



## **OCS Training Workshop 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**

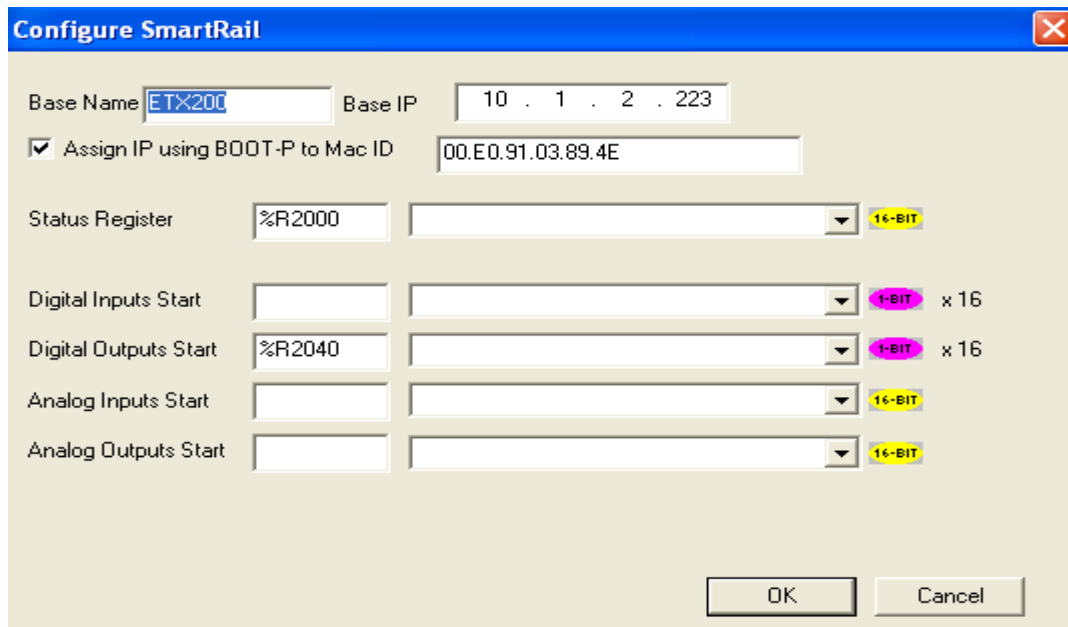
Click on the **Controller** menu and select **Hardware Configuration**. Choose the tab labelled **Ethernet I/O Configuration**.

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. It has a blue title bar with a close button. The fields are as follows:

Field	Value
Base Name	ETX200
Base IP	10 . 1 . 2 . 223
Assign IP using BOOT-P to Mac ID	<input checked="" type="checkbox"/> 00.E0.91.03.89.4E
Status Register	%R2000
Digital Inputs Start	
Digital Outputs Start	%R2040
Analog Inputs Start	
Analog Outputs Start	

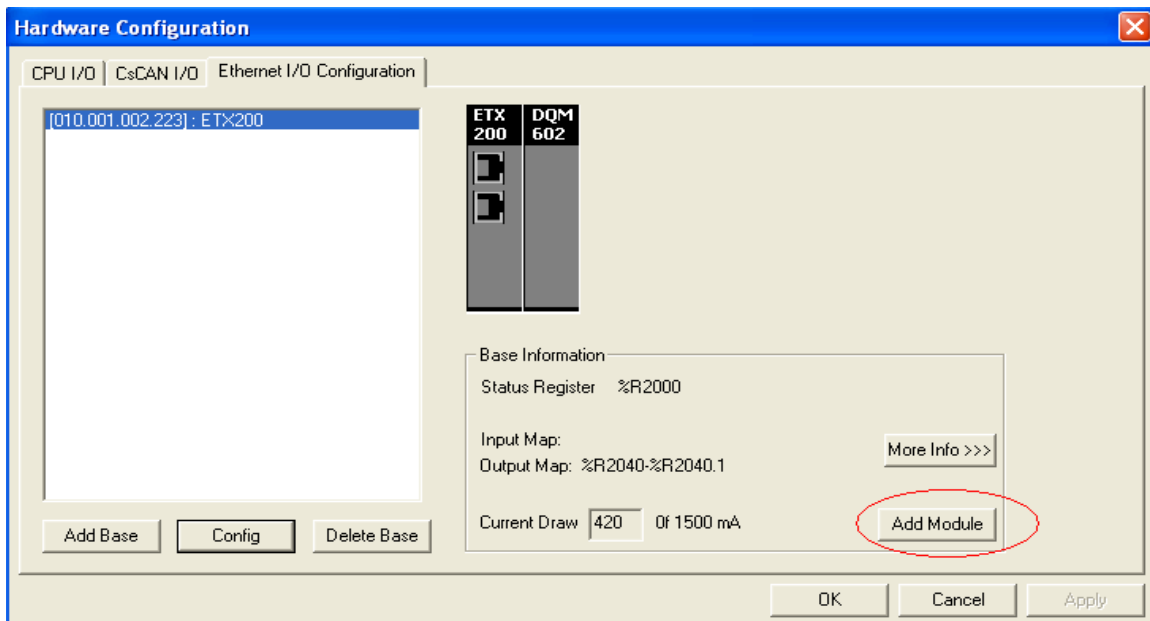
Buttons: OK, Cancel

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 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. It has a blue title bar with a close button. The tabs are CPU I/O, CsCAN I/O, and Ethernet I/O Configuration. The 'Ethernet I/O Configuration' tab is selected. The list shows [010.001.002.223] : ETX200. The 'Add Module' button is circled in red.

Module	Base Information
ETX 200	Status Register: %R2000
DQM 602	Input Map: %R2040-%R2040.1 Output Map: %R2040-%R2040.1 Current Draw: 420 Of 1500 mA

Buttons: Add Base, Config, Delete Base, Add Module, 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.

The image shows a 'Module Configuration' window with two tabs: 'I/O Map' and 'Module Setup'. The 'Module Setup' tab is active. It contains two main sections: 'Register Usage' and 'Protocol Support'.

**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

On the right side of the 'Register Usage' section, there are two checkboxes: 'Use CAN ID for last Octet' and 'Enhanced Configuration', both of which are unchecked.

**Protocol Support:**

A list of protocols with checkboxes next to them:

- ☐ 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

There is a 'Configure Selected Protocol' button to the right of the list.

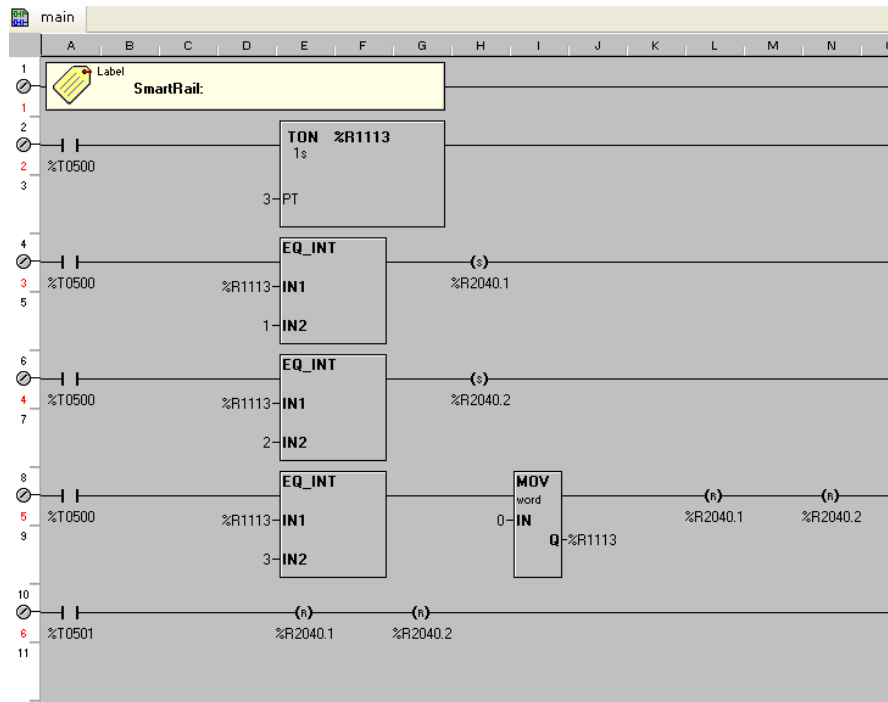
At the bottom of the window are three buttons: 'OK', 'Cancel', and 'Apply'.

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### Step 5

#### Create some ladder code to execute the I/O point

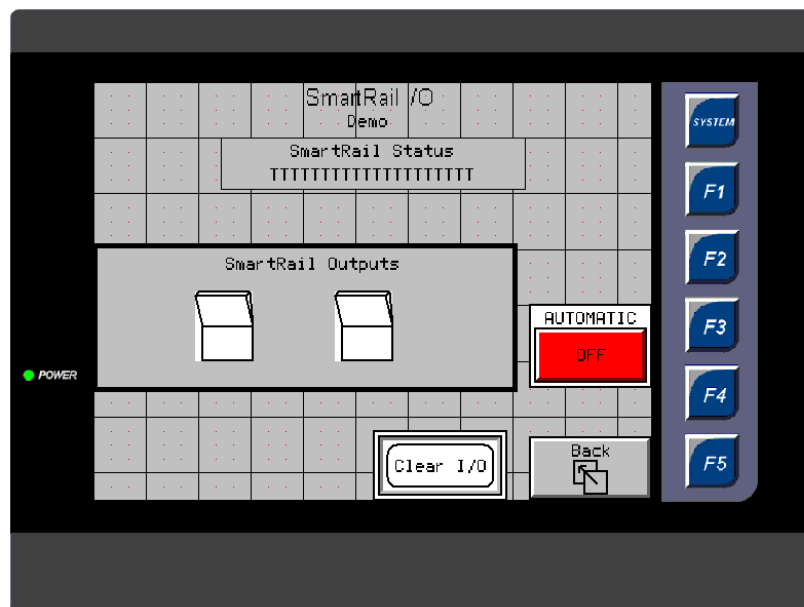
Write some ladder code as seen below. This ladder code triggers some digital relay outputs of the DQM602 slice module.



### Step 6

#### Create a page on the screen of the XL6e

Enter the graphics editor tool in Cscope 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