
Operator Interface

Tech Note 11

Port Sharing/Program-Thru



Abstract:

This document describes how to use the Crimson[®] Port Sharing feature to program a device that is serially connected to a Red Lion[®] operator interface product.

Products:

G3 Series HMI / Graphite[®] HMI / Modular Controller / Data Station Plus / ProductVity Station

Use Case:

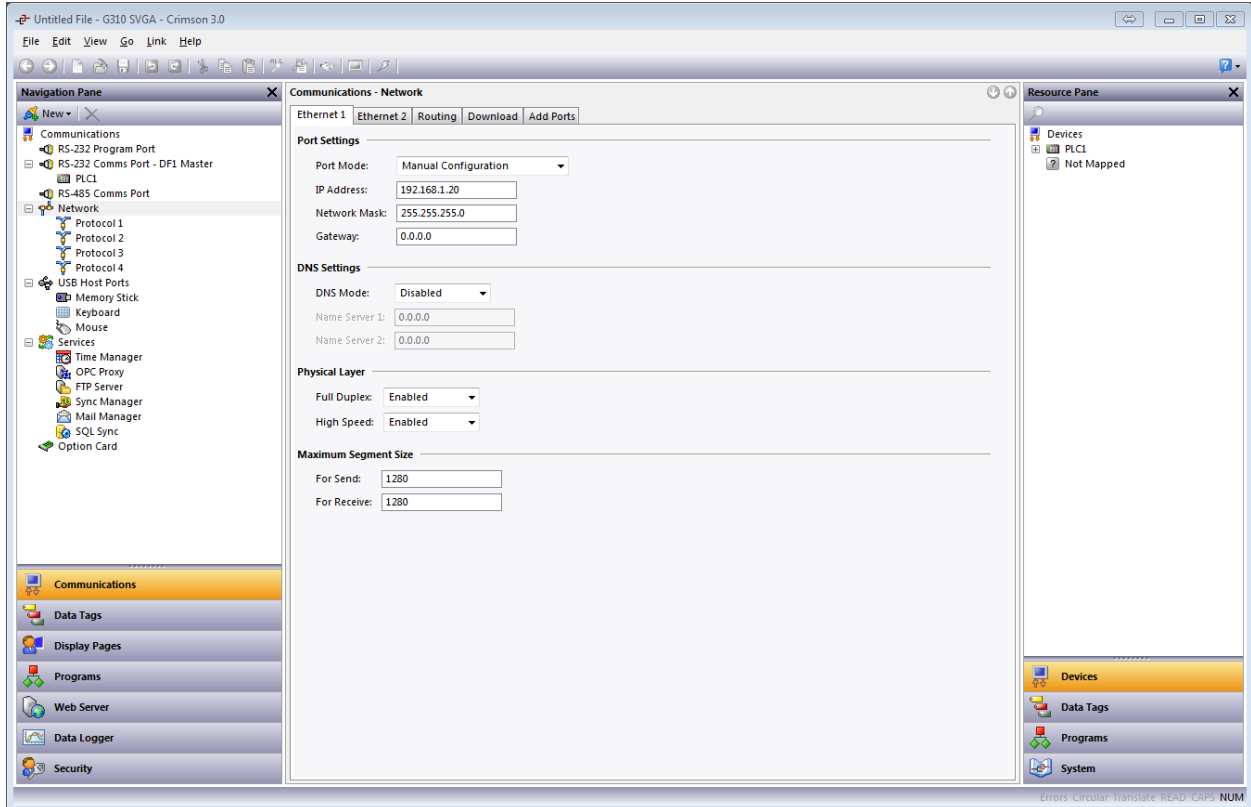
Many industrial control devices, such as PLCs, have a single serial port which is used for both programming and communications. When connected to a communications device, the cable needs to be switched out to allow for programming of the device. Enabling Port Sharing in Crimson allows the cable to remain in place while the programming PC is connected via another serial port or even Ethernet to the Red Lion product.

Required Software:

Crimson[®] 2.0 or 3.0

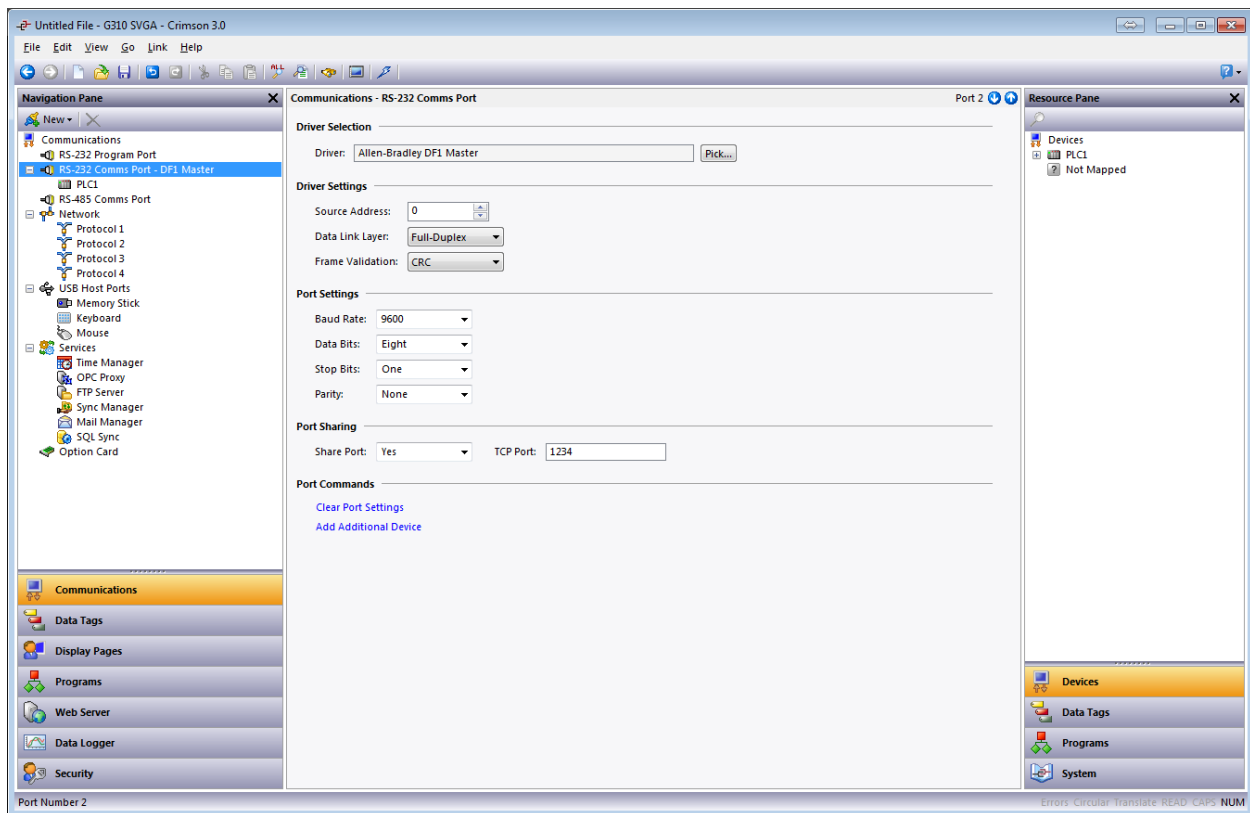
Enabling TCP/IP

The Port Sharing feature relies on the TCP/IP protocol, even if serial Program-Thru is being used. To enable Ethernet, select the Network icon in the Communications section of the Navigation Pane, and select the required Port Mode. For installations where Ethernet is not actually being used, you can select *Manual Configuration* and leave the rest of the options at the default settings.



Sharing the Required Port

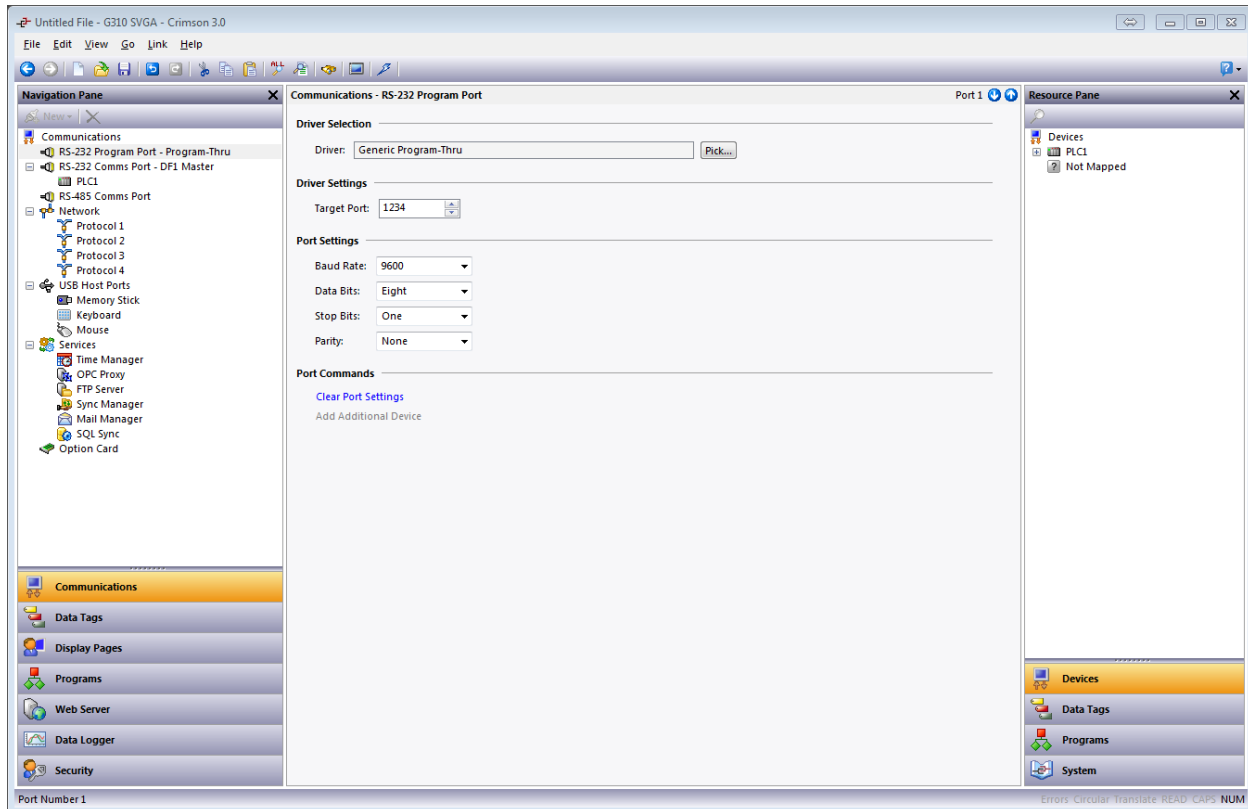
The next step is to share the required port. This is done by selecting Yes in the Share Port property and optionally entering a suitable TCP/IP port number. This number represents the virtual port that will be used to expose the serial port for access via TCP/IP.



If the port setting is left at zero, a number of 4000 plus the logical index of the port will be used. To obtain the logical index of the port, click on the port and then look at the upper right of the middle pane, or the left of the status bar at the bottom of the Crimson window. Both locations show Port 2 in the screenshot above. Any TCP port that is not already used by another TCP/IP protocol or service is acceptable for use.

Connecting via Another Serial Port

In order to use another port on the HMI to route data to the shared port, select the Generic Program-Thru driver for that port. Configure this driver with the TCP/IP port number of the serial port that has been shared. In the example below, data is being routed from the programming port to a PLC that is connected via the RS-232 communications port.

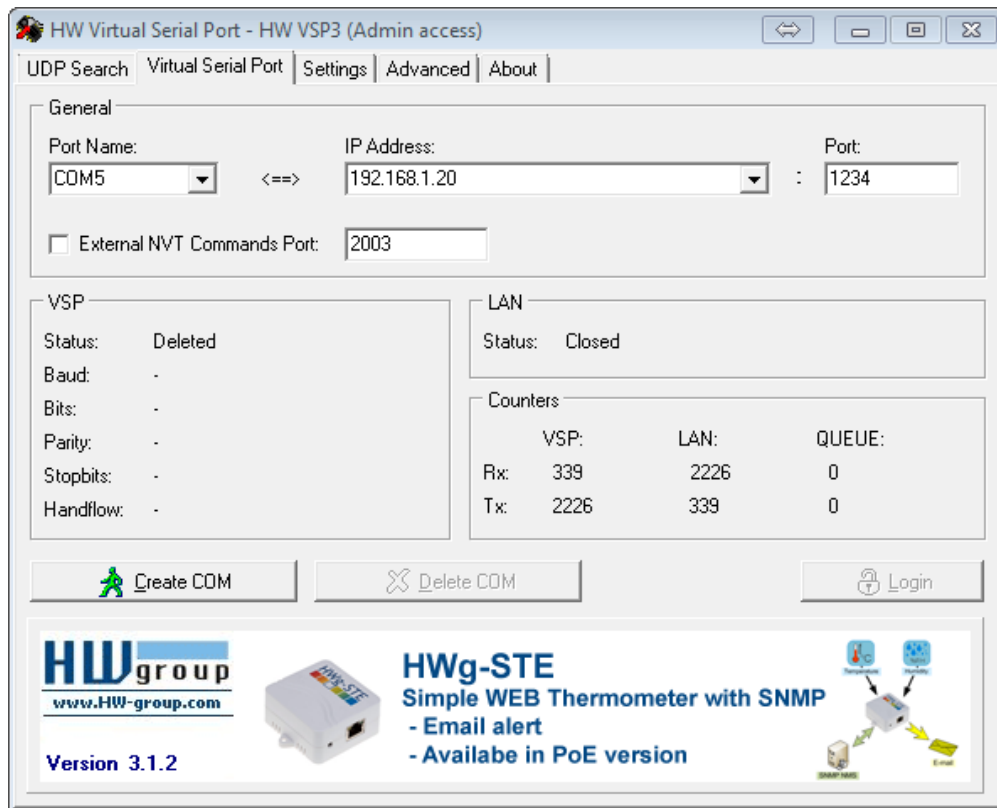


Note that the Baud rate and other port settings do not have to be the same as those for the port we are sharing. In the configuration shown above, data to and from the programming software is sent at a higher Baud rate than the data to and from the PLC, with the G3 doing the appropriate buffering and conversion. In this example, to make use of the shared port, connect a spare serial port on your PC to the programming port of the G3. Configure the PLC programming software to talk to this COM port. As soon as the PC begins to talk to the PLC, communications between the G3 and the PLC will be suspended, and the G3's two ports will be "connected" in software so that the PC will appear to be talking directly to the PLC. If no data is transferred for more than a minute, communications between the G3 and the PLC will resume.

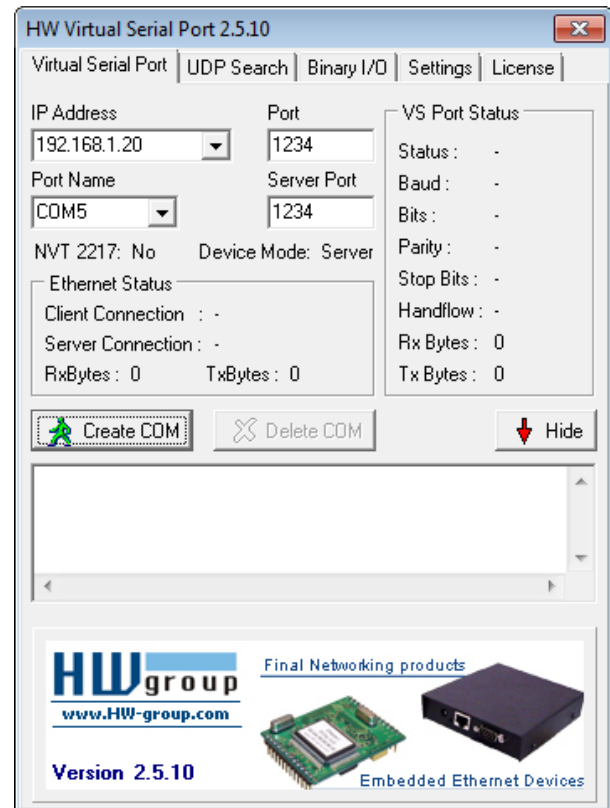
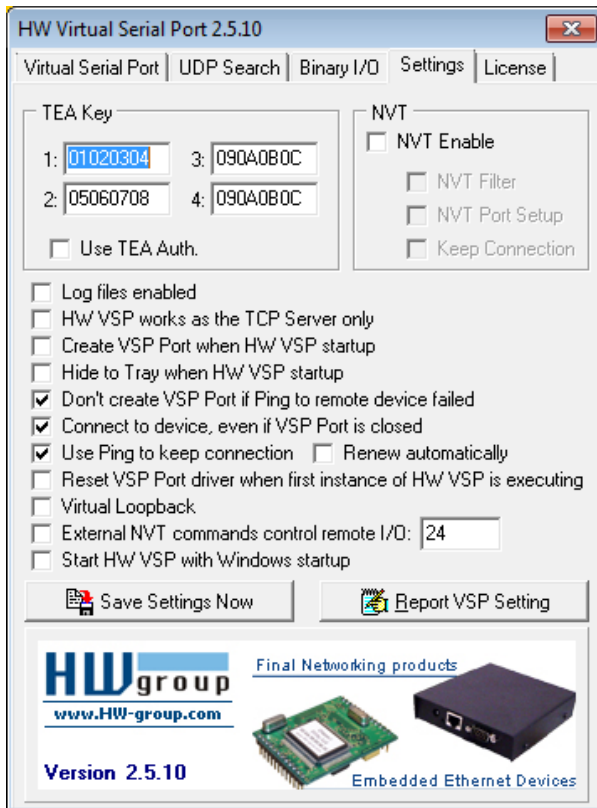
Connecting via Ethernet

Rather than using an additional serial port on your PC and on the HMI, it is possible to use a third-party utility to create what are known as virtual serial ports on your computer. These will appear to applications as physical COM ports, but in fact, they send and receive data to a remote device over TCP/IP. By installing one of these utilities and configuring it to address the G3 HMI, serial access can be established to any devices connected to the HMI without any additional cabling. Indeed, there is no need to have any physical serial ports available on the PC at all. This ability can be very valuable when working with modern laptops, where a COM port is often an expensive option. Several third-party virtual serial port utilities are available. On the freeware side, a company called HW Group provides an excellent utility called HW Virtual Serial Port. There are also a number of other freeware port drivers available, most of which seem to be derived from the same source base.

The Singleport version of [HW VSP 3](#) works with the default settings on Windows 7, all that needs configured is the IP address and TCP to use for the connection (as shown below).



The older [HW Group Virtual Serial Port Version 2](#) is recommended for PCs running Windows XP. See the screenshots below of the settings and how to use it to establish a virtual serial port connection.



To create a virtual serial port:

1. Run the HW Group software.
2. Click on the settings tab.
3. Match the settings from the screenshot above.
4. Click on the Virtual Serial Port tab.
5. Type the IP address of the Red Lion unit into the IP Address field.
6. Choose a COM Port Name that is not already in use on the PC.
7. Match the Port and Server Port settings to the TCP Port setting of the port being shared in Crimson.
8. Click *Create COM*.

This COM port can now be selected in the other devices programming software to connect through the Red Lion device.

Pure Virtual Ports

In some circumstances you may need to use a spare serial port on a G3 to provide access to a remote device that is not otherwise connected to the HMI, or to connect to a dedicated programming port on a device, even though the G3 is using another port to perform communications with that device.

For example, Siemens S7 PLCs that program via MPI require separate programming and communications adapters (although some combination adapters do exist). One RS232 port in the Red Lion device would be configured with the MPI Master driver, while the other with the Generic Program-Thru driver.

Limitations

Note that some PLC programming packages may not work with virtually or physically shared ports. Issues to watch out for are tight timeouts that do not allow the G3 adequate time to relay the data to the PLC; a reliance on sending break signals or on the manipulation of hardware handshaking lines; or DOS-style port access such that the package cannot “see” the virtual serial ports. Luckily, these issues are rare, and most packages will happily communicate as if they were directly connected to the PLC in question.

Here is a list of PLCs that have been tested by Red Lion Controls or our customers along with the results:

PLCs/Drivers Known to Work

Allen Bradley (DF1 Connections via RS232)

- MicroLogix
- SLC
- ControlLogix and CompactLogix (prior to version 17 firmware)
- PLC5 have not been proven, but uses RSLinx like the rest to establish a connection.
- Ultra 3000

Omron

- C-series

Aramat, Matsushita, NAIS

- FP series

GE

- VersaMax, when timeout on Port 1 is configured for NONE
- Any others that you can configure for no timeout on Port 1 should also work.
- 90-30 seems like it will not work, even with all of the timeouts set to over 10 seconds.

Emerson

- EN-drive, see Power Tools app note

Mitsubishi

- FX1N, FX2N, FX3G, FX3U (according to Wayne Delong at AA Electric)

Koyo

- DL205, after we increased timeout

Parker

- Acroloop, with small programs, large programs fail

Red Lion Controls

- PAX meter, **MUST** be set to 9600 8n1

Unitronics

- V350-35-TA24, using Visilogic ver. 8.6.0 with a timeout of 3 seconds

PLCs/Drivers Know to NOT work

Allen Bradley

- DH485 devices

Siemens

- S7-200, the software ‘sees’ something unrecognizable

Scheinder

- via Unitelway

For more information: <http://www.redlion.net/support/policies-statements/warranty-statement>

