

Weintek HMI to Control Techniques Unidrive M700 Drive



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Weintek HMI to Control Techniques M700 Drive via built-in Ethernet Module

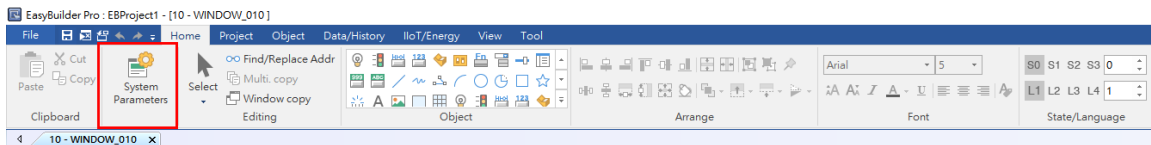
Introduction: This paper discusses how to communicate between Weintek cMT3090 and a Control Techniques Unidrive M700 drive via its built-in Ethernet module. M700 drive supports Modbus TCP/IP, a well-known Ethernet communication standard. Weintek Lab released a driver “Control Techniques SI-Ethernet Modbus 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 M700 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:

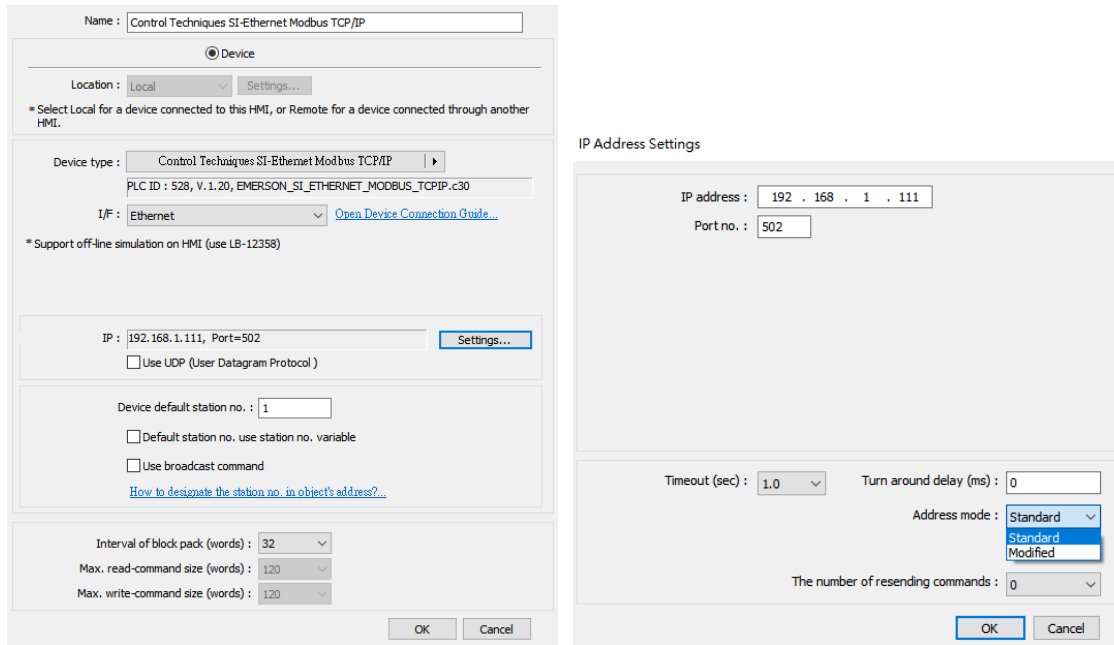
1. Weintek HMI cMT3090
2. Control Techniques M700 drive

Details of the Programming (HMI Side): Open a new project and choose the HMI model cMT3090. To get the HMI talking to the M700 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 M700 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 4.15.013 you chose in CT software to the communications dialog box.

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According to the M700 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.

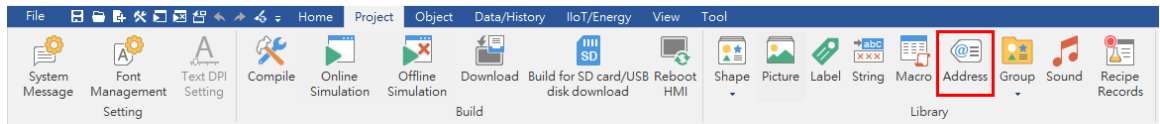
This table shows the address of the drive. The notation SSS.MM.PPP is used to access these parameters where SSS is the slot number, MM is the menu number, and PPP is the parameter number. For example, to access minimum speed of the drive, its parameter appears in drive Menu 1 and it is referred to as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

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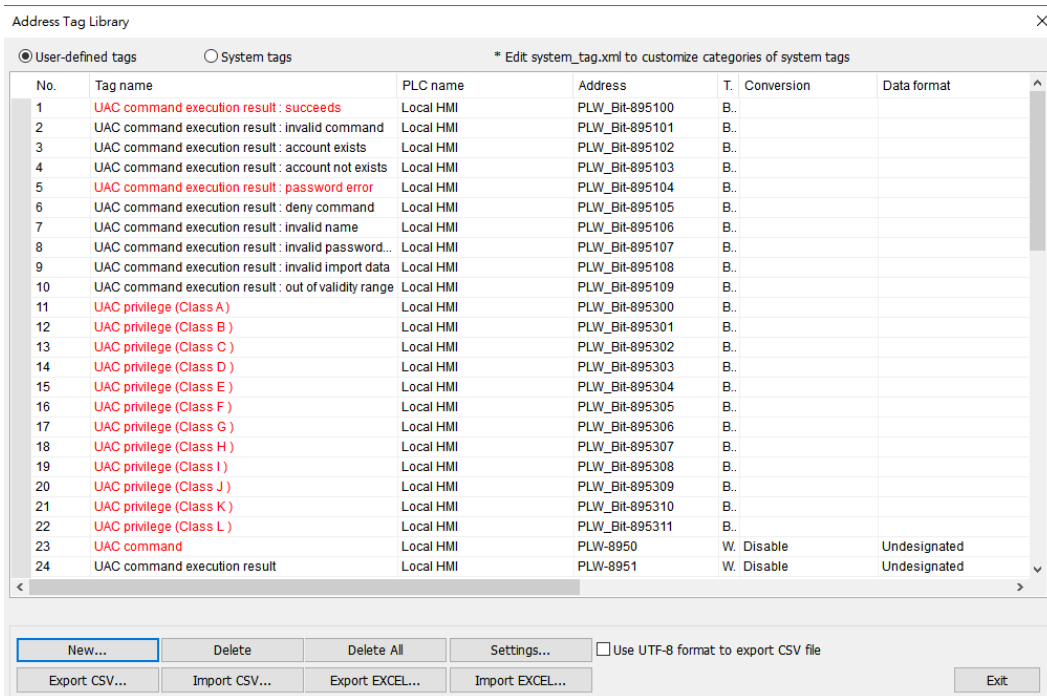
Device type	Address format	Format range	Easybuilder data format	Size
BIT	SSS.MM.PPP	SSS:0-255, MM:0-99,PPP:0-999	Bit object	1-bit
BYTE	SSS.MM.PPP	SSS:0-255, MM:0-99,PPP:0-999	16-bit	8-bit
WORD	SSS.MM.PPP	SSS:0-255, MM:0-99,PPP:0-999	16-bit	16-bit
DWORD	SSS.MM.PPP	SSS:0-255, MM:0-99,PPP:0-999	32-bit	32-bit

I recommended defining the parameter in Address Tag Library before starting to create objects. It not only avoids accidental reuse of addresses but also improves project readability. Let me show you how to build and use Address Tag Library.

1. Click [Project] » [Address] on the toolbar and the [Address Tag Library] dialog box appears.



2. Click [New] button to add a parameter.



3. According to the M700 parameter reference guide for how to access “Acceleration Rate 1” parameter, enter the parameter 00.02.011 to the Read address box and name this tag. Type is 32 bit, so you know you should choose

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“DWORD” for its device type and 32-bit signed for Data format. Click [OK] button to finish this setting.

This table from the M700 parameter reference guide demonstrates the information about Acceleration Rate 1.

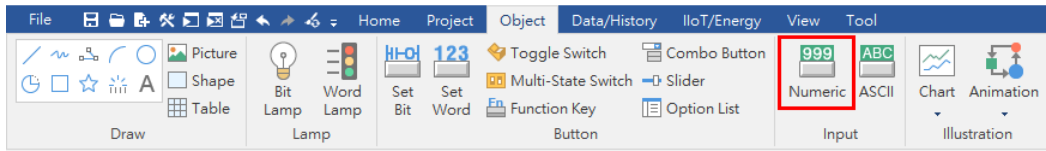
Parameter	02.011 Acceleration Rate 1		
Short description	Defines the acceleration rate present in acceleration rate 1		
Mode	RFC-S		
Minimum	-VM_ACCEL_RATE	Maximum	VM_ACCEL_RATE
Default	0.200	Units	s
Type	32 Bit User Save	Update Rate	4ms read
Display Format	Standard	Decimal Places	3
Coding	RW, VM		

The Screen Shot of the Final Address Tag Library

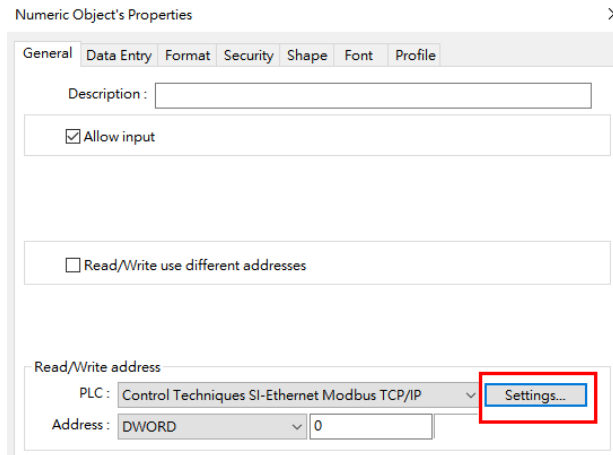
No.	Tag name	PLC name	Address	Type	Conversion	Data format
31	Acceleration Rate 1	Control Techniques SI-Ethe...	DWORD-00.02.011	Word	Disable	32-bit Signed
32	Deceleration Rate 1	Control Techniques SI-Ethe...	DWORD-00.02.021	Word	Disable	32-bit Signed
33	Reference Selector	Control Techniques SI-Ethe...	BYTE-00.01.014	Word	Disable	16-bit Unsigned
34	Symmetrical Current Limit	Control Techniques SI-Ethe...	WORD-00.04.007	Word	Disable	16-bit Signed
35	SCP_Gain Kp1	Control Techniques SI-Ethe...	DWORD-00.03.010	Word	Disable	32-bit Unsigned
36	SCI_Gain Ki1	Control Techniques SI-Ethe...	WORD-00.03.011	Word	Disable	16-bit Unsigned
37	SCDF_Gain Kd1	Control Techniques SI-Ethe...	WORD-00.03.012	Word	Disable	16-bit Unsigned
38	Speed Feedback	Control Techniques SI-Ethe...	DWORD-00.03.002	Word	Disable	32-bit Signed
39	P1 Position	Control Techniques SI-Ethe...	WORD-00.03.029	Word	Disable	16-bit Unsigned
40	Current Magnitude	Control Techniques SI-Ethe...	DWORD-00.04.001	Word	Disable	32-bit Signed
41	Iq	Control Techniques SI-Ethe...	DWORD-00.04.002	Word	Disable	32-bit Signed
42	Torque Mode Selector	Control Techniques SI-Ethe...	BYTE-00.04.011	Word	Disable	16-bit Unsigned
43	Ramp Mode	Control Techniques SI-Ethe...	BYTE-00.02.004	Word	Disable	16-bit Unsigned
44	Ramp Enable	Control Techniques SI-Ethe...	BIT-00.02.002	Bit		
45	Current Reference Filter 1 Time Constant	Control Techniques SI-Ethe...	BYTE-00.04.012	Word	Disable	16-bit Unsigned
46	Analog Input 2 Mode	Control Techniques SI-Ethe...	BYTE-00.07.011	Word	Disable	16-bit Signed
47	Analog Input 2 Destination	Control Techniques SI-Ethe...	WORD-00.07.014	Word	Disable	16-bit Unsigned
48	Analog Input 3 Mode	Control Techniques SI-Ethe...	BYTE-00.07.015	Word	Disable	16-bit Unsigned
49	Bipolar Reference Enable	Control Techniques SI-Ethe...	BIT-00.01.010	Bit		
50	Jog Reference	Control Techniques SI-Ethe...	WORD-00.01.005	Word	Disable	16-bit Unsigned
51	Preset Reference 1	Control Techniques SI-Ethe...	DWORD-00.01.021	Word	Disable	32-bit Signed
52	Preset Reference 2	Control Techniques SI-Ethe...	DWORD-00.01.022	Word	Disable	32-bit Signed
53	Over Speed Threshold	Control Techniques SI-Ethe...	WORD-00.03.008	Word	Disable	16-bit Unsigned
54	P1 Rotary Lines Per Revolution	Control Techniques SI-Ethe...	DWORD-00.03.034	Word	Disable	32-bit Unsigned

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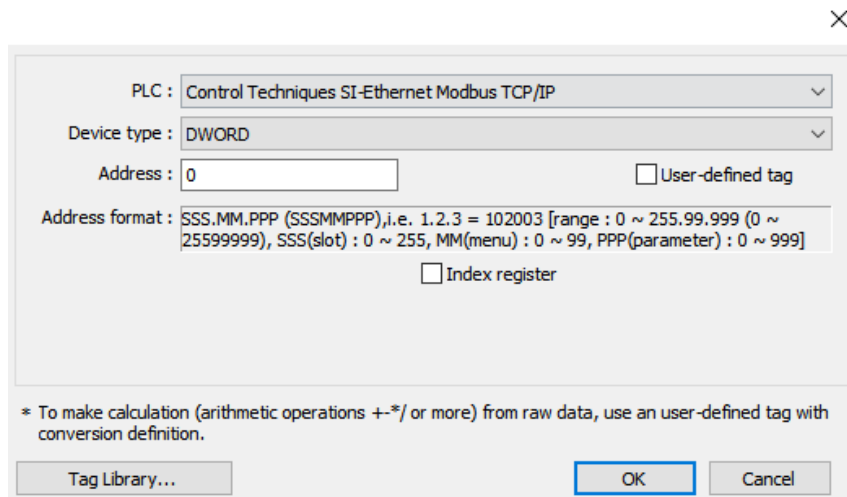
Now you can create an object, click the Numeric object.



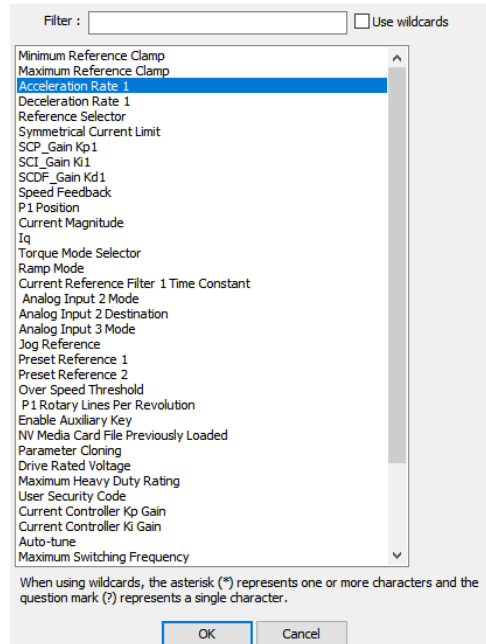
1. Go to Settings under the general tab.



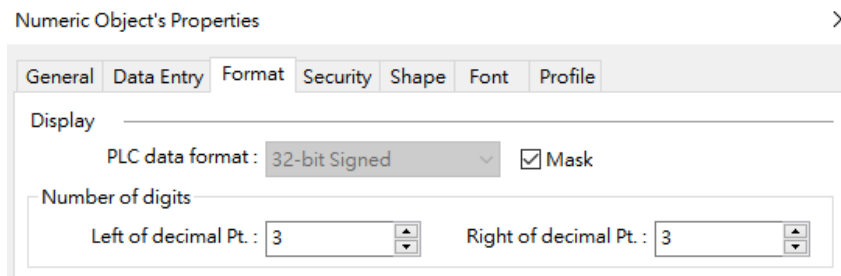
2. Enable "User-defined tag" check box and then click on [Device type]. The tag list dialog box will appear. Choose Acceleration Rate 1.



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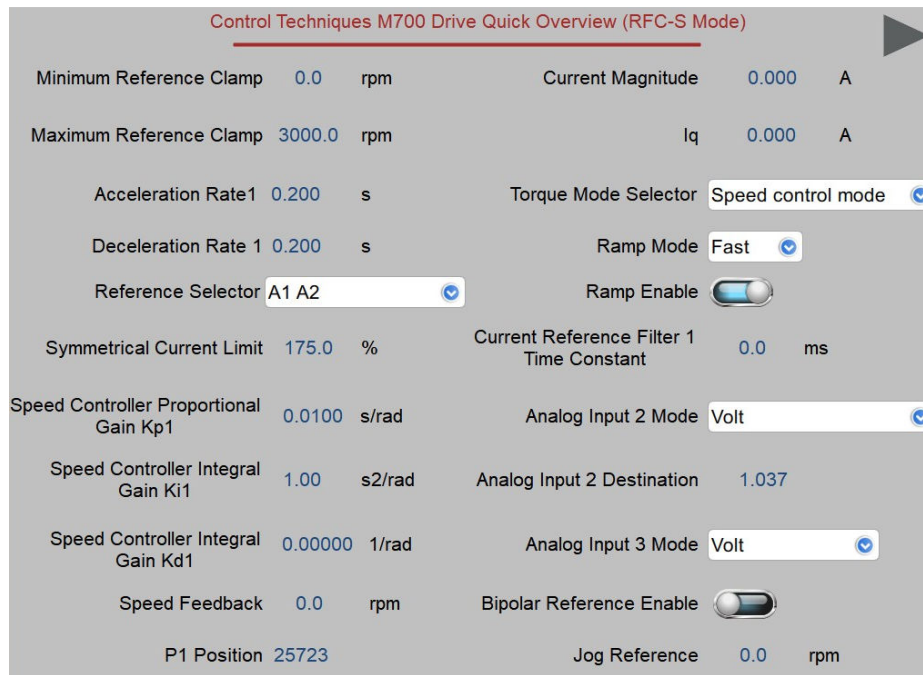


- Under the Format tab, you should enter 3 to the Right of decimal Pt according to decimal place of this parameter. Click [OK] button to finish setting up this object.



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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 M700 Drive User Guide:

<http://acim.nidec.com/drives/control-techniques/products/ac-drives/unidrive-m/unidrive-m700>



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.

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