Weintek USA, Inc.   Rev. MAR 8 2018

www.WeintekUSA.com

(425) 488-1100   By Tim Hsieh, Engineering Manager, Weintek USA, Inc.

# Weintek HMI to Control Techniques M400 AC Drive via Modbus TCP/IP Ethernet Module

Introduction: This paper discusses how to communicate between Weintek cMT3090 and a Control Techniques Unidrive M400 AC drive via a SI-Ethernet option module, which is an option module that provides Ethernet interface and can be placed onto M series drives. SI-Ethernet module supports Modbus TCP/IP, a well-known Ethernet communication standard. Weintek Lab released a driver "Control Techniques SI-Ethernet Modbus TCP/IP" in Easybuilder pro version 6.00.01.199, mapping the drive parameters to Modbus addresses. Therefore, an automation engineer doesn't need to choose the Modbus function code and calculate its start register address.

Goal: The goal of this document is to introduce how to correctly access the M400 drive's parameters via a driver "Control Techniques SI-Ethernet Modbus TCP/IP," and provide a template to let HMI programmers know how to establish common drive parameters (Menu 0) in Easybuilder pro.

Equipment:

1. Weintek HMI cMT3090
2. Control Techniques M400 drive
3. SI Ethernet option module

Details of the Programming (HMI Side): Open a new project and choose the HMI model cMT3090. To get the HMI talking to the M400 drive, go to HOME on the top of the menu and then click on System Parameters button.
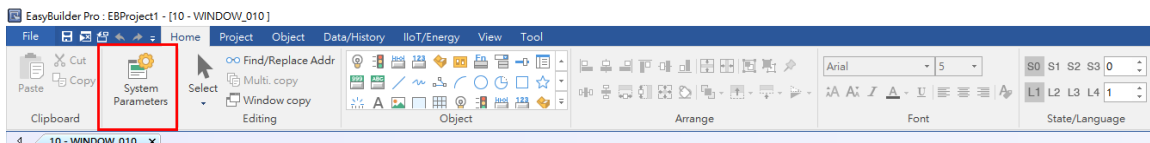
After you get into System Parameters, you can add M400 drive to the communications scheme. The screen shot shows you the communication setup in the HMI for the drive. What you need to do is click on the Settings button (to the right of the IP setting area). Enter your drive IP address and select the same Address mode corresponding to

Modbus Register Addressing Mode you chose in CT software to the communications dialog box. In my case, the SI-Ethernet is installed in slot 1. The address of the Modbus Register Addressing Mode is 001.15.013.

According to the M400 drive user manual, if you want to access a parameter number above 99, you have to switch "Modbus Register Addressing Mode (S.15.013)" to the modified addressing mode in CT software.

Make sure what Modbus Register Addressing Mode you should use. Here is the table to show you the scope of these two modes.

value	Text	Menu Range	Parameter Range
0	Standard	mm<=162	ppp <=99
1	Modified	mm <=63	ppp <= 255

Now we can create objects to make HMI read or write parameters from the drive. This driver allows you to enter parameters as their addresses, like what you are operating on the drive's keypad or PC Tools application.

This table shows the address of the drive. The notation SSS.MM.PPP is used to access these parameters where SSS is the slot number, MM is the menu number, and PPP is the parameter number. For example, to access minimum speed of the drive, its parameter appears in drive Menu 1 and it is referred to as 01.007. The drive is in slot 0. Therefore, the full address is 001.01.007.

| Device type	Address format	Format range	Easybuider data format	Size
BIT	SSS.MM.PPP	SSS:0-255, MM:0-99,PPP:0-999	Bit object	1-bit
BYTE	SSS.MM.PPP	SSS:0-255, MM:0-99,PPP:0-999	16-bit	8-bit
WORD	SSS.MM.PPP	SSS:0-255, MM:0-99,PPP:0-999	16-bit	16-bit
DWORD	SSS.MM.PPP	SSS:0-255, MM:0-99,PPP:0-999	32-bit	32-bit

Let me show you how to read a parameter by using our HMI comms object.

1. Click the Word Lamp object.
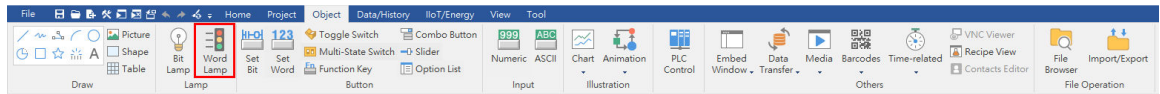
2. Under the general tab, select the drive name "Control Techniques SI-Ethernet Modbus TCP/IP" as the PLC name. Enter the parameter 01.15.013 to the Read address box.

   Referencing to the SI-Ethernet module user guide, its minimum is 0 (Standard mode), and the maximum is 1 (modified mode). Set up the No. of states to 2. Type is 8 bit, so you know you should choose "Byte" for its device type. Each drive or option module parameter is mapped to a single 16-bit Modbus register, so you have to choose 16-bit unsigned for its data type.
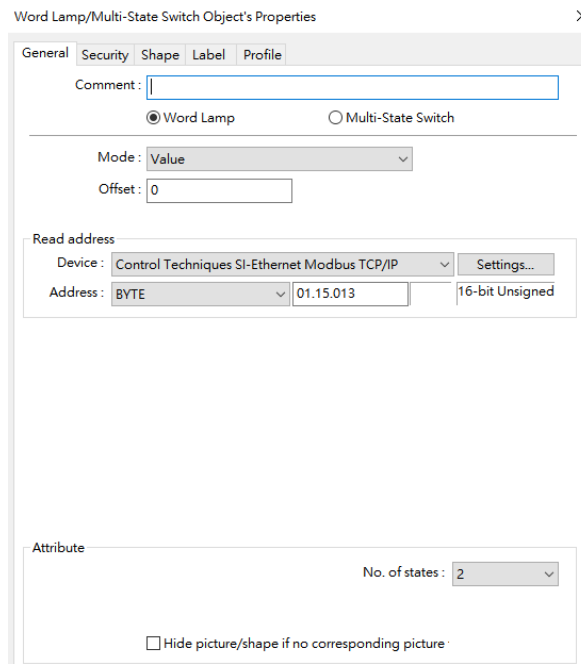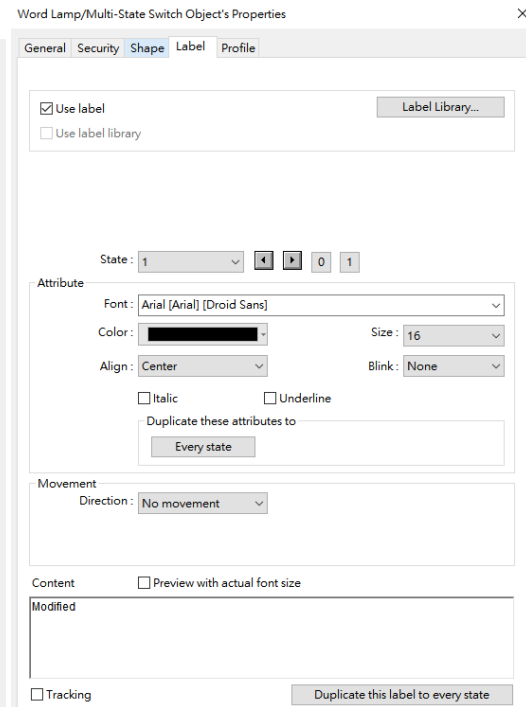
3. Under the Label tab, this tab can make the values signify the relative descriptions.
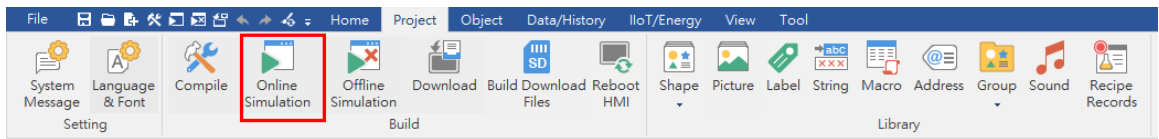
State 0
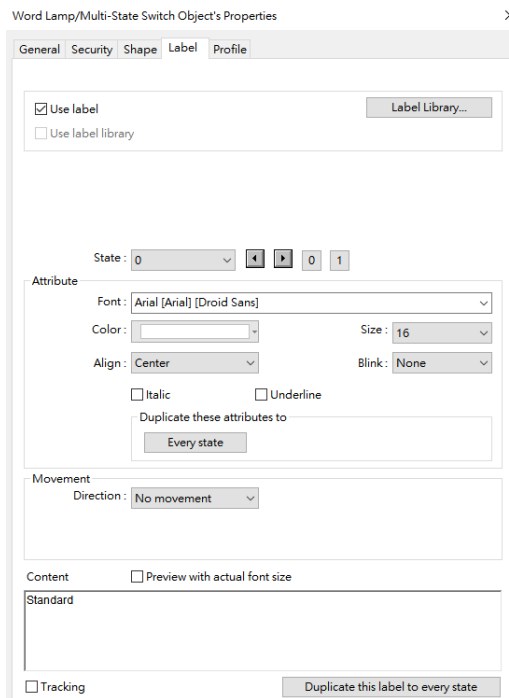
State 1

4. Run online simulation by clicking on the Online Simulation button.

Creating other objects is similar. The spreadsheet shown below is convenient for you to reference.

Object	Address	Data type	Description
Toggle Switch	Bit-00.01.010	N/A	Bipolar Reference Enable
Numeric	Dword-00.05.007	32-bit unsigned	Motor Rated Current
Numeric	Word-00.05.009	16-bit unsigned	Motor Rated Voltage
Mutli State Switch	Byte-00.06.009	16-bit unsigned	Catch A Spinning Motor
Numeric	Dword-01.02.006	32-bit unsigned	Option module IP Address

Screen Shot of the Final Project: an operator can immediately monitor the status of a drive or multiple drives and control drives via a HMI.
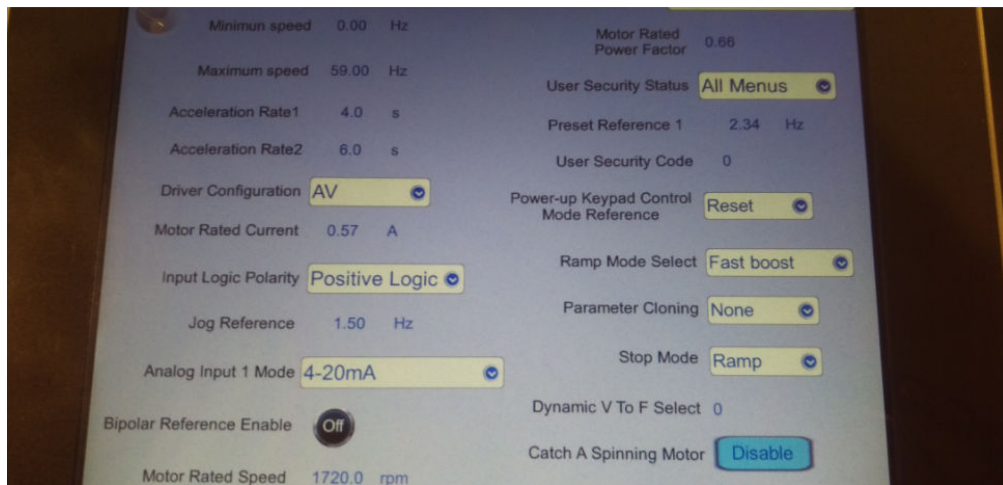
Reference Link:

Weintek Labs website: http://www.weintek.com

Control Techniques Unidrive M400 AC Drive User Guide:

http://www.controltechniques.com/en-US/controltechniques/products/acdrives/unidrivem/m400/Pages/unidrivem400.aspx

Founded in 1996, WEINTEK LABS is a global-leading HMI manufacturer and is dedicated to the development, design, and manufacturing of practical HMI solutions. WEINTEK LAB's mission is to provide quality, customizable HMI-solutions that meet the needs of all industrial automation requirements while maintaining customer satisfaction by providing "on-demand" customer service. WEINTEK LABS brought their innovative technology to the United States in 2016, WEINTEK USA, INC., to provide quality and expedient solutions to the North American industrial market.

6219 NE 181s Street STE 120
Kenmore, WA 98028
425-488-1100