Operating a Power Xpert C445 Global Motor Management Relay with a Siemens PLC via Profibus DP

Introduction

The purpose of this application note is to demonstrate how to operate and monitor a C445 Motor Management Relay via a Profibus DP network and a Siemens Simatic PLC with a Profibus master module. The C445XC-P PROFIBUS module is used to interface the C445 to the PROFIBUS network.

A GSD file is available for the C445XC-P and it may be downloaded from the Eaton website. The Profibus address is configured using the dip switches on the Base Control Module.

While this application example uses a Siemens Simatic S7-1200 controller with a Profibus DP master module to control and monitor the C445, any PROFIBUS master may be used for this purpose. Siemens Simatic Step 7 Basic, V13 programming software was used for this application example. The Simatic S7 PLC will be configured to poll the Motor Insight to operate and monitor the C445 Motor Management Relay.

The C445XC-P module supports PROFIBUS DPV0 and DPV1 functionality. This document will demonstrate how to configure the Profibus master to monitor motor and status parameters from the C445 as well as controlling a motor via the C445.

System Overview

The C445 Relay uses Output1 on the Base Control Module in the Direct Operation Mode to control a FVNR motor via a separate contactor. An Eaton XT or Freedom contactor is used. Output1 is a normally open relay contact wired to the contactor coil. This output supports both 24vdc and 120vac. Output1 also acts as the fault/trip contact for protecting the motor. The Siemens PLC controls the motor over Profibus via the relay output by turning the Run bit on. The C445 protects the motor by opening this relay output contact when a fault or trip condition occurs. Complete wiring diagrams for all supported operation modes for the C445 can be found in the C445 user manual, publication MN042003EN.

Creating a Project in Siemens Simatic Software

Create a project in Simatic software by starting the software and selecting Create New Project.

Enter a Project name and Path where the project will be stored, then select the Create button per the following:



Create new project	
Project name:	C445
Path:	C:\Users\E0057779\Documents\C445
Author:	E0057779
Comment:	<u>^</u>
	✓
	Create

From the next screen, select Configure a device, then select Add new device. An S7-1200 PLC is being used for this application. Select the CPU under Unspecified CPU 1200. Choose the correct version (V3.0 for this example) and select the ADD button. The following Project View will be displayed, showing a generic CPU.



Click the CPU box to select it, then select "<u>detect</u>" in the yellow area below it. The Hardware Detection screen will be displayed as follows:

manuware detection for	PLC_I					
		Type of the PG/PC interf PG/PC interf	ace: ace:	PN/IE	32579LM Gigabit N	Ietwork Connection 💌 💎 🛐
	Compatible accessib	le nodes of the selected	interfa	ce:		
	Device	Device type	Туре		Address	MAC address
	PLC_1	CPU 1214C DC/D	PN/IE		192.168.0.2	00-1B-1B-70-66-EB
						<u>R</u> efresh
Online status information:						
Scan and information	retrieval completed.					*
	epons					Detect <u>C</u> ancel

For this example, the Ethernet port on the PLC is being used to communicate with the PLC. It will also be used to upload/download the project later. Set up your computer and software to communicate with your PLC. Once communications is properly set up, select the Detect button and the software will detect the actual controller type and the Profibus master module connected to it as follows:



Connect a standard Profibus cable between the PROFIBUS master and the C441Q/S module. Use the standard Profibus connectors and turn on the termination on one or both ends. Refer to the C445 User Manual (publication MN042003EN) for details on the PROFIBUS cable connector pinouts if needed.

Then in the Simatic software, select the Options drop down menu and choose: "Install general station description file (gsd)". Download the GSD file from the Eaton website for the C441Q/S modules, then search for it on your hard drive by selecting the ellipses in the upper right hand corner of the following screen:

Install general station description file 🛛 🗙								
Source path:	Source path: C:\Users\E0057779\Documents\C445\Profibus\Final_GSD_File							
Content of imported path								
File		Version	Language	Status	Info			
eatn0f3f.gsd			Default	Already installed	C445 Smar			
				Install	Cancel			

Select the 2 boxes by selecting the box next to File and next to the C445 GSD file, then select Install and follow the directions to install the GSD file for the C445 Motor Management Relay.

Per the following, select the Network View tab.

C441_MI → Devices & networks		_ # = ×	Hardware catalog
E 1	opology view 🖁 🛔 Network v	iew 🛐 Device view	Options
Network	Network overview Cor	nections VPN	
^	Pevice	Туре	✓ Catalog
=	▼ 57-1200 station_1	S7-1200 station	<search></search>
PLC 1	CM 1243-5	CM 1243-5	Filter
CPU 1214C	▶ PLC_1	CPU 1214C DC/DC/DC	Controllers
			🕨 🛅 HMI
			PC systems
	-		Drives & starters
			Network components
			Detecting & Monitoring
			Distributed I/O
			Field devices
			Other field devices

The PLC will be displayed. In the Catalog at the far right, select the arrow next to "Other field devices", then next to PROFIBUS DP / Switching devices / Eaton Corp / ??? /C445 PROFIBUS Communication Card / C445 PROFIBUS Communication Card. Drag and drop the device called C445 PROFIBUS Communication Card below the controller/PROFIBUS master on the Network View screen. Then select the purple square on the PROFIBUS master and drag it to the purple square on the C445 PROFIBUS Option Board and release the mouse button. The following should now be displayed:



The Profibus network has been created in the offline project. Double click the Slave_1 C445 PROFIBUS module and the following will be displayed:



Double click the Slave_1 box and its Properties will open below it as follows:

[CPU 1214C DC/DC/DC] > 1	Distributed I/O 🔸	DP-Mastersys	tem (1): PROFIBUS_	1 → Slave_1 🔄 🖬 🖬 🗙
		Topology v	view 🚠 Network	view 🛐 Device view
Slave_1	💌 🖪 🖬	€ ± 100%	-	Device
33 ¹⁶ .1			_	
	DP	NORM		
< III				> 🗧 🛛 📖 >
Slave_1 [Module]		Roperti	es 🚺 Info 🔒	Diagnostics
General IO tags Sy	ystem constants	Texts		
General PROFIBILS address	PROFIBUS addre	ss		
General DP parameters Device-specific parameters	Interface netw	orked with		
Hex parameter assignment Watchdog SYNC/FREEZE		Subnet:	PROFIBUS_1 Add new subnet	
Hardware identifier	Parameters			
		Address:	3	•
-	н	ighest address:	126	×
	Trans	mission speed:	1.5 Mbps	T

Change the Profibus address to match the address selected on the C445 Base Control Module for the C445XC-P PROFIBUS card. For this example, the Profibus address being used is 3. The Transmission speed will default to 1.5 Mbps, which is fine. Any speed will work here because the C445XC-P card is set to Auto. The data rate is dependent on the overall network cable length.

Drag and drop up to 2 of the selections on the right to lines below the "Slave_1 line. For this example Cyclic Module 12 is used and Cyclic Module 4. Cyclic Module 12 contains 16 input bytes and Cyclic Module 4 contains 1 output byte. It should look like the following:

[CPU 1214C DC/DC/DC] + Distributed I/O + DP-Mastersystem (1): PRO	FIBUS_1 → Slave_1	_ # #×	Hardware catalog	a 🗉 🕨
🚝 Topology view	品」	letwork view 🛛 🕅 🛛	evice view	Options	
🔐 Slave_1 💌 🖽 🕼 🖽 🔍 ± '		Device overview			
	^	Wodule		✓ Catalog	
		Slave_1		<search></search>	îriş îriî
		Cyclic M	odule 12_1	Filter	
Adie	_	Cyclic M	odule 4_1	C445 PROFIBUS Communication Care	d
w l	-			Universal module	
				Motor Management Profile	
				Cyclic Module 2	
				Cyclic Module 3	
DP-NORM				Cyclic Module 4	
				Cyclic Module 5	
		_		🚺 Cyclic Module 6	
		-		Cyclic Module 7	
		-		Cyclic Module 8	
				Cyclic Module 9	
		-		Cyclic Module 10	
				Cyclic Module 11	
				Cyclic Module 12	
				Cyclic Module 13	
				Cyclic Module 14	
				Cyclic Module 15	
I					

Refer to the C445 user manual, Appendix C for additional information.

To configure the Cyclic Module 4 control bits, select the Device-specific parameters under the General tab in the Properties window below the module for the C445 as shown below. Then select the following:

Motor Control Run1: Cyclic Module 4 bit0 Motor Control Fault Reset: Cyclic Module 4 bit2

Slave_1 [Module]	🗟 Propertie	es 🚺 Info 👔 🗓 Diagnostics	┛╘╺
General IO tags Syste	em constants Texts		
General	UV Restart Mains Loss Timeout:	200	^
PROFIBUS address	Backspin Inhibit Time:	0	
General DP parameters	Allowed Starts Per Hour:	4	
Device-specific parameters	Change to run delay from Start:	10	
Watchdog	Protection Start Inhibit Enable:	Enable voltage start inhibit	•
SYNC/FREEZE	Motor Control Run1:	Cyclic Module 4 Bit0	
Hardware identifier	Motor Control Run2:		•
	Motor Control Reserved:		
	Motor Control FaultPaset	Contine Mediule 4 Bit2	
•	Motor Control PaultReset.		
	Motor Control Reserved:	OP BIT NOT CONNECTED	•
•	Motor Control Reserved:	OP BIT NOT CONNECTED	
	Motor Control Reserved:	OP BIT NOT CONNECTED	•
	Motor Control Reserved:	OP BIT NOT CONNECTED	•
	BCM Field Output control0:	OP BIT NOT CONNECTED	•
	BCM Field Output control1:	OP BIT NOT CONNECTED	-
	BCM Field Output control2:	OP BIT NOT CONNECTED	
	BCM Field Output control3:	OP BIT NOT CONNECTED	•
	BCM Field Output control4:	OP BIT NOT CONNECTED	
			~

The data for the 8 input words for Cyclic Module 12 must also be selected.

To select the 8 input parameters to monitor from the C445 using Cyclic Module 12, double click Cyclic Module 12 under the Device Overview window. Then under Properties and Device-specific parameters, select the parameters to monitor for each word as shown below:

Cyclic Module 12_1 [Module]		🖻 Properties 🛛 🗓 Info 🧯 🗓 Diagnostic	cs 🗖 🗏 🔻
General IO tags System	em constants Texts		
 ✓ General Catalog information 	Device-specific parameters		
Device-specific parameters Hex parameter assignment	Input Word 0:	Motor Status	•
I/O addresses Hardware interrupt	Input Word 1:	I Average Percentage of FLA	•
Hardware identifier	Input Word 3:	Line Voltage BC	
	Input Word 4:	Line Voltage CA	-
	Input Word 5:	Active Fault Code	•
	Input Word 6:	Active Inhibit Code	-
	Input Word 7:	Thermal Memory Percent	T

The Motor Status Word is defined as follows:

Bit 0: Running 1 Bit 1: Running 2 Bit 2: Remote = 1, Local = 0 Bit 3: Faulted Bit 4: Warning Bit 5: Inhibit Bit 6: Ready Bit 7: At Speed

Any of the available values shown under the drop down menus for each Input Word may be assigned.

It is also very important to enable this parameterization file to be downloaded to the C445 by the Siemens PLC / PROFIBUS master. This is how the I/O configuration data is downloaded to the C445. This is enabled in the Siemens TIA Portal software by double clicking the Slave (C445) module again and selecting the Device-specific parameters under Properties. The first parameter as shown below must be set to Enable for this parameterization file to be downloaded to the C445 each time the master establishes a connection with the C445. This feature also allows a new C445 to be automatically configured if a C445 needs to be replaced, minimizing downtime.

Slave_1 [Module]	📴 Properties 🛛 🚺 Info 👔 🗓 Di	agnostics 📃 🗖 🗏 🥆
General IO tags Sys	stem constants Texts	
 General PROFIBUS address 	Device-specific parameters	*
General DP parameters		
Device-specific parameters	Parameterization Download	
Hex parameter assignment	Enable: Enable	
Watchdog	Active Starter Profile: Direct	· · · · · · · · · · · · · · · · · · ·
SYNC/FREEZE	Remote Control Souce Select: Fieldbus remote control s	ource 🔻
Hardware identifier	Local motor control source: Auto detect BUI	•
	Motor Control Comm Loss Behavior: Stop and Issue Com fault	
	Motor Control Net Idle Behavior: Stop on idle event	
	Delay before control faultx10ms: 200	
	Control Interlocking Time: 10	
	C445 Q1 Output function select: None	
	C445 Q2 Output function select: None	
	C445 Q3 Output function select: None	-
	Q3 Latching Relay at Power-down: Turn off	▼ ~

When utilizing the PROFIBUS parameterization file with the C445, care must be taken for the following situations:

- 1. If the inControl software is used to modify any configuration parameters in a C445, these same changes must be made for the same parameters in the PROFIBUS parameterization file.
- 2. Be sure all the motor parameters and all other parameters for the C445 in the PROFIBUS parameterization file are correct before enabling this file for download.

Map the I/O Tags for the C445 in the Siemens Programming Software

Under the device view for the C445 (Slave), the Device Overview shows the generic I/O addresses assigned to the output byte and the 16 input bytes (8 input words) for the C445, per the following.

		🚆 Topology view 🛛 🏭	Networ	k view	📑 Dev	ice view]
Slave_1	-	Device overview					
	^	Y Module	Rack	Slot	I address	Q address	Ту
		Slave_1	0	0			C
~		Cyclic Module 12_1	0	1	6883		C
184°	=	Cyclic Module 4_1	0	2		2	C
9°	-						
DP-NORM							
		-					
							

This is showing the I/O addresses that will be added to the PLC tags as described below.

To map the I/O tags so they may be used in the user program to control and monitor the C445, select PLC tags in the project tree on the left and then choose Show all tags as shown below.



When double clicking Show all tags, the PLC tags screen will be displayed. Add tags to this screen as shown below. 8 input word tags were added based on the addresses assigned by the software and 1 output byte tag. Names may be entered for each tag and these tag names can then be used in the user program.

Pro	Profibus_C445_SiemensPLC → PLC_1 [CPU 1214C DC/DC/DC] → Watch and force tables → C445							
	≝ ≝ <mark>10 1₀ 9₁ 9₀ 92</mark> °° °°							
	i	Name	Address	Display format	Monitor value			
1		"C445_Output_Control"	%QB2	Hex				
2		"C445_Motor_Status"	%IW68	Bin 💌				
з		"C445_I_Avg"	%IW70	DEC				
4		"C445_VAB"	%IW72	DEC				
5		"C445_VBC"	%IW74	DEC				
6		"C445_VCA"	%IW76	DEC				
7		"C445_Fault_Code"	%IW78	DEC				
8		"C445_Inhibit_Code"	%IW80	DEC				
9		"C445_TC"	%IW82	DEC				

Controlling and Monitoring the C445 with the Siemens PLC

In place of a user program, this example will add the I/O tags for the C445 to a Watch List and control the C445 by modifying the C445_Output_Control tag and monitor the C445 by reading the 8 input tags.

Next, double click "Add new watch table" under "Watch and Force tables" in the Project Tree on the left per the following:



The new watch table is named "C445" for this example. Add the I/O addresses for the C445 as shown below. Note that the names for these addresses that you entered into the PLC Tags area are automatically populated as the addresses are entered. This watch table will allow testing the C445 Motor Management Relay over PROFIBUS without writing a program. This will allow monitoring the input data from the C445, while operating it.

Project tree		Pro	fibus_C445_SiemensPLC >	PLC_1 [CPU 12	214C DC/DC/DC] Watch and force tables Caller	
Devices							
B 0 0							
			i Name	Address	Display format	Monitor value	
▼ Profibus_C445_SiemensPLC	^	1	"C445_Output_Control"	%QB2	Hex		
📑 Add new device		2	"C445_Input_Status"	%IW68	Bin		
📩 Devices & networks		З	"C445_I_Avg"	%IW70	DEC		
▼ 1 PLC_1 [CPU 1214C DC/DC/DC]		4	"C445_VAB"	%IW72	DEC		
Device configuration		5	"C445_VBC"	%IW74	DEC		
Online & diagnostics		6	*C445_VCA*	%IW76	DEC		
🕨 🚘 Program blocks		7	"C445_Fault_Code"	%IW78	DEC		
Technology objects		8	"C445_Inhibit_Code"	%IW80	DEC		
External source files		9	"C445_TC"	%IW82	DEC		
👻 🔚 PLC tags		10		🔳 <add new=""></add>			
lange Show all tags							
💕 Add new tag table							
💐 Default tag table [32]	=						
PLC data types							
Add new watch table							
🔛 C445							
Force table							
Program info							
Device proxy data							
Text lists							
Local modules							
Distributed I/O							

Downloading the program to the Siemens S7 PLC

The project must first be compiled with no errors before it is downloaded to the PLC. In the Project Tree under PLC_1 [CPU....], double click "Device configuration" as follows to display the Device View containing the PLC.



Select the PLC then click the Compile button. The compile button is just to the left of the Download button on the tool bar. Shown below are, from left to right: Compile button, download button and the upload button. As you hover over each of these buttons in the software, it will display its function.



The results of the compile process will be displayed in the area below the PLC as follows:

Profibus_C445_Siem	ensPLC → PLC_	1 [CPU 1214C [DC/DC/DC]					_ = = ×
			5	Р Торо	ology view	/ 🚠 Network vie	ew 🚺 Dev	vice view
PLC_1		l 🖌 🗄 🍳 ±	<u>+</u> +	3	Device	overview		
				^		odule	Slot	I address
							103	^
		3.5					102	=
		MACI		≡	-	CM 1243-5	101	
						DP interface	101 2	
					-	PLC_1	1	
	103 102 1	01	1			DI14/DO10_1	11	01
D. J. O	105 102 1					AI2_1	1 2	6467
Rack_0		SIEMENS	\$10.070 \$14,020				1 3	
						HSC_1	1 16	10001
						HSC_2	1 17	10041(
	1	w 100 DP	CPU tate2 BC/BC/BC			HSC_3	1 18	10081
				-		HSC_4	1 19	10121
				•		HSC_5	1 20	10161
		. 🖻				HSC_6	1 21	10201(
						Pulse_1	1 32	
						Pulse_2	1 33	
						Pulse_3	1 34	
						Pulse_4	1 35	
						PROFINET interface	e_1 1 X1	
							2	
							3	
							4	
							5	
							6	
				~			7	
<			[> 🗊	<			>
				Q Pr	operties	i Info 🔒 🛚	Diagnostics	
General (1) Cros	s-references	Compile				12,		
Compiling completed (errors: 0: warnings:	 : 0)						
I Path	De	escription				Go to ?	Errors W	arnings Tim
V PLC 1							0 0	12:
Hardware co	onfiguration						0 0	12-
Program blo	cks					7	0 0	12.
Main (OB	1) BI	lock was successf	fully compiled.				0 0	12:
	C	ompiling complete	ed (errors: 0; warnir	nas: 0)			0 0	12:
i								

Next, select the download button to download the project to the PLC. The following window will be displayed. If the controller was in the Run mode, it must be stopped for the download. Select "Stop all" per the following, then select the Load button.

Load pre	eview			×
?	heck l	before loading		
Status	1	Target	Message	Action
+II	0	▼ PLC_1	Ready for loading.	
	0	Stop modules	Stop all 💌	
	0	Device configurati	Delete and replace system data in target	Download to device
	0	 Software 	Download software to device	Consistent download
	_			
<			1111	>
				Refresh
			Finish	Load Cancel

The results of the Load will be displayed in the lower portion of the project screen as shown below. "Start all" should be selected, then select the Finish button. This will complete the download and place the PLC into the Run mode per the following:

)3	102	10 ⁻	Load re:	sults								×	
			G s	itatus a	and actions after downloa	ading to device							
			Status	1	Target	Message				Ac	tion		
		lung (4	%	▼ PLC_1	Downloading to	device completed with	nout error					
		Ē		4	Start modules	Start modules a	fter downloading to de	vice.			Start all		
			<				III					>	
<	1111								etatak				× >
0	Genera	al							FINIST			ancei	
1	Messa	age						Go to	?	Date	Time		
0	Pr	oject C	445_App	l_Note	opened.					9/21/2015	6:56:34 AM		
Ø	👻 St	tart dov	wnloadin	g to de	vice.					9/21/2015	10:36:37 AM		
0	•	PLC_	1							9/21/2015	10:36:37 AM		
0			ardware o	configu	uration					9/21/2015	10:37:49 AM		
0			PLC_1 s	topper	d.					9/21/2015	10:38:25 AM		
0			Hardwa	re con	figuration was loaded su	ccessfully.				9/21/2015	10:38:31 AM		
0		'N	Main'was	loader	d successfully.					9/21/2015	10:38:31 AM		
0	Sc	cannin	g for devi	ces co	mpleted for interface Inte	l(R) Ethernet Conne	ction I218-LM. Found 1.			9/21/2015	10:37:43 AM		

With the PLC selected, select "Go online" from the Tool Bar to go online with the project running in the PLC.

Project tree	■ ◀	Prot	fibus_C	445_Siem	ensPLC 🕨 I	PLC_1 [CI	PU 121	4C DC/D	C/DC]					_ •	Ξ×
Devices										🖉 Т	opology	view 🔒 Network vie	w 🔢	Device vie	ew
B O O	1	dt-	PLC_1		-	1 🖽 🖌		€ ± '			Devic	e overview			
Navigates backward to the link										^		indula.	Slot	Laddrace	C
▼ Profibus_C445_SiemensPLC		1		6								ouule	103	Taudress	
💕 Add new device				243									102		-
Devices & networks				CNA DCI							Z -	CM1243-5	101		-
PLC_1 [CPU 1214C DC/DC/DC]	 ✓ 	-								=		DPinterface	101 2		
Device configuration												PLC 1	1		
🗓 Online & diagnostics		03	102	101	1		2	3	4	5		DI14/DO10_1	11	0.1	C
Program blocks	•										~	AI2 1	12	64 67	
Technology objects					_						-		13		
External source files				SIEMENS		81270 2012						HSC 1	1 16	1000 10	
PLC tags	•										_	HSC 2	1 17	1004 10	
PLC data types											~	HSC 3	1 18	1008 10	
 Watch and force tables 				turag						1	_	HSC 4	1 19	1012 10	
💕 Add new watch table			- 1				-				_	HSC 5	1 20	1016 10	
U C445				H						•	~	HSC 6	1.21	1020 10	
Force table										-		Pulse 1	1 32	1020	1
Program info			_								~	Pulse 2	1 33		1
Device proxy data												Pulse 3	1 34		
Text lists		I										Pulse 4	135		
Local modules	 	I										PROFINET interface 1	1 X1		
Distributed I/O												· · · · · · · · · · · · · · · · · · ·	2		
🕨 🙀 Common data		I											3		
Documentation settings													4		
Languages & resources		I											5		
Online access													6		
Card Reader/USB memory													7		
													8		
										~			۵ ۵		~
		<		1111						> 📃	<				>

Pro	ibus_(C 445	_SiemensPLC > PLC_1 [CP	U 121	4C DC/D	OC/DC]							- •	×
								🛃 Т	opolog	y view	🔒 Network vie	w [])	Device view	v
đŧ	PLC_1	1	Image: Second		€ ± '				Devi	e overvi	iew			
								^	1	Module		Slot	I address	¢
			5									103		^
		~	LA2									102		=
		Cer	A.C.						~	- CM124	13-5	101		
			*						~	DP	interface	101 2		
					_	-			~	PLC_1		1		
)3	102	101	1	2	3	4	5		\checkmark	DI1	4/DO10_1	11	01	С
										AI2	_1	1 2	6467	
												13		
			SIEMENS SHUTCONS							HSC	L_1	1 16	100010	
										HSC	<u>_</u> 2	1 17	100410	
		-								HSC	1.3	1 18	100810	
		211155	CFU shid DCDC.DC					4		HSC	4	1 19	101210	
		-								HSC	1_5	1 20	101610	
			E C					•		HSC	2_6	1 21	102010	
			4							Puls	se_1	1 32		1
										Puls	se_2	1 33		1
										Puls	se_3	1 34		1
										Puls	se_4	1 35		1
										PRC	FINET interface_1	1 X1		
												2		
												3		
												4		
												5		
												6		
												7		
												8		
								× -	1			0		*

When online, the Simatic software should look like the following:

In the Project Tree on the left, double click "C445" under "Watch and force tables" to display the following:

Project tree		Pro	fibus_C445_SiemensPLC F	PLC_1 [CPU 12	214C DC/DC/DC] ▶ Watch and force tables
Devices						
1 O O 1	ų	-	🔮 😼 🗓 🗗 🖣 🕉 🤔 🖤	00- 1		
			i Name	Address	Display format	Monitor value
✓ Profibus_C445_SiemensPLC		1	"C445_Output_Control"	%QB2	Hex	
Add new device		2	"C445_Input_Status"	%IW68	Bin	
📩 Devices & networks		З	"C445_I_Avg"	%IW70	DEC	
▼ 1 PLC_1 [CPU 1214C DC/DC/DC]		4	"C445_VAB"	%IW72	DEC	
Device configuration		5	"C445_VBC"	%IW74	DEC	
😓 Online & diagnostics		6	"C445_VCA"	%IW76	DEC	
🕨 🚘 Program blocks		7	"C445_Fault_Code"	%IW78	DEC	
Technology objects		8	"C445_Inhibit_Code"	%IW80	DEC	
External source files		9	"C445_TC"	%IW82	DEC	
PLC tags		10		Add new>		
PLC data types						
🕶 詞 Watch and force tables						
📑 Add new watch table						
C445						
Force table						
Program info						
Device proxy data						
Text lists						
Local modules						
Distributed I/O						
🕨 🙀 Common data						
Documentation settings						
Languages & resources						
Online access						
Card Reader/USB memory						
			<			

Below is the Tool Bar located above the Watch List.



If the second icon from the right is selected, the Watch List will begin monitoring and displaying the I/O data as follows:

Profibus_C445_SiemensPLC → PLC_1 [CPU 1214C DC/DC/DC] → Watch and force tables → C445										
≝ ≝ b/ b. 1, 1. 2 I P P1										
i	Name	Address	Display format	Monitor value						
1	"C445_Output_Control"	%QB2	Hex	16#01						
2	"C445_Input_Status"	%IW68	Bin	2#0000_0000_0000_1000						
3	"C445_I_Avg"	%IW70	DEC	99						
4	"C445_VAB"	%IW72	DEC	480						
5	"C445_VBC"	%IW74	DEC	480						
6	"C445_VCA"	%IW76	DEC	480						
7	"C445_Fault_Code"	%IW78	DEC	0						
8	"C445_Inhibit_Code"	%IW80	DEC	0						
9	"C445_TC"	%IW82	DEC	77						
10		<add new=""></add>								

In the "Modify value" column for QB2 enter a 1 to energize Output1 and a 0 to de-energize Output1. If the system is wired to the motor as described earlier in the document, when Output1 is energized, the motor will Run. Note that the C445 must be in Auto (Remote) mode.

The data can be entered/viewed in different formats by changing the Display Format for any value.

Each time values are entered or modified in the "Modify Value" column for the Outputs tag, the lightning bolt with a 1 under it shown below must be selected to instruct the software and the PLC to write the value to the C445.

9.

Refer to the Profibus Chapter in the C445 Global Motor Management Relay User Manual (publication MN042003EN) for additional information on the configuration, control and monitoring parameters, Fault Codes and more.

References

C445 Global Motor Management Relay User Manual, Publication MN042003EN

Power Xpert inControl Software User Manual, Publication MN040013EN

Additional Help

In the US or Canada: please contact the Technical Resource Center at 1-877-ETN-CARE or 1-877-326-2273 option 2, option 6.

All other supporting documentation is located on the Eaton web site at www.eaton.com/C445





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