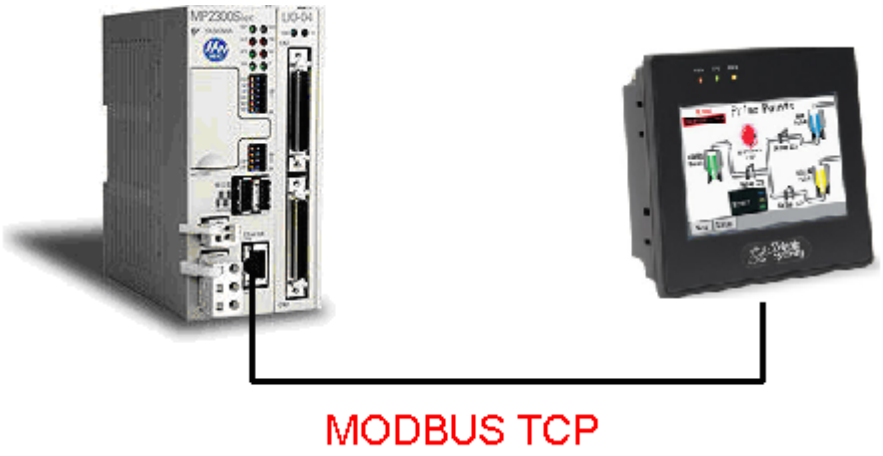
Product Application Note

Configuring EZ Ware on a Maple HMI to Communicate with an MPiec controller over MODBUS TCP

Applicable Product: MPiec, MotionWorksIEC



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Subject: Application Note	Product: MPiec	Doc#: AN.MP2000iec.06
Title: Configuring EZ Ware on a Maple HMI to Communicate with an MPiec controller over MODBUS TCP		

Application Overview

This document explains the steps required to configure a Maple HMI using EZ Ware 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	Maple Silver series HMI
HMI software	EZ Ware

Implementation Method of Core Operation

Configuration of the MPiec controller

Step 1: Configuring MODBUS server:

Under Hardware configuration, enable the MPiec controller to be a MODBUS slave (server)

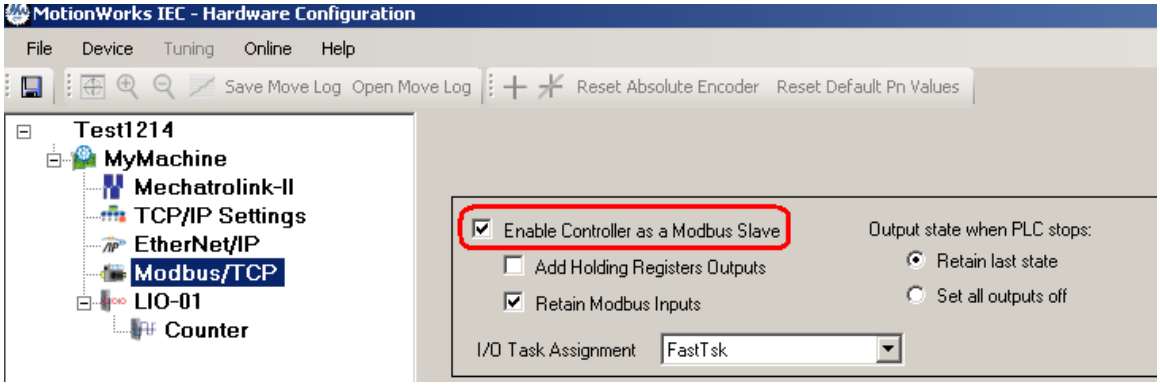

Figure 1: Enabling MODBUS server

This creates MODBUS groups that support Function codes 5 (MODBUS registers 00001 onwards), 6/16 (MODBUS registers 400001 onwards), 2 (MODBUS registers 10001 onwards) and 4 (MODBUS registers 30001 onwards) in the global variables list.

Save the Hardware configuration.
Power cycle the controller.

Step 2: Create MODBUS variables in the global variable list.

Create variables under the appropriate groups and assign local addresses to these variables (based on the group address range) as shown in the figure below.

Name	Type	Usage	Description	Address
Modbus FC#05 Qty: 128 Coils, Address Range: %IB24560 - %IB24575			Group Address Range	
BitMaple_2_Siec	BOOL	VAR_GLOBAL		%IX24560.0
Modbus FC#06,16 Qty: 1024 Registers, Address Range: %IB28672 - %IB30719				
WordMaple_2_Siec	WORD	VAR_GLOBAL		%IW28672
Modbus FC#02 Qty: 128 Inputs, Address Range: %QB24560 - %QB24575				
Bit_Siec_2_Maple	BOOL	VAR_GLOBAL		%QX24560.0
Modbus FC#04 Qty: 1024 Input Registers, Address Range: %QB28672 - %QB30719				
Word_Siec_2_Maple	WORD	VAR_GLOBAL		%QW28672

Figure 2: MODBUS Variables in the global variable page

Compile the project.
Download to controller
Run the project on the PLC

Configuring EZWare

Step 1: Device configuration:

Under device settings, the local HMI is already listed. Add a new device.

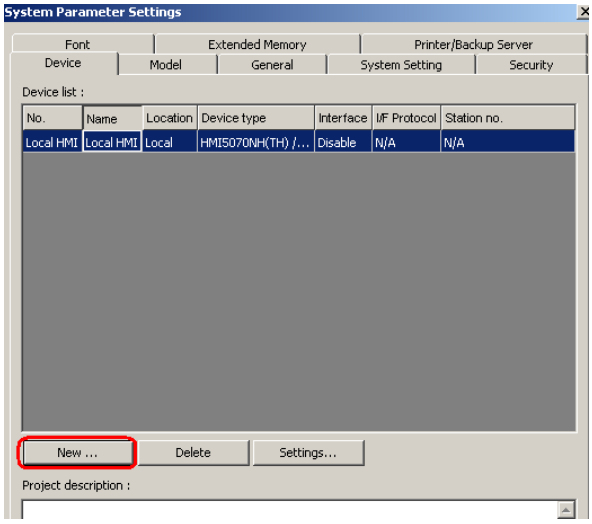

Figure 3: System settings in EZware

Set up new device with the following settings.

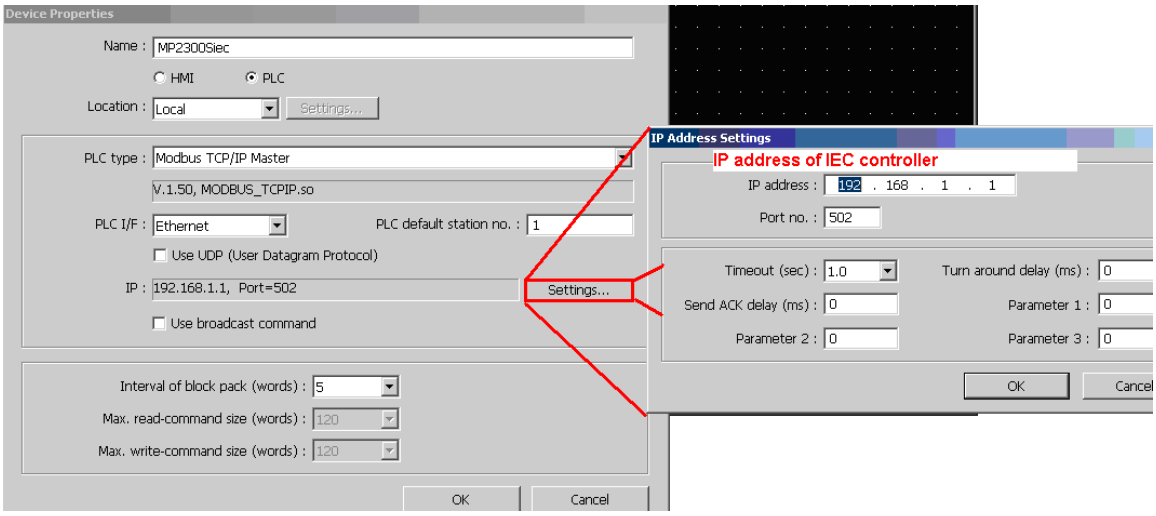

Figure 4: IP address settings for the server

Step 2: Variable declaration and MODBUS mapping:

To start variable creation,
Go to library > Tags

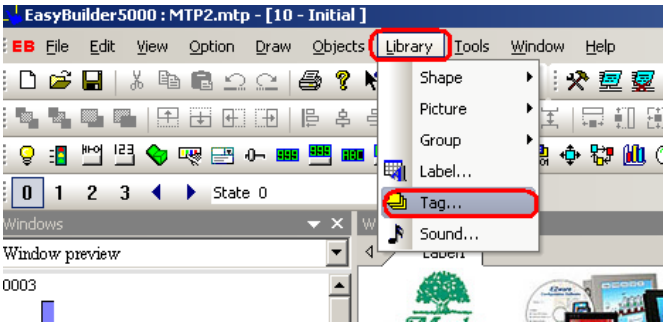

Figure 5: Variable creation

Start a new tag as shown in figure 6

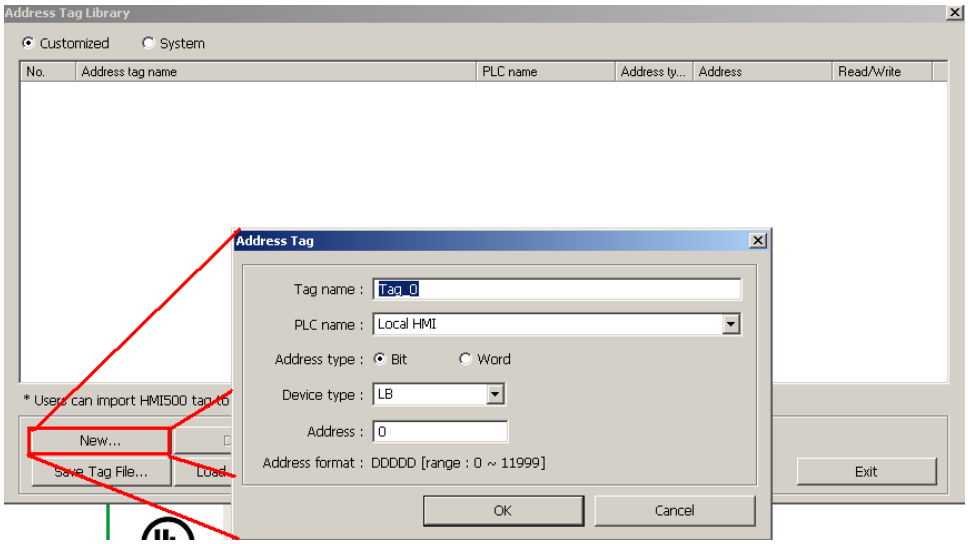

Figure 6: New tag creation

To create a coil (bit to transfer BOOL data type from the Maple HMI to the IEC controller), use the fields as shown in figure 7.

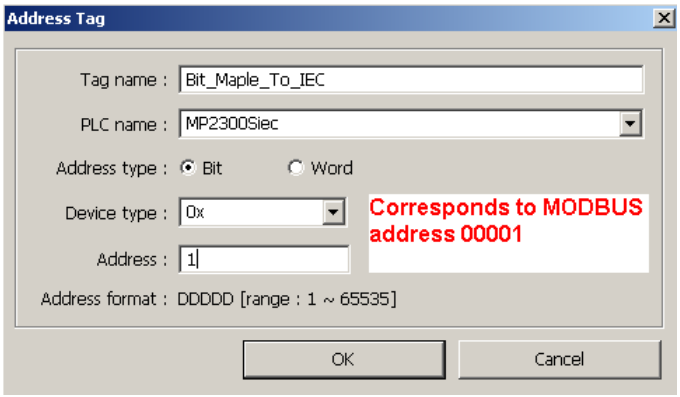

Figure 7: New tag properties

To create a tag to transfer a bit from the IEC controller to the Maple HMI, use the fields as shown in figure 8.

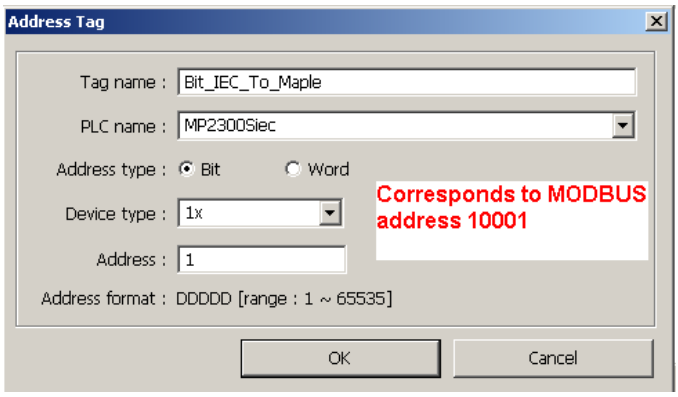

Figure 8: Discrete input tag

The properties to create a tag to send a word from Maple HMI to IEC Controller are as shown in figure 9.

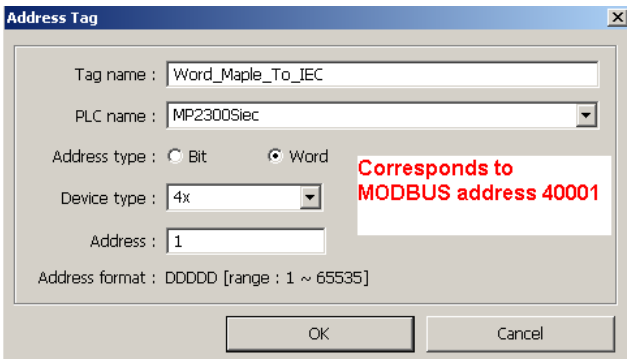

Figure 9: Multiple registers

The properties to create a tag to send a word from the IEC Controller to the Maple HMI are as shown in figure 10.

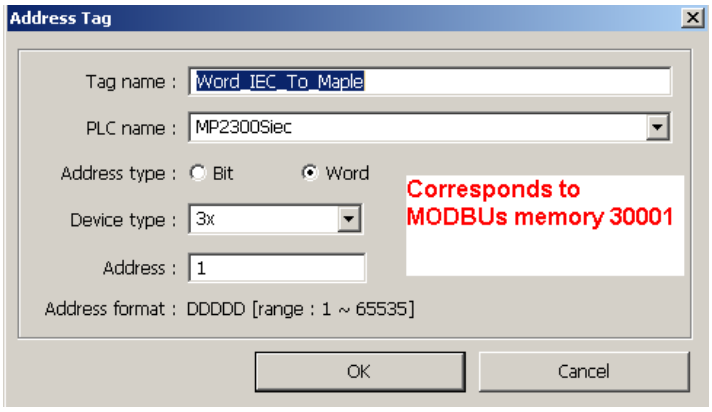

Figure 10: Input registers

The address tag list looks as shown in figure 11.

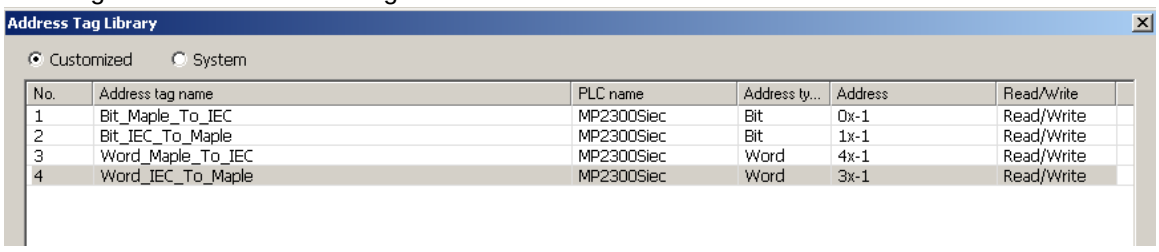

Figure 11: Tag list

Step 3: Screen creation and variable mapping to screen objects:

Insert new object. New lamp object is used in this example. Click on 'setting' to associate this object with a defined tag.

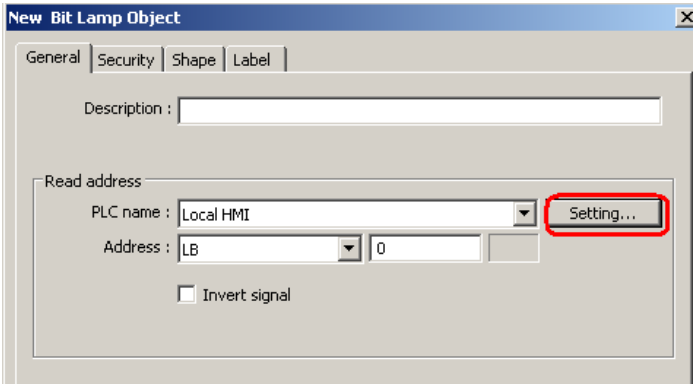

Figure 12: New object properties

Checking the user defined tag check box will allow the user to select the variable from the user defined tags.

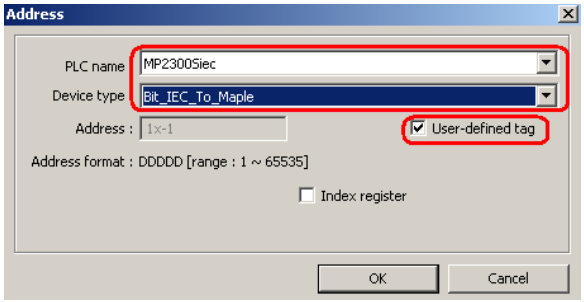

Figure 13: Mapping object to MODBUS variable

The shape, label and other properties can be chosen as desired. The object can then be placed on the display screen.
Configurations of Bit_Maple_To_IEC, Word_IEC_To_Maple and Word_Maple_To_IEC are given below.

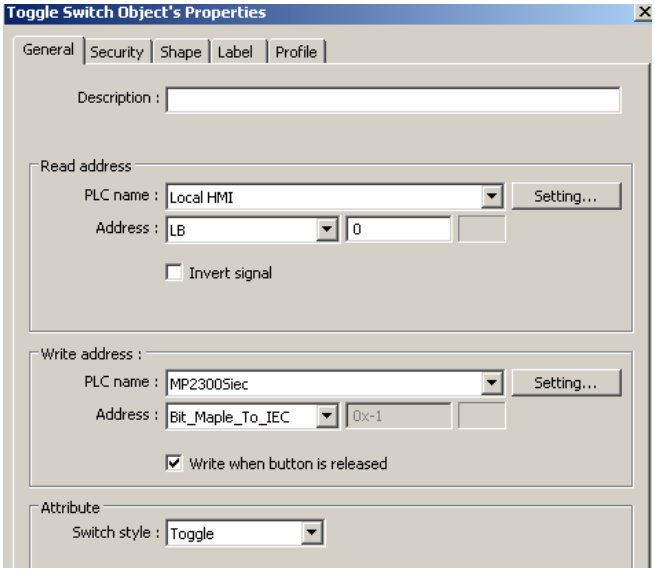

Figure 14: Configuration of Bit_Maple_To_IEC

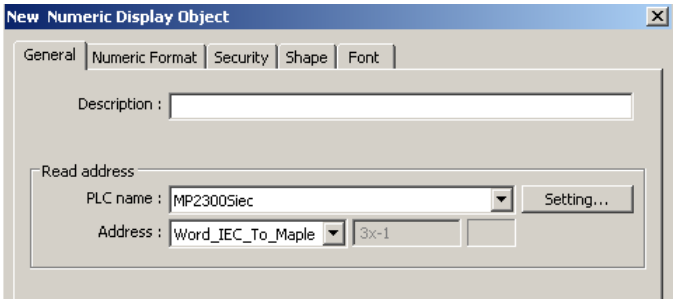

Figure 15: Configuration of Word_IEC_To_Maple

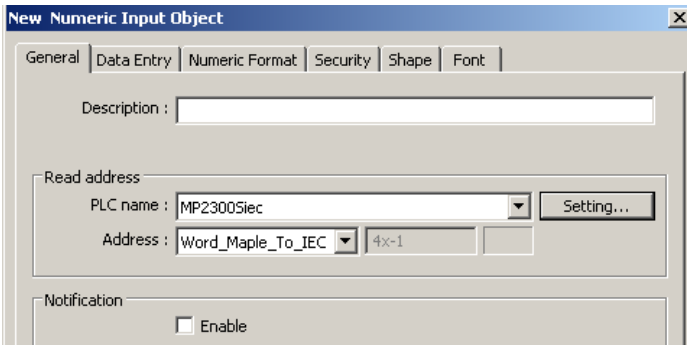

Figure 16: Configuration of Word_Maple_To_IEC:

The display screen looks as in figure 17.

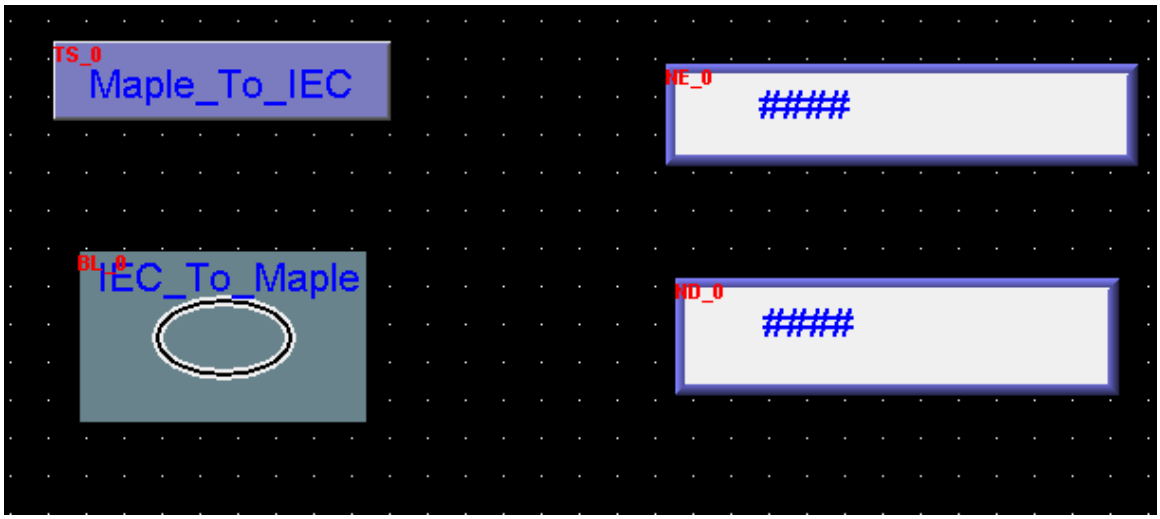

Figure 17: Display screen

Step 4: Simulation

Save the project
Tools> Compile

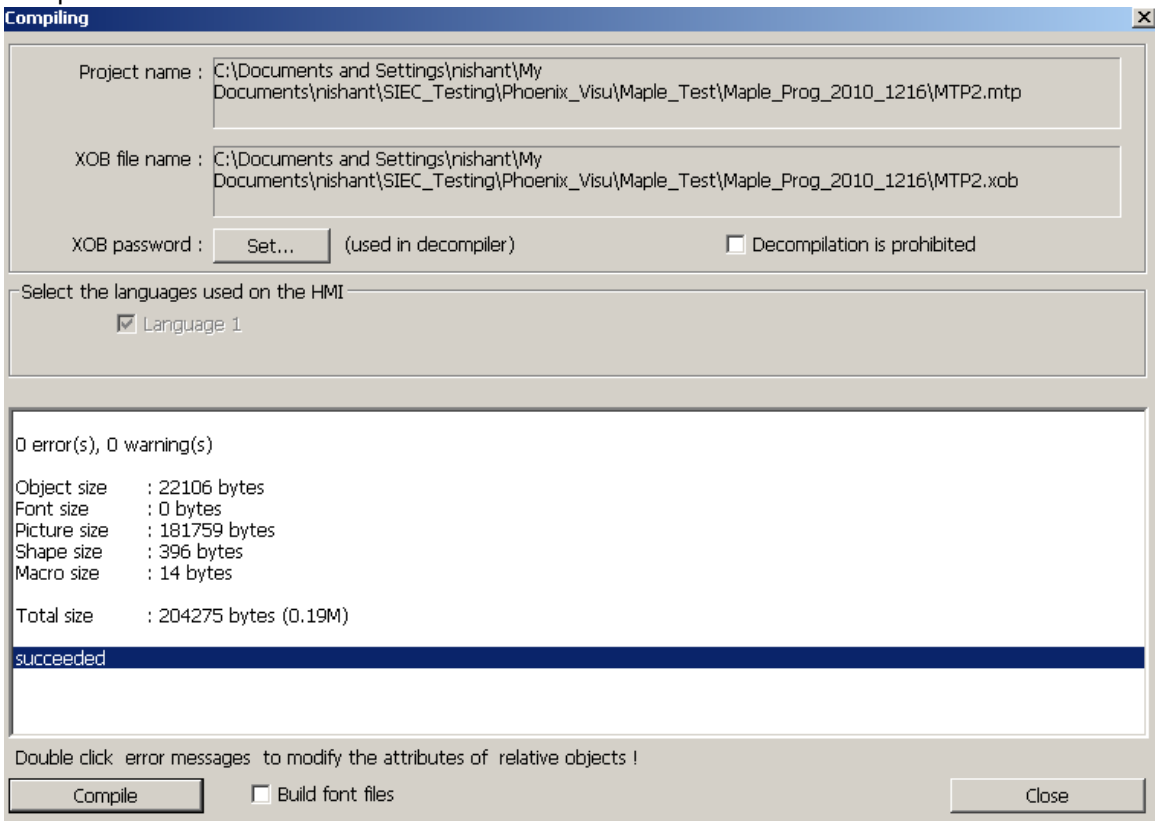

Figure 18: Compile

Tools> Online Simulation will get the simulation running and the user can test real time communication between the two devices. On successful communication data exchange can be confirmed.

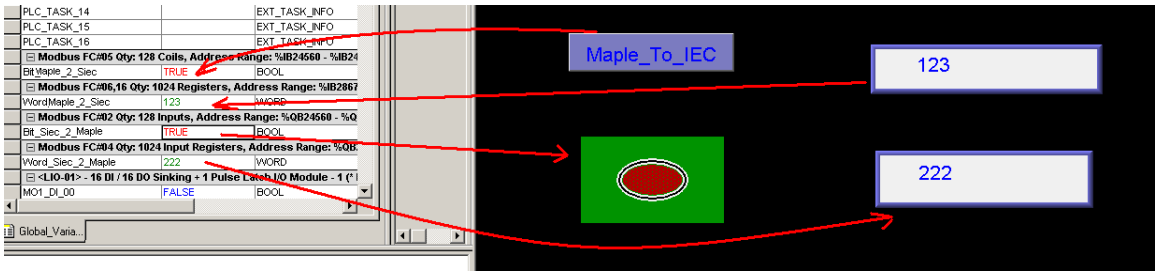

Figure 19: Testing communication