



# **OCS Training Workshop**

## **LAB9**

Usage of Ethernet add-on

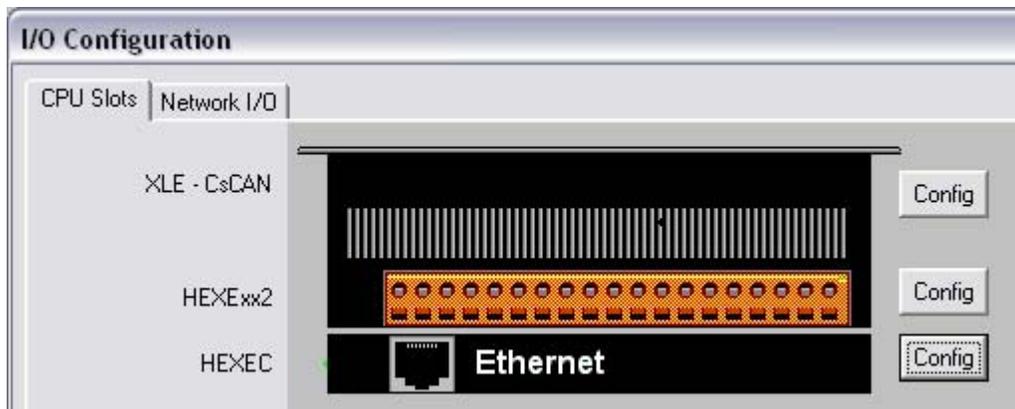
## Lab 9: Usage of Ethernet Add-on

### Introduction

The purpose of this lab is to demonstrate the usage of Ethernet add-on, an expansion to any XL series OCS product. We will demonstrate how to use such add-on to monitor/debug your application via Ethernet as well as how to successfully configure connection between OPC/SCADA platform and OCS.

### Overview

**HE-XEC** – Ethernet add-on, extension to any XL-series OCS. Field installable, includes all parts necessary for installation.



**Modbus** – industry standard communication protocol. In its simple form the communication runs serially, Modbus/TCP on the other hand is the standard over Ethernet. Modbus connectivity is well supported by OCS family and with Ethernet add-on connection between OPC/SCADA packet and OCS can be even more efficient.

**KEPServerEX** – the latest generation of Kepware's OPC server technology. The KEPServerEX gets the device and system data. It then translates it into a standard communication protocol (OPC or DDE) that all clients (like SCADA) can receive and understand.



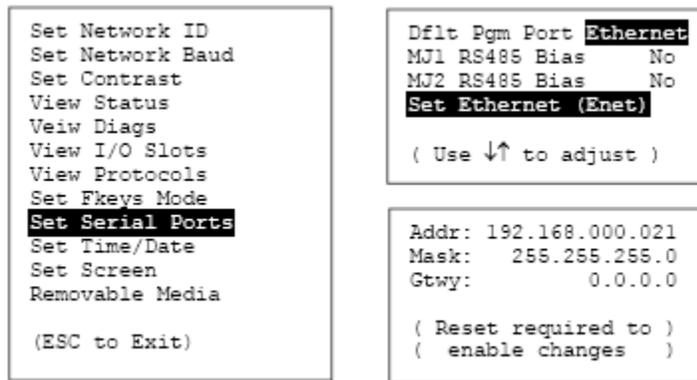
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### Procedure

#### PART 1 – Connectivity with Cscape

##### Step 1

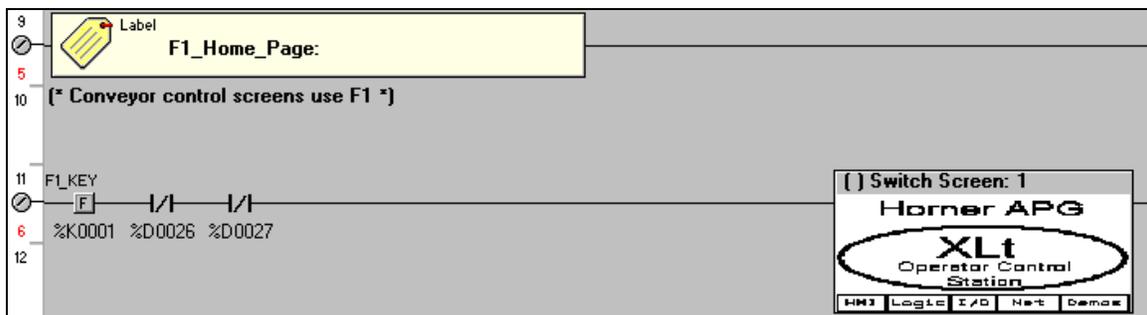
On the device, change the default programming port to Ethernet from the System Menu.  
OCS System Menu -> Set Serial Ports -> Dflt Pgm Port -> Ethernet for MJ1



Change the Ethernet addressing (IP Address) to suit your needs (OCS System Menu -> Set Serial Ports -> Set Ethernet) and remember to cycle the power of the unit before trying to use the new settings.

##### Step 2

Make sure that the OCS holds an application with at least few lines of logic and few user screens. Application from the previous Lab would do or you could use the OCS standard demo loaded originally to the unit.



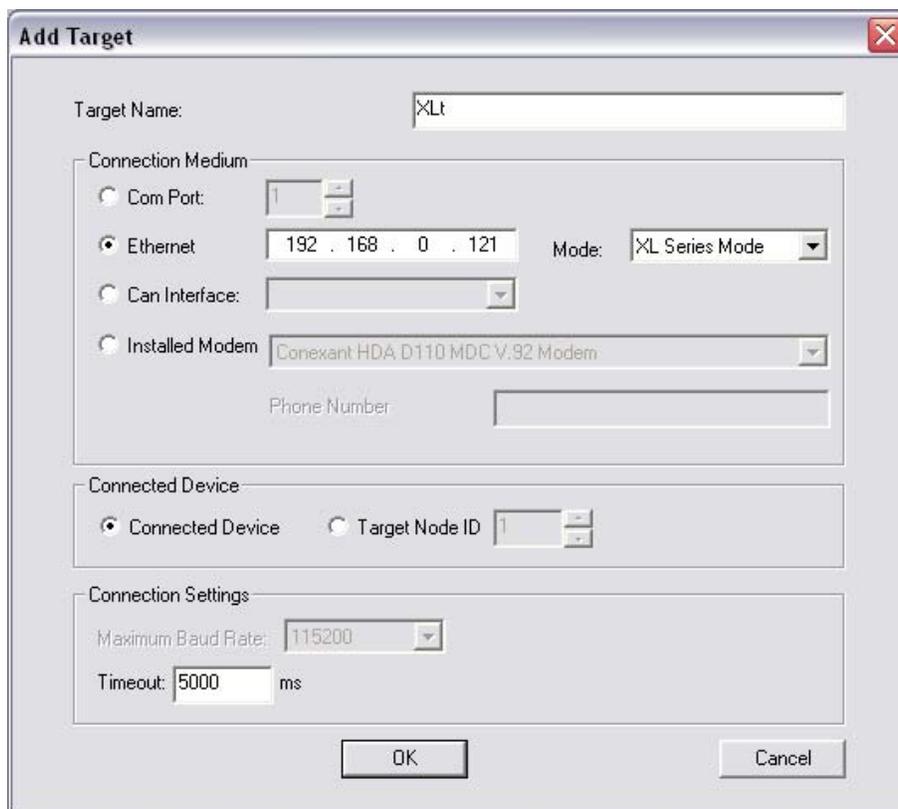
Please note that after you set the default programming port in Ethernet mode you will have to stop the controller (OCS System Menu -> View Status -> Mode -> Idle)

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### **Step 3**

In Cscape:

- Select 'Tools' -> 'Communication Port'
- Click on the Configure button
- Select the Ethernet option, with the correct mode (for XL series please select 'XL Series Mode')
- Input the correct IP address
- Select the 'Connected Device' radio button
- Specify the Timeout at around 5000



After clicking OK twice Cscape will try to establish Ethernet connection. If everything was configured correctly the status bar will look similar:



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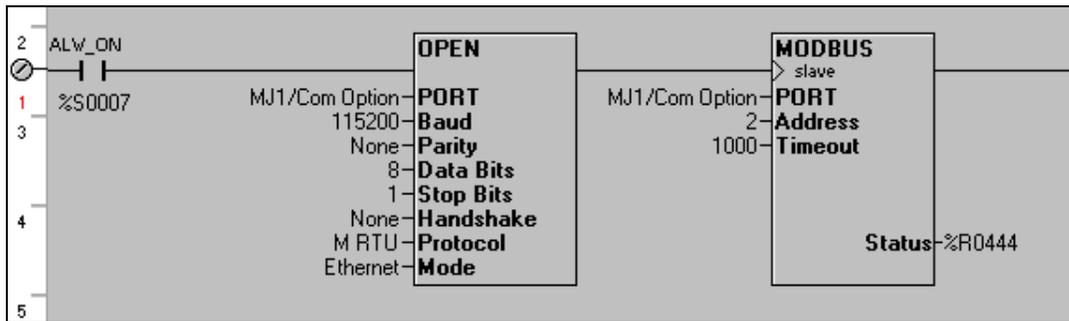
### Step 3

To test the connection you can try download/upload the project  , changing the mode (Run/Do IO/Idle)   , using datawatch  or debugger .

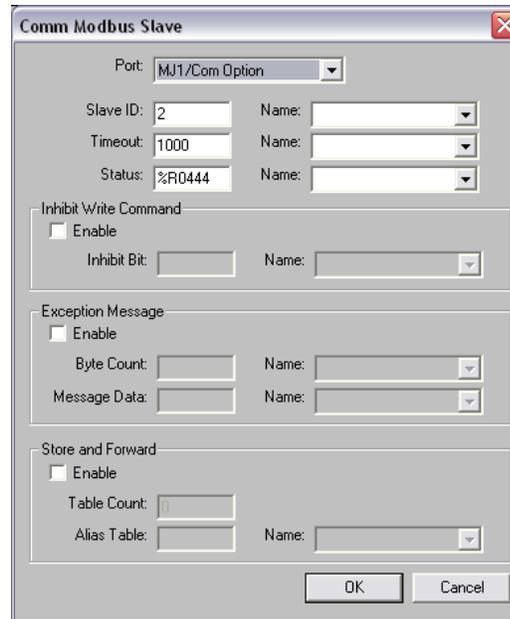
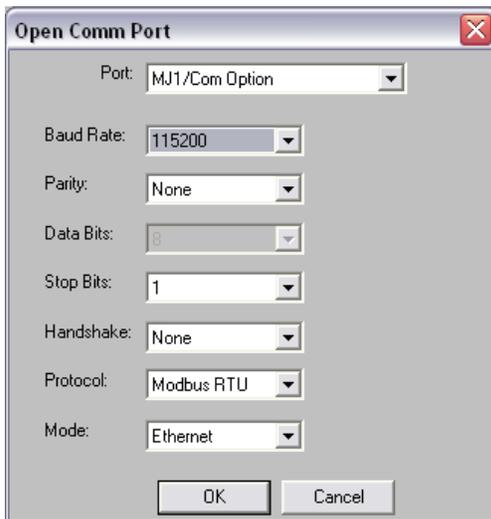
### **PART 2 – Modbus connectivity over Ethernet**

#### Step 1 – Cscape application

Create a simple ladder program:



Blocks 'Open Comm' and 'Modbus Slave' are configured as following:

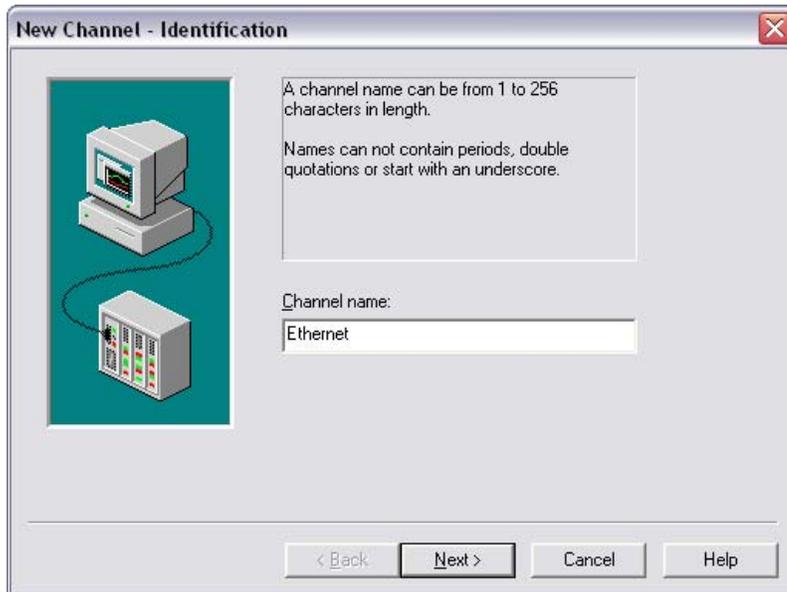


'Slave ID' field specified in 'Modbus Slave' communication block assigns a unique ID, which will be important when configuring KEP Server EX in the next step.

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### Step 2 – KEP Server EX configuration

- Create a New Channel (Edit -> New Channel...)

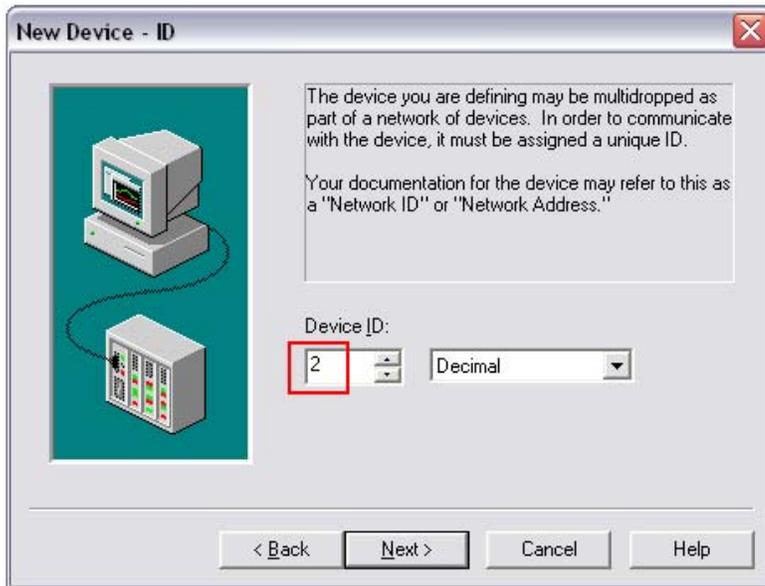


- As a 'Device driver' select 'Modbus Ethernet' or 'Modbus Serial' with *Ethernet Encapsulation* for older Ethernet Modules. Leave other settings as default
- Add a New Device (Edit -> New Device...)

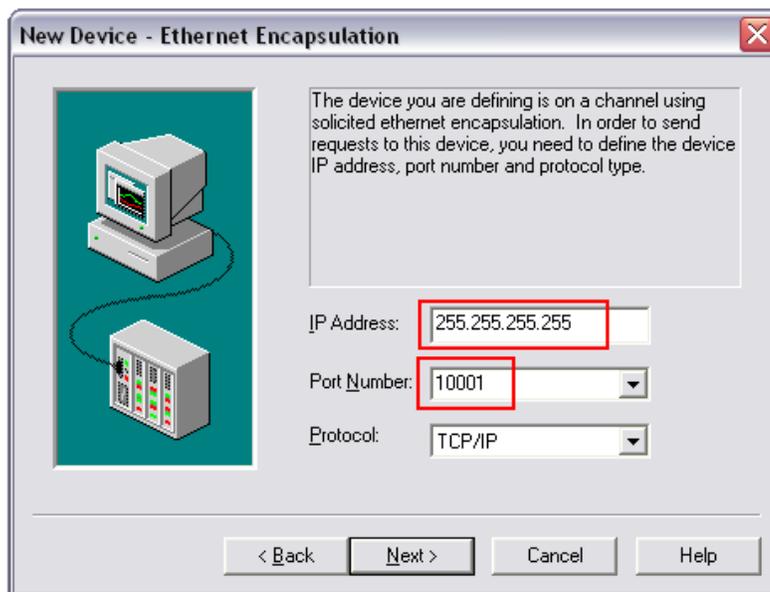


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- Set 'Device model' as Modbus
- Set the proper 'Device ID' (should be identical with the one put in Cscape)



- Specify the IP address assigned previously to your OCS unit. Port 10001 is a standard OCS port for Ethernet connectivity.



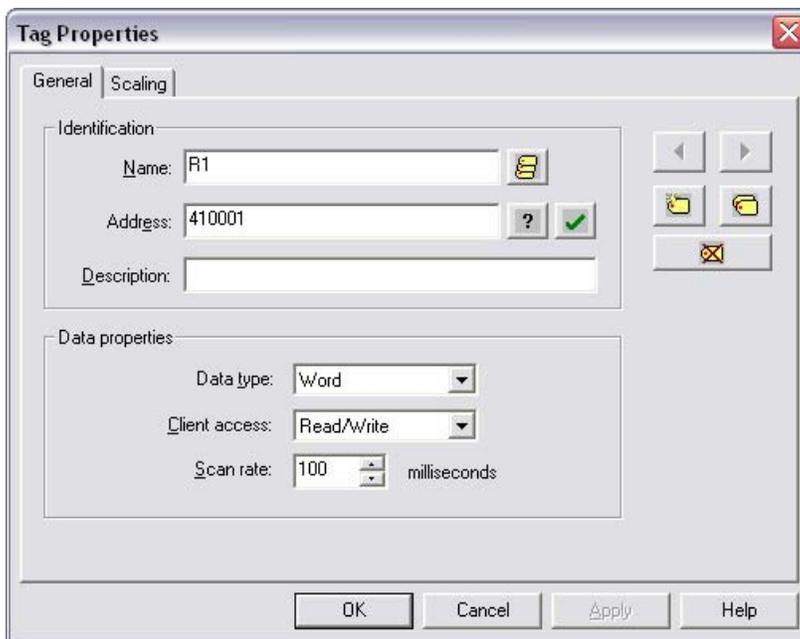
- Leave the rest of settings as default

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- Your KEP Server window should look similar:

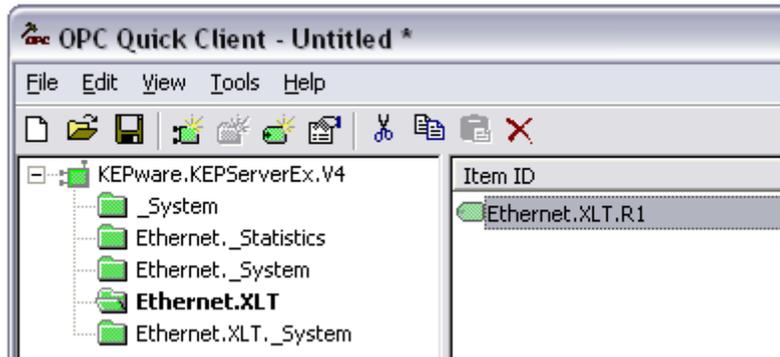


- Click on the right side of the window to add a tag (a variable). The following window shows how to successfully associate tag with OCS register %R1



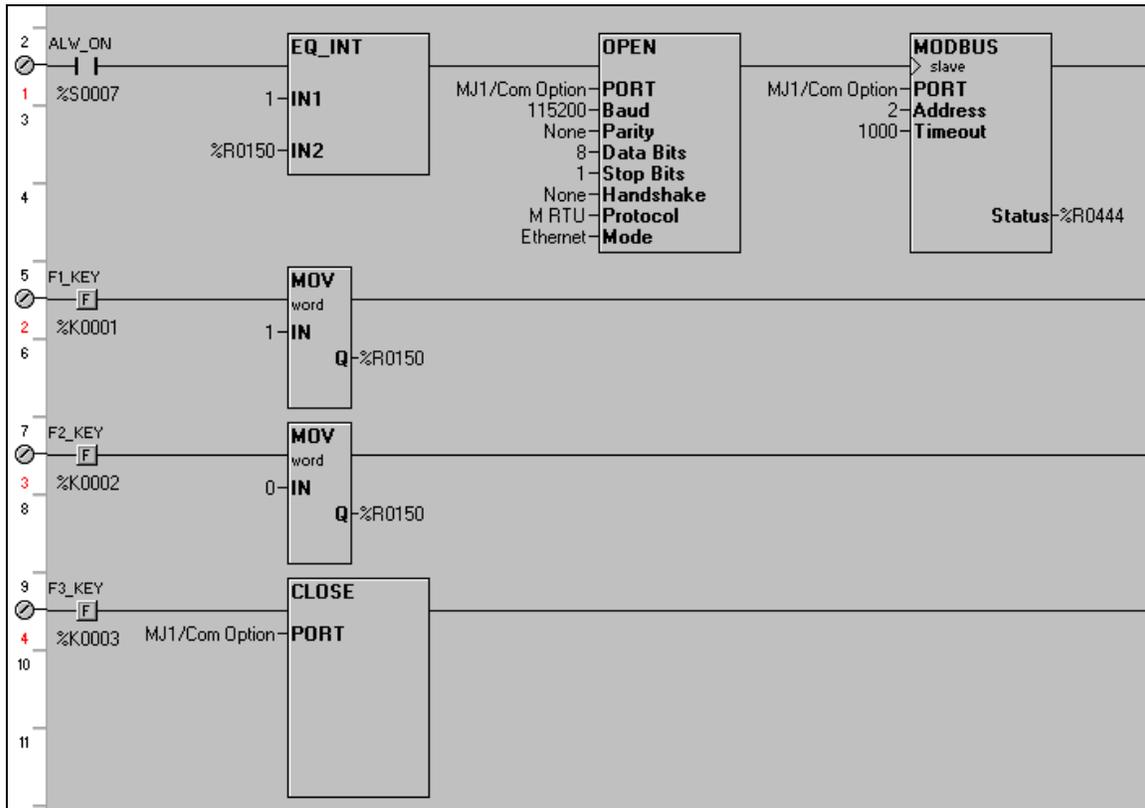
- To run the communication select OPC Client option (Tools -> Launch OPC Quick Client)

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### Extra Credit:

To make the Cscape application more functional we could add some control:



Now, the F1 key enables OCS for Ethernet communication, F2 disables it. F3 key closes the port.

## End of LAB9

