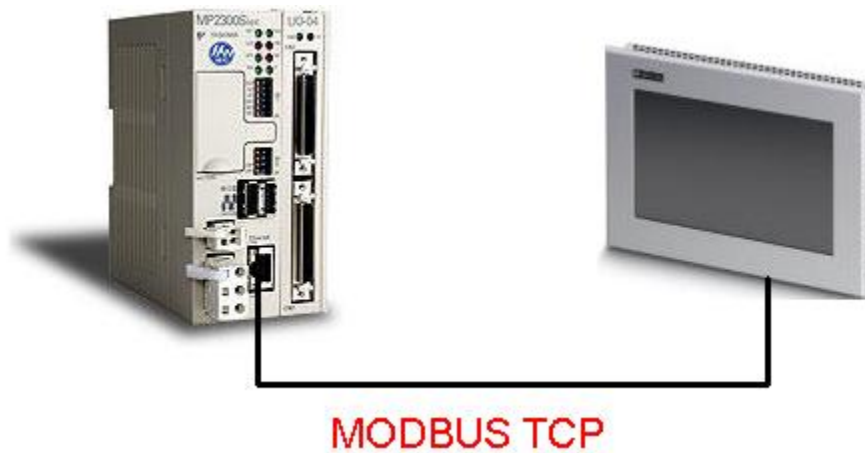


## Product Application Note

# Configuring Visu+ software on a TP series Phoenix HMI to Communicate with an MPiec controller over MODBUS TCP

Applicable Product: MPiec, MotionWorksIEC



Subject: Application Note	Product: MPiec	Doc#: AN.MP2000iec.05
Title: Configuring Visu+ software on a TP series Phoenix HMI to Communicate with an MPiec controller over MODBUS TCP		

**Application Overview**

This document explains the steps required to configure a TP series HMI using Visu+ to communicate to an MPiec series controller over MODBUS TCP. The HMI is the client and the MPiec controller is the server in this protocol.

**Products Used:**

Component	Product and Model Number
Controller	MPiec
Software	MotionWorks IEC Professional
HMI	TP series HMI from Phoenix contact
HMI software	Visu+

**Implementation Method of Core Operation**

**Step 1:** Create variables under the Real Time DB group. The variable properties can be edited. Important properties that may be included are data type and description.

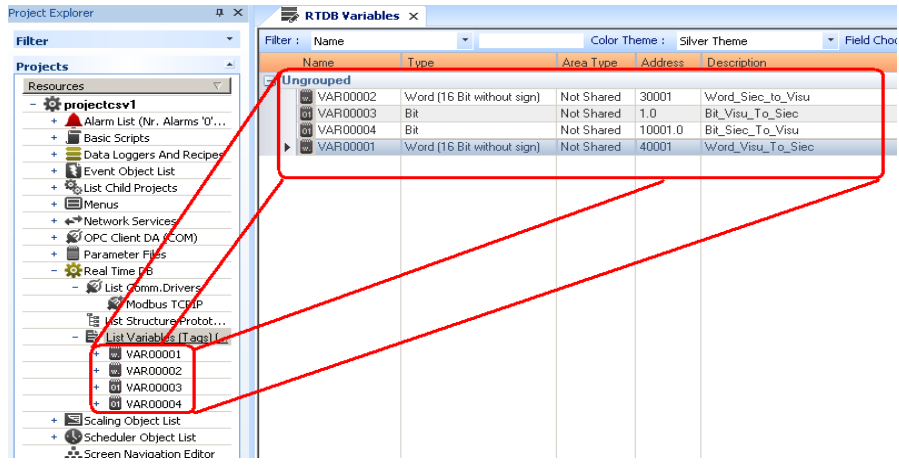


Figure 1: Real Time Variable Database

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**Step 2:** Add the MODBUS driver under the Real Time DB group. Important properties of the slave station are the server IP address and port settings.

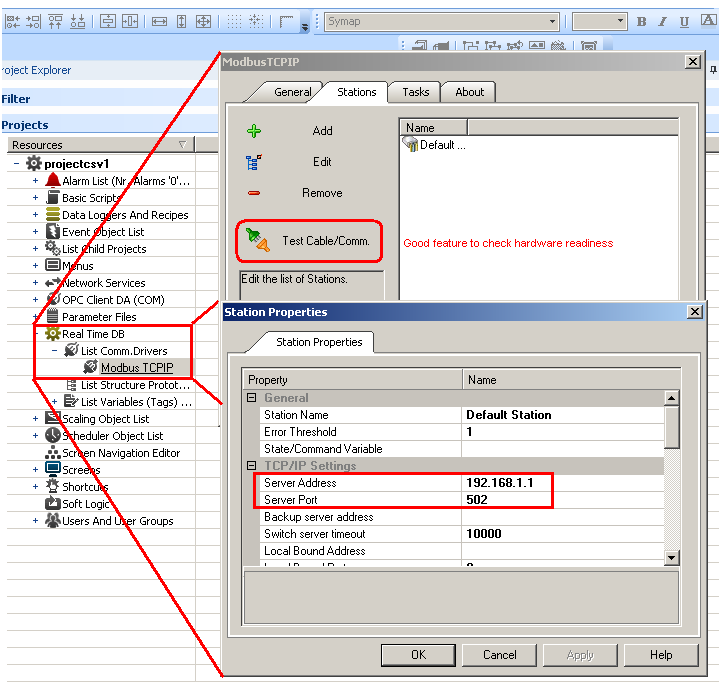


Figure 2: MODBUS configuration

**Step 3:** Assign MODBUS variables to tasks in the MODBUS configuration page. Important fields to be filled are:

- a) Data area
- b) Start address (this is the offset from the base modbus address)

In the example shown in figure 3, the write multiple registers function code is used and a start address of 0 corresponds to the first element of the 40000 MODBUS memory area for holding registers. In the example in figure 4, a start address corresponds to the first element in the 30000 memory area for input registers. In the example in figure 5, the start address 0 stands for the first element in the 00000 MODBUS memory area for write coils. In the example in figure 6, the start address 0 stands for the first element in the 10000 MODBUS memory area for reading discrete inputs.

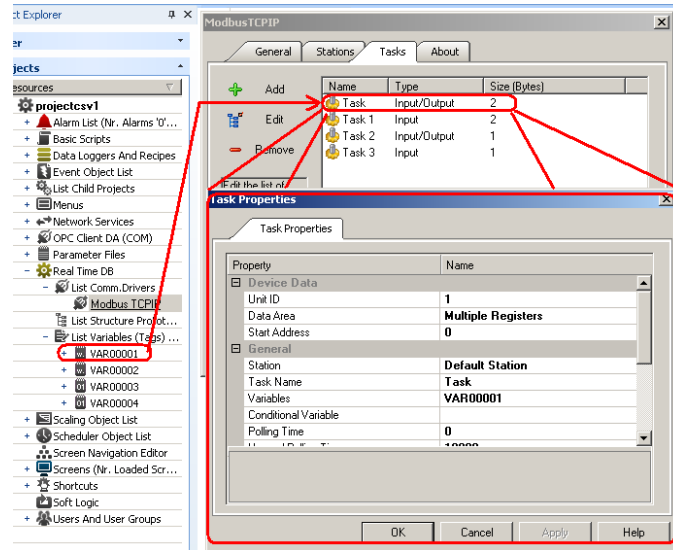


Figure 3: MODBUS variable mapping for multiple registers

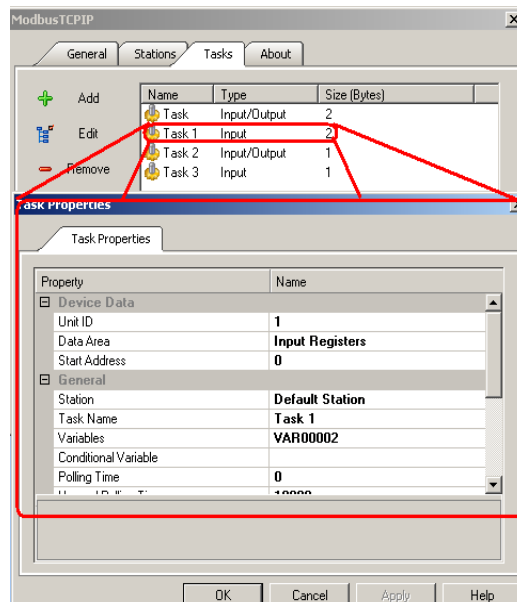


Figure 4: MODBUS variable mapping for input registers

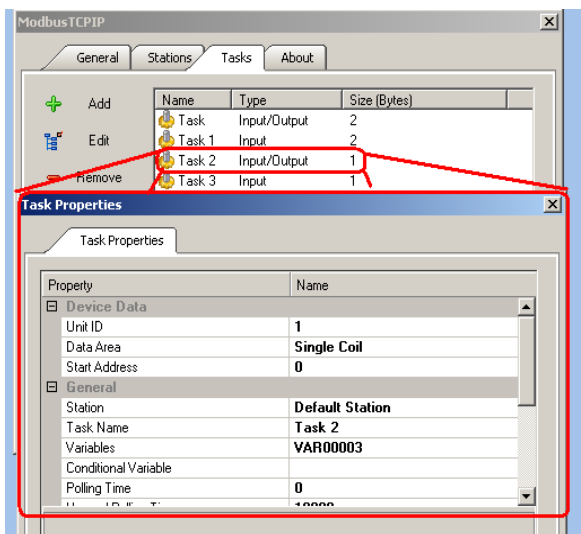


Figure 5: MODBUS variable mapping for writing single coil

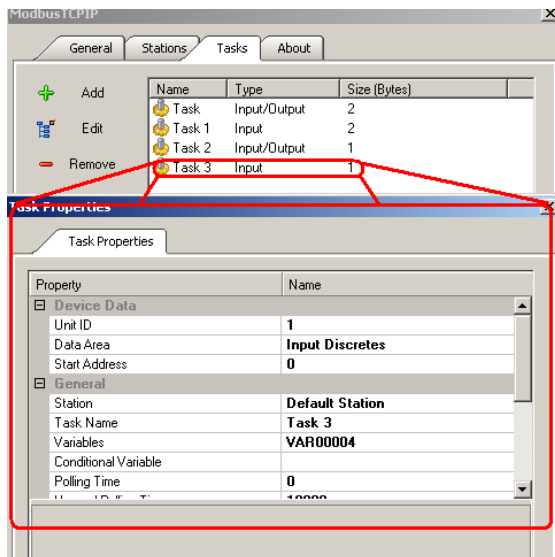


Figure 6: MODBUS variable mapping for reading discrete inputs

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**Step 4: Screen creation**

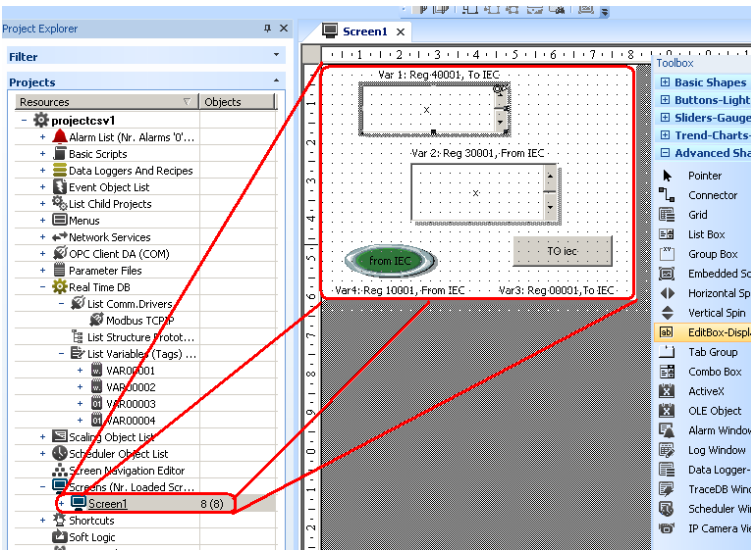


Figure 7: Creating screen objects

**Step 5: Map screen objects to variables.**

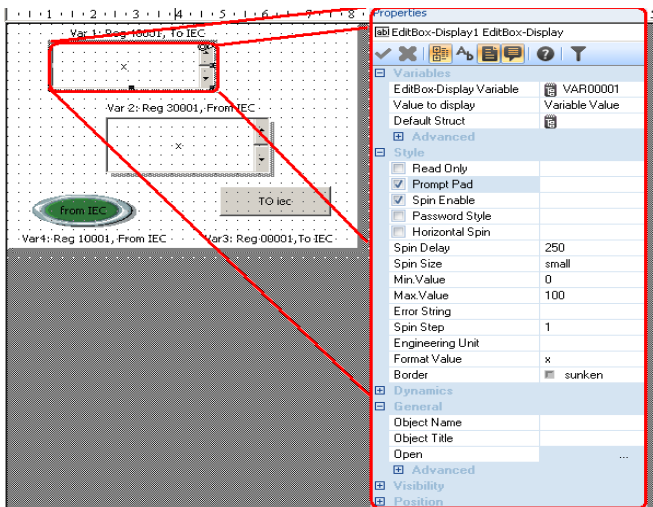


Figure 8: Mapping variables to screen objects

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**Step 6:** Simulation

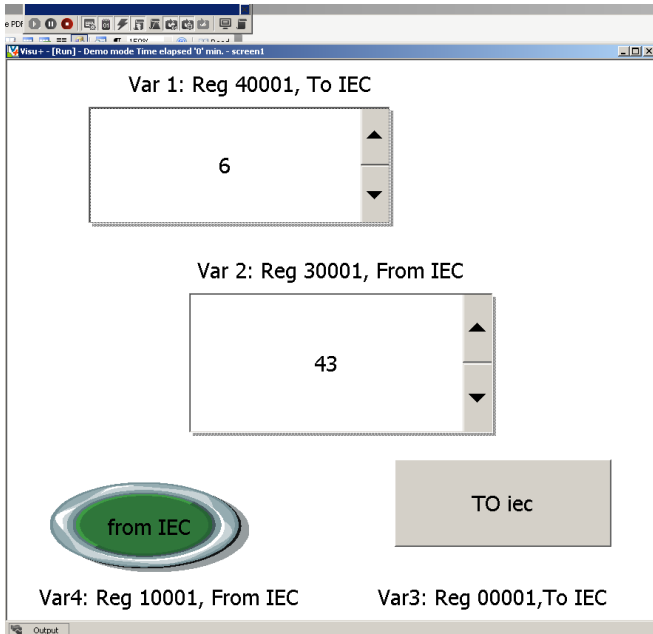


Figure 9: Simulation to test communication

**Step 7:** Import Export csv file: If variables need to be imported into the Visu+ environment, go to Tools> Csv Tag Importer- Exporter. The format of the csv file can be viewed by exporting the already existing variables to a csv file.

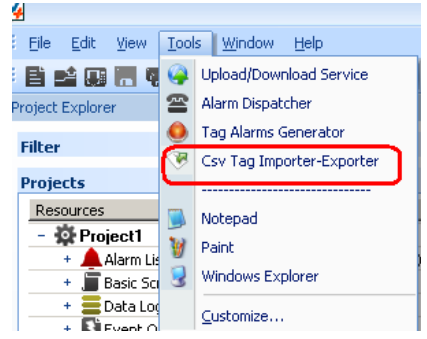


Figure 10: CSV tag import - export

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Name	Type	Area Type	Address	Description	Dynamic
VAR00003	Bit	Not Shared	1.1	Bit_Visu_To_Siec	
B_Visu_to_Siec	Bit	Not Shared	1.2	Bit_Visu_To_Siec	
VAR00004	Bit	Not Shared	10001.1	Bit_Siec_To_Visu	
B_Siec_to_Visu	Bit	Not Shared	10002.2	Bit_Siec_To_Visu	
VAR00002	Word (16 Bit without sign)	Not Shared	30001	Word_Siec_To_Visu	
W_Siec_to_Visu	Word (16 Bit without sign)	Not Shared	30002	Word_Siec_To_Visu	
VAR00001	Word (16 Bit without sign)	Not Shared	40001	Word_Visu_To_Siec	
W_Visu_to_Siec	Word (16 Bit without sign)	Not Shared	40002	Word_Visu_To_Siec	

Figure 11: Comprehensive list of variables

Address column in variable worksheet has no impact on MODBUS addressing in the MODBUS driver. To make a variable a MODBUS variable, they need to be added separately as shown in figure 12. They can be selected from the list of real time variables from the tag browser window as shown in figure 12.

The screenshot displays the configuration environment for the MODBUS driver. On the left, a tree view shows the project structure with 'Modbus TCP/IP' selected. The main window is divided into several panes:
 

- Modbus TCP/IP Configuration:** Shows a table of tasks. 'Task 1' is selected, and its properties are shown in the 'Task Properties' pane below it. The 'Variables' section lists 'VAR00001.W\_Visu\_to\_Siec'.
- Tag Browser:** A window at the bottom showing a list of variables. 'VAR00001.W\_Visu\_to\_Siec' is highlighted, indicating it is being added to the MODBUS driver configuration.

Figure 12: Making a variable as a MODBUS variable

Addresses are not explicitly mentioned in the MODBUS driver configuration page. The order in which they are added is important.



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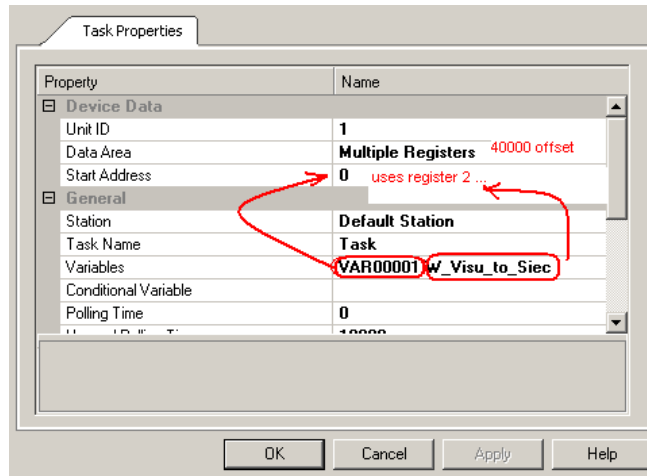


Figure 13: List of variables under MODBUS function code 16