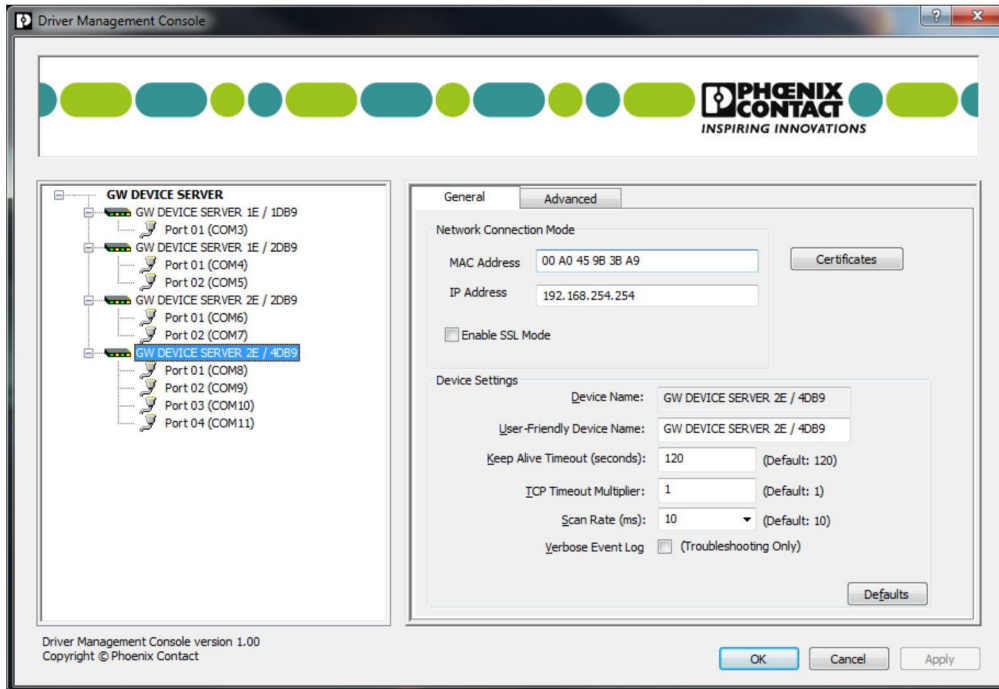

Figure 7   "Module/General" screen

Field name	Function
MAC Address	Enter the MAC address of the GW DEVICE SERVER…. Be sure to use the correct format: 00 A0 45 xx xx xx. A space must separate each pair of digits. The MAC address and IP address must be entered, and the GW DEVICE SERVER… must be connected to a local network for information to be displayed on the "Advanced" tab.
Certificates	When SSL is enabled, click the "Certificates" button to select the certificates that correspond to the certificate information loaded onto the GW DEVICE SERVER….
IP Address	Enter the IP address of the corresponding GW DEVICE SERVER… to establish a connection.
Enable SSL Mode	Enables SSL encryption in the Windows driver only. In order for the connection to function properly, SSL must also be enabled in the GW DEVICE SERVER…. If using a private certificate, both the Windows device and the GW DEVICE SERVER… must use the corresponding certificate authorization chain.
Device Name	The Device Name identifies the model of GW DEVICE SERVER… and may not be changed. Use the User-Friendly Device Name field to provide custom device names for your installation.

Field name	Function
User-Friendly Device Name	This name identifies the GW DEVICE SERVER… in the Driver Management Console.
Keep Alive Timeout (seconds)[1]	Sets the amount of time, in seconds, that this GW DEVICE SERVER… waits until it closes this connection and frees all the ports associated with it. The Keep Alive feature works in the following way. Values entered may be from **0** to **999999**. Values less than **5** will cause the driver to fail to maintain communications. Values greater than **120** will require greater time periods for recovery and are not generally recommended. A setting of **10** is generally most effective in reestablishing communications.
TCP Timeout Multiplier	Use the TCP Timeout Multiplier option to modify two timers used in TCP/IP socket communications. The first identifies how long the TCP protocol should wait before timing out an attempt to open a TCP channel. The TCP Timeout Multiplier default is **1,** and the timer defaults to **500 ms** when the TCP/IP address method is used to communicate with a device. If the TCP Timeout Multiplier is set to **2**, the timer would now be **1000 ms**, or **1 second**. If the multiplier is **4**, the new timeout period would be **2000 ms**, or **2 seconds**. The second timer defines how long the driver will wait for a response from the GW DEVICE SERVER… when a forced release of a port is requested. This timer defaults to **8 seconds**. If the TCP Timeout Multiplier is changed to **2**, the timer would now be **16 seconds**. If the multiplier is **4**, the new timeout period would be **32 seconds**.
Scan Rate (ms)[1]	The Scan Rate should be set to the default value of **10 ms** for most applications. To adjust latency for time-critical applications, select a longer or shorter interval from the drop-down list or type in the rate (**2** to **50**). If a value larger than **50** is entered, the maximum of **50** is implemented.
Verbose Event Log	The Verbose Event Log should only be used for extensive kernel debugging.
Defaults	The "Defaults" button will set the Device Settings to default values.

[1] Driver settings dictate connection settings irrespective of GW DEVICE SERVER… settings.

Keep Alive Timeout (seconds)

During normal operation, the driver periodically sends a connection check to the GW DEVICE SERVER… and the GW DEVICE SERVER… then returns a response. There are two timers: one in the driver, and one in the GW DEVICE SERVER…. These timers are reset when a connection check signal is received. If a connection is broken, that is, a check is not received, the data is stored in the computer and/or the GW DEVICE SERVER…. Depending on the amount of time that has expired since the connection was lost, the following happens:

– When the computer loses its connection to the GW DEVICE SERVER… but reestablishes it before the timeout period expires, any data transmitted during this period is queued and sent when the connection resumes.

– When the computer loses its connection to the GW DEVICE SERVER… and does not reestablish the connection before the timeout period expires, the driver then purges any pending I/O data for ports on that connection and returns all pending and future I/O commands, with the exception of the Close request, to the application with an error indicating the disconnected status.

The lost connection process is similar to the processing that occurs when the computer receives a notification from the GW DEVICE SERVER… that a port release request was processed on a port it owns, with the exception that a different status is returned. When the connection is reestablished, the computer attempts to reacquire the ports that were open when the connection was lost.

– If the attempt is successful, normal operations resume for the port.

– If any port fails to be acquired, then the computer will continue to fail all further I/O operations, with the exception of a Close request. When the Close request is received, the port can then be reopened.

If the computer loses its connection and the time period expires, the GW DEVICE SERVER… places the port into a state in which another computer can establish a connection, locking out the original driver when a connection is made. The driver will respond to all I/O commands, with the exception of the Close request, with an error indicating the disconnected status. If the port is still available when the driver reestablishes a connection, then it will claim the port and allow I/O to resume.

3.2   Port configuration

Highlight the desired port in the left pane to display the configuration options for that port.
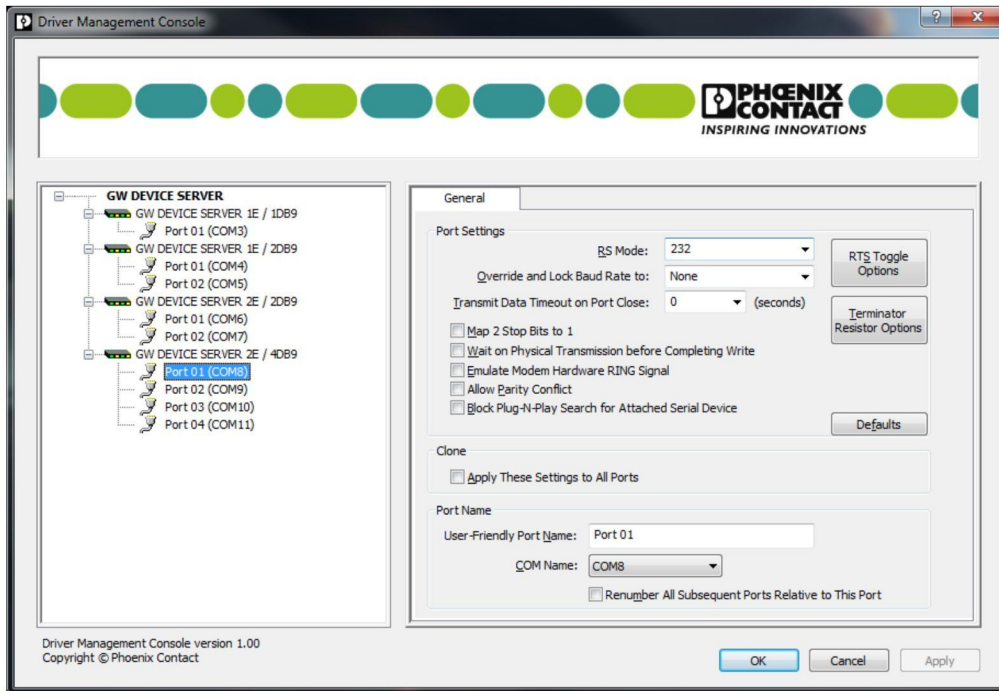

Figure 8   "Port/General" screen

Field name	Function
RS Mode[1]	RS Mode refers to the communications mode of the serial device that you are connecting to for a particular COM port. Make sure to select the mode that matches the serial device that connects to that port.
	RS-485 Mode provides these choices:
	– RS-485 2-wire (half duplex) supports transmit and receive data. When data is transmitted, the Transmit Enable signal is activated, and the Transmit Receive device switches from receive to transmit automatically.
	– RS-485 4-wire Master (full duplex master) supports transmit and receive data, which means both signals are always active. The GW DEVICE SERVER… is enabled by the Transmit Enable signal. This mode is the same as RS-422.
	– RS-485 4-wire Slave (full duplex slave) supports transmit and receive data. When data is transmitted, the Transmit Enable signal is activated; the Transmit device goes active and starts sending data. When the data is not being sent, the Transmit device is inactive. The Receive device is always active.
Terminator Resistor[1]	Enables the termination resistors on the GW DEVICE SERVER… when operating in RS-422 or RS-485 mode.
Override and Lock Baud Rate to[1]	Sets the transfer rate to a fixed value and prevents the application from changing the transfer rate.
	Select a rate from the drop-down list or type the value in the field.
	The default is **None**.

Field name	Function
Transmit Data Timeout on Port Close	This sets a time delay on the transmit data before a port closes. Select the length of time to wait for data to clear the transmit buffer before a close request from a host application is completed. If data is still in the transmit buffer, you can set a delay time to allow the buffer to empty before a close request is completed. This is typically used with slower peripheral devices, such as printers, to give the data sufficient time to flush through the system.

The default is **0**. |
| RTS Toggle Options[1] | This button opens the RTS Toggle Options popup that allows you to configure RTS (Request to Send) options for RS-485 mode. |
| Map 2 Stop Bits to 1 | This allows the mapping of two stop bits to one stop bit. If the application you are using is hard coded to use two stop bits and you are receiving framing errors, you can implement this option. Leave the box unchecked to enable stop bits to pass through unchanged. |
| Wait on Physical Transmission before Completing Write | This allows you to force all write packets to wait until the transmit data has physically completed the transmission before returning completion to the host application.

The default mode (not checked) is to buffer the data in the transmit hardware buffer and return completion as soon as the packet is in the buffer. This is typically used with slower peripheral devices, such as printers, to give the data sufficient time to flush through the system. |
| Emulate Modem Hardware RING Signal | This allows emulation of a hardware ring indicator (RI) signal. |
| Allow Parity Conflict | GW DEVICE SERVER 1E/1DB9 only

This is used to allow a parity conflict on a GW DEVICE SERVER 1E/1DB9. It may be necessary to use this option after determining that the cabling is correct and able to transmit data, but not receive proper data. |
| Block Plug-N-Play Search for Attached Serial Device | This option disables Plug-N-Play from searching for a device attached to the serial port. |
| Defaults | Click the "Defaults" button to return all fields to the default state. |
| Clone | Clone allows the configuration of all ports on this GW DEVICE SERVER… to the same settings.

If this box is checked, the changes on the "Port/General" screen are applied to all ports on this GW DEVICE SERVER….

If this box is not checked, the changes made on the "Port/General" screen apply only to this port. |
| User-Friendly Port Name | Enter a custom COM port name to identify the GW DEVICE SERVER… in the Device Management Console. The default is the corresponding port number. |
| COM Name | This field allows renumbering of this COM port. Click the drop-down menu to see the options.

If a COM port number is followed by **(in use)**, this means that Plug-N-Play sees those COM port numbers in use by another device.

If this COM port is renumbered and you check the "Renumber All Subsequent Ports Relative to This Port" box, the Driver Management Console will renumber all of the ports on the GW DEVICE SERVER…, starting with the number selected in the "COM Name" field.

If you select a name used by another port, a message box appears indicating that the port is already in use. |
| Renumber All Subsequent Ports Relative to This Port | This option renumbers all subsequent ports on the GW DEVICE SERVER… relative to the port displayed in the "COM Name" field. |

[1] Driver settings dictate connection settings irrespective of GW DEVICE SERVER… settings.

RS Toggle Options

The "RS Toggle" button opens the "RTS Toggle Options" popup window to allow configuration of the RTS (Request to Send) options for RS-485 mode.

– Override and Lock to RTS Toggle Mode

Check this box to lock the port in RTS (Request to Send) toggle mode. Then set the mode (low or high) as desired for RS-485 mode.

– RTS Toggle RTS Low

Check this box to toggle the RTS output signal low during data transmission, which may be needed for relay devices for RS-485.

If the box is not checked, RTS is toggled high (asserted) during data transmission for RS-485 mode.

– Defaults

Click the "Defaults" button to return all the values in the "RTS Toggle Options" popup window to their default state:

– Override and Lock to RTS Toggle Mode = Disabled
– RTS Toggle RTS Low = Disabled