

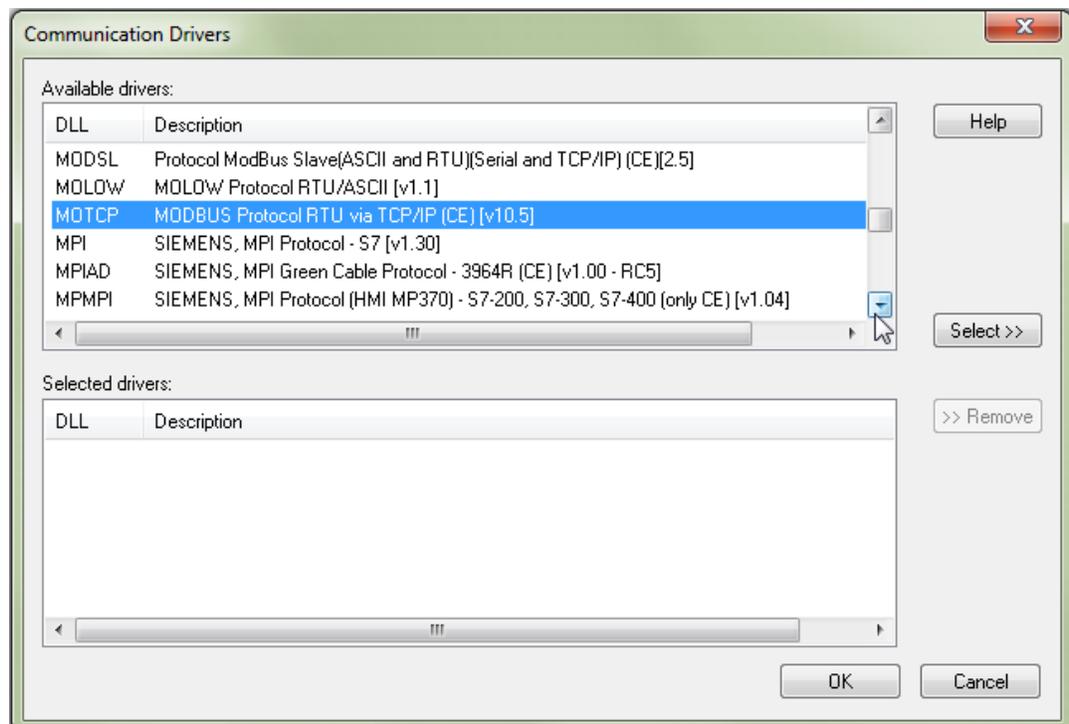
July 10, 2013

## Modbus Communication with InduSoft SCADA

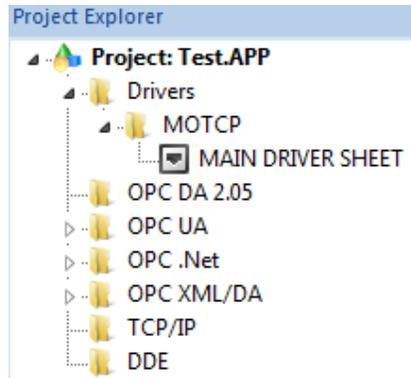
InduSoft Web Studio has a lot of drivers built in for many devices, but if you are working with a device that does not have an inbuilt driver in InduSoft Web Studio and if your device supports Modbus over TCP/IP communication, it is very easy to communicate with InduSoft. Here, we will see how we can use built in Modbus driver MOTCP in InduSoft to communicate with wide range of devices.

### ■ Selecting MOTCP Driver

- Using the main menu bar go to Insert > Add/Remove Driver. From the 'Available drivers' list, select the MOTCP driver and it will be added under 'Selected drivers' list.

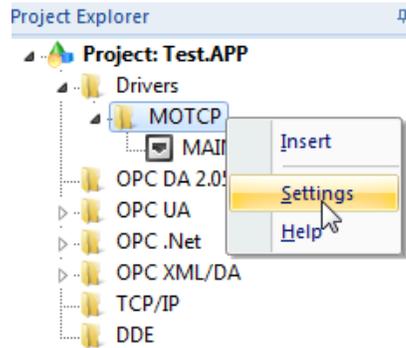


- The selected driver should also be listed under 'Drivers' in 'Comm' tab of Project Explorer.

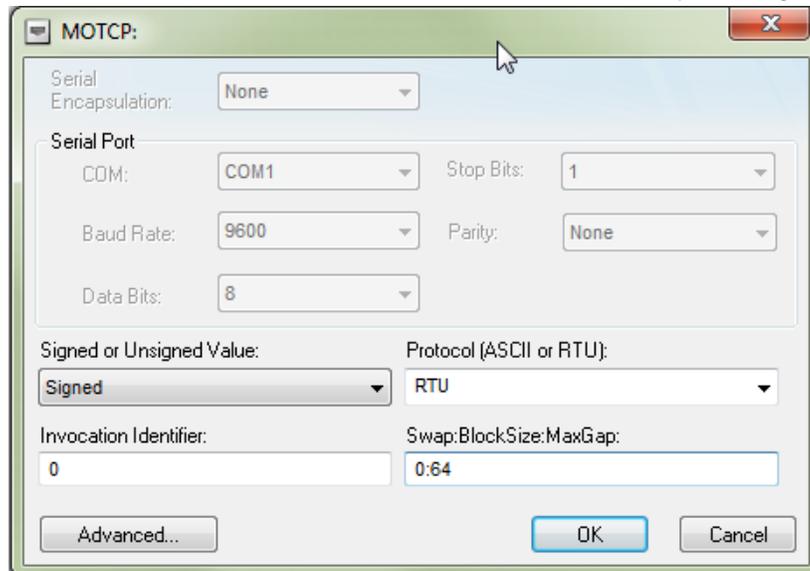


**Driver Configuration**

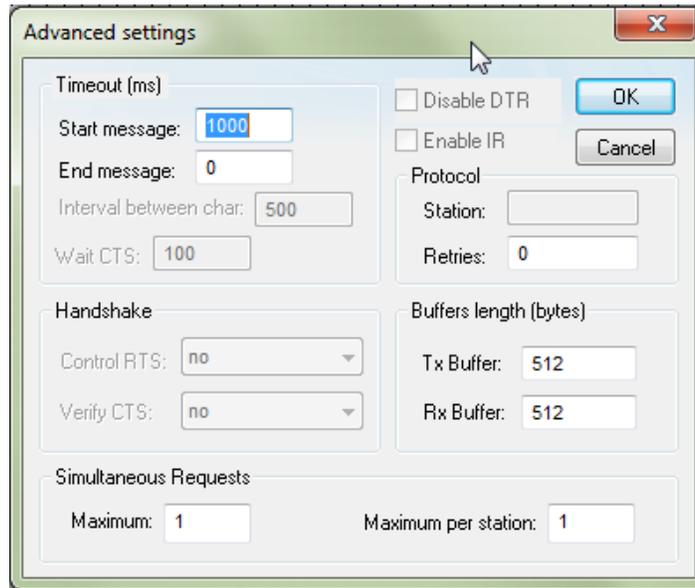
- The settings for the driver should be compatible with the target device for establishing communication. The communication parameters on the target device should match the settings on the driver.
- To set the driver parameters, right click on 'MOTCP' and select 'Settings'.



- On this window, enter the values as set or recommended for your target device.

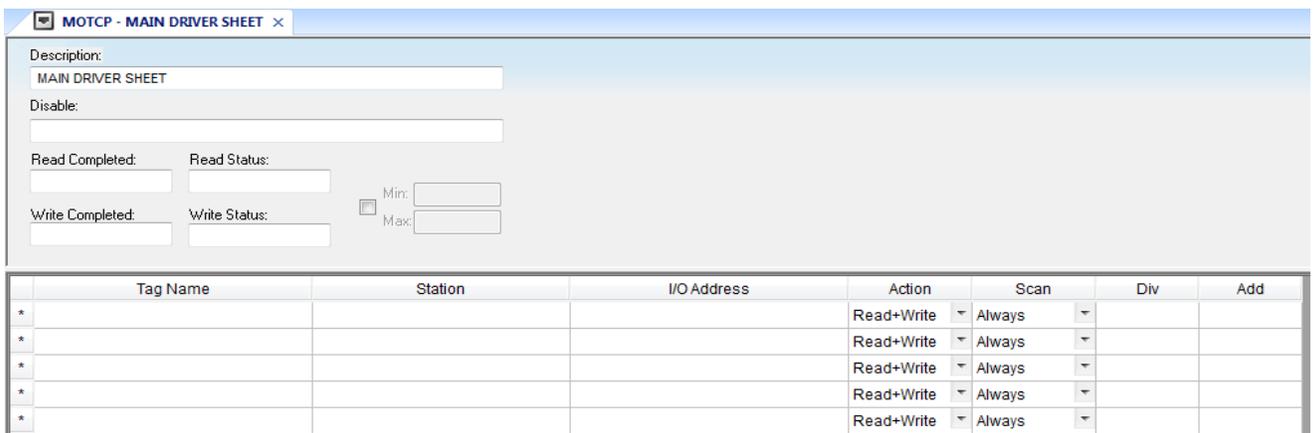
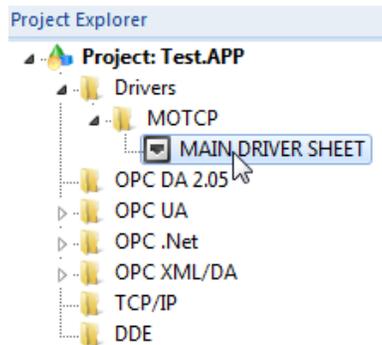


- If you wish, you can click on the ‘Advanced’ button to change the advanced settings for communication in the following window.



**Setting up the Main Driver Sheet**

- We will use this worksheet to map InduSoft tags with Modbus addresses on the target device.
- Double click on ‘Main Driver Sheet’ and a blank driver worksheet for MOTCP driver will open up.



- Following is the brief description of each field in the main driver sheet:
  - **Description:** enter the description for the Main Driver Sheet
  - **Disable:** if you would like to enable or disable Main Driver Sheet on certain conditions, enter the name of the tag or expression indicating that condition. The sheet will be disabled when this tag/expression value is greater than 0 and enabled when the field is 0 or left blank.
  - **Read Completed:** enter a Boolean tag and the driver will toggle that tag when the read command is completed.
  - **Read Status:** enter a tag that will receive the status of the read command.
  - **Write Completed:** enter a Boolean tag and the driver will toggle that tag when the write command is completed.
  - **Write Status:** enter a tag that will receive the status of the write command.
  - **Min Max:** click on the checkbox to enable them and enter the respective values for Min and Max for the data coming from remote device.
  - **Tag Name:** enter the tag that will receive the value from remote device for that memory location.
  - **Station:** specify the IP address of the remote device for communication using the following syntax: <IP address>:<port number>:<PLC ID>  
For example, 192.168.180.123:502:1
  - **I/O Address:** specify the Modbus address for the registers in your remote device to link with InduSoft tags using the following syntax:  
<Type>:[Signed/Unsigned]<Address>.[Bit]  
For example, 0X:1 refers to register 00001  
4X:4 refers to register 40004  
FP:1 refers to registers 40001 and 40002
    - Type: this specifies the register type like Boolean, 16 bit data register, 32 bit data register, floating point, BCD data register etc. Please refer to the following table for most commonly used register types and their addressing.

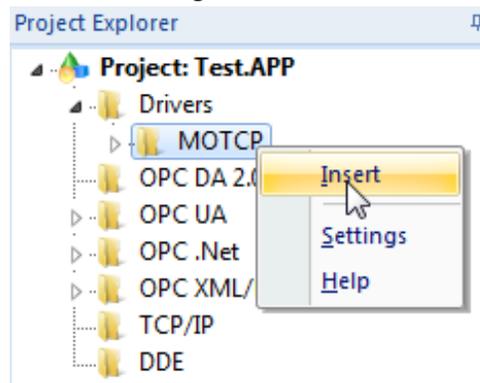
Type	Addressing
0X	Modbus coils – instructions 01, 05 and 15
1X	Modbus inputs – instruction 02
3X	Modbus input registers – instruction 04
4X	Modbus holding registers – instructions 03, 06 and 16
FP	Floating point value using two consecutive holding registers
DW	32 bit integer value using two consecutive holding registers
BCD	BCD Value – Modbus instructions 03, 06 and 16

Please refer to MOTCP driver's documentation in InduSoft manual for more information on register types.

- Signed/Unsigned: this is an optional field and used only for integer values. A signed value is indicated by 'S' and an unsigned value is indicated by 'U'.
- Address: this specifies the Modbus address of the remote device register.
- Bit: this is an optional field and can only be used with 3X and 4X types of registers.
- **Action:** chose between the three options – Read, Write, Read+Write
- **Scan:** select the scan condition between three options – Always, Screen and Auto
  - Always: the tag will be scanned continuously by the driver
  - Screen: the tag is scanned only if it is being used in at least one open project screen, either locally or on a client station.
  - Auto: the project will decide between 'Always' or 'Screen' depending on where the tag is used in the project.
- **Div:** enter the division factor if scale adjustment is required. Do not use this if Min or Max fields are configured.
- **Add:** enter the addition constant if scale adjustment is required. Do not use this if Min or Max fields are configured.

#### Standard Driver Worksheet

- In addition to the Main Driver Sheet, you have an option to add Standard Driver Worksheets also. Using Standard Driver Worksheets you can associate InduSoft tags to remote device registers based on specific conditions for your project. To insert Standard Driver Worksheet, right click on 'MOTCP' and select 'Insert'.



- Configure the 'Read Trigger', 'Enable Read when Idle', 'Write Trigger', 'Enable Write on Tag Change' fields with tags that control the read/write conditions for optimizing communication. The syntax for other fields is same as for Main Driver Sheet.

MOTCP001.DRV x

Description:   Increase priority

Read Trigger:	Enable Read when Idle:	Read Completed:	Read Status:
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>
Write Trigger:	Enable Write on Tag Change:	Write Completed:	Write Status:
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>
Station:	Header:	<input type="checkbox"/> Min: <input style="width: 50px;" type="text"/> <input type="checkbox"/> Max: <input style="width: 50px;" type="text"/>	
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>		

	Tag Name	Address	Div	Add
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*				
*				
*				
*				