SIMOCODE pro Labs

Hands On Training

Hands On Exercises

- Lab 1 Overload Relay w/ Run PB
- Lab 2 Online Monitoring of measured values
- Lab 3 Standard Functions Remote Reset
- Lab 4 Direct Starter
- Lab 5 Reversing Starter with lights
- Lab 6 Open/review a Saved Configuration
- Lab 7 Standard Functions
- Lab 8 Logic Modules
- Lab 9 PLC Communications
- Lab 10 Maintenance and Troubleshooting

SIMOCODE pro Live Demo



Configuration Process

5 Step Process

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- 1. Select SIMOCODE basic unit
- 2. Select application profile
- 3. Select device configuration
- 4. Select network address
- 5. Select motor FLA

Lab #1



Overload Relay with Run PB

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Lab # 2 (Overload Relay w/ logic)



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Page 6

Add a New Device



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Step 1 - Select Base Unit and Version



Step 2 - Select Profile (Overload Relay)

Sirius Device Wizard - Dir	ect Starter X	
	Application SIMOCODE pro V PN - V1.2 Select an application for the device.	
Application	 ✓ Standard ✓ Overload relay Direct starter 	<u>Step 1</u>
	Circuit breaker (MCCB) Star-delta starter Star-delta reversing starter Dahlander Dahlander reversing starter Pole-changing starter	Select Overload Relay Profile
	Solenoid valve	Step 2
	Overload relay Description: With this control function, SIMOCODE pro functions like a solid-state overload relay. Control commands (e.g. ON, OFF) cannot be issued to the load.	Select Finish
	<u>F</u> inish <u>C</u> ancel	

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Step 3 – Match Existing Device





Step 3 – Match Existing Device



Select 0..3 -3A Current Voltage Measuring Module

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Step 3 – Match Existing Device



Double Click "DM mono" to insert digital module into rack

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Step 4 – Select Network Address



Double Click Parameters

Step 4 – Select Network Address

310 Class Project ► Control	device_2 [SIMOCODE pro V PN] →	Parameters	_ = = ×		
 Identification PROFINET parameters 	PROFINET parameters		<u>^</u> ≡		
Configuration	MAC address				
Motor control	MAC address.				
Control station	IP parameters				
Machine monitoring					
Inputs		Overwrite IP parameters in device	•		
 Outputs 	IP address:	192 . 168 . 0 . 10			
 Standard functions 	Subpet mark:				
Logic modules	Subnetmask.				
PROFlenergy		Use router			
Analog value recording	Address (gateway):	192.168.0.10			
Operator panel with display			<u>Step 2</u>	<u>2</u> –	
	Station				
		Overwrite device name in device	Enter	the PROFINE	Γ address below
Step 1 –	< III		>		
			IP address:	192 . 168	0 .10
Select "PROF	INET parameters"		_		
			Subnet mask:	255 . 255 .	255.0

Step 5 – Select FLA

🐴 Siemens - D:\Trailer 2015 - Working Rev F	Final 062615\310 Class Project\310 Clas	s Project
Project Edit View Insert Online Optio	ns Tools Window Help	
📑 📑 🔚 Save project 🔳 🐰 🗐 🗎 🗙	崎 🛨 (🖻 ± 🐻 🛄 🌆 💋 G	o online 🖉 Go offline 🔚 🖪 🔚 🔛 🔚 🛄
Project tree	□	I device_2 [SIMOCODE pro V PN] → Parameters ■ ■ >
Devices		
B O O	🗐 🕋 🖽 🏗	
	Identification	
▼ 310 Class Project	PROFINET parameters	Motor protection
Add new device	Configuration	Overlead/upbalance/stalled_reter
H Devices & networks	Motor protection	
 Control device_1 [SIMOCODE pro 	✓ Motor control	Overload protection
Device configuration	A station	
Online & diagnostics	ontrol function	Set current Is1
Parameters	Machine monitoring	
🕂 Commissioning	Inputs	Set current Is1: 0.30
Charts	Ou puts	sformation ratio - active
Control device_2 [SIMOCODE pro	Standard functions	
Device configuration	Logic modules	
🛿 Online & diagnostics	PROFlenergy	Class: 10
Parameters	Aralog value recording	
t Commissioning	Overator panel with display	
Charts		Response to trip level: Triip
Unassigned devices	✓	Cooling down period: 300.0
< III	>	
✓ Details view		Pause time: 0.0
		Ctor O
	<u>Step 1 –</u>	<u>Step 2</u> –
	ection" I he value 0.30 /	

The value 0.30 A is OK for the demo

Select Outputs on Base Unit

Identification	Register unit	
PROFINET parameters	Basic unit	
Configuration		
 Motor protection 	BU - output 1: 2 Not connected	
 Motor control 	BU - output 2: 2. Not connected	
 Machine monitoring 	RUL output 3: Restantion/Control - 2 OE2	
Inputs	Bo-outputs.	
✓ Outputs		
Basic unit		
Cyclic send data		
OPC-UA send data		
Standard functions		
Logic modules	· · · · · · · · · · · · · · · · · · ·	
PROFlenergy	BU - output 1: ZaNot connected	15.
Analog value recording		
	BU - output 2: 2 Not connected	12=
	BU - output 3: 📌 Protection/Control - 3 QE3	128
S	Step 1 –	
	Note – Output 3 has been assigned to the second state of the secon	gned by
U	Inder Outputs - Select "Basic Unit" selecting Overload Relay profile	е

Select Outputs on Base Unit

Identification		
PROFINET parameters	Basic unit	
Configuration		
 Motor protection 	BU - output 1: 🚬 Not connected	
 Motor control 	BU - output 2: 2. Not connected	
 Machine monitoring 		
Inputs	BU - output S: Refotection/Control - 3 QES	
▼ Outputs		
Basic unit		
Cyclic send data	BLL- output 1: BLL inputs - input 1	
OPC-UA send data	bo output t. A bo input i	
 Standard functions 	BU - output 2: 4 Not connected	
Logic modules	BU - output 3: Protection/Control	
PROFlenergy	Extended protection	
Analog value recording	Monitoring functions	
	The second secon	
	🗢 🔜 BU inputs	Sten 1 - Select "Innut 1" unde
	The input 1	
	not 2	Inputs/BU Inputs
	Tr input 3	
	Tre input 4	
	The test/reset button	

Download to Device



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Test Overload Relay with Logic



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Lab #2



Online Monitoring

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Monitoring Functions



Monitoring Functions

Project tree	□	oad Relay [SIMOCODE pro V PN] → Parameters ■ ■ ×
Devices		
B 0 0		
	Identification	Machine monitoring
SITEC 2016 Labs	PROFINET parameters	
🗳 Add new device	Configuration	Current limits
Devices & networks	Motor protection	
Overload Relay [SIMOCODE pro V PN]	Motor control	I > (higher limit)
Device configuration	Machine monitoring	
🗓 Online & diagnostics	Inputs	Trip level: 0 % of Is
Parameters	Outputs	Response to trip level: deactivated
Commissioning	Standard functions	Trip delay: 0.5
Charts	Logic modules	
Unassigned devices	PROFienergy	
Common data	Analog value recording	Response to warning level signal
Documentation settings		Warning de y: 0.5 s
Languages & resources		
Online access		I < (lower limit)
Card Reader/USB memory		
<u>Step 1 –</u>	<u>Step 2 –</u>	<u>Step 3</u> –
Double click "Parameters"	Click "Machine N	onitoring" Input 115% for "I > - Warning Level"
		and coloct "Signal" as response
		and select Signal as response
Unrestricted © Siemens 2016		

Monitoring Functions

	SITEC 2016 Labs 🔸 Ov	verload Relay [SIMOCODE pro V PN] Parameters	_ • •
	Identification	Disting and the 1	
	PROFINET parameters		
	Configuration		
	 Motor protection 	DM - output 1: Current limits - warning level I>	
	 Motor control 	DM - output 2: 2 Not connected	
	 Machine monitoring 		
	Inputs		
	 Outputs 		
	Basic unit		
	Digital module 1		
	Cyclic send data		
	OPC-UA send data		
	 Standard functions 		
<u>Step 1 –</u>		<u>Step 2</u> –	
Select "Digital moo	ule 1"	Under Monitoring Functions - Select "Current limits – warning level I>"	
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Test Online Monitoring

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Lab #3



Standard Functions Remote Reset

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Under "Standard Functions" - Select "Reset 1"

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Under "BU Inputs" - Select "Input 3"

<u>Step 1 –</u>

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Lab #4



Direct Starter

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Theory Of Operation

Overload with Communication



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Theory Of Operation

Starter with Communication (Motor Management) Μ **Additional Values** START Voltage/Power Digital I/O Analog I/O STOP RTD SIMOCODE Local Logic • **Motor Profiles** Network

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Theory Of Operation

Starter with Communication (Motor Management)

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Lab # 5 (Direct Starter)



Add a New Device



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Step 1 - Select Base Unit and Version



Step 2 - Select Profile (Direct Starter)

Sirius Device Wizard - Dir	Application SIMOCODE pro V PN - V1.2 Select an application for the device.	×		
Application	 Standard Overload relay Direct start Reversing starter Circuit breaker (MCCB) Star-delta starter Star-delta reversing starter Dahlander Dahlander reversing starter Pole-changing starter Pole-changing reversing starter Solenoid valve 		<u>Step 1</u> Select "Direct Starter" Pr	rofile
	Name: Direct starter Description: SIMOCODE pro can switch a motor on and off with this control function. <u>Einish</u>	⊂ancel	<u>Step 2</u> Select Finish	


Step 3 – Match Existing Device





Step 3 – Match Existing Device



Select 0..3 -3A Current Voltage Measuring Module

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Step 3 – Match Existing Device



Double Click "DM mono" to insert digital module into rack

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Step 4 – Select Network Address



Double Click Parameters

Step 4 – Select Network Address

310 Class Project → Control o	device_2 [SIMOCODE pro V PN] →	Parameters	_ = = ×		
			_		
 Identification PROFINET parameters 	PROFINET parameters		<u>^</u> ≣		
Configuration					
Motor protection	MAC address:	00 - 00 - 00 - 00 - 00			
 Motor control 					
Control station	IP parameters				
Control function					
 Machine monitoring 					
Inputs		Overwrite IP parameters in device			
 Outputs 	IP address:	192 168 0 10			
 Standard functions 	>	192.108.0 .10			
Logic modules	_ Subnet mask:	255 . 255 . 255 . 0			
PROFlenergy		Use router			
Analog value recording	Address (gateway):	192.168.0.10			
Operator panel with display			Step 2	2_	
	Station		<u></u>		
		Overwrite device name in device	Enter	the PROFINE	T address below
Step 1 –					
				400 400	0 10
			ir address:	192.168.	0.10
Select "PROF			Subnet mask:	255 . 255 .	255.0

Step 5 – Select FLA

🐴 Siemens - D:\Trailer 2015 - Working Rev	Final 062615\310 Class Project\310 Clas	s Project
Project Edit View Insert Online Optio	ons Tools Window Help	
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Project tree	□	I device_2 [SIMOCODE pro V PN] → Parameters _ ■ ■ ■ ×
Devices		
	Identification	
 310 Class Project 	PROFINET parameters	Motor protection
Add new device	Configuration	Overlead/upbalance/stalled_reter
Devices & networks	Motor protection	
 Control device_1 [SIMOCODE pro 	- Motor control	Overload protection
Device configuration	Introl station	
😼 Online & diagnostics	ontrol function	Set current Is1
🚰 Parameters	Machine monitoring	
	Inputs	Set current Is1: 0.30
Charts	Ouputs	sformation ratio - active
Control device_2 [SIMOCODE pro	. Standard functions	
Device configuration	Logic modules	-
🚱 Online & diagnostics	PROFlenergy	Class: 10
🛂 Parameters	Aralog value recording	
Commissioning	Overator panel with display	
Charts		Response to trip level: Triip
Unassigned devices	✓	
<	>	Cooling down period: 300.0
✓ Details view		Pause time: 0.0 🗸
	•	
	Step 1 –	Step 2 –
	<u></u>	
	Select "Motor prot	ection" The value 0.30 A

The value 0.30 A is OK for the demo

Download to Device



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Test Direct Starter





Step 2 – Press green and red PB to start/stop motor

Voltage	U		
Current	Ι		
Temperature	Т		
<u>Step</u>	<u>1</u> -Adjust	dials to 12 o'clock	

Motor Control (Control Station)



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Lab #5



Reversing Starter with Lights

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Lab #6 (Reversing Starter with lights)



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Add a New Device



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Step 1 - Select Base Unit and Version



Step 2 - Select Profile (Reversing Starter)



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Step 3 – Match Existing Device





Step 3 – Match Existing Device



Select 0..3 -3A Current Voltage Measuring Module

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Step 3 – Match Existing Device



Double Click "DM mono" to insert digital module into rack

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Step 4 – Select Network Address



Double Click Parameters

Step 4 – Select Network Address

310 Class Project → Control o	device_2 [SIMOCODE pro V PN] →	Parameters	_ = = ×		
			_		
 Identification PROFINET parameters 	PROFINET parameters		<u>^</u> ≣		
Configuration					
Motor protection	MAC address:	00 - 00 - 00 - 00 - 00			
 Motor control 					
Control station	IP parameters				
Control function					
 Machine monitoring 					
Inputs		Overwrite IP parameters in device			
 Outputs 	IP address:	192 168 0 10			
 Standard functions 	>	192.108.0 .10			
Logic modules	_ Subnet mask:	255 . 255 . 255 . 0			
PROFlenergy		Use router			
Analog value recording	Address (gateway):	192.168.0.10			
Operator panel with display			Step 2	2_	
	Station		<u></u>		
		Overwrite device name in device	Enter	the PROFINE	T address below
Step 1 –					
				400 400	0 10
			ir address:	192.168.	0.10
Select "PROF			Subnet mask:	255 . 255 .	255.0

Step 5 – Select FLA

🐴 Siemens - D:\Trailer 2015 - Working Rev F	Final 062615\310 Class Project\310 Clas	s Project
Project Edit View Insert Online Optio	ns Tools Window Help	
📑 📑 🔚 Save project 🔳 🐰 🗐 🗎 🗙	崎 🛨 (🖻 ± 🐻 🛄 🌆 💋 G	o online 🖉 Go offline 🔚 🖪 🔚 🔛 🔚 🛄
Project tree	□	I device_2 [SIMOCODE pro V PN] → Parameters ■ ■ >
Devices		
B O O	🗐 🕋 🖽 🏗	
	Identification	
▼ 310 Class Project	PROFINET parameters	Motor protection
Add new device	Configuration	Overlead/upbalance/stalled_reter
H Devices & networks	Motor protection	
Control device_1 [SIMOCODE pro	✓ Motor control	Overload protection
Device configuration	A station	
Online & diagnostics	ontrol function	Set current Is1
Parameters	Machine monitoring	
🕂 Commissioning	Inputs	Set current Is1: 0.30
Charts	Ou puts	sformation ratio - active
Control device_2 [SIMOCODE pro	Standard functions	
Device configuration	Logic modules	
😼 Online & diagnostics	PROFlenergy	Class: 10
Parameters	Aralog value recording	
t Commissioning	Overator panel with display	
Charts		Response to trip level: Triip
Unassigned devices	✓	Cooling down period: 300.0
< III	>	
✓ Details view		Pause time: 0.0
		Ctor O
	<u>Step 1 –</u>	<u>Step 2</u> –
	Select "Motor prote	ection" I he value 0.30 /

The value 0.30 A is OK for the demo



Select Outputs on Base Unit

310 Class Project ► Control d	evice_2 [SIMOCODE pro V PN]	Parameters	_∎≡×
Identification	Desta unit		
PROFINET parameters	Basic unit		
Configuration			
Motor protection	BU - output 1	: 📌 Protection/Control - 1 QE1	122
Motor control	BU - output 2	2: Reprotection/Control - 2 QE2	15*
Machine monitoring	BLL - output 3	Not connected	Inc.
Inputs	bo output		
• Outputs		$\mathbf{\Lambda}$	
Basic unit	•		
Digital module 1			
Cyclic send dat	▶		
OPC-UA send dat	BLL-output 1:		- 1 OE1
Standard functions	bo output I.	Jun Totection/Control	1 QLI
Logic modules	BUL output 2:	Protection/Control	2.052
PROFlenergy	BO - Output 2.	Frotection/Control -	- 2 QE2
Analog value recording			
Operator panel with display	BU - output 3:	Protection/Control -	- QLE< (ON<)
			<u>Step 1 –</u>
	Outputs		
-	Carpais		Under Basic
	Basic unit		
			Select "Prote
Jnrestricted © Siemens 2016			QLE< (On<)'
			· · · · ·



Select Outputs on Digital Module

Identification Identification ProPrint Transfers Configuration Motor protection Motor protection Motor protection Motor protection Motor control Motor protection Motor protection DM - output 1: Not connected DM - output 2: Not connected DM - output 1: Protection/Control - QLA (OFF) DM - output 2: Protection/Control - QLE> (ON>) Motor protection DM - output 2: Protection/Control - QLE> (ON>) Stelenergy Anelog value recordin Operator panel LEDs Degrator panel LEDs Digital module 1 Under Digital module Outputs Select "Protection/Control – QLA (Off) for Output 1 Operator panel LEDs Digital module 1 Under Digital module Outputs Select "Protection/Control – QLA (Off) for Output 1 and QLE> (On>)" for Output 2	310 Class Project ► Control d	levice_2 [SIMOCODE pro V PN] → Parameters _ = = = ×
PROFINET parameters Digital module 1 Outputs DM-output 1: Not connected Matchine monitoring DM-output 1: Not connected Imputs Outputs Desic unit DM-output 1: Protection/Control - QLA (OFF) Operator panel LEDs DM - output 2: Protection/Control - QLE> (ON>) Operator panel LEDs DM - output 2: Protection/Control - QLE> (ON>) Steep 1 Under Digital module 0 Protection/Control - QLA (OFF) Under Digital module 0 Operator panel LEDs Digital module 1 Digital module 1 DM - output 2: Protection/Control - QLE> (ON>) DM - output 2: Nates value recording Operator panel LEDs Digital module 1 Operator panel LEDs Digital module 1 Digital module 1 Under Digital module Outputs Steep 1 Under Digital module Outputs Select "Protection/Control – QLA (Off) for Output 1 and QLE> (On>)" for Output 2 Page 58 Difference 2016	Identification	
Configuration Motor protection Motor control	PROFINET parameters	Digital module 1
Motor control Machine monitoring Machine monitoring Motor control Machine monitoring Inputs Outputs Basic unit Operator panel LEDs Operator panel LEDs Didital module 11 Control - QLA (OFF) Step 1 Under Digital module Outputs Select "Protection/Control – QLA (Off) for Output 1 Outputs Basic unit Operator panel LEDs Digital module 11 Outputs Unsettricted © Siemens 2016 Page 58	Configuration	
• Metric rontrol Machine monitoring Inputs • Outputs Basic unit Operator panel LEDS Occilic send da OPCUA send	 Motor protection 	DM - output 1: 🔁 Not connected
• Machine monitoring inputs Outputs Basic unit Operator panel LEDs Operator panel LEDs DM - output 1: Protection/Control - QLA (OFF) DM - output 2: Protection/Control - QLE> (ON>) • Outputs Basic unit Operator panel LEDs Digital module 1 Under Digital module Outputs Select "Protection/Control – QLA (Off) for Output 1 and QLE> (On>)" for Output 2	Motor control	DM - output 2: 2 Not connected
• Outputs • Outputs Basic unit Opcrator panel LEDs Opcrator panel with dislay • Outputs PROFinergy Analog value recordina Operator panel with dislay • Outputs Basic unit Operator panel LEDs Digital module 1 Under Digital module 1 Under Digital module 1 Variettice 0 Siemes 2016	Machine monitoring	
Outputs Basic unit Operator panel LEDs Operator panel LEDs Operator panel LEDs DM - output 1: Reprotection/Control - QLA (OFF) DM - output 2: Reprotection/Control - QLE> (ON>) Molegian Module Molegian Module Molegian Module Molegian Module Molegian Module Standard functions DM - output 2: Reprotection/Control - QLE> (ON>) Molegian Module Molegian Module Molegian Module Molegian Module Standard functions DM - output 2: Reprotection/Control - QLE> (ON>) Molegian Module <	Inputs	
Basic unit Opcides repeated by Opcides and de Opcides and de Standard functions Logic modules PROFlenergy Analog value recording Operator panel LEDs Digital module 1 Under Digital module Outputs Select "Protection/Control – QLA (Off) for Under Digital module Outputs Select "Protection/Control – QLA (Off) for Output 1 and QLE> (On>)" for Output 2	▼ Outputs	
Operator panel LEDs OPC-UA send delta OPC-UA send delta Standard functions DM - output 1: Protection/Control - QLA (OFF) DM - output 2: Protection/Control - QLE> (ON>) DM - output 2: Protection/Control - QLE> (ON>) Operator panel with dislay Image: Control - QLE - QLE> (ON>) Image: Control - QLE - QLE> (ON>) Image: Control - QLE> (ON>) Image: Control - QLE - QLE> (ON>) Image: Control - QLE> (ON>) Image: Control - QLE - QLE> (ON>) Image: Control - QLE> (ON>) Image: Control - QLE - QLE> (ON>) Image: Control - QLE> (ON>) Image: Control - QLE - QLE> (ON>) Image: Control - QLE> (ON>) Image: Control - QLE - QLE> (On>) Image: Control - QLE> (On>) Image: Control - QLE - QLE> (On>) Image: Control - QLE> (On>) Image: Control - QLE - QLE> (On>) Image: Control - QLE - QLE> (On>) Image: Control - QLE - QLE - QLE> (On>) Image: Control - QLE - QLE> (On>) Image: Control - QLE - QLE - QLE - QLE> (On>) Image: Control - QLE - Q	Basic unit	
Origital module OPC-UA send der OPC-UA send der BROFlenergy Analog value recordint Operator panel LEDs Digital module 1 DM - output 1: Protection/Control - QLA (OFF) Vertexticed © Siemens 2016 DM - output 1: Protection/Control - QLE> (ON>)	Operator panel LEDs	
OpcUA send dat OpcUA send dat OpcUA send dat PROFlenergy Analog value recording Operator panel with disaley Outputs Basic unit Operator panel LEDs Digital module 1 Unrestricted © Siemens 2016 Page 58 DM - output 1: Protection/Control - QLA (OFF) Image 58 DM - output 1: Image 58 DM - output 1: Image 70 Protection/Control - QLA (OFF) Image 58 DM - output 1: Image 70 DM - output 2: Image 70 Protection/Control - QLA (OFF) Image 70 Output 2: Image 70 Distribution Image 70 Image 70 I	Digital module 1	•
OPC-UA send data Standard functions Logic modules PROFlenergy Analog value recording Operator panel with diallay Image: Control - QLE (ON) Image: Control - QLE (OF) Image: Contret (Control - QLE) Image: Contro	Cyclic send dat	DM-output 1: Protection/Control - OLA (OFF)
DM - output 2: Protection/Control - QLE> (ON>) M- output 2: Protection/Control - QLE> (ON>) M- output 2: Protection/Control - QLE> (ON>) Step 1- Under Digital module Outputs Select "Protection/Control – QLA (Off) for Output 1 and QLE> (On>)" for Output 2	OPC-UA send da a	In output I. M. Hoteetion control Quit(on)
PROFerrory DMI-output 2: Protection/Control - QLES (ONS) Analog value recording Operator panel with diablay Step 1 Under Digital module 1 Under Digital module Outputs Digital module 1 Select "Protection/Control – QLA (Off) for Output 1 and QLE> (On>)" for Output 2	Standard functions	
Analog value recording Operator panel with disclay Outputs Basic unit Operator panel LEDs Digital module 1 Under Digital module Outputs Select "Protection/Control – QLA (Off) for Output 1 and QLE> (On>)" for Output 2 	PROFleperov	DM - output 2: Reprotection/Control - QLE> (ON>)
Operator panel with dialey Outputs Basic unit Operator panel LEDs Digital module 1 Under Digital module Outputs Select "Protection/Control – QLA (Off) for Output 1 and QLE> (On>)" for Output 2 	Analog value recording	
Outputs Step 1 - Basic unit Under Digital module Outputs Operator panel LEDs Select "Protection/Control – QLA (Off) for Unrestricted © Siemens 2016 Output 1 and QLE> (On>)" for Output 2	Operator panel with display	
▼ Outputs Step 1 Basic unit Under Digital module Outputs Operator panel LEDs Select "Protection/Control – QLA (Off) for Digital module 1 Output 1 and QLE> (On>)" for Output 2		
• Outputs Step 1 - Basic unit Under Digital module Outputs Operator panel LEDs Digital module 1 Unrestricted © Siemens 2016 Select "Protection/Control – QLA (Off) for Output 2 Page 58 Output 1 and QLE> (On>)" for Output 2		
Outputs Step 1 Basic unit Operator panel LEDs Digital module 1 Under Digital module Outputs Unrestricted © Siemens 2016 Select "Protection/Control – QLA (Off) for Output 1 and QLE> (On>)" for Output 2		
Basic unit Operator panel LEDs Operator panel LEDs Digital module 1 Unrestricted © Siemens 2016 Select "Protection/Control – QLA (Off) for Output 2 Page 58 Output 1 and QLE> (On>)" for Output 2	- Outputs	<u>Step 1</u>
Operator panel LEDs Under Digital module Outputs Digital module 1 Select "Protection/Control – QLA (Off) for Unrestricted © Siemens 2016 Output 1 and QLE> (On>)" for Output 2	Bacio	- unit
Operator panel LEDs Digital module 1 Digital module 1 Select "Protection/Control – QLA (Off) for Unrestricted © Siemens 2016 Output 1 and QLE> (On>)" for Output 2 Page 58 Page 58	Dasie	Under Digital module Outputs
Digital module 1 Select "Protection/Control – QLA (Off) for Unrestricted © Siemens 2016 Output 1 and QLE> (On>)" for Output 2 Page 58 Page 58	Oper	rator panel LEDs
Unrestricted © Siemens 2016 Page 58 Output 1 and QLE> (On>)" for Output 2	Digit	al module 1 Select "Protection/Control – QLA (Off) for
Page 58	Unrestricted © Siemens 2016	Output 1 and QLE> (On>)" for Output 2
	Page 58	

Download to Device



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Test Reversing Starter with Lights





Motor Control (Control Function)





Open/Review a Saved Configuration

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Open an existing Project

Ma Siemens - D:\Trailer 2015 - Working Rev Final 062615\310 Class Pr	oject\310 Class Project	_ • ×
Project Edit View Insert Online Options Tools Window He	IP	Totally Integrated Automation
📑 🔁 🖬 Save project 🚇 🐰 🗉 🛍 🗙 🏷 ± 🖓 ± 🖓 🗄 🛄 🌆	🖳 🙀 🖉 Go online 🖉 Go offline 🔚 🖪 🖪 🛃 🛃 🔄	PORTAL
Project tree 🔲 🖣		Tasks 📑 🗉 🕨
Devices		Options
	\sim	× Find and replace
▼ 📑 310 Class Project		
는 Add new device		Find:
증 📩 Devices & networks		ibra
Common data Documentation settings		Whole words only
Languages & resources		Match case
Online access		Find in substructures
Card Reader/USB memory		Find in hidden texts
		Use wildcards
		Use regular expressi
		O Whole document
		Erom current positio
		0011000 O Selection
At Details view		
		(Down
Name	Properties 🗓 Info 🚺 🗓 Diagnostics	
Add new device	General	Find
A Devices & networks		Replace with:
Common data		
🗐 Documentation settings	No 'properties' available.	Replace Rec 💙
	No 'properties' can be shown at the moment. There is either no object selected or the selected object does not have any displayable properties.	
		✓ Languages & reso
		Editing language: 💌
		<
Portal view Deverview	Projec	t 310 Class Project created.

<u>Step 1</u> – Select "Portal View"

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Open an existing Project

Step 1

Select "Open Existing Project"



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Step 4

Device Configuration



PLC I/O Addresses for SIMOCODE



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PROFINET Address

	SITEC 2016 SIMOCODE Works	hop Master Project 🔸 SIMOCODE [SIMOCODE pro V PN] 🔸 Parameters 📃 🗖	≡×
	Identification		~
	PROFINET parameters		- =
	Configuration		
	Motor protection	MAC address: 00 - 00 - 00 - 00 - 00 - 00	
	Motor control		
	Machine monitoring	IP parameters	
	Inputs		
Step 1 -	 Outputs 		
	Basic unit	Overwrite IP parameters in device	
Under Parameters Click on	Operator panel LEDs		
Under Parameters - Click Un	Digital module 1	1 duites. 192 108 0 . 10	
"PROFINET narameters"	Cyclic send data	Subnet mask: 255 . 255 . 0	
	OPC-UA send that	Use router	
	State and functions	Address (gateway): 192 . 168 . 0 . 10	
	Logic modules		
	PROFlenergy		
	Analog value recording	Station	
	Operator panel with display		
		Verwrite device name in device	
		Device name: simocode	
Note - SIMOCODE PROFINET		Station type: Motor Mamt. System	
- dalar		Paul estas 12 Mbile	
address and device name		Baud rate: 12 Moltos	
		Basic type: 3	
		OPC UA Server / Webserver	
			V

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Configuration



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Note - SIMOCODE selected profile is "Reversing Starter"

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Motor Protection

11 11			
Identification PROFINET parameters	Motor protection		- =
Configuration Motor protection	Overload/unbalance/stalled roto	r	_
Motor control	Overload protection		
Machine monitoring			
Inputs	Set current Is1		
✓ Outputs			
Basic unit	Set current Is1:	0.50 A	
Operator panel LEDs		Transformation ratio - active	
Digital module 1			
Cyclic send data			
OPC-UA send data	Class:	10	
Standard functions			
Logic modules			
PROFlenergy	Personne to trin level:	Triin	
Analog value recording	Response to trip level.	inh i	
Operator panel with display	Cooling down period:	300.0 s	
	Pause time:	0.0 s	
	Type of load:	tri-phase 💌	•



Machine Monitoring



Inputs



Outputs (Basic Unit)



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Outputs (Operator Panel)

Identification			
PROFINET parame	Operator panel LEDs		
Configuration			
Motor protection	LED green 1:	Signal conditioning 4 - output	
Motor control	LED green 2:	Protection/Control - OLE< (ON<)	
Machine monitoring	LED areas 3:		
Current limits	LED green 5.		
Voltage	LED green 4:	Reprotection/Control - QLA (OFF)	
Cos-Phi			
Active power			
Operating hou			
Ground fault			
Inputs			
Outputs			
Basic unit 🔹			
Operator pane			
Digital module 1 🕴			
Cyclic send data			
OPC-UA send data			

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Outputs (Cyclic Send Data)



Defines meaning of PLC IB40 and IB41 (16 bits) and IB42 to IB 59 (18 bytes) of analog values

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OPC UA Server

Identification			
PROFINET parame	OPC-UA send data _		
Configuration	Byte 0		
Motor protection			
Motor control		Bit 0: 🍡 Not connected	15ª
 Machine monitoring 		Bit 1: 2. Not connected	ht.
Current limits			
Voltage		Bit 2: Connected	li*
Cos-Phi		Bit 3: 🔁 Not connected	152
Active power		Bit 4: 🍡 Not connected	122
Operating hou		Bit 5: Not connected	121
Ground fault		Pit C: Not connected	
Inputs			
 Outputs 		Bit 7: 🚬 Not connected	[E ²]
Basic unit	1		
Operator pane	Byte 1		
Digital module 1	-	-	
Cyclic send data		Bit 0: 🚬 Not connected	11 I
OPC-UA send data		Bit 1: 🔁 Not connected	15°
Standard functions		Bit 2: 🔁 Not connected	152
Logic modules		Bit 3: Dot connected	
PROFlenergy			[10]
Analog value rec		Bit 4: Z Not connected	[¹
Operator panel w		Bit 5: 🍡 Not connected	128
		Bit 6: 🚬 Not connected	[12]
		Bit 7: Dot connected	Ita

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Standard Functions

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Standard Functions

Standard functions

Test/ Reset

Test Position Feedback (TPF)

External fault

Operational Protection Off (OPO)

Operator panel with display

Power failure monitoring (UVO)

Emergency start

Watchdog (PLC/PCS monitoring)

Page 77

11 iii						
Identification	~					
PROFINET parameters		5	tandard fui	ictions		
Configuration		т				
 Motor protection 			esu neset			
 Motor control 						
 Machine monitoring 					Test/Reset keys disabled	
Current limits						
Voltage		>	Test 1			
Cos-Phi						
Active power						
Operating hours monitoring				Test - input:	Cyclic receive byte 0 - bit 0.3	II
Ground fault						
Inputs		>	Test 2 🔄			
✓ Outputs						
Basic unit	= *			Test input:	Not connected	let
Operator panel LEDs				iest-input.		112
Digital module 1	•					
Cyclic send data		>	Reset 1			
OPC-UA send data						
 Standard functions 				Reset - input:	Cyclic receive byte 0 - bit 0.6	15
Test/ Reset					300 3	
Test Position Feedback (TPF)		,	Reset 2			
External fault			neset 2			
Operational Protection Off (OPO)						
Power failure monitoring (UVO)				Reset - input:	式 Cyclic receive byte 1 - bit 1.0	157
Emergency start						
Watchdog (PLC/PCS monitoring)		>	Reset 3			
Logic modules						
PROFlenergy					Dec.	
Analog value recording				Reset - input:	Not connected	15
Operator papel with display	~					





Logic Modules

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Logic Modules

Logic modules

Truth table 3I/1Q

- Truth table 2I/1Q
- Truth table 5I/2Q
- Counter
- Timer
- Signal conditioning
- Non-volatile element
- Flashing
- Flicker
- Limit monitor
- Calculators

Analog multiplexer

Pulse width mod. (PWM)

11 11		E
Identification		
PROFINET parameters	Logic modules	
Configuration		
Motor protection		
Motor control	Truth table 1 31/10	
 Machine monitoring 		
Inputs		
Outputs	Truth table - input 1: 🍡 Not connected	128
Standard functions	Truth table - input 2: 🔁 Not connected	121
 Logic modules 	Truth table - input 3: 12 Not connected	ht:
Truth table 3I/1Q		li"
Truth table 2I/1Q		
Truth table 5I/2Q	Truth table 1 31/1Q: 11 12 13 01	
Counter		
▶ Timer		
 Signal conditioning 	0 0 1 0	
Non-volatile element	• 0 1 0 0	
Flashing	0 1 1 0	
Flicker	1000	
Limit monitor		
 Calculators 		
Analog multiplexer		
Pulse width mod. (PWM)	1 1 1 0	
PROFlenergy		
Analog value recording		
Operator panel with display		
	Truth table 2 3I/1Q	
		>



PLC Communications (Instructor led)

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Maintenance and Troubleshooting

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Typical Download Problems

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Click Download ICON to load configuration

Error (12::00A7)	×
Parameter changes currently not possible due to system state. Motor is maybe in operation.	<u>^</u>
	•
Ok	



Possible causes

In Remote

• Local stop input off

Possible cause

 Configured version does not match actual version

Commissioning

Project Edit View Insert Online Options Tools Window	Help	
Project tree	MOCODE Workshop Master Project > SIMOCODE [SIMOCODE pro V PN] > Commissioning	_₹≣X
Devices		
		
▼ SITEC 2016 SIMOCODE Workshop Mast	information Diagnostics	
Add new device Faults	Count	
Bevices & networks Warnings	General	
PLC_1 [CPU 1215C AC/DC/Rly] Status inform	tion Module	
Main HMI [TP700 Comfort] Measured va	es	
▼ 📑 SIMOCODE [SIMOCODE pro V PN] Service data	statistical data hort code: SIMOCODE proV PN	
Device configuration Error buffer/e	or protocol Artice number: 3UF7 011-1A*00-0	
Colline & diagnostics Test	Hardware version:	
27 Parameters Command	Eirmware ersion:	
A Commissioning Password		
Actual config	ation Manufacturar information	
Analog value		
Documentatic settings Hardware inp	Ven pr: SIEMENS AG	
Contine access Contine access Contine access		
Card Reader/US memory	·	
v 1 _ ■		
hla Click "Commission	$\mathbf{x}_{\mathbf{a}}$ " Step 2 – \mathbf{f}	
	-	
	Select "Go Online"	

agnostics ntrol / status information ults rnings tus information asured values rvice data / statistical data ror buffer/error protocol it. mmand ssword tual configuration alog value recording rdware inputs and outputs /e trend rameter comparer

Faults

<u>Step 1 –</u>

Turn off MSP and press local start



"Execution On Command" fault turns on

Warnings

۸ Diagnostics Warnings Control / status information Faults Warnings Group fault Group warning Status information Measured values Service data / statistical data Error buffer/error protocol Protection Monitoring Miscellaneous/General Test Command Overload Current limit Ground fault External fault Password Actual configuration Prewarning overload External fault 1 Warning level I> Internal ground fault Analog value recording (I>115%Is) Hardware inputs and outputs Unbalance Warning level I< Internal ground fault External fault 2 Live trend Parameter comparer External fault 3 Overload Operation Power Number of starts > External fault 4 Overload + pha Warning level P> failure Stalled ro Just one start possible Warning level P< External fault 5 No start permitted External fault 6 Thermi nermistor trip level Motor operating hours > Hardware Stop time > Thermistor short circuit Voltage Thermistor open circuit Warning level U< < >

<u>Step 1 –</u>

Turn on motor and turn current potentiometer counter clockwise until under current warning comes on

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Service and Statistical Data

90.93					
	1				
 Diagnostics 	Service data / statistical data				
Control / status information					
Faults	Motor				
Warnings					
Status information	Motor operating hours:	3	0	h 🔗	
Measured values	Motor operating hours >:				
Service data / statistical data	Number of overload trips:	5	0	4	
Error buffer/error protocol					
Test	Number of starts:	837	0	1	
Command	Permissible starts - actual	0			
Password	value:	0			
Actual configuration	Just one start possible:				
Analog value recording	No start permitted:				
Hardware inputs and outputs	Ston time:	4	0	h 🛷	
Live trend 4	stop time.				
Parameter comparer	Stop time >:				
	Deale welt				
	Dasic unit				
	Time shift UTC +:				
	Device operating hours:	457		h	
	Number of parameterizations:	90			
	Date:				
	Time:				_
	Timer				

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SIMOCODE Motor Management





John Burns Lead Application Consultant SII DF CP 5300 Triangle Parkway Norcross, GA 30092 Tel.: +1 (770) 625-5726 Fax: +1 (678) 297-7250 Cell: +1 (678) 575-3086 E-mail: john.burns@siemens.com

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