

Title: Configuring InduSoft Web Studio to Communicate with the MPiec controller using Modbus TCP

Product(s): MP3200iec, MP2300iec, MP2600iec,
MP3300iec, MotionWorks IEC

Doc. No. AN.MPIEC.13

Application Overview:

This application note describes the steps needed to configure InduSoft Web Studio v7.1 to communicate with an MPiec controller over Modbus TCP. InduSoft Web Studio is the client and the MPiec controller is the server in this protocol.

Products Used:

Component	Product and Model Number
Controller	MP3200iec
Software	InduSoft Web Studio v7.1
Software	MotionWorks IEC 3 Professional

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Implementation:

Step 1: Create a driver sheet in InduSoft Web Studio by navigating to the **Comm** tab, right clicking the **Driver** folder, and selecting **Add/Remove drivers** (Figure 1).

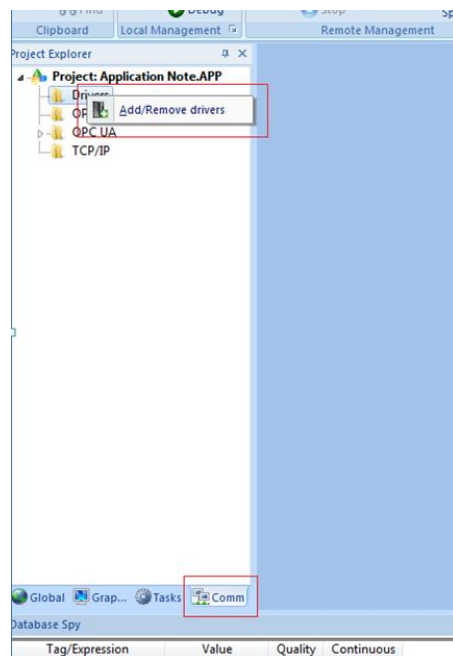


FIGURE 1: CREATING A DRIVER SHEET.

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Step 2: A **Communication Drivers** screen pops up. Scroll down to **MOTCP** under the **DLL** column, select it so it is highlighted, and then click the select button (Figure 2). The **MOTCP** driver should now show up under selected drivers. Click the **OK** button to finish.

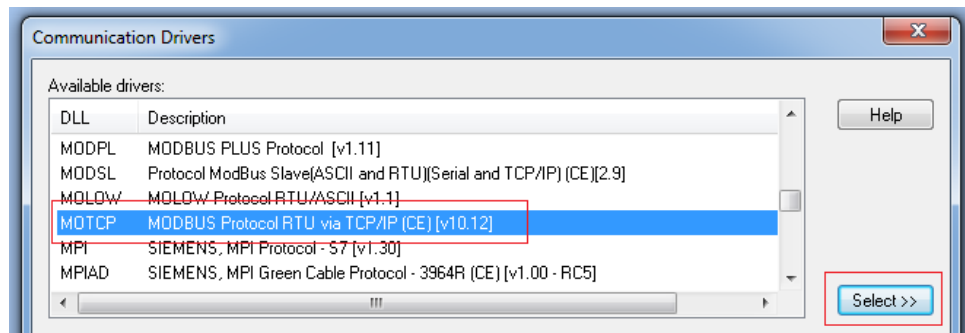


FIGURE 2: SELECTING A DRIVER.

Step 3: On the **COMM** tab, expand the **Drivers** folder, then expand the **MOTCP** folder, and then open up the **MAIN DRIVER SHEET**.

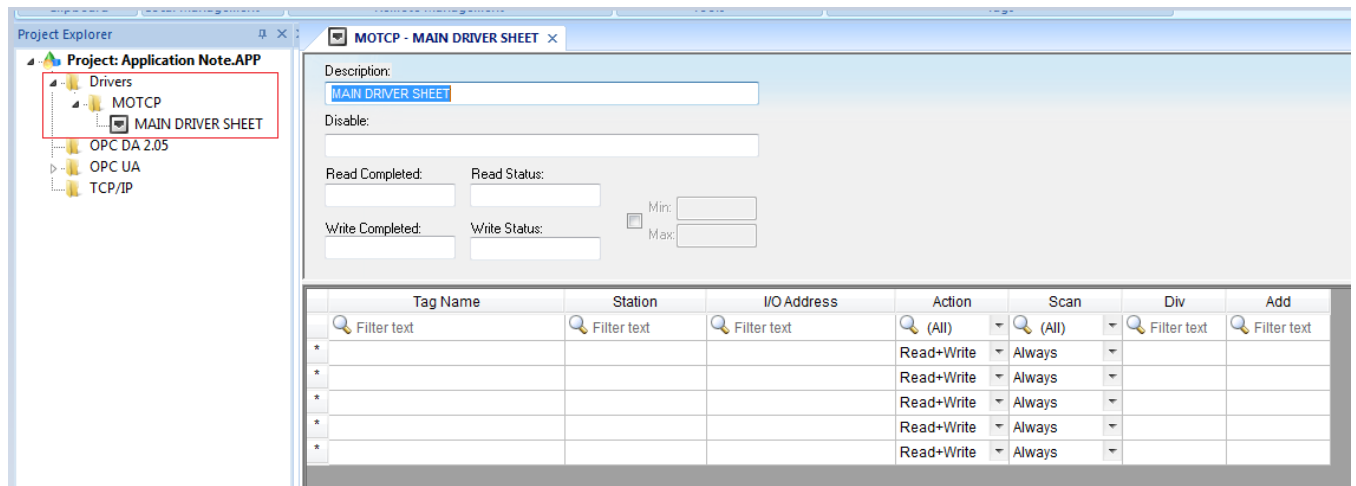


FIGURE 3: OPENING THE DRIVER SHEET.

The important fields to be filled out are **Tag Name**, **Station**, and **I/O Address**.

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- **Tag Name** is any variable used in the InduSoft Web Studio HMI.
- **Station** is the IP address of the MPiec controller. The port must also be specified (typically 502). For example: if the IP address of the controller was 192.168.207.132, then the station ID would be as follows: **192.168.207.132:502**
- **I/O Address** is the corresponding Modbus address where the variable will be written to, or read from.

Step 4: Figure 4 is an image of the MP3000iec series controller memory map when it is configured as a Modbus server in MotionWorks IEC.

- Modbus coil 0X1 corresponds to the MotionWorks IEC Global Variable located at the address %IX73728.0. 512 coils are available.
- Modbus register 4X43 equates to the Global Variable at %MB3.483412. 10,000 registers are available.
- Modbus input 1X10 equates to the Global Variable at %QX73729.1. 512 inputs are available.
- Modbus register 3X105 equates to the Global Variable at %QB74000. 10,000 registers are available.

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MP3000iec Series Controller as a Modbus Server / Slave

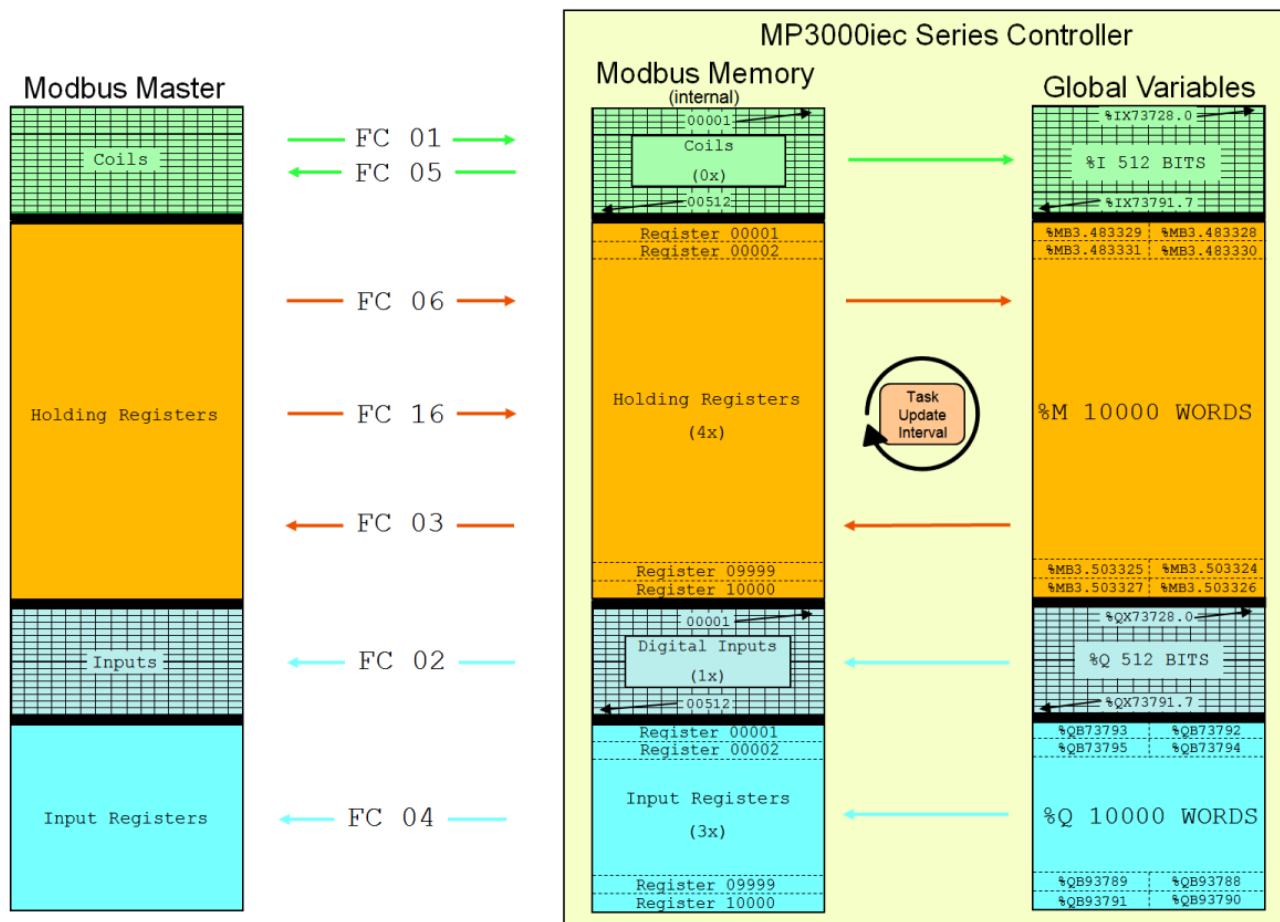


FIGURE 4: MEMORY MAP OF THE MP3000IEC SERIES CONTROLLER AS A SERVER.

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Step 5: Figure 5 is a Modbus driver sheet that contains four variables that are mapped to the IP address of an MPiec controller. The hardware address of each variable is also entered.

Tag Name	Station	I/O Address	Action	Scan	Div	Add
1 EnableBool	192.168.1.1:502	0X:1	Read+Write	Always		
2 EnableInteger	192.168.1.1:502	4X:1	Read+Write	Always		
3 Real3	192.168.1.1:502	FP3:1	Read+Write	Always		
4 Real4	192.168.1.1:502	FP:2	Read+Write	Always		
*			Read+Write	Always		
*			Read+Write	Always		
*			Read+Write	Always		
*			Read+Write	Always		
*			Read+Write	Always		

FIGURE 5: MODBUS TCP DRIVER SHEET WITH VALUES.

- **EnableBool** is a boolean value stored at **0X:1** (%IX73728.0).
- **EnableInteger** is an integer value stored at **4X:1** (%MW3.483328).
- **Real3** is a real value stored at **FP3:1*** (%QD73792)
- **Real4** is a real value stored at **FP:2*** (%MD3.483332)

***CRITICAL NOTE:** If a variable is of type **REAL** and is being mapped using function code 16 (read/write holding register), it must be labeled **FP:** instead of 4X. If the variable is of type **REAL** and is using function code 4 to read input registers, it must be labeled **FP3:** instead of 3X.

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Step 6: These values can be verified in MotionWorks IEC via a simple program.

- Figure 6 is an HMI created in InduSoft. The EnableBool button toggles **EnableBool** in the MotionWorks IEC program (Figure 7). **EnableInteger**, **RealValue4X1**, and **RealValue3X1** are read from their corresponding hardware addresses and their values are updated in the HMI.
- Figures 8 and 9 demonstrate that InduSoft is addressed correctly, because the HMI mirrors the values shown in MotionWorks IEC.

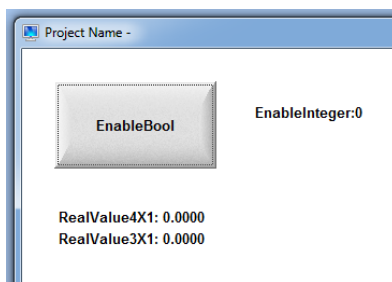


FIGURE 6: SIMPLE HMI READS/WRITES VARIABLES TO THE MPIEC CONTROLLER.

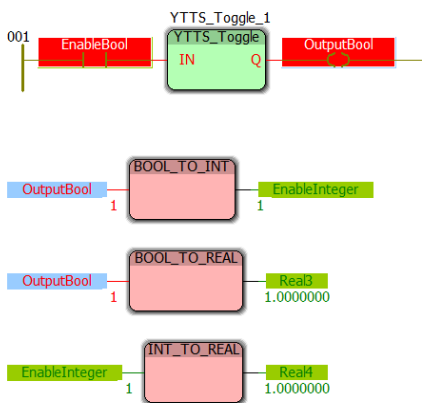


FIGURE 7: MOTIONWORKS IEC PROGRAM THAT TOGGLES GLOBAL VARIABLES BETWEEN 0 AND 1.

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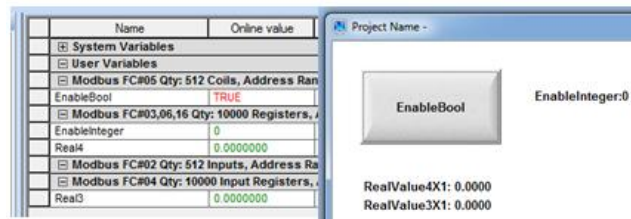


FIGURE 8: THE VARIABLE VALUES ARE EQUIVALENT WHEN OUTPUTBOOL IS FALSE.

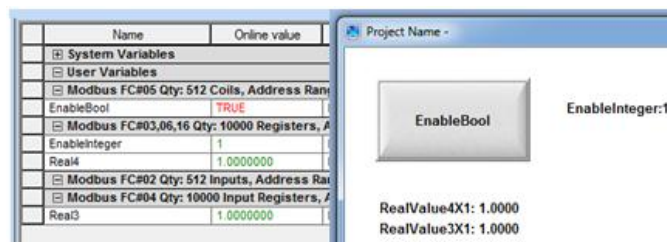


FIGURE 9: THE VARIABLE VALUES ARE EQUIVALENT WHEN OUTPUTBOOL IS TRUE.