

**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 Study 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.

Communicati	on Drivers		<b>X</b>
Available dri	vers:		
DLL	Description	•	Help
MODPL MODSL MOLOW	MDDBUS PLUS Protocol [v1.11] Protocol ModBus Slave(ASCII and RTU)(Serial and TCP/IP) (CE)[2:9] MDLDW Protocol RTU/ASCII [v1.1]		
MOTCP	MODBUS Protocol RTU via TCP/IP (CE) [v10.12]		
MPI	SIEMENS, MPI Protocol - S7 (v1.30)		
MPIAD	SIEMENS, MPI Green Cable Protocol - 3964R (CE) [v1.00 - RC5]	-	
•	III	•	Select >>

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**.

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Project Explorer $\Psi \times :$	MOTCP - MAIN DRIVER SHEET ×								
Project: Application Note.APP Morres MOTCP MAIN DRIVER SHEET OPC DA 2.05 OPC UA TCP/IP	Description: MAN DRIVER SHEET Disable: Read Completed: Write Completed: Write Status:	Mir: [							
	Tag Name	Station	I/O Address	Action		Scan		Div	Add
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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.

MOTCP - MAIN DRIVER	SHEET ×							
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MAIN DRIVER SHEET								
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	bdie:							
/rite Completed: Write Status:	Marc Marc							
	Max.							
Tag Name	Station	I/O Address	Action		Scan		Div	Add
🔍 Filter text	🔍 Filter text	🔍 Filter text	🔍 (All)	Ŧ	🔍 (All)	Ŧ	🔍 Filter text	🔍 Filter text
EnableBool	192.168.1.1:502	0X:1	Read+Write	Ŧ	Always	Ŧ		
EnableInteger	192.168.1.1:502	4X:1	Read+Write	Ŧ	Always	Ŧ		
Real3	192.168.1.1:502	FP3:1	Read+Write	Ŧ	Always	Ŧ		
Real4	192.168.1.1:502	FP:2	Read+Write	Ŧ	Always	Ŧ		
			Read+Write	Ŧ	Always	Ŧ		
			Read+Write	Ŧ	Always	Ŧ		
			Read+Write	Ŧ	Always	Ŧ		
			Read+Write	Ŧ	Always	Ŧ		
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	escription: MAIN DRIVER SHEET isable: ead Completed: Read Status: /rite Completed: Write Status: Tag Name Filter text EnableBool EnableInteger Real3 Real4	eacription: IAIN DRIVER SHEET isable: ead Completed: Read Status: /rite Completed: Write Status: Mirr. Tag Name Station Filter text EnableBool 192.168.1.1:502 EnableInteger 192.168.1.1:502 Real3 192.168.1.1:502 Real4	eacription: IAIN DRIVER SHEET isable: ead Completed: Read Status: Image: Mirr. Max. Tag Name Station VO Address Filter text Filter text Filter text EnableBool 192.168.1.1:502 0X:1 EnableInteger 192.168.1.1:502 4X:1 Real3 192.168.1.1:502 FP3:1 Real4 192.168.1.1:502 FP3:1 Real4 192.168.1.1:502 FP3:1	eacription: IAIN DRIVER SHEET isable: ead Completed: Read Status: Min: Hite Completed: Write Status: Tag Name Station VO Address Action Filter text Filter text (II) Filter text Filter text (II) Filter text Filter text (II) Filter text Filter text (II) Filter text (II) F	eacription: AAN DRIVER SHEET isable: ead Completed: Read Status: Mirx Max inte Completed: Write Status: Mirx Max inte Completed: Write Status: Mirx Max Filter text Filter text (All) * EnableBool 192.168.1.1:502 0X:1 Read+Write * EnableInteger 192.168.1.1:502 4X:1 Read+Write * Real3 192.168.1.1:502 4X:1 Read+Write * Real4 192.168.1.1:502 FP:2 Read+Write * Read+Write * Read+Write * Read+Write * Read+Write * Read+Write * Read+Write *	eacription: AAN DRIVER SHEET isable: ead Completed: Read Status: Mirr: Max rite Completed: Write Status: Mirr: Mirr	eacription: AAN DRIVER SHEET isable: ead Completed: Read Status: inte Completed: Write Status: Mirc Aite Completed: Write Status: Mirc Hiter text Aita Status: Mirc Filter text Aita Status: Mirc EnableBool 192.168.1.1:502 0X:1 Read+Write Always T EnableInteger 192.168.1.1:502 4X:1 Read+Write Always T Real3 192.168.1.1:502 FP:2 Read+Write Always T Real4 192.168.1.1:502 FP:2 Read+Write Always T Real4 192.168.1.1:502 FP:2 Read+Write Always T Read4Write Always T	eacription: AAN DRIVER SHEET isable: ead Completed: Read Status: inte Completed: Write Status: Mint: Mark inte Completed: Write Status: Mint: Mark Filter text Filter text (AII) CAddress Action Scan Div Filter text Filter text (AII) CALL CALL CALL CALL CALL CALL CALL CAL

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.