

DATRAN XL4 RTU Ethernet Interface



The DATRAN XL4 RTU has an Ethernet interface as standard, to maximise connectivity options. The Ethernet interface can be used for communications from the XL4 RTU to the DATRAN VI SCADA base station via ADSL or any internet connection providing communication options from anywhere in the world.

Ethernet also provides an alternative to RS232 for interfacing to other devices, typically PLCs, pump controllers or on-site HMIs.

Communication Protocols Supported

- DATRAN base comms (Qcomms)
- MODBUS (RTU as master or slave)
- DNP3 (RTU as slave)

Setup – Using a Hub or LAN

To connect the XL4 to a device by Ethernet normally both the XL4 and the device would be connected to a switch or hub by standard LAN cables.

That is, the devices are not directly connected to each other. This is the normal LAN situation such as you would find when interfacing to a PLC in a water treatment plant.

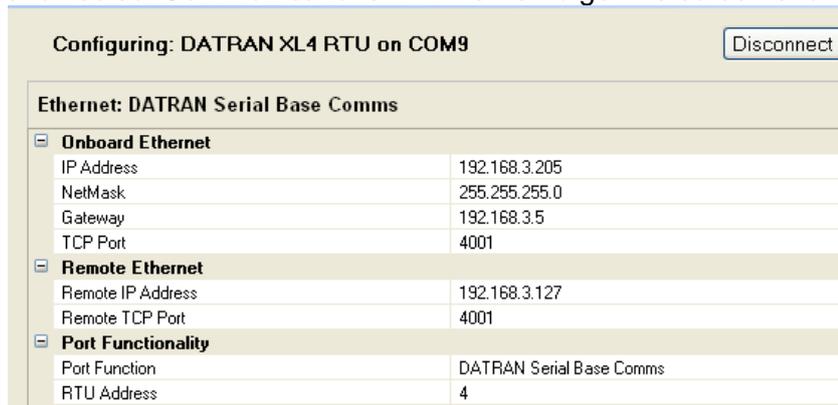
Setup – Direct connection

Alternatively if you want to directly connect a device that is not on a LAN, such as a local HMI you can use a patch cable. This will need to be a crossover cable as you will be connecting Data Terminal Equipment (DTE) to DTE. Note that crossover patch cables are the exception and may have distinctive “CROSSOVER” labels on them.

It is recommended to purchase LAN cables rather than manufacture your own.

Workbench Configuration

Using Workbench select Communications → Ethernet to get the screen shown below:



Configuring: DATRAN XL4 RTU on COM9	
Disconnect	
Ethernet: DATRAN Serial Base Comms	
Onboard Ethernet	
IP Address	192.168.3.205
NetMask	255.255.255.0
Gateway	192.168.3.5
TCP Port	4001
Remote Ethernet	
Remote IP Address	192.168.3.127
Remote TCP Port	4001
Port Functionality	
Port Function	DATRAN Serial Base Comms
RTU Address	4

Onboard Ethernet

IP Address:

A static IP address that the RTU will respond to. Usually this is in the same subnet as the device you want to connect to. That is, if your PLC or HMI has an IP address of 192.168.3.99, then you must assign the RTU an address 192.168.3.xxx where “xxx” is in the range 1-255.

Netmask:

An IPv4 mask used to divide an IP address into subnets. Typically (and in the example used for IP address) the subnet will be 255.255.255.0

Gateway:

The IP address of the gateway server for the network. Typically this does not need to be configured when talking to local devices. The gateway is the route to the WAN or internet, this will usually be a router or firewall server. If your RTU and device are on the same subnet (the first three fields of the IP address are the same e.g. 192.168.3.xxx) this entry is not used.

TCP Port:

The TCP port that the RTU will respond to, must be in the range 1 to 65000.

Remote Ethernet

Remote IP Address:

If the RTU is operating as a Modbus Master then this is the IP address of the remote slave (currently this is limited to only one slave)

Remote TCP Port:

If the RTU is Modbus Master, then this is the TCP port that the remote slave is listening on.

Port Functionality

What the Ethernet port is being used for.

Note that when the Ethernet port is configured for Datran Serial Base Comms the Remote Ethernet settings are not used (they will be greyed out). This is because the RTU is a slave. When DATRAN polls the RTU, it will use the incoming IP address as the address to respond to for the poll and for any change of state (COS) transmissions.

Limitations

Ethernet cable has a maximum length of 100m but can be extended by using a repeating device such as a switch or hub.

Currently the XL4 can only communicate with one device over the Ethernet port.

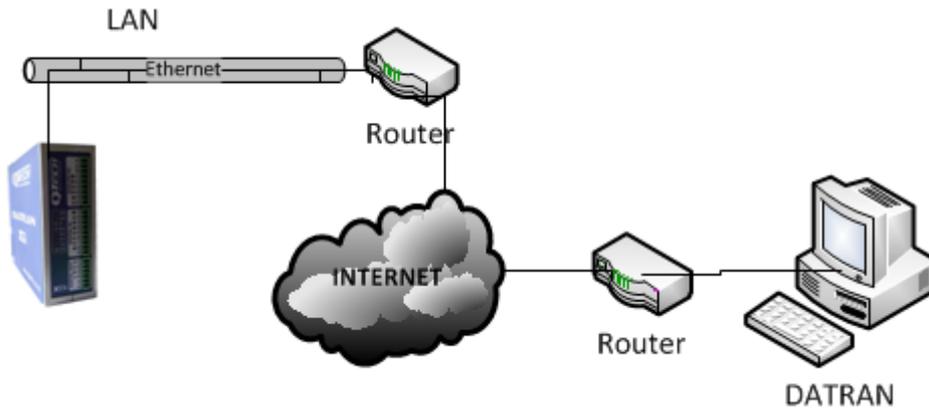
Other Reference Material

This application note should be read in conjunction with the Cellular IP data and Modbus user notes as there is important set up data in there which is not repeated here.

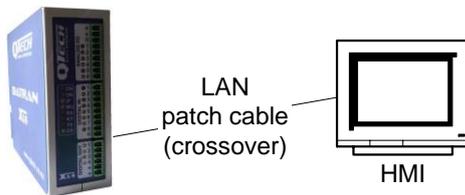
Please visit the [Application Note](#) section of our website.

Typical Configurations

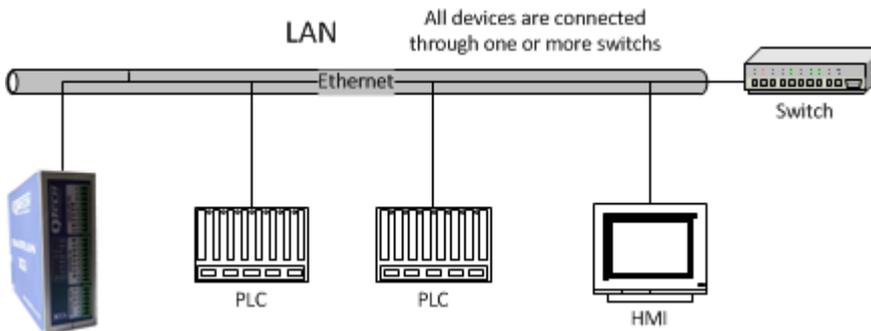
Config 1 - XL4 communicating with DATRAN base over a wider network



Config 2 - XL4 direct connected using a crossover patch cable



Config 3 - All devices on one LAN segment



Config 4 - XL4 & PLC on own LAN segment, connected to each other by a switch

