



**OCS Training Workshop
Lab 22**

Configuration of SmartRail Remote I/O modules

Lab 22: Configuration of SmartRail Remote I/O modules

Introduction

Objective:

The objective of this lab is to give you the knowledge to configure SmartRail Remote I/O's over Ethernet (Modbus TCP/IP protocol).

This will be helpful to configure SmartRail Remote I/O devices communicating with the OCS over this protocol.

Overview:

SmartRail I/O is DIN rail mountable expansion I/O and comes in various slice formats. In this lab, connectivity of the I/O to the OCS is done over an Ethernet base using Modbus TCP/IP protocol. Horner provides other variants of connecting the slice I/O to the OCS. These are Profibus DP and CsCAN fieldbus protocol bases.

Requirements:

- *NX, QX and XL6e with Ethernet port on board.*
- *ETX200 SmartRail Ethernet base.*
- *HE599DQM602, 16-channel digital relay output slice module.*
- *Cscape 9.10 or higher.*
- *Firmware version 12.70 or higher.*
- *Ethernet CAT-5 patch cable.*

Cscape Configuration Procedure

Step 1

Open Ethernet I/O configuration window

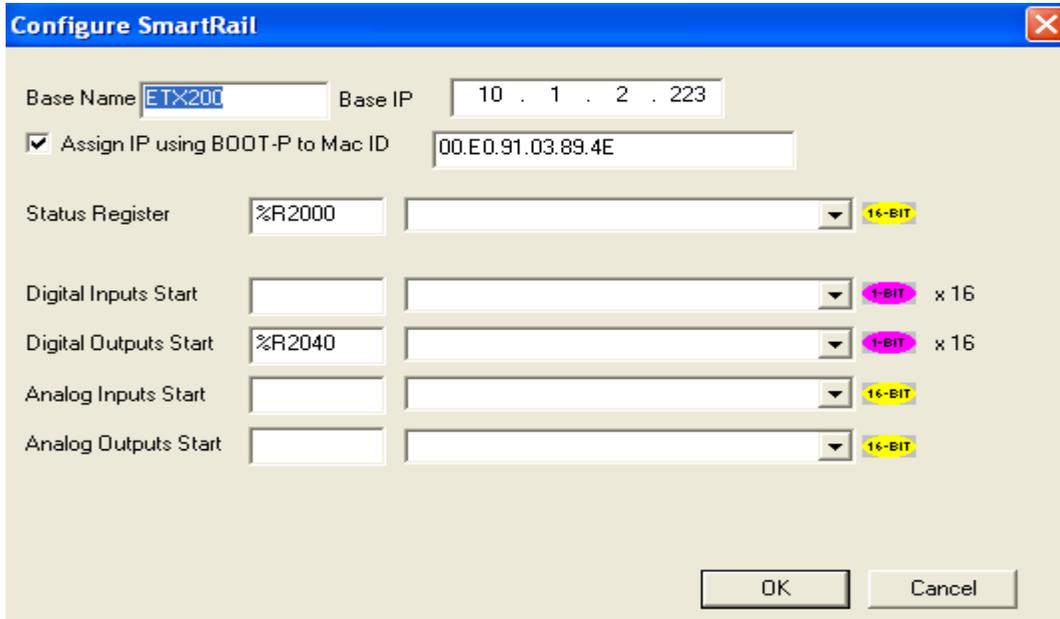
Click on the **Controller** menu and select **Hardware Configuration**. Choose the tab labelled **Ethernet I/O Configuration**.

Step 2

Add the SmartRail Remote I/O base

Click the Add button. Configure the SmartRail base by entering a valid IP address for your network. Check the BOOT-P to Mac ID check box and fill in the MAC ID field with the MAC ID supplied on the label of the SmartRail Ethernet base.

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The 'Configure SmartRail' dialog box is shown with the following fields and values:

- Base Name: ETX200
- Base IP: 10 . 1 . 2 . 223
- Assign IP using BOOT-P to Mac ID: 00.E0.91.03.89.4E
- Status Register: %R2000 (dropdown), 16-BIT
- Digital Inputs Start: (empty dropdown), 1-BIT x 16
- Digital Outputs Start: %R2040 (dropdown), 1-BIT x 16
- Analog Inputs Start: (empty dropdown), 16-BIT
- Analog Outputs Start: (empty dropdown), 16-BIT

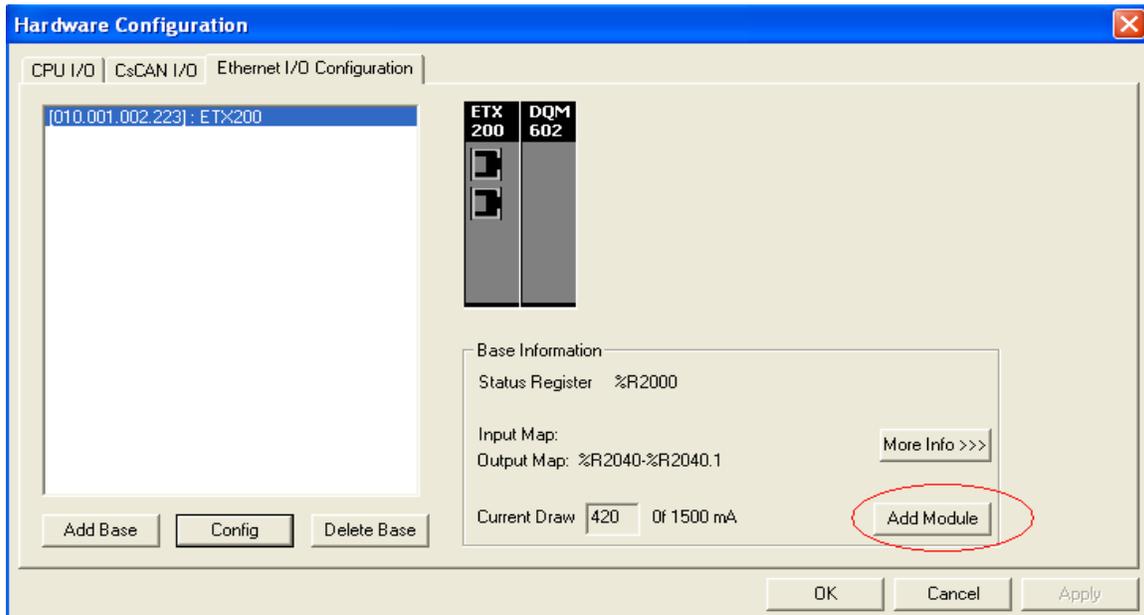
Buttons: OK, Cancel

Now fill in the necessary fields for the status register and starting register points for monitoring I/O data. For this lab exercise, type %r2040 into the Digital Output Start field as seen above.

Step 3

Add the SmartRail Slice I/O module

Click the Add button module button as seen below. Select the DQM602 output module from the pop up window. OK everything to exit.



The 'Hardware Configuration' dialog box is shown with the following fields and values:

- Tab: Ethernet I/O Configuration
- Table: [010.001.002.223] : ETX200
- Module Selection: ETX 200, DQM 602
- Base Information:
 - Status Register: %R2000
 - Input Map: (empty)
 - Output Map: %R2040-%R2040.1
 - More Info >>>
- Current Draw: 420 Of 1500 mA
- Buttons: Add Base, Config, Delete Base, Add Module (circled in red), OK, Cancel, Apply

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Step 4

Configure your XL6e device with an IP address

Click on the **Controller** menu and select **Hardware Configuration**. Choose the tab labelled **CPU I/O**. Click the **Config** button to the right of the field corresponding to the Ethernet [300] module.

Click the **Module Setup** tab to bring up the configuration window seen below. Enter a valid IP address for the XL6e and also the necessary status registers, then click OK to exit out of the tool.

Module Configuration

I/O Map | **Module Setup**

Register Usage

Default Settings	Register	Direction
IP Address: 10 . 1 . 2 . 222	%R0882 32-BIT	Read Only
Net Mask: 255 . 255 . 255 . 0	32-BIT	
Gateway: 0 . 0 . 0 . 0	32-BIT	
Status: %R0884	16-BIT	Read Only
Version: %R0885	16-BIT	Read Only

Use CAN ID for last Octet
 Enhanced Configuration

Protocol Support

- ICMP (Ping)
- EGD (Ethernet Global Data)
- SRTP Slave (90:30 Service Request)
- Modbus TCP Slave
- Ethernet/IP
- FTP (File Server)
- HTTP (Web Server)
- ASCII Over TCP/IP

Configure Selected Protocol

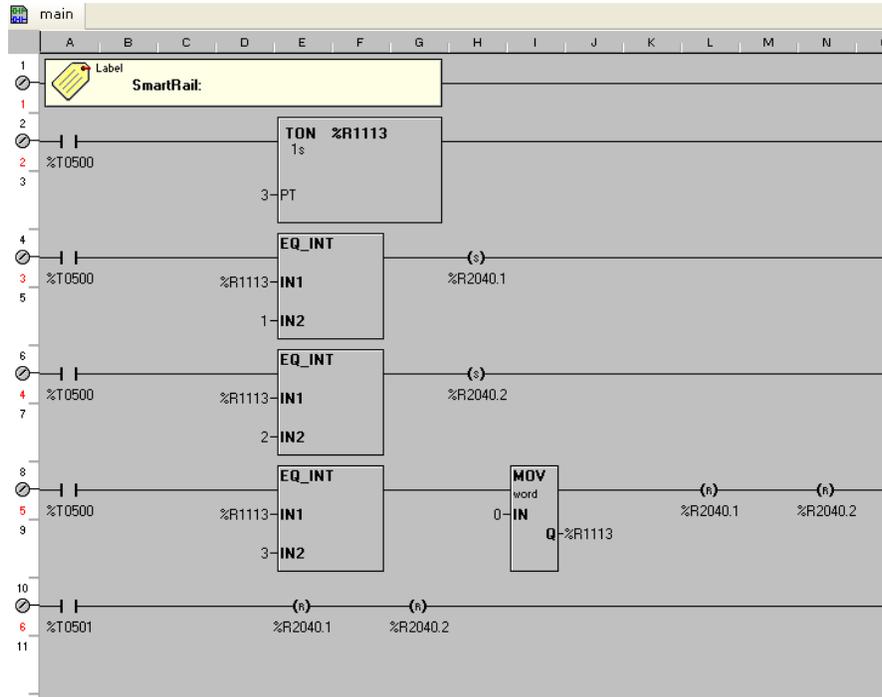
OK Cancel Apply

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Step 5

Create some ladder code to execute the I/O point

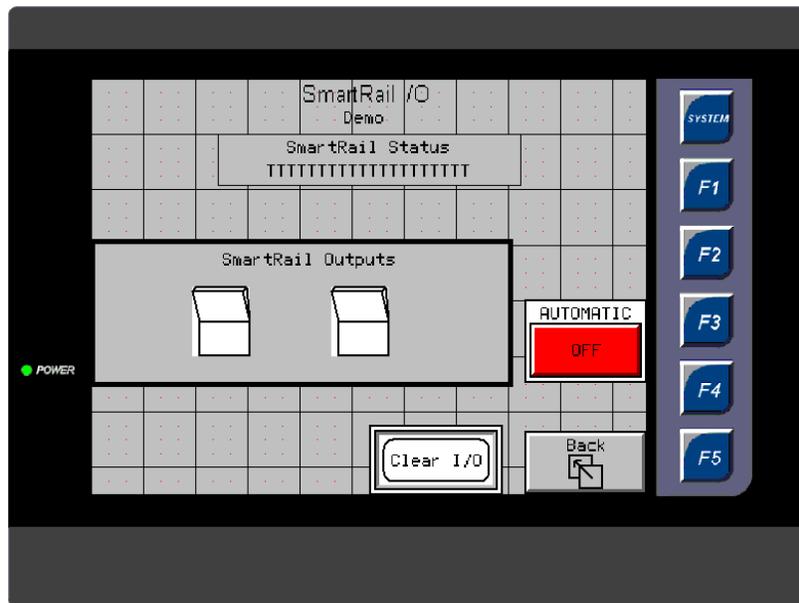
Write some ladder code as seen below. This ladder code triggers some digital relay outputs of the DQM602 slice module.



Step 6

Create a page on the screen of the XL6e

Enter the graphics editor tool in Cscape and design your XL6e screen to monitor the digital output points as seen below.



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Exercise:

Try adding the remaining digital output channels of the slice I/O module both in the ladder code and on the screen via the graphical editor.

You should end up with 16 rocker switches on the screen, each one controlling one of the 16 digital relay output channels individually.

End of LAB 22