

Technical Information Sheet

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TIS#: 293

Date: November 27, 2006

Issued by: Chris Lawlor

Subject
Serial Talk Through: Configuring a 3508 with iTools through a 6000 Series Recorder

Definition:

Serial talk-through allows a recorder to share its serial slave devices with other Modbus masters over an Ethernet connection. Essentially, the other masters talk to the recorder's slave devices through the recorder. In this respect, the recorder acts as an Ethernet gateway to a serial network, routing Modbus TCP requests to the appropriate slave.

Case Study:

One of the many possibilities that this capability allows for is to configure a controller from a PC running the iTools Engineering Suite.

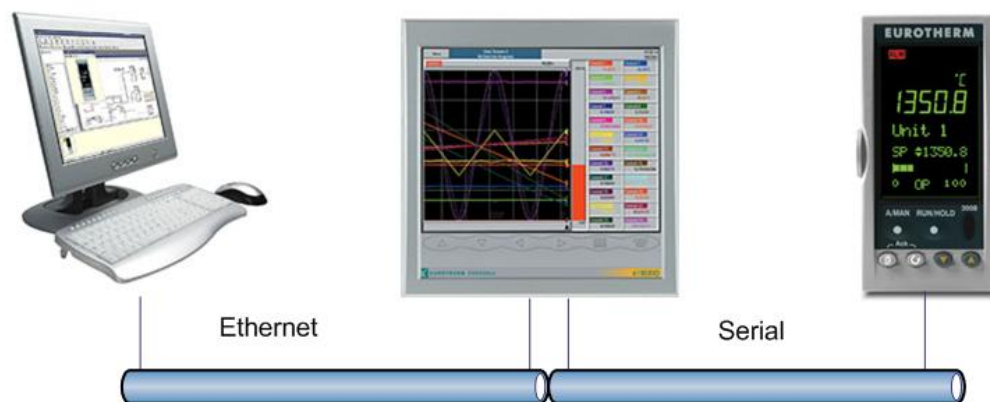


Figure 1 – PC Running iTools connected to a 3508 controller through a 6000 Series Recorder

This Technical Information Sheet will explain the steps necessary to create such a connection. It will first discuss configuring the recorder's serial connection, and adding the 3508 as a slave. Second, iTools OPC server will be configured to allow access to the 3508 from the PC. A working knowledge of the 6000 series instruments and the iTools software is assumed. It is also assumed that all instrument wiring is complete, and that the recorder is networked to a PC with iTools installed. If you need more assistance in these areas, the following resources may be of use:

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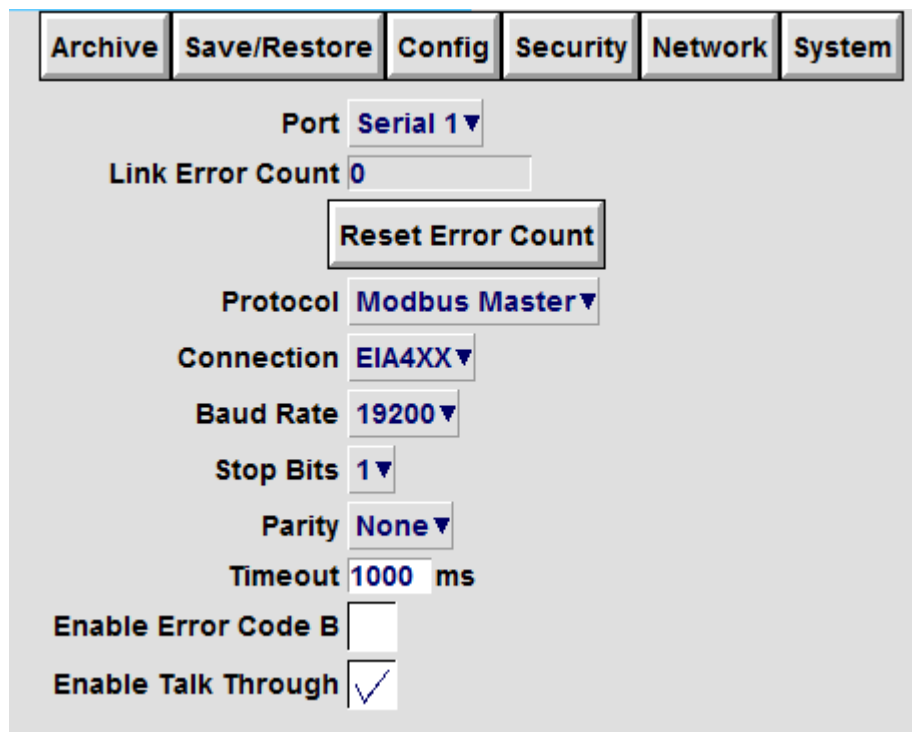
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- [6000 Series User Guide](#) (HA028910) for 6000 Series configuration
- [iTools Help Manual](#) HA028838 for iTools operation
- The Eurotherm [online serial connection guide](#) for serial comms wiring.

Step 1: 6000 Series Connection Configuration

First, log in to the recorder as an Engineer. In the Operator screen, open the Config → Connections menu.



The screenshot shows the 'Config' menu with sub-options: Archive, Save/Restore, Config, Security, Network, and System. The 'Config' sub-menu is open, displaying the following settings:

- Port: Serial 1 ▼
- Link Error Count: 0
- Reset Error Count (button)
- Protocol: Modbus Master ▼
- Connection: EIA4XX ▼
- Baud Rate: 19200 ▼
- Stop Bits: 1 ▼
- Parity: None ▼
- Timeout: 1000 ms
- Enable Error Code B: ☐
- Enable Talk Through: ☒

Figure 2 – Recorder - Config → Options Menu

The protocol must be set to Modbus Master. Baud rate, stop bits, and parity settings in the recorder and slave must match. Make sure that the 'Enable Talk Through' option is checked. If you have made any changes, press 'Apply' at this time.

Step 2: Adding the 3508 as a slave

Go to the Config → Master Comms menu. In the Slave drop-down, choose the first unused slave, and check Enable. You should then see the option list as shown below:

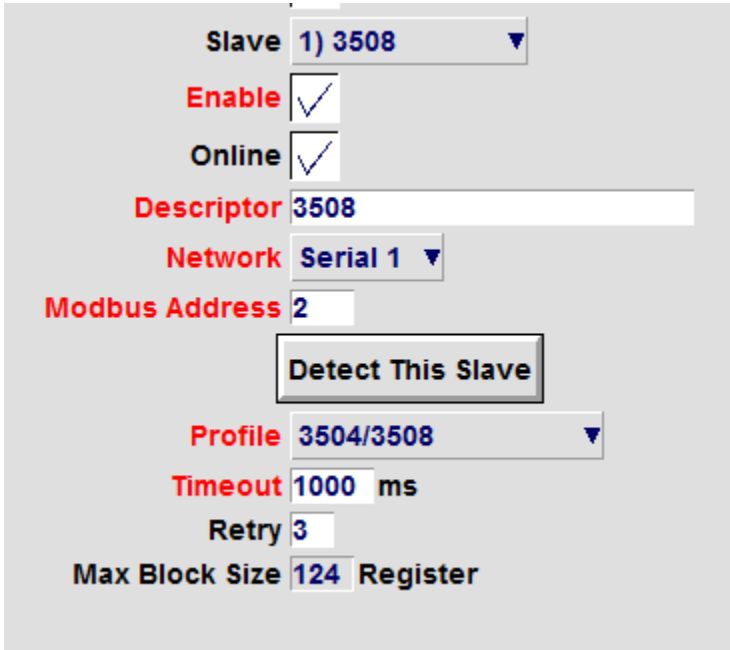
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Archive	Save/Restore	Config	Security	Network	System
High Priority Interval 0.125 Seconds					
Medium Priority Interval 1 Seconds					
Low Priority Interval 2 Seconds					
Store Diagnostics ☐					
Slave 1) Remote_1					
Enable ☒					
Online ☒					
Descriptor Remote_1					
Network Serial 1					
Modbus Address 2					
Detect This Slave					
Profile Third Party					
Timeout 250 ms					
Retry 3					
Max Block Size 124 Register					

Figure 3 – Recorder - Config → Master Comms Menu

Change Network to the appropriate serial network. Specify the Modbus address of the controller. If all is well, pressing 'Detect This Slave' should yield the following:



Slave 1) 3508 ▼

Enable ☒

Online ☒

Descriptor 3508

Network Serial 1 ▼

Modbus Address 2

Detect This Slave

Profile 3504/3508 ▼

Timeout 1000 ms

Retry 3

Max Block Size 124 Register

Figure 4 – Recorder - Slave Auto-Detect

Note that the Descriptor and Profile have been automatically assigned for the 3508. If the slave was a non-Eurotherm product, the profile would be set to Third Party. This completes the slave configuration process, press 'Apply' to save your changes.

At this point, the recorder is ready to route Modbus TCP requests to this slave device.

Step 3: Configuring the iTools OPC Server

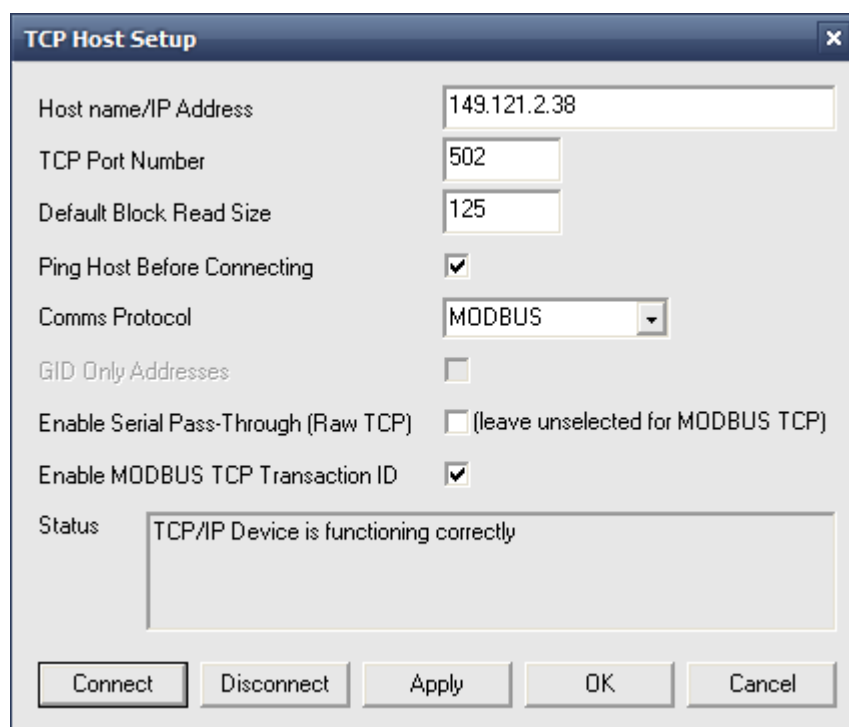
Open the iTools OPC Server from your Windows Start Menu:

Start → Programs → Eurotherm → iTools Advanced → iTools OPC Server

From the iTools OPC Server's perspective, the 6000 recorder is both a device, and a port. Once it is configured as a port, both itself and its slaves can be added as devices.

In the OPC Server menu, go to Add → New TCP Network Port. In the Port User / OPC Name text box, give an appropriate name (the name of the recorder would be appropriate).

Click the 'Add TCP Host Details' button on the bottom left of the window. This brings up the following dialog:



The TCP Host Setup dialog box contains the following fields and controls:

- Host name/IP Address: 149.121.2.38
- TCP Port Number: 502
- Default Block Read Size: 125
- Ping Host Before Connecting: ☒
- Comms Protocol: MODBUS (dropdown menu)
- GID Only Addresses: ☐
- Enable Serial Pass-Through (Raw TCP): ☐ (leave unselected for MODBUS TCP)
- Enable MODBUS TCP Transaction ID: ☒
- Status: TCP/IP Device is functioning correctly
- Buttons: Connect, Disconnect, Apply, OK, Cancel

Figure 5 – OPC Server TCP Host Setup

Enter the recorder's IP address in the top text box. All other options can be left at the default settings. Pressing the 'Connect' button will test the connection, giving the Status as shown above if all is well. Press OK when finished.

Back in the TCP Port setup window, pressing the 'Connect All' button should give the following:

List of TCP hosts associated with this port					
Host name/IP Address	TCP Port	Block Size	Ping	Devices	Status
149.121.2.38	502	125	Yes	0	TCP/IP Device is functioning correctly

Figure 6 – OPC Server TCP Device connected

Press OK to return to the OPC server. To add a device, right click on the newly added port and select New Device:

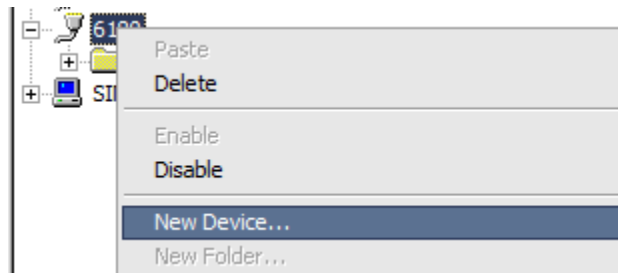


Figure 7 – OPC Server – Add Device

In the Add Device dialog, enter the Modbus address of the desired device, and click 'Auto Detect Device.' If you are connecting to a non-Eurotherm slave device, press the OK button instead.

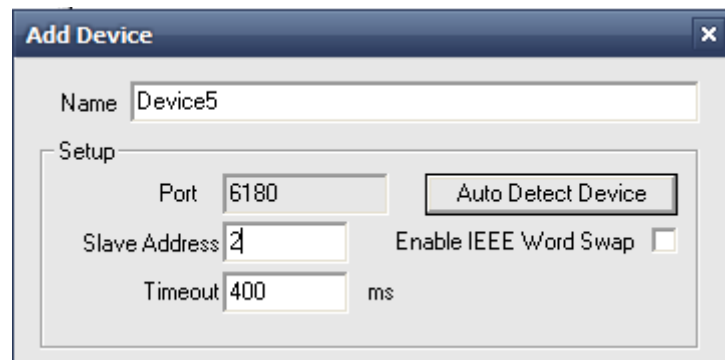


Figure 8 – OPC Server – Specify Device Modbus Address

The OPC server will connect to the 3508 through the recorder, and add it to the device tree:

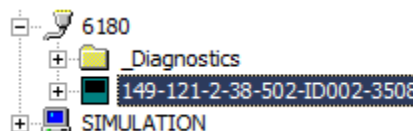


Figure 9 – OPC Server – Device Added

The device has been automatically named with the IP address and port number of the recorder, a unique ID, and the device's model number.

The OPC server will now allow the iTools Engineering Studio to access the 3508.

Step 4: Adding the 3508 to the iTools Engineering Studio

Open the iTools Engineering Studio from the Windows Start Menu:

Start → Programs → Eurotherm → iTools Engineering Studio



Press the  button on the toolbar to bring up the following dialog:

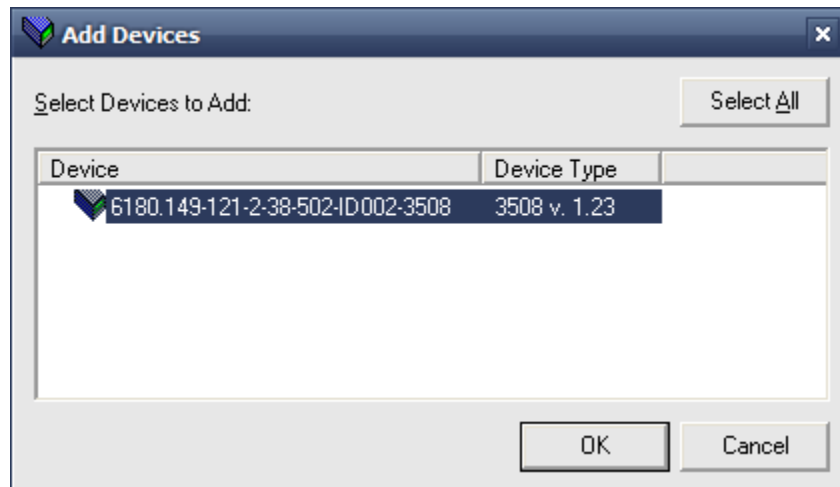


Figure 10 – iTools Eng. Studio – Add Device

Select the device to add, and press OK.

The controller can now be configured as if it were connected directly to the PC.

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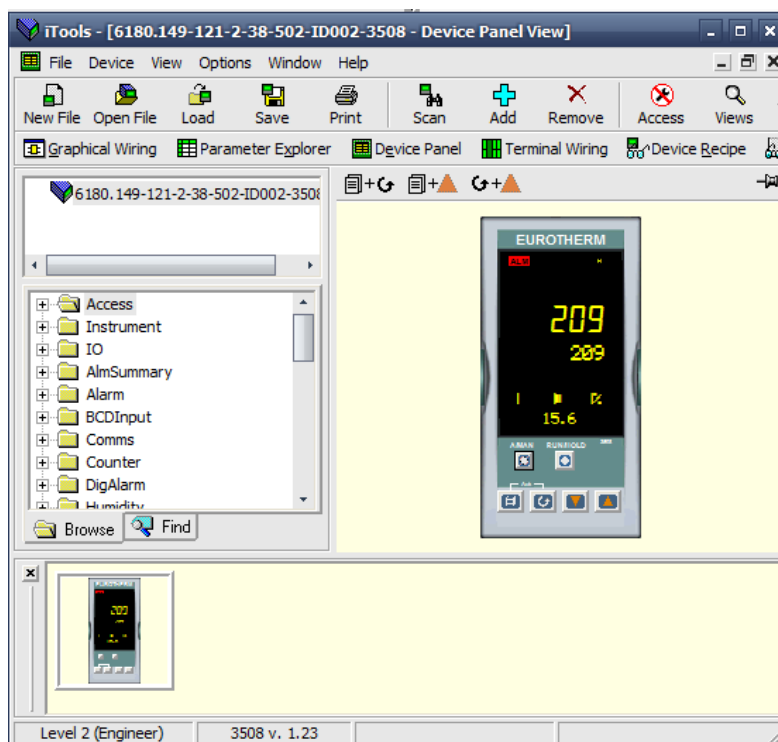


Figure 11 – iTools Eng Studio – 3508 Connected