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

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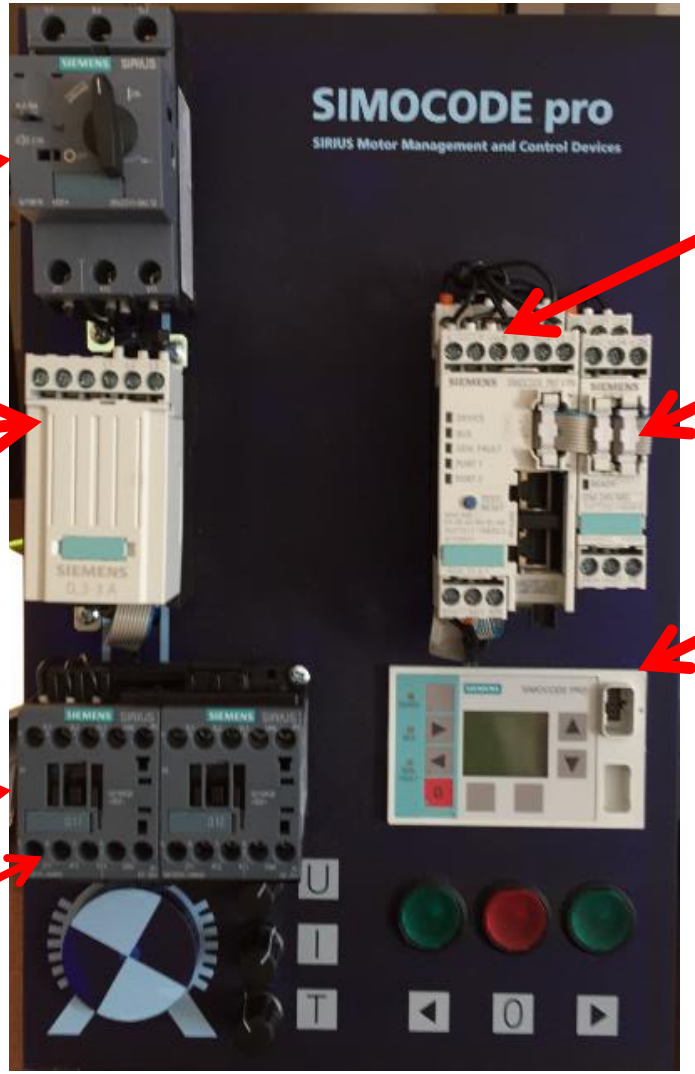
SIMOCODE pro Live Demo



Manual Disconnect

Current/Voltage Measuring Module

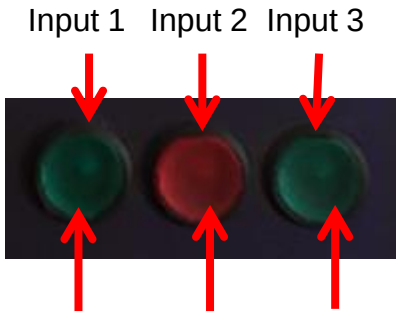
Contactors

Output 1&2

Base Unit

Digital Expansion

Optional HMI



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Configuration Process

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5 Step Process

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

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Overload Relay with Run PB

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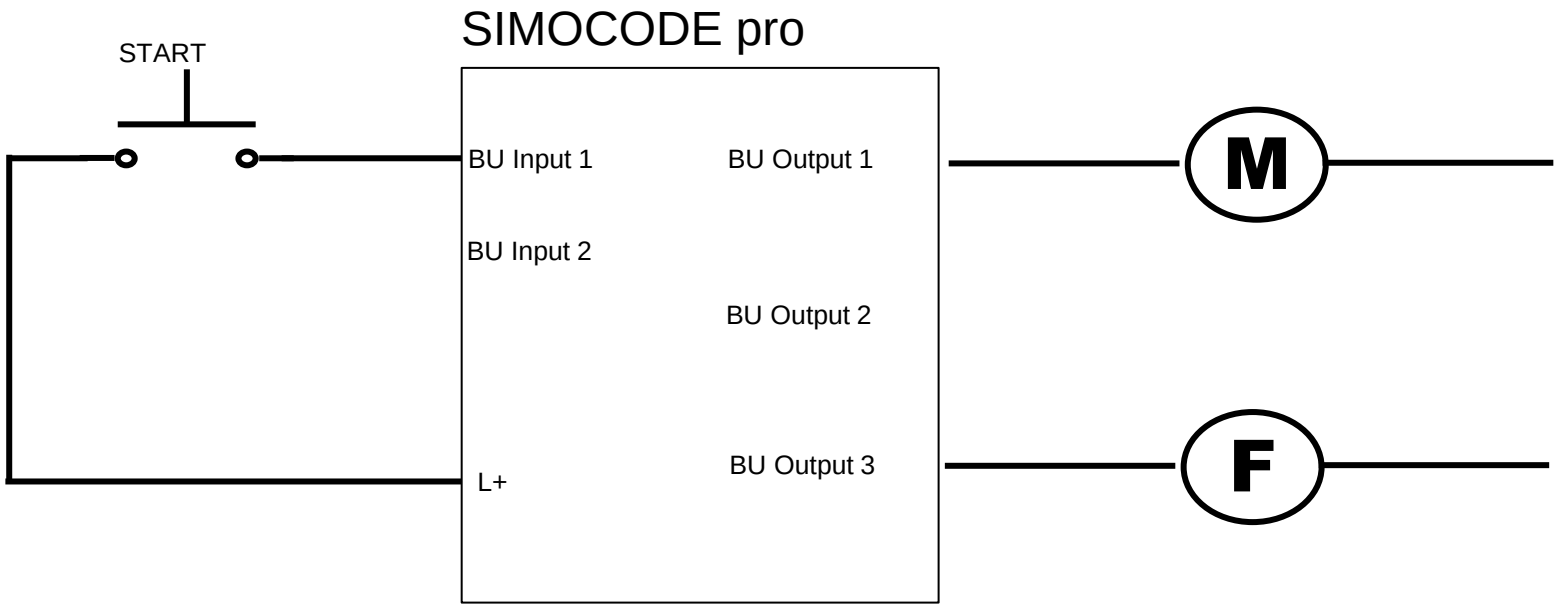
Lab # 2 (Overload Relay w/ logic)



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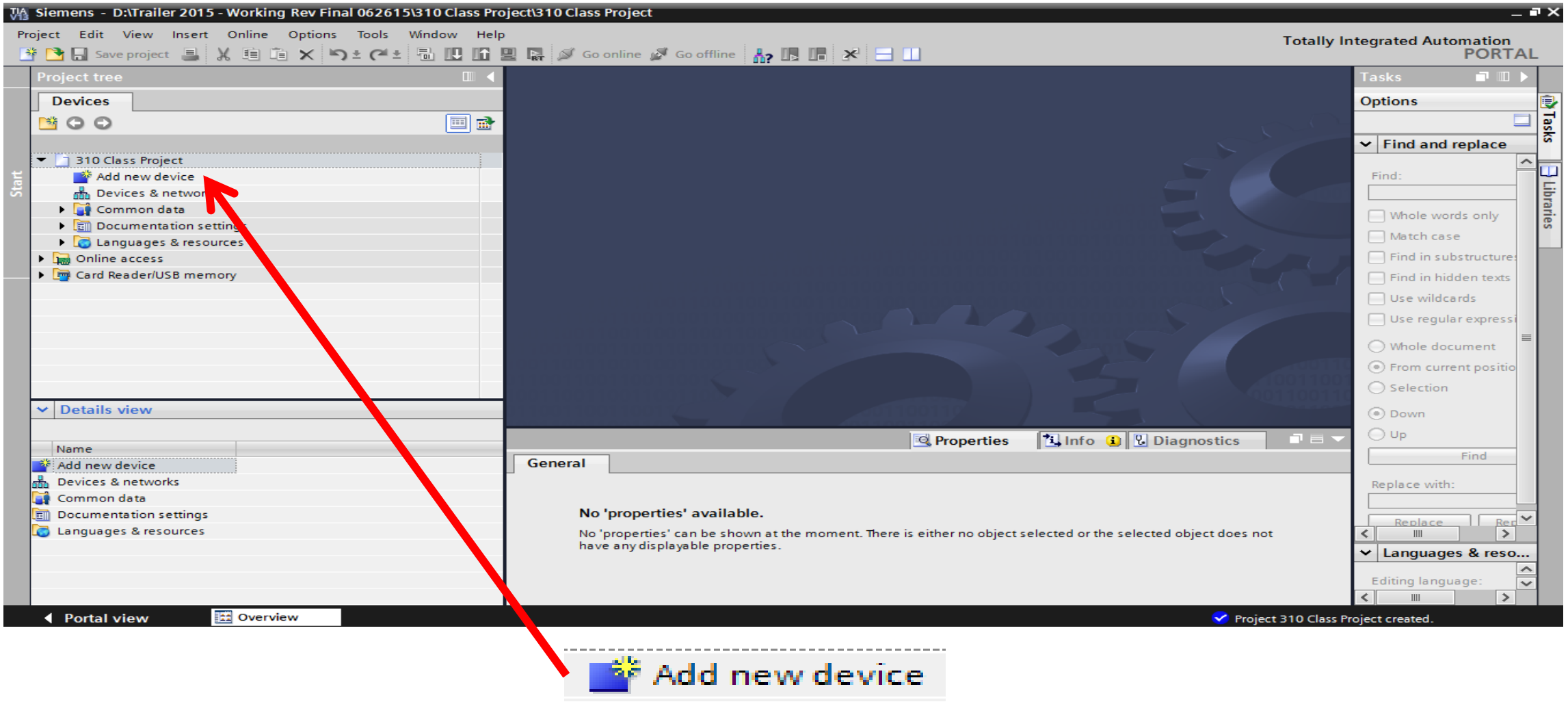
Add a New Device



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Step 1 - Select Base Unit and Version

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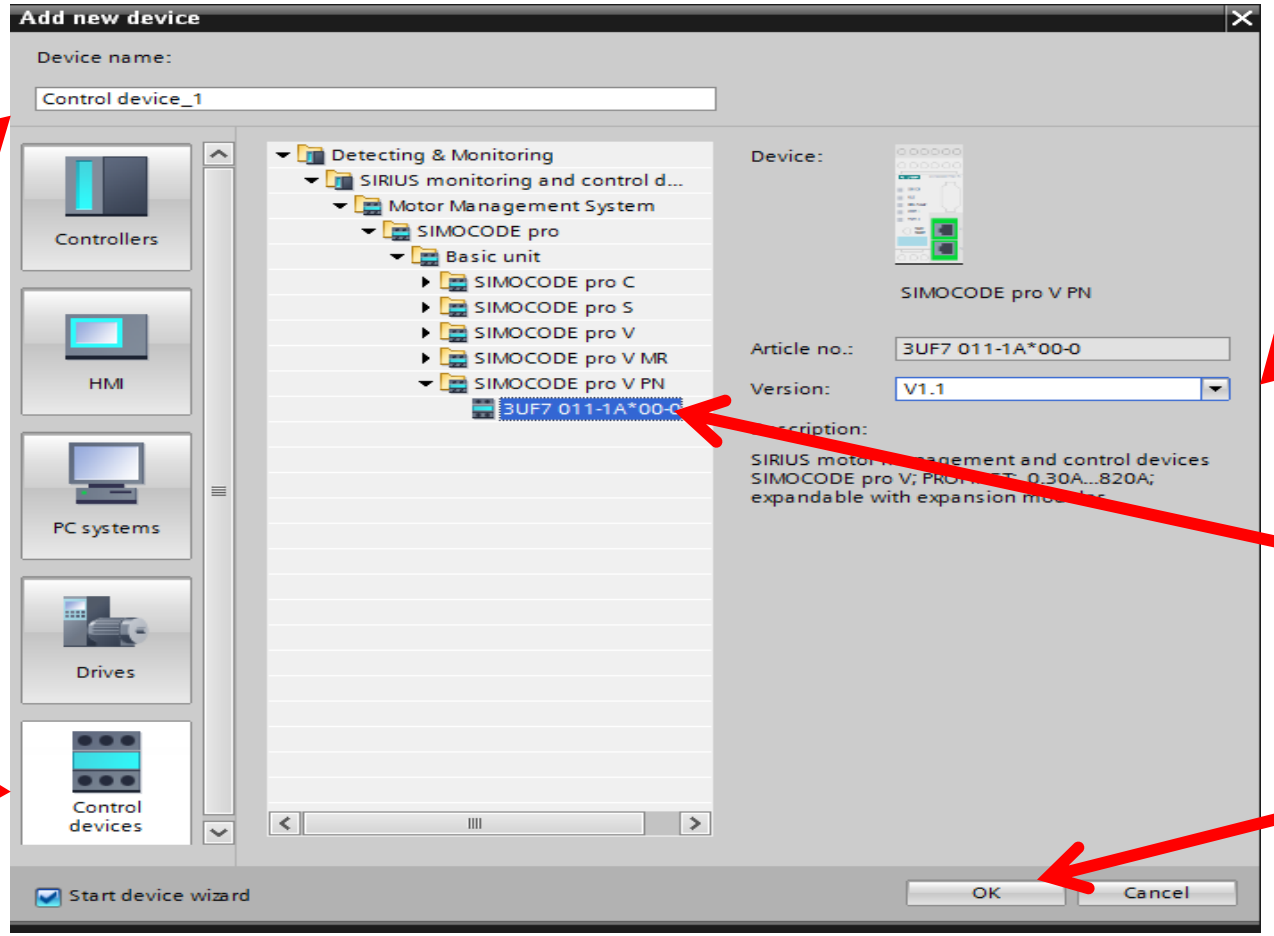

Step 4

Change name to “Overload Relay”

Step 3

Select Version

Step 2

Select SIMOCODE pro V PN

Step 1

Select Control Devices

Step 5

Select OK

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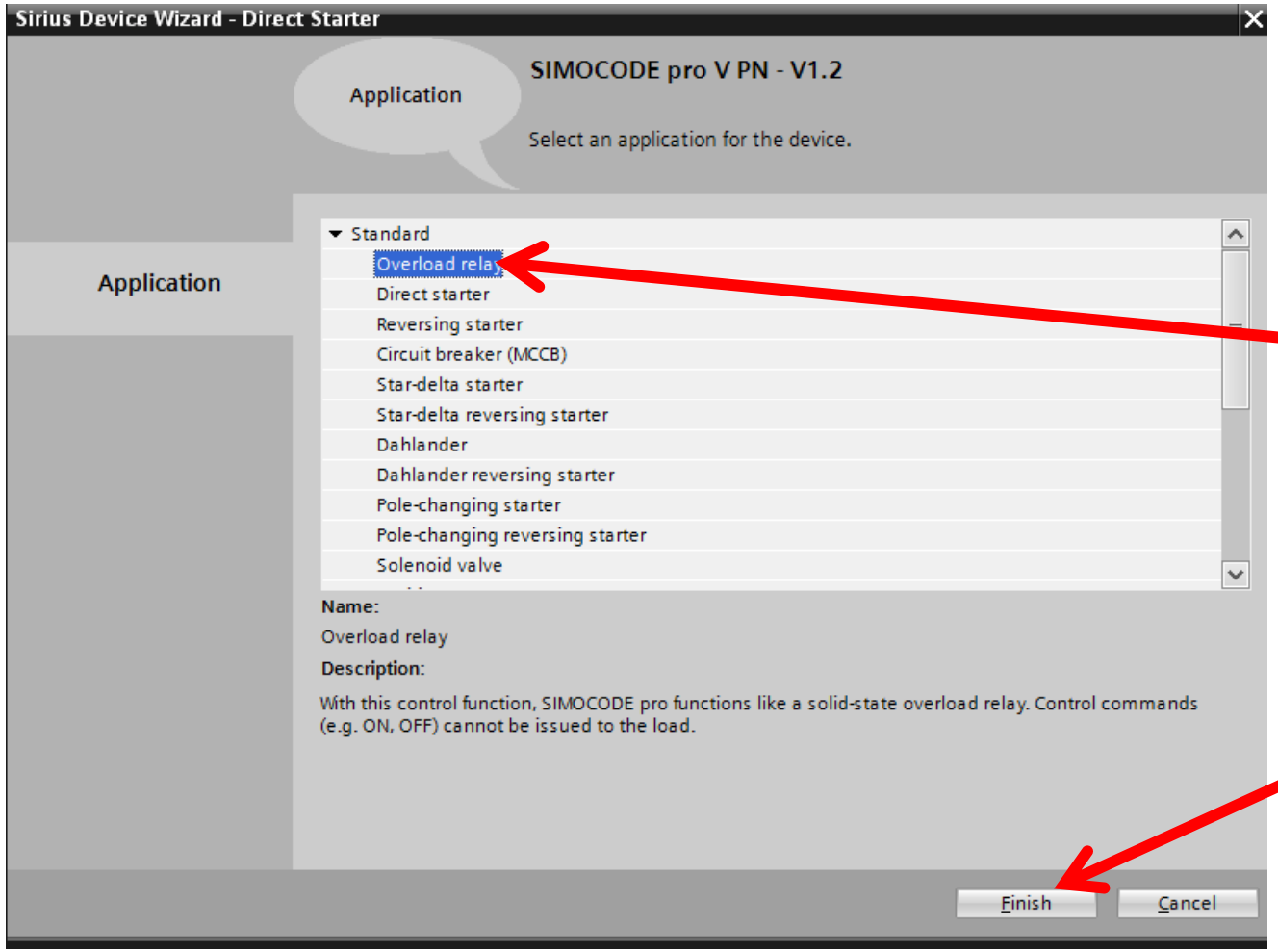
Step 2 - Select Profile (Overload Relay)



Step 1

Select Overload Relay Profile

Step 2

Select Finish

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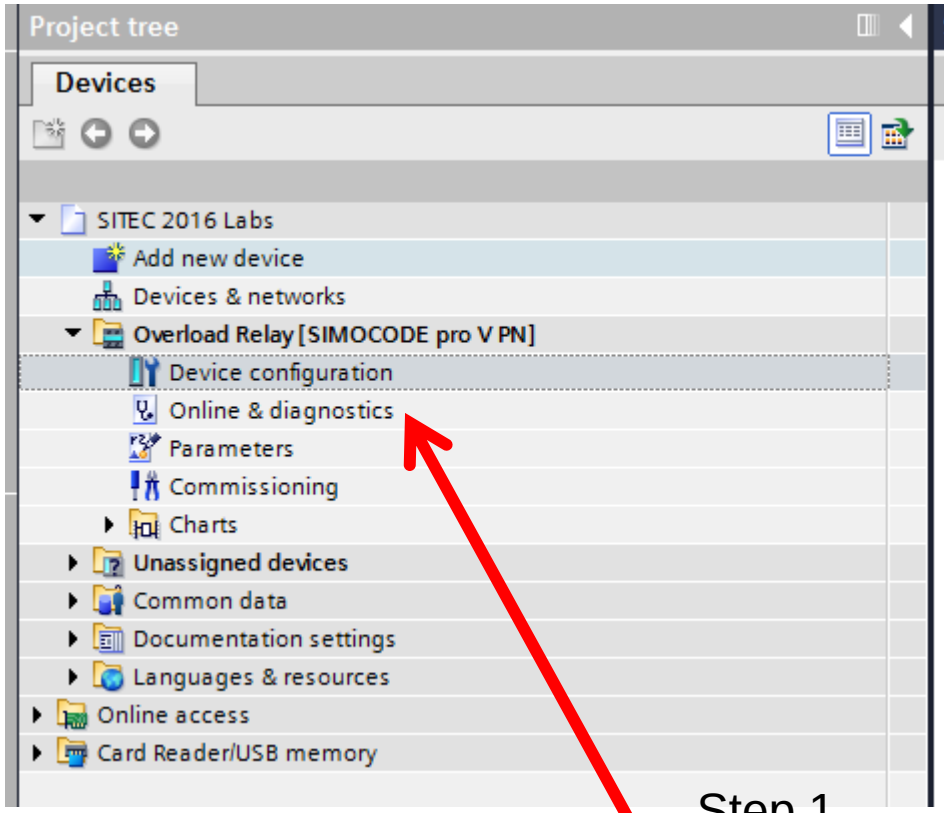
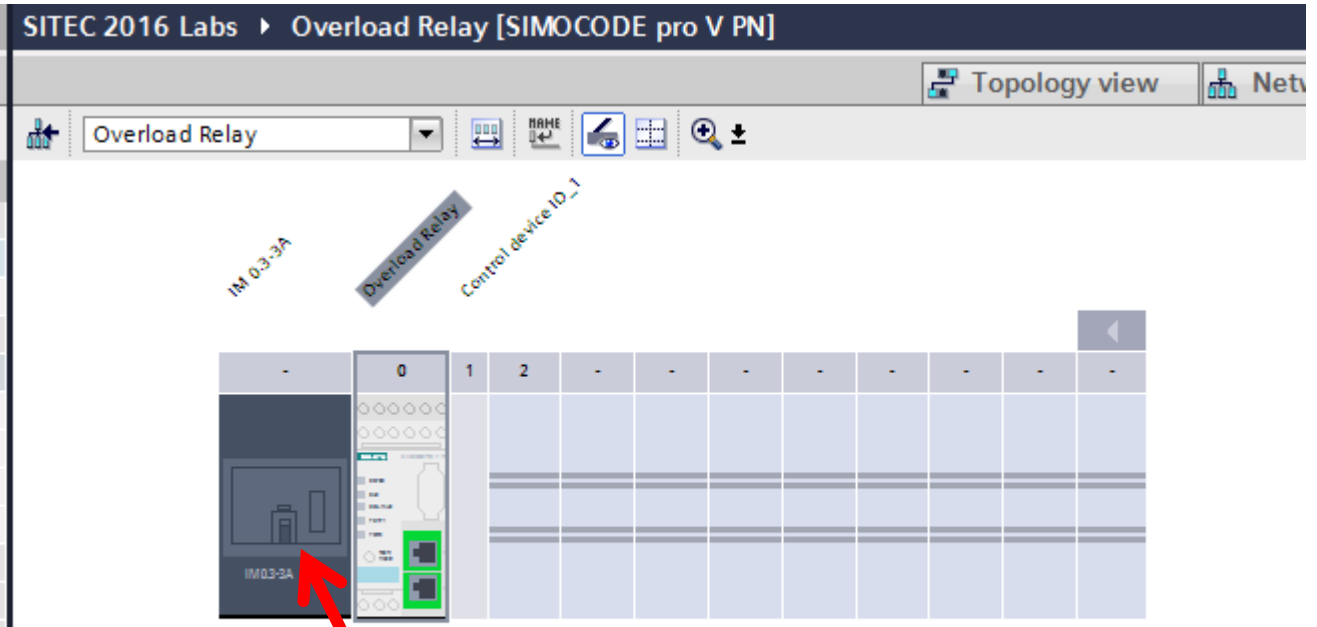
Step 3 – Match Existing Device





Step 1

Double Click on Device Configuration

Step 2

Right Click on Measuring Module and Select Change Device

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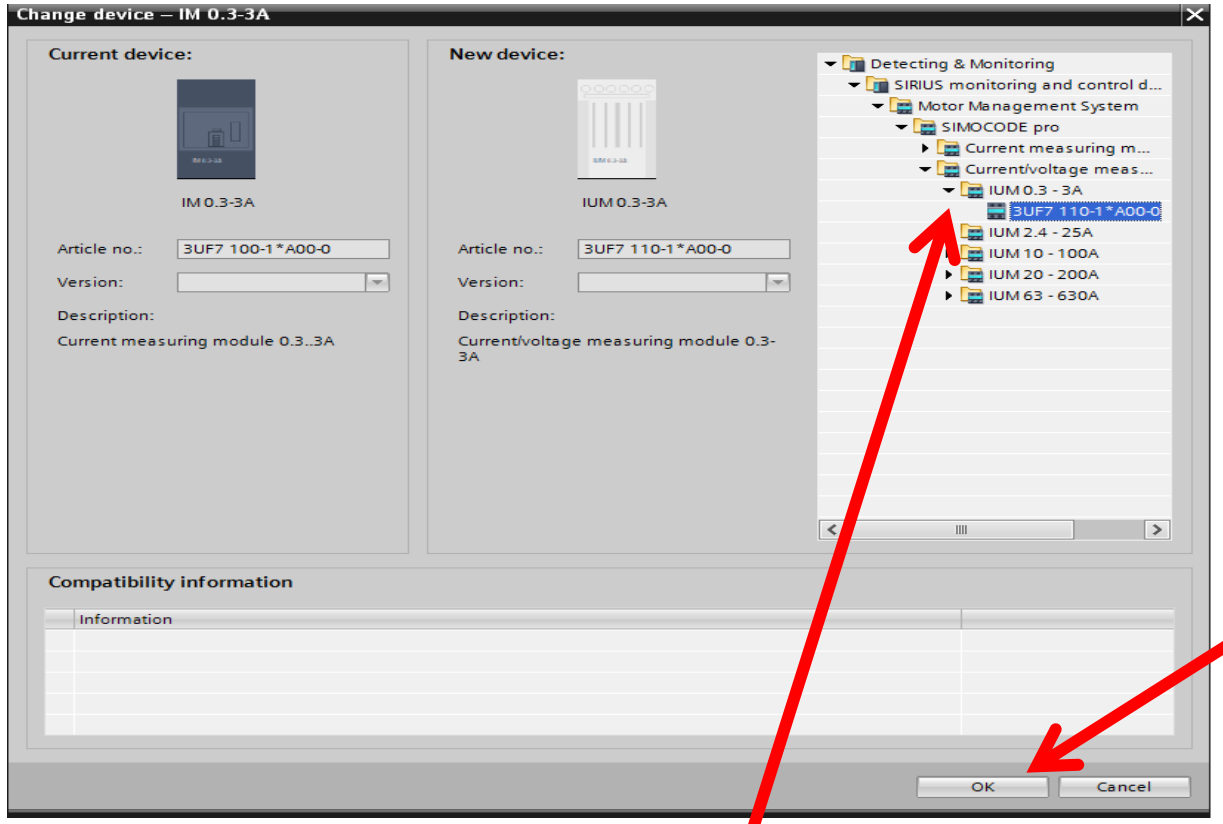
Step 3 – Match Existing Device



Step 2–

Select OK

Step 1 –

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

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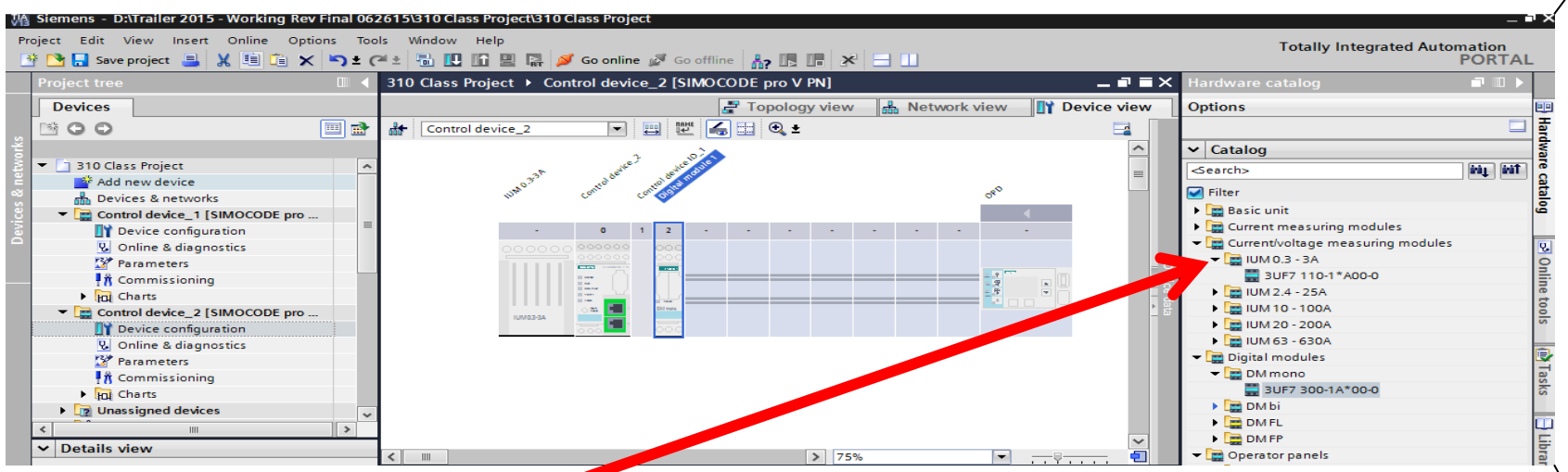
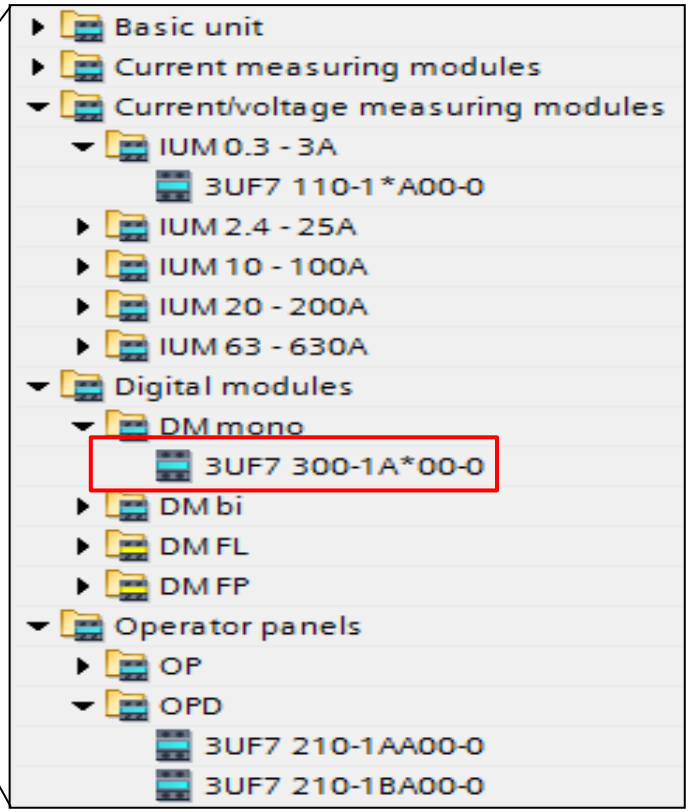
Step 3 – Match Existing Device





Step 1 –

Double Click “DM mono” to insert digital module into rack

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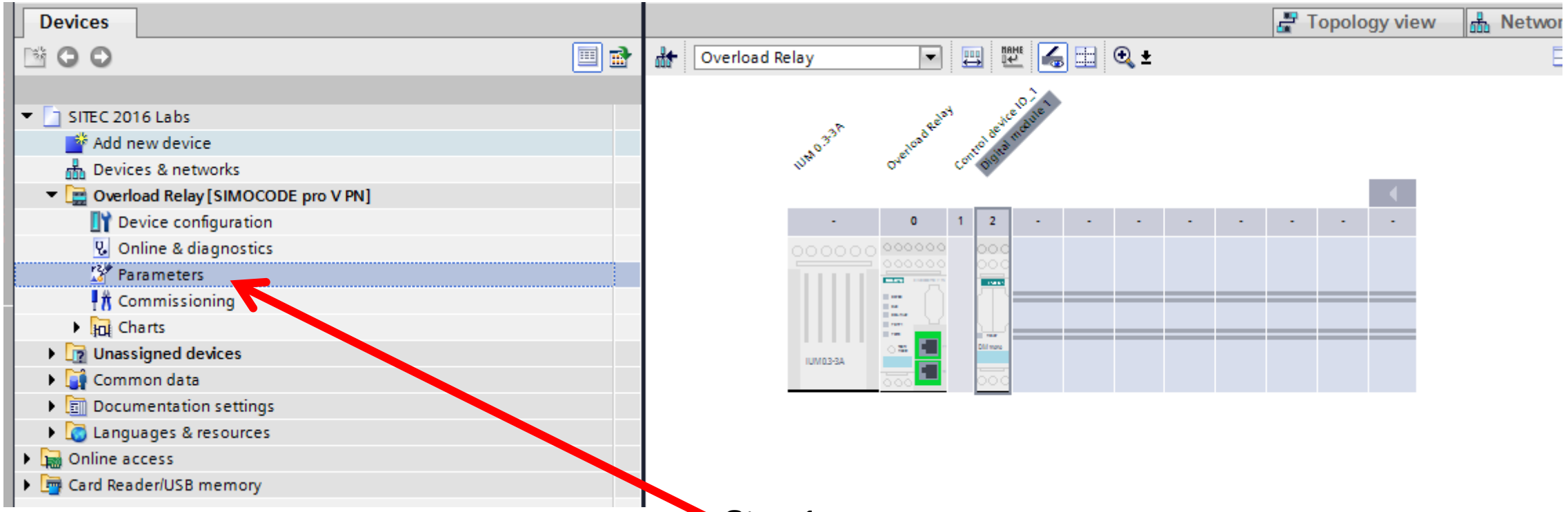
Step 4 – Select Network Address



Step 1 –

Double Click Parameters

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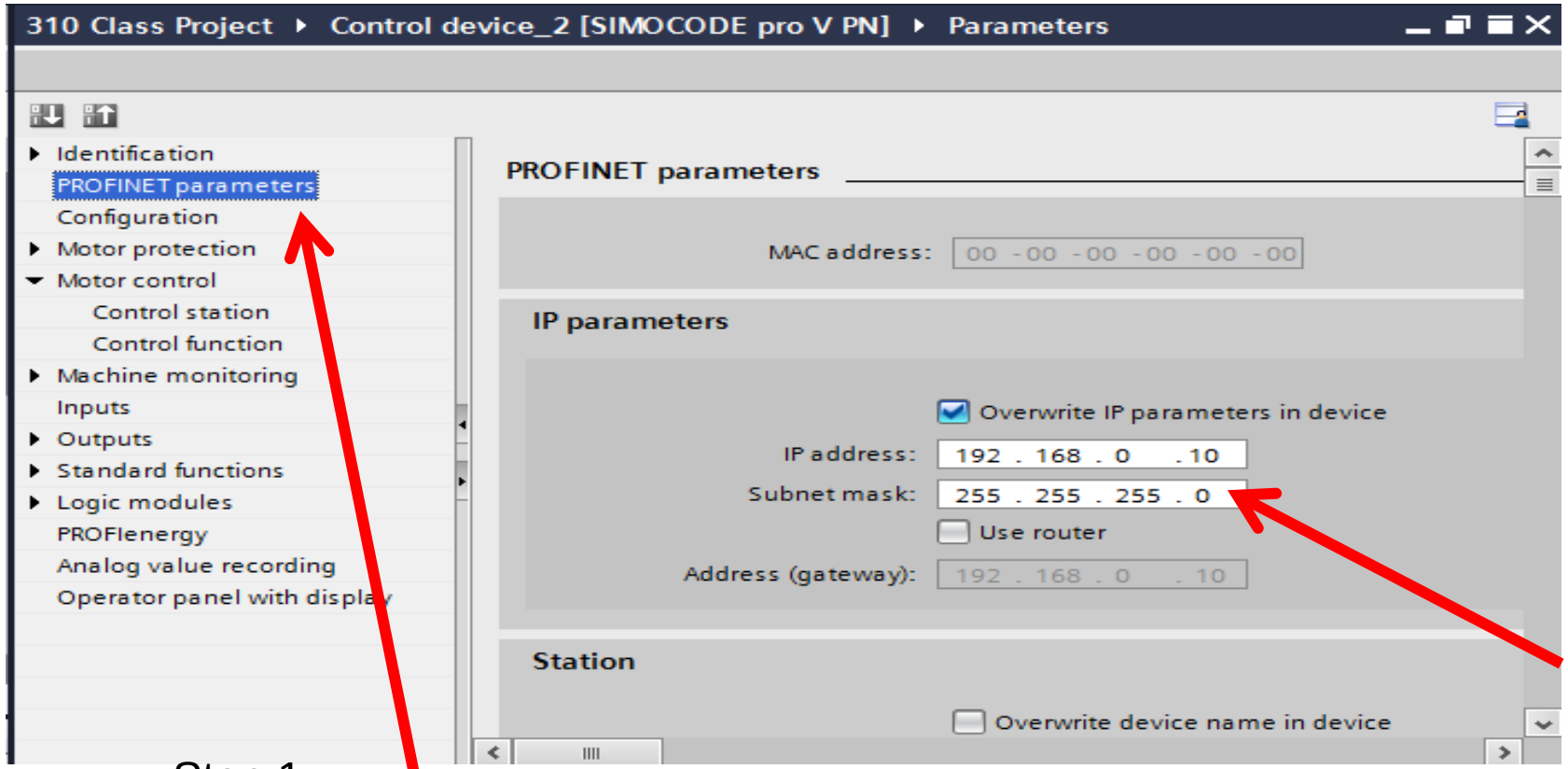
Step 4 – Select Network Address

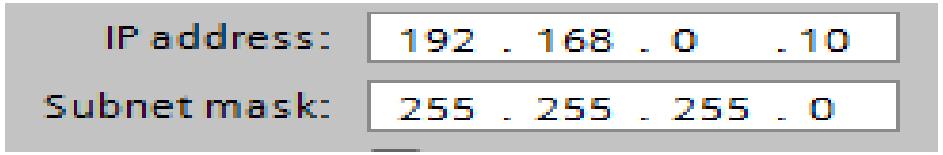


Step 1 –

Select “PROFINET parameters”

Step 2 –

Enter the PROFINET address below



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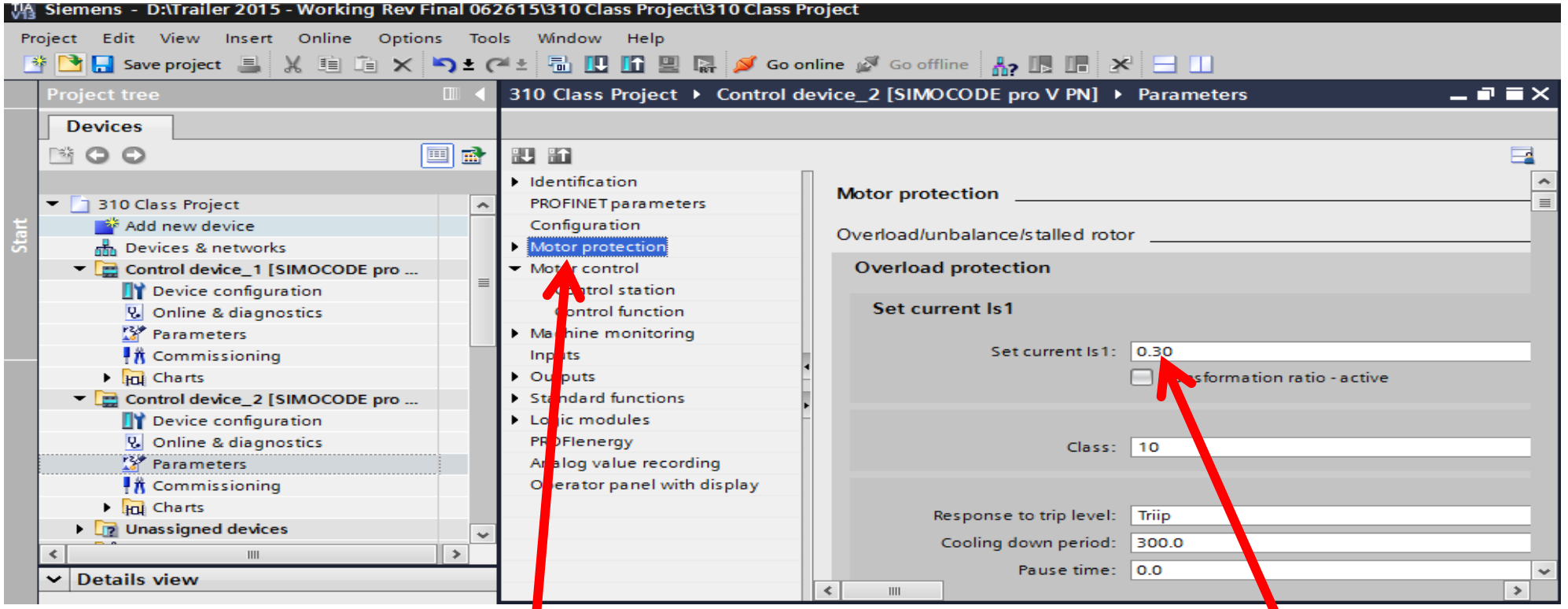
Step 5 – Select FLA



Step 1 –

Select “Motor protection”

Step 2 –

The value 0.30 A is OK for the demo

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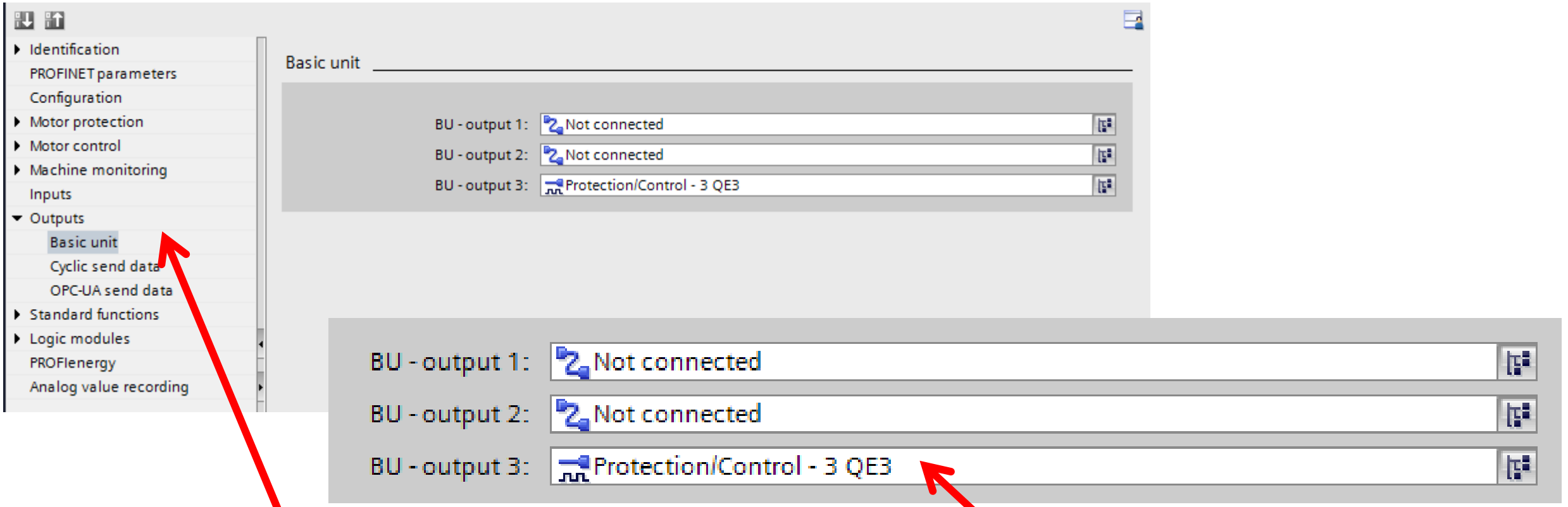
Select Outputs on Base Unit



Step 1 –

Under Outputs - Select “Basic Unit”

Note – Output 3 has been assigned by selecting Overload Relay profile

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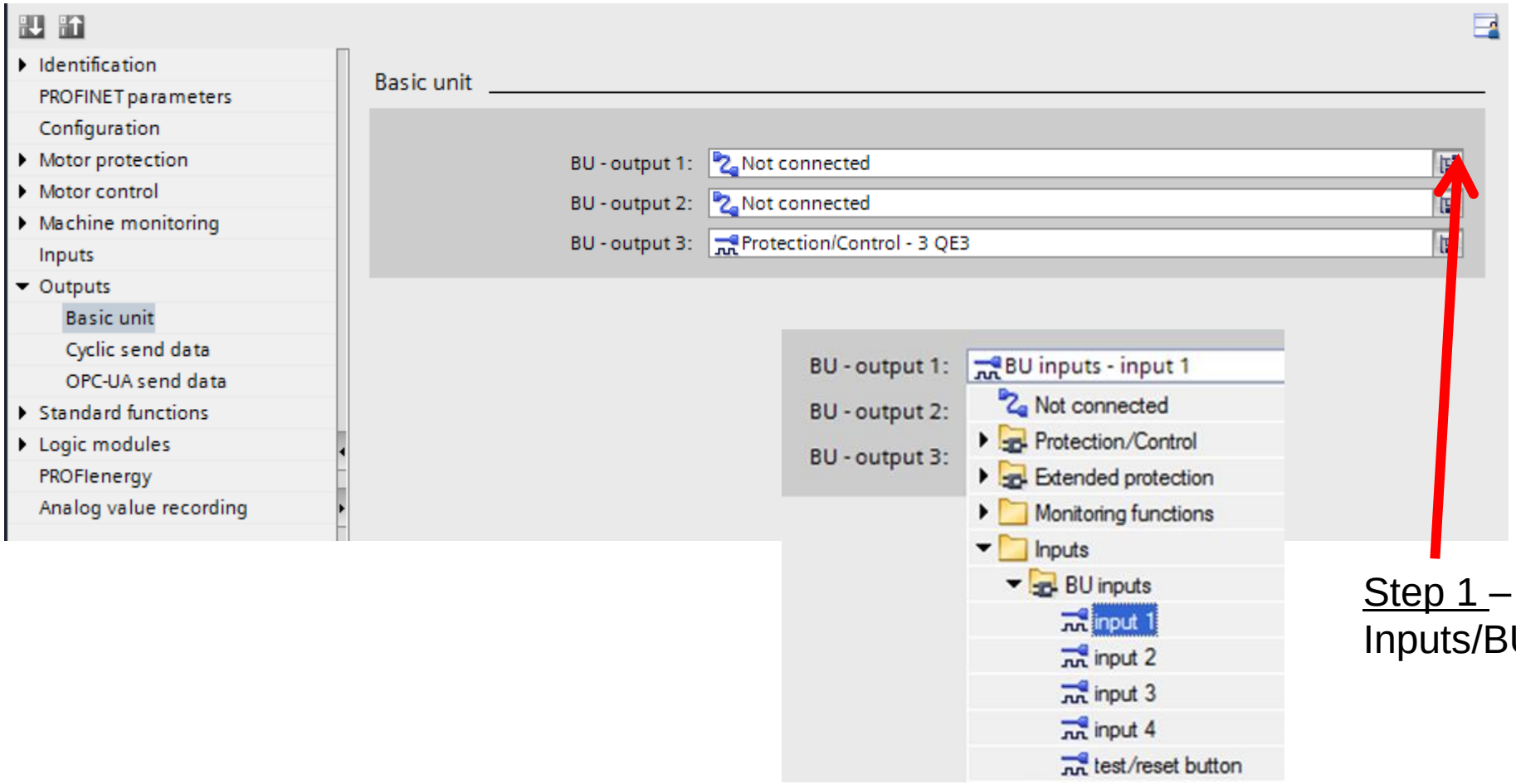
Select Outputs on Base Unit



Step 1 – Select “Input 1” under Inputs/BU Inputs

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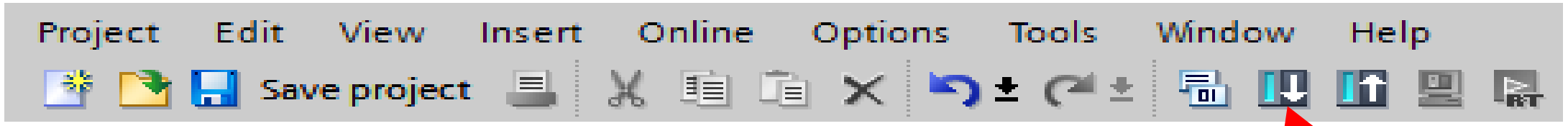
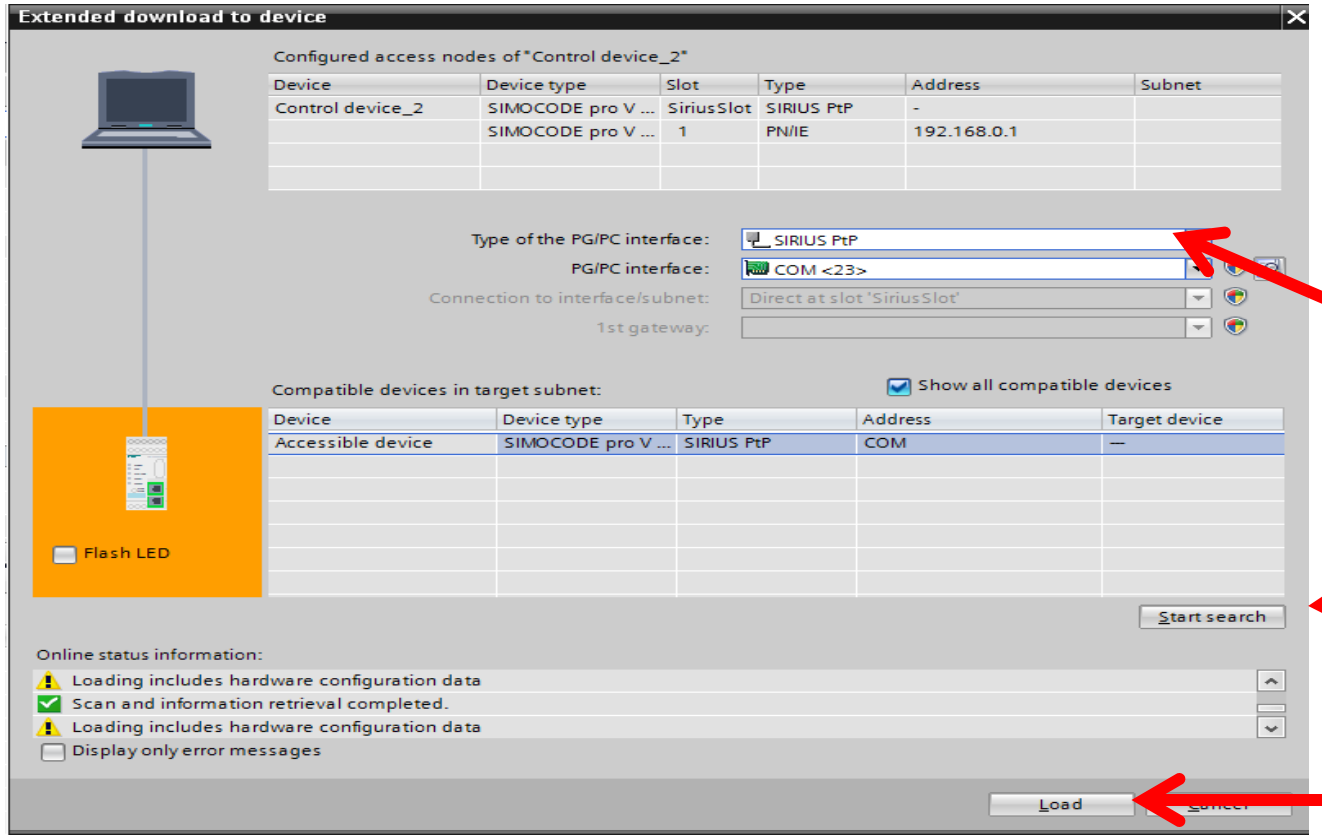
Download to Device

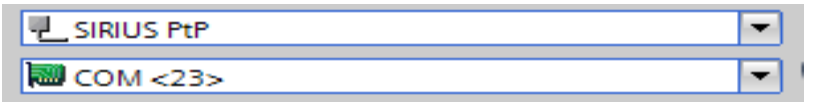




Step 1 –

Select “Load to Switching device”

Step 2 – Select “SIRIUS PtP”



Step 3 – Select “Start search”

Step 4 – Select “Load”

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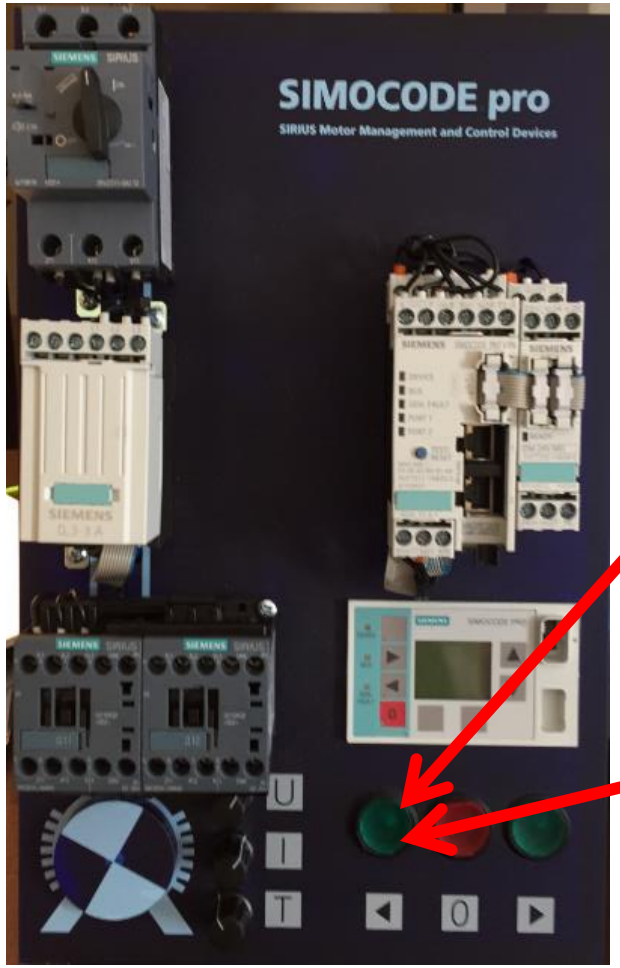
Test Overload Relay with Logic



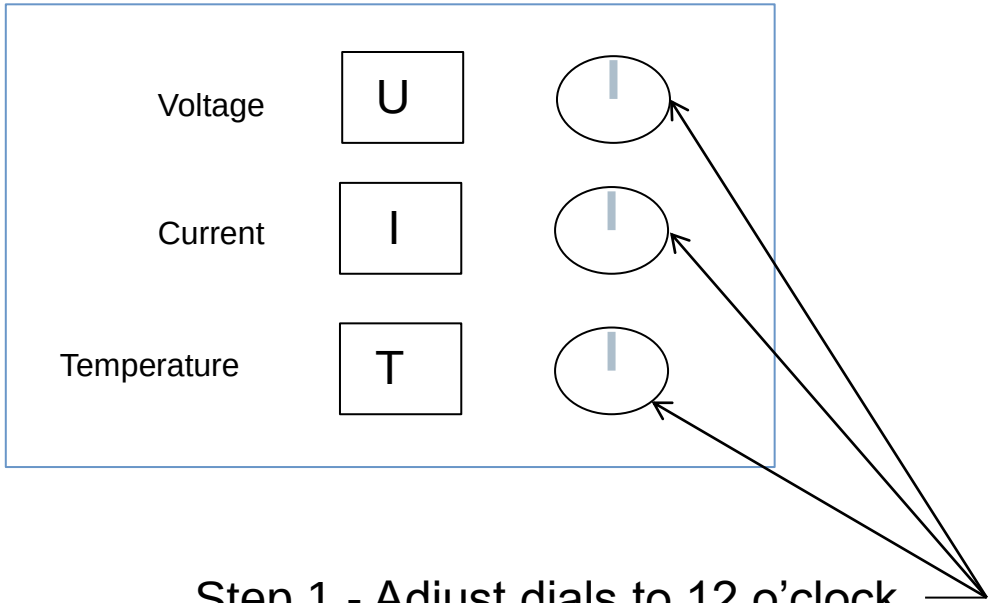
Fault Contact Indication

(Output #3)

Step 2-

Press Green PB to run contactor

(Input #1)



Step 1 - Adjust dials to 12 o'clock

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Online Monitoring

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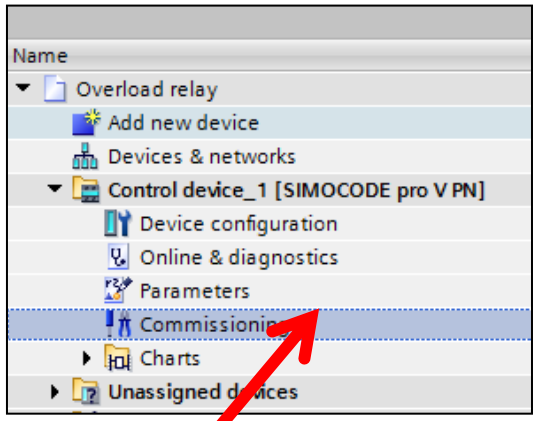
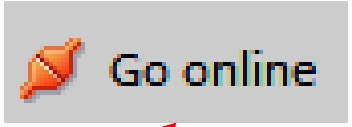
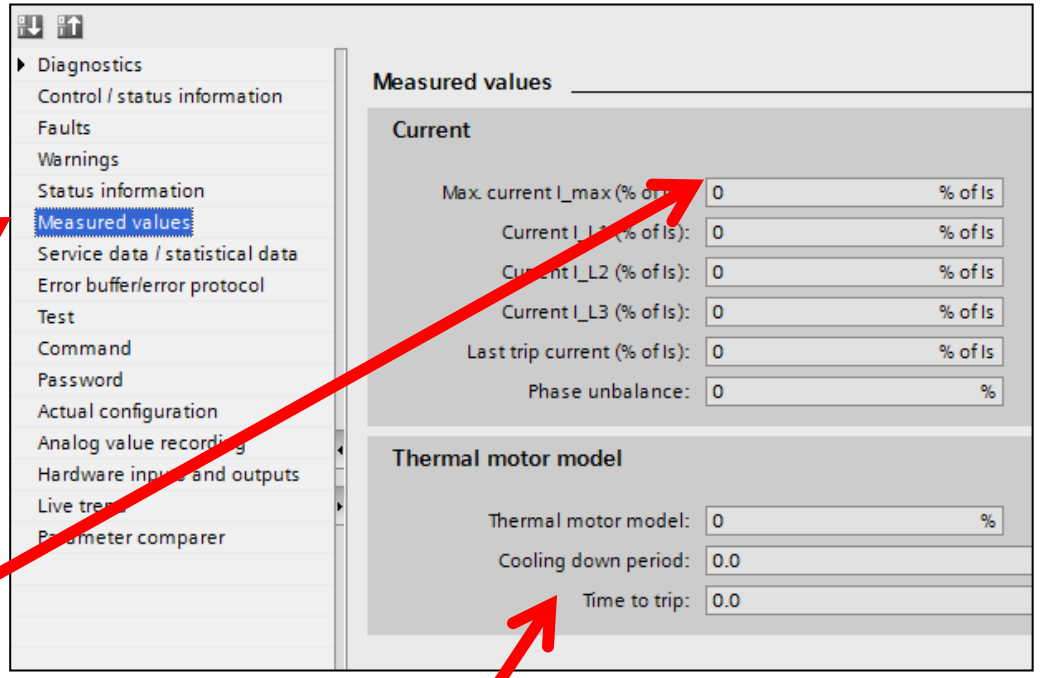
Monitoring Functions







Step 1 –

Double click “Commissioning”

Step 2 –

Select “Measured Values”

Step 3 –

Select “Go Online” on top toolbar

Step 4 –

Press green PB to start motor and monitor motor current

Step 5 –

Adjust knob labeled I to increase current to above 115% and the below 115%

Notice time to trip when I is above 115%

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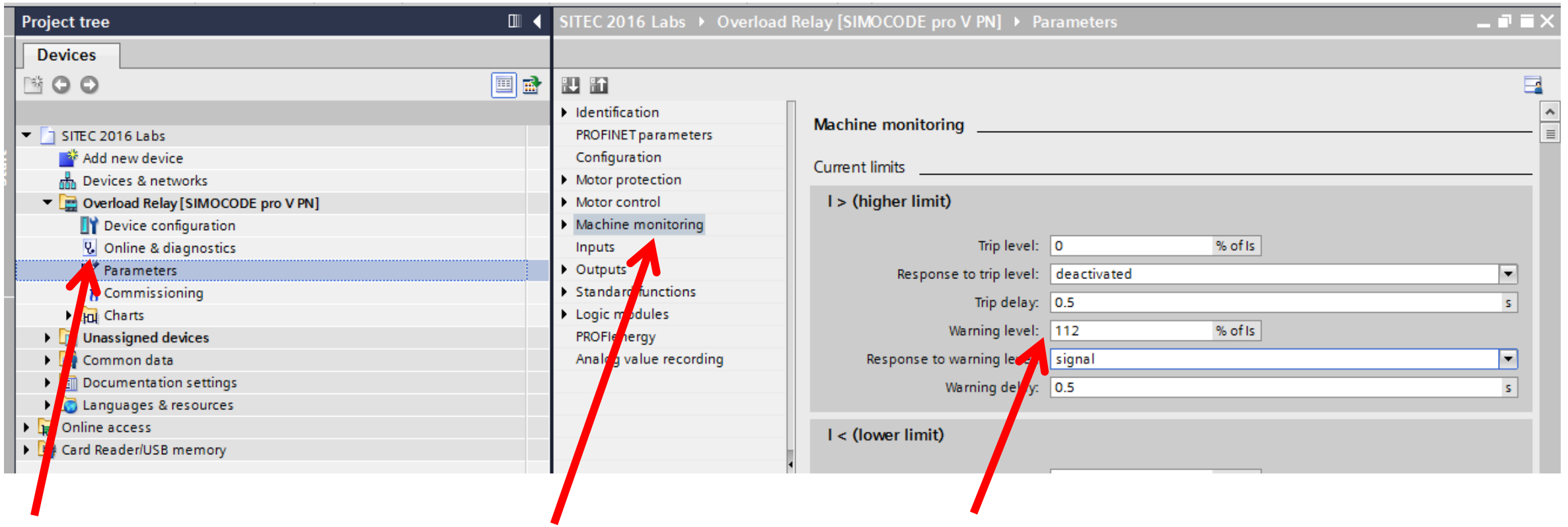
Monitoring Functions



Step 1 –

Double click "Parameters"

Step 2 –

Click "Machine Monitoring"

Step 3 –

Input 115% for "I > - Warning Level"

and select "Signal" as response

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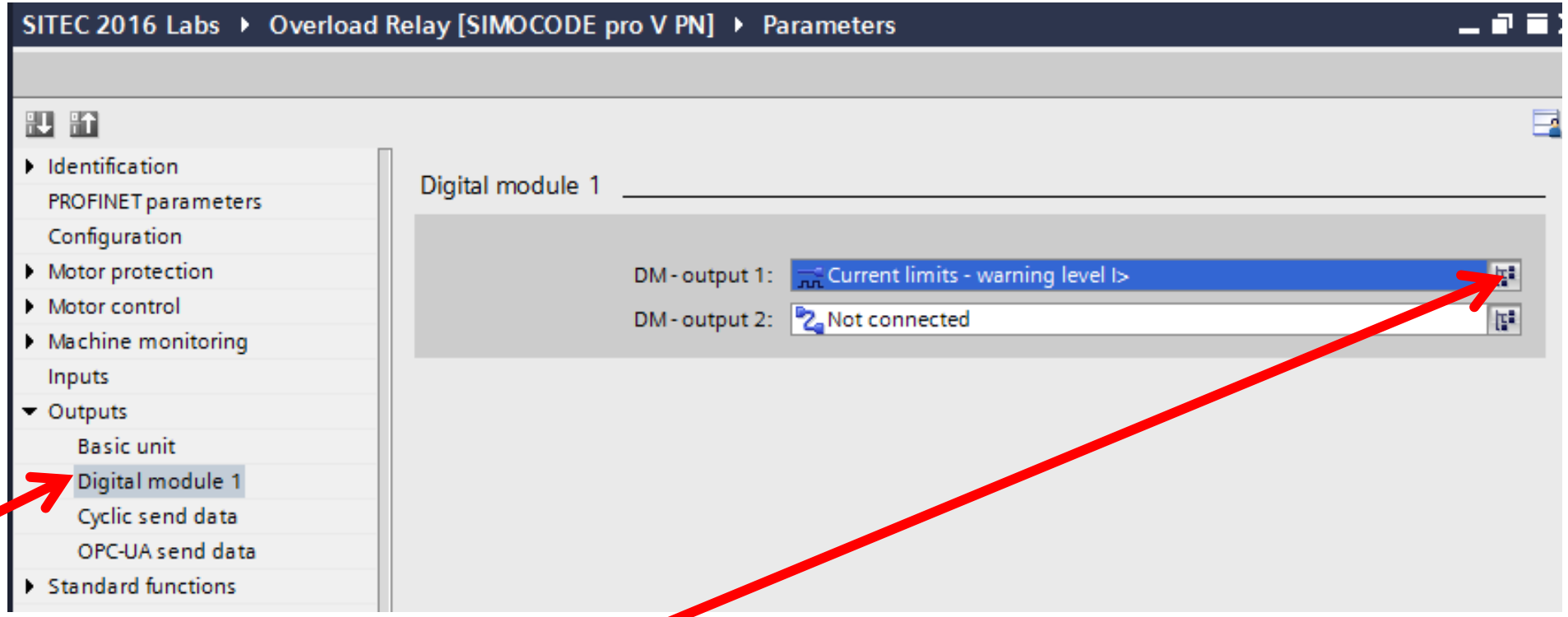
Monitoring Functions



Step 1 –

Select “Digital module 1”

Step 2 –

Under Monitoring Functions - Select “Current limits – warning level I>”

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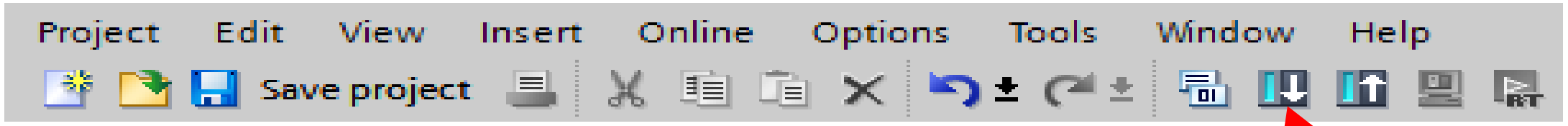
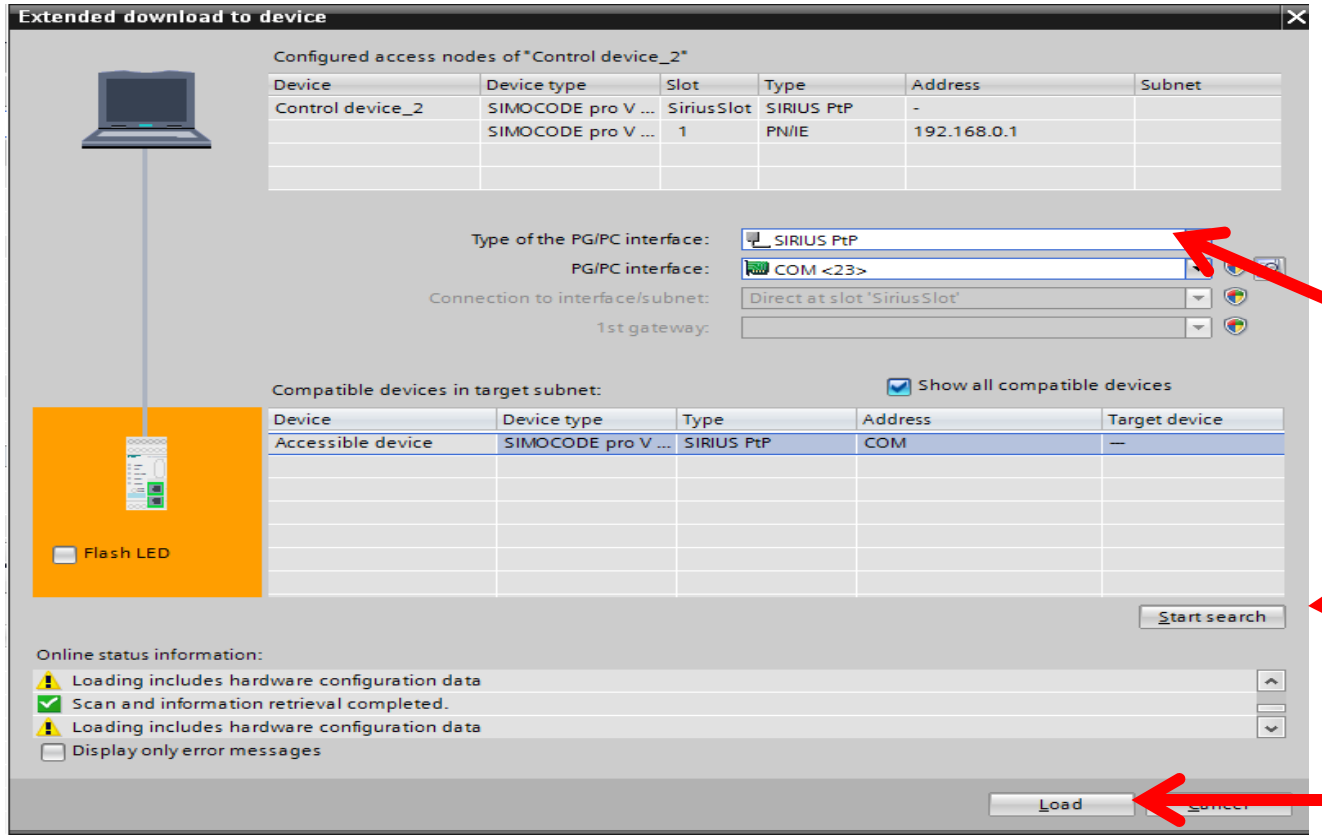
Download to Device

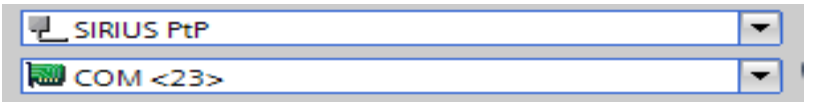




Step 1 –

Select “Load to Switching device”

Step 2 – Select “SIRIUS PtP”



Step 3 – Select “Start search”

Step 4 – Select “Load”

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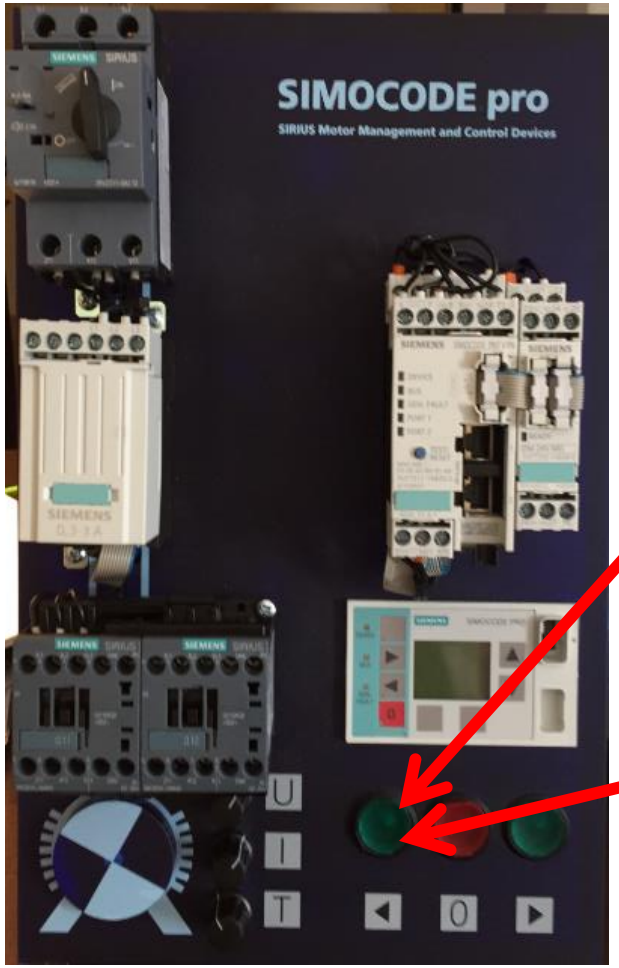
Test Online Monitoring



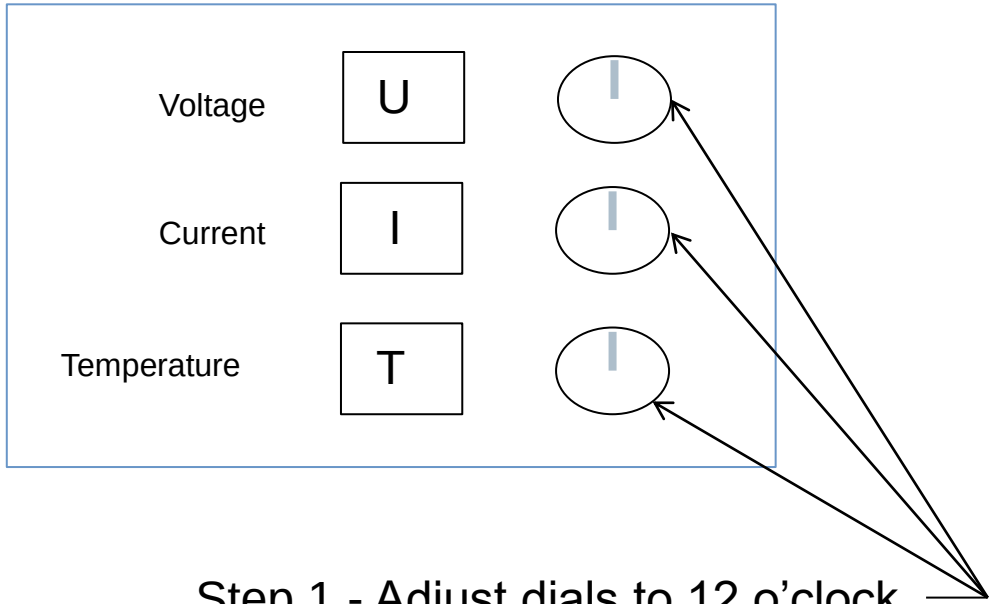
Fault Contact Indication

(Output #3)

Step 2-

Press Green PB to run contactor

(Input #1)



Step 1 - Adjust dials to 12 o'clock

Step 3-

Adjust potentiometer labeled I clockwise until green light turns

(Output #1 on digital expansion)

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Standard Functions
Remote Reset

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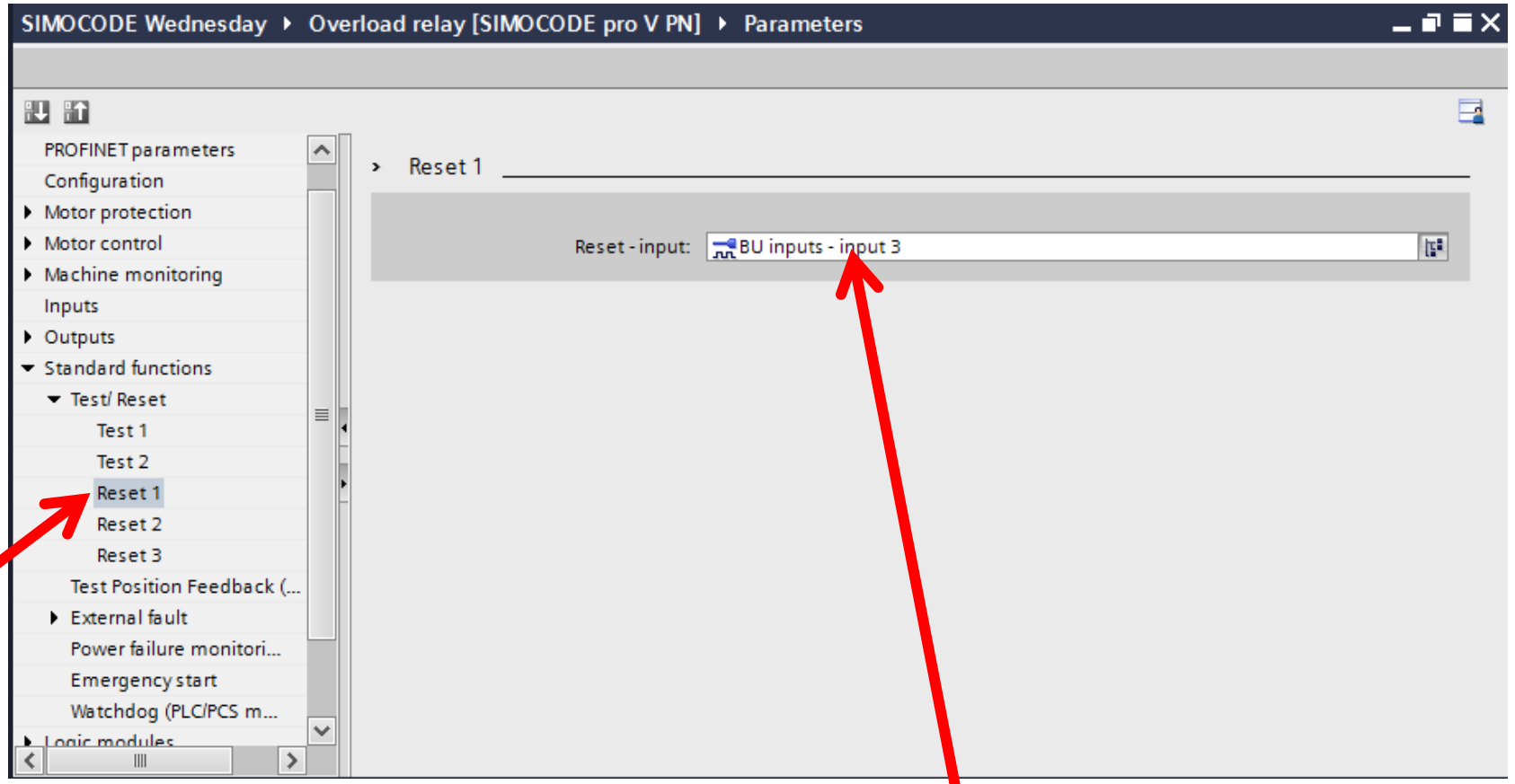

Step 1 –

Under “Standard Functions” - Select “Reset 1”

Step 2 –

Under “BU Inputs” - Select “Input 3”

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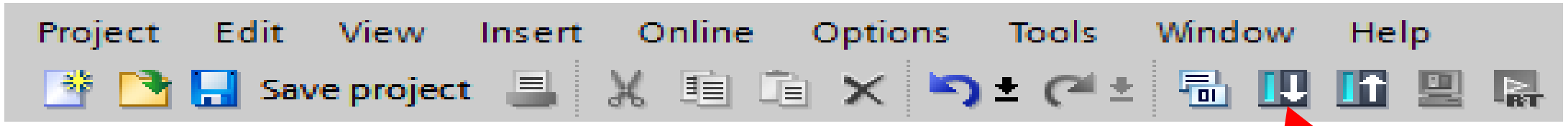
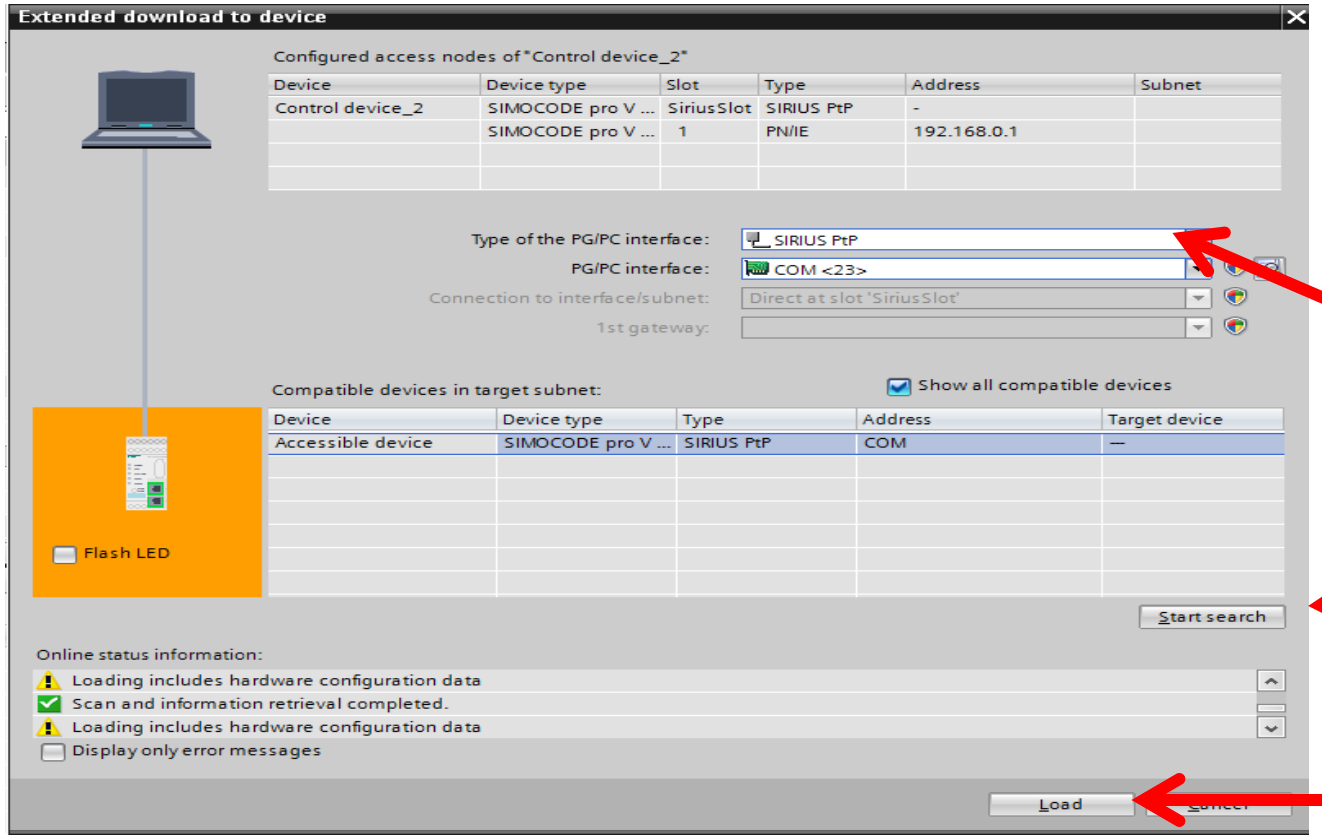
Download to Device

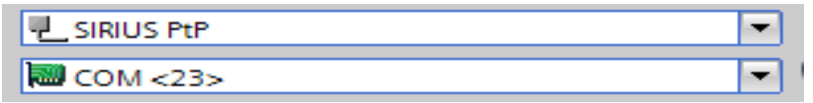




Step 1 –

Select “Load to Switching device”

Step 2 – Select “SIRIUS PtP”



Step 3 – Select “Start search”

Step 4 – Select “Load”

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Direct Starter

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Theory Of Operation

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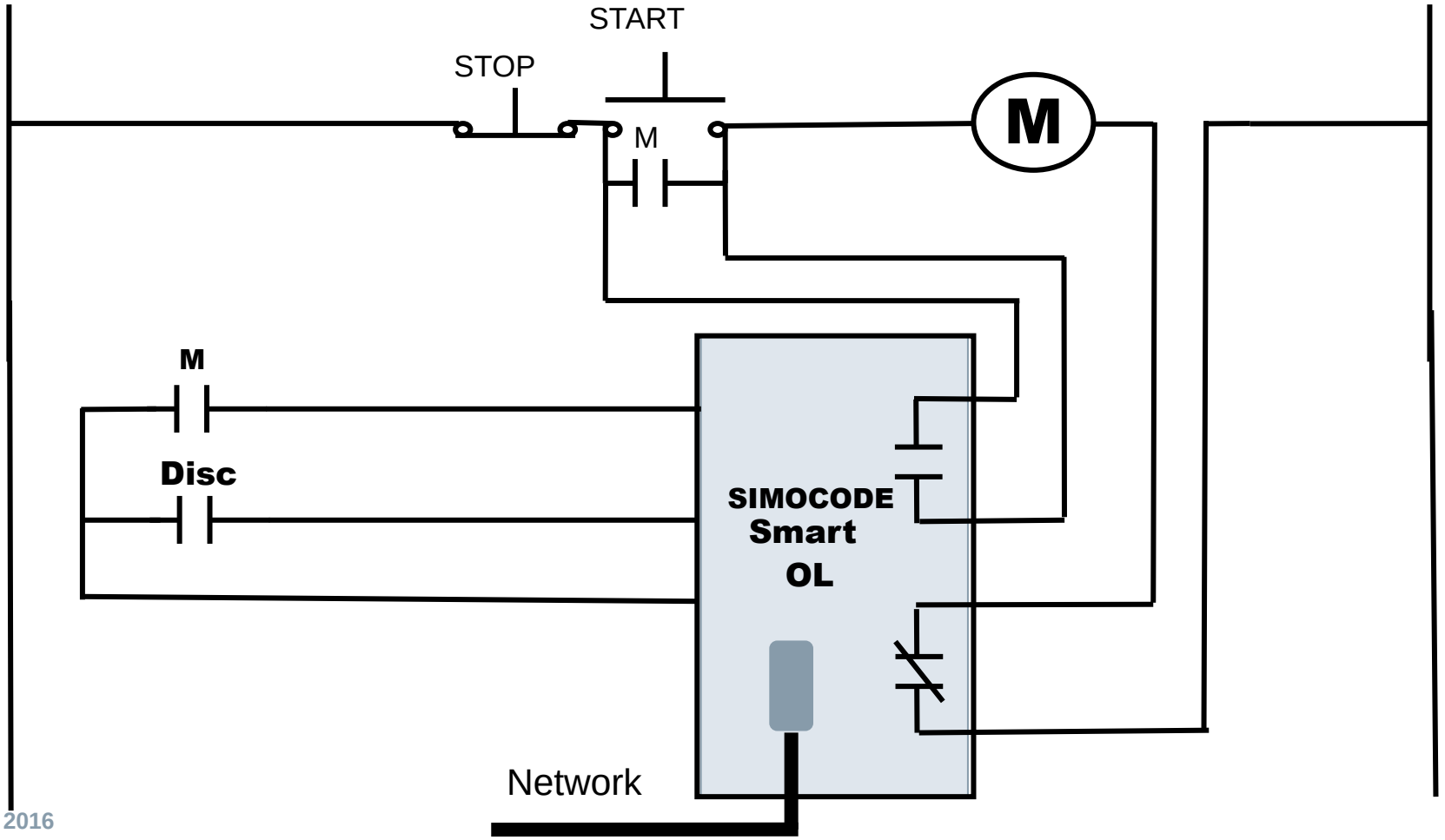
Overload with Communication



Additional Values

- Voltage/Power
- Digital I/O
- Analog I/O
- RTD
- Local Logic
- Motor Profiles

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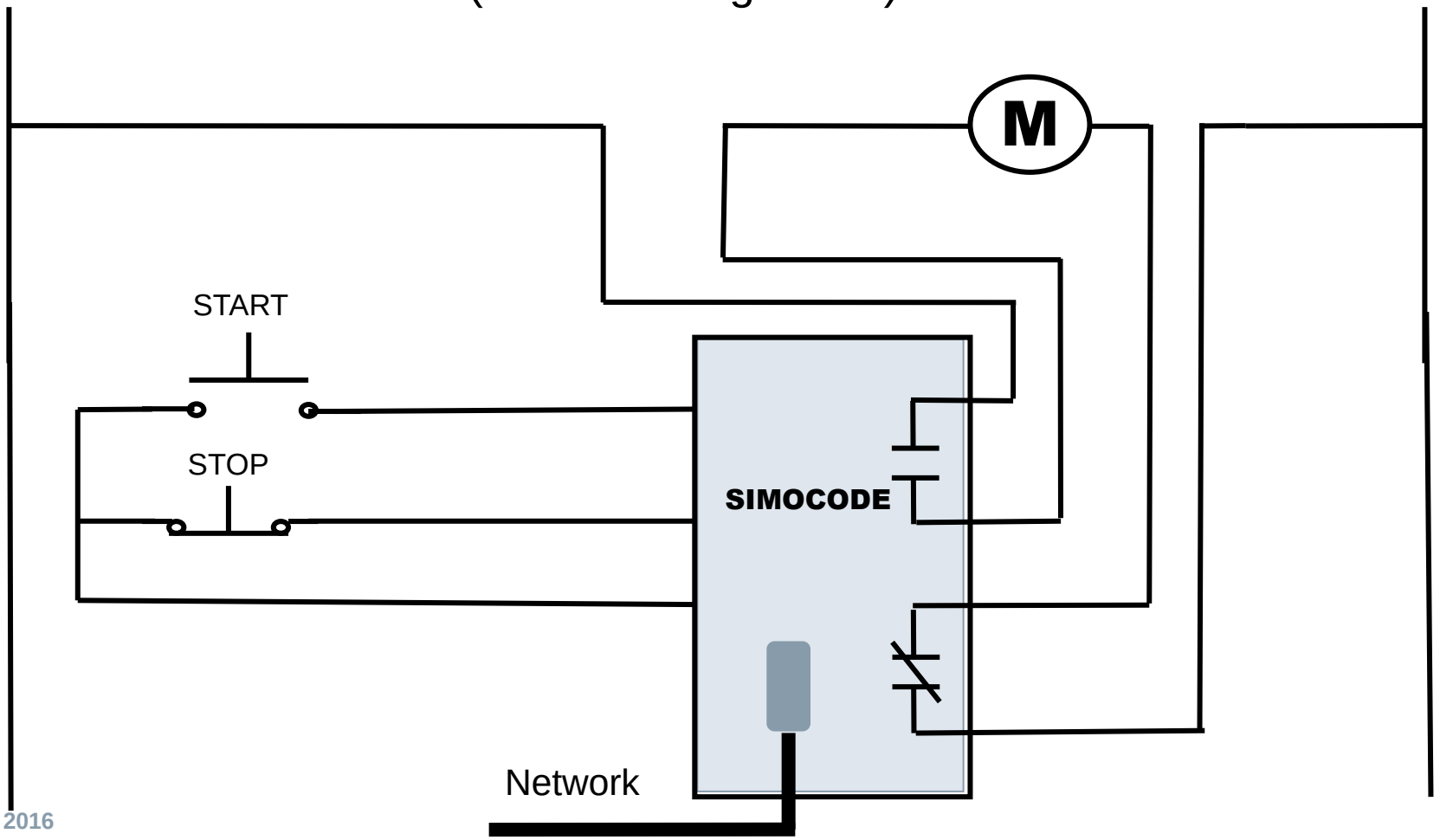
Theory Of Operation

SIEMENS

Starter with Communication
(Motor Management)



Additional Values

- Voltage/Power
- Digital I/O
- Analog I/O
- RTD
- Local Logic
- Motor Profiles

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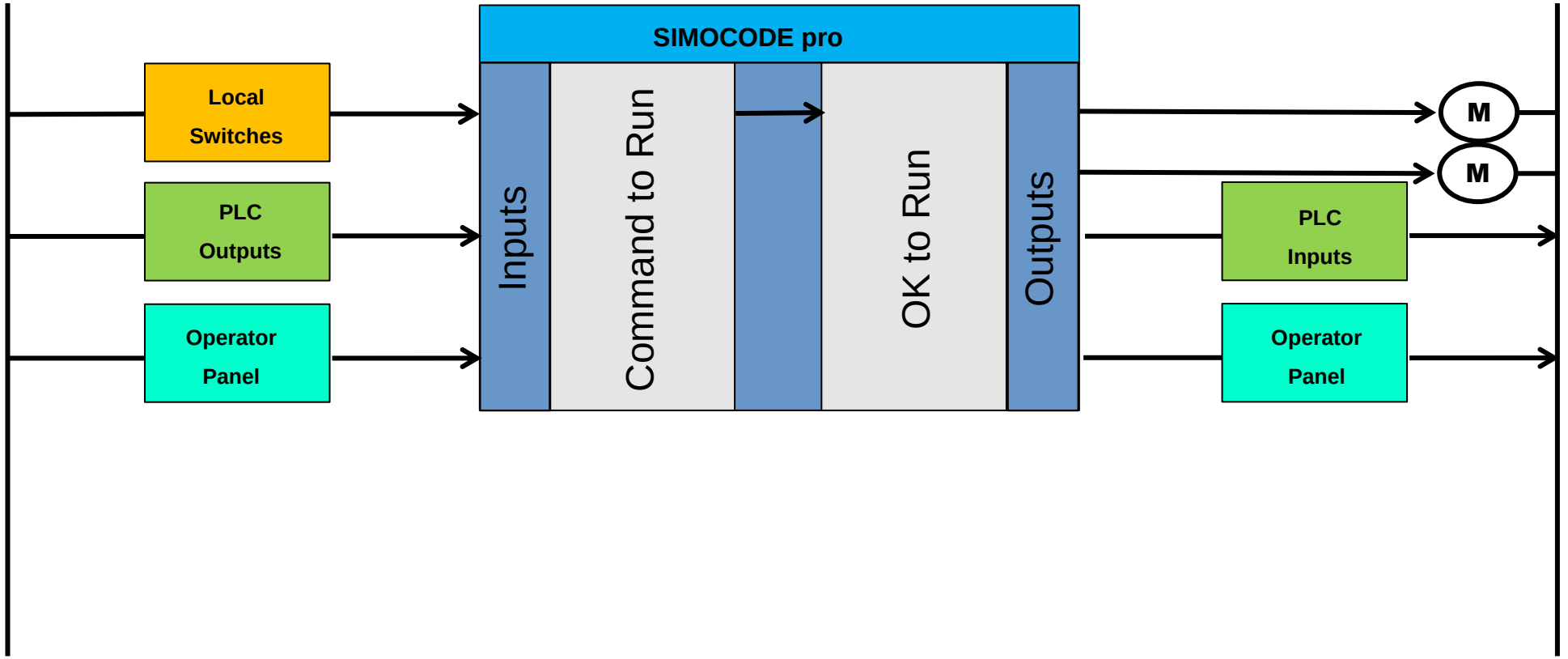
Starter with Communication (Motor Management)



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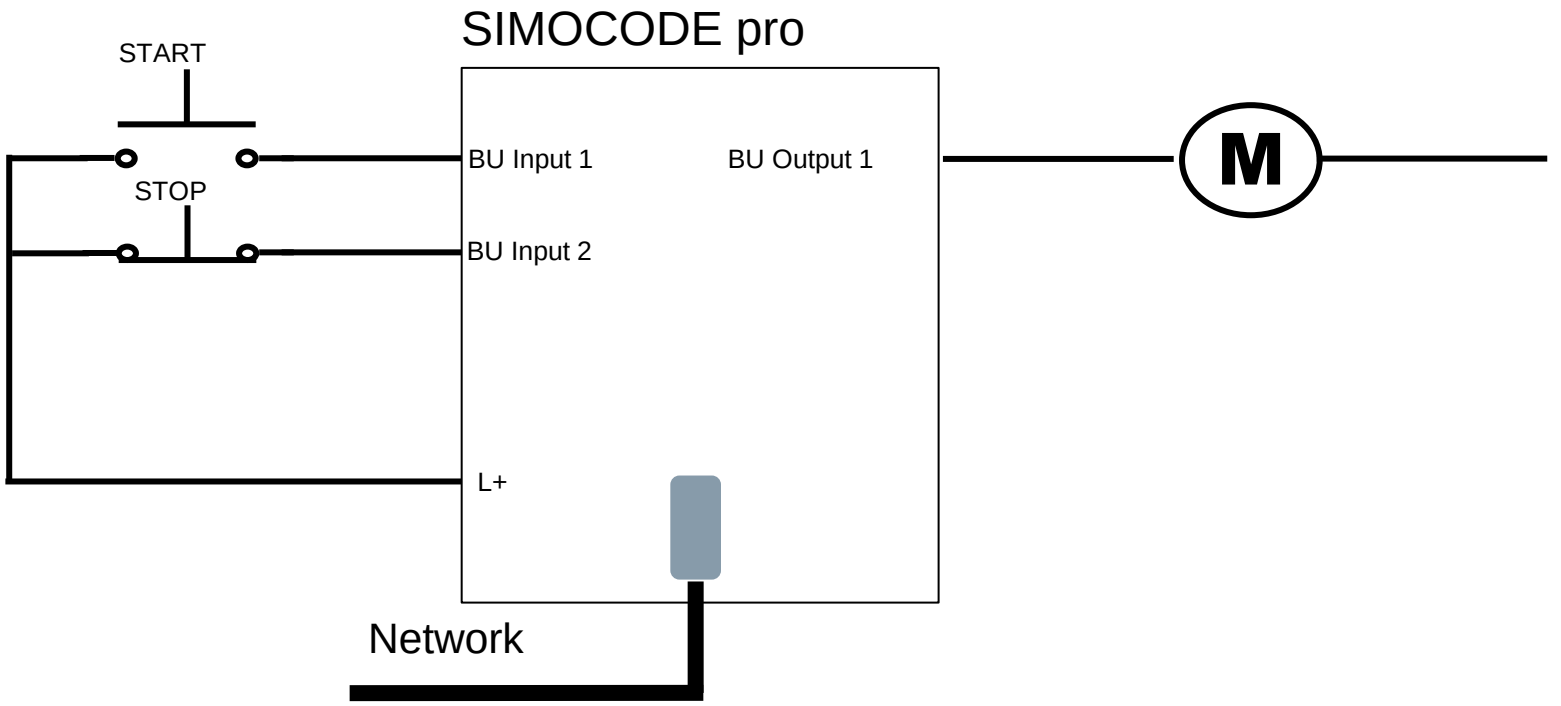
Lab # 5 (Direct Starter)



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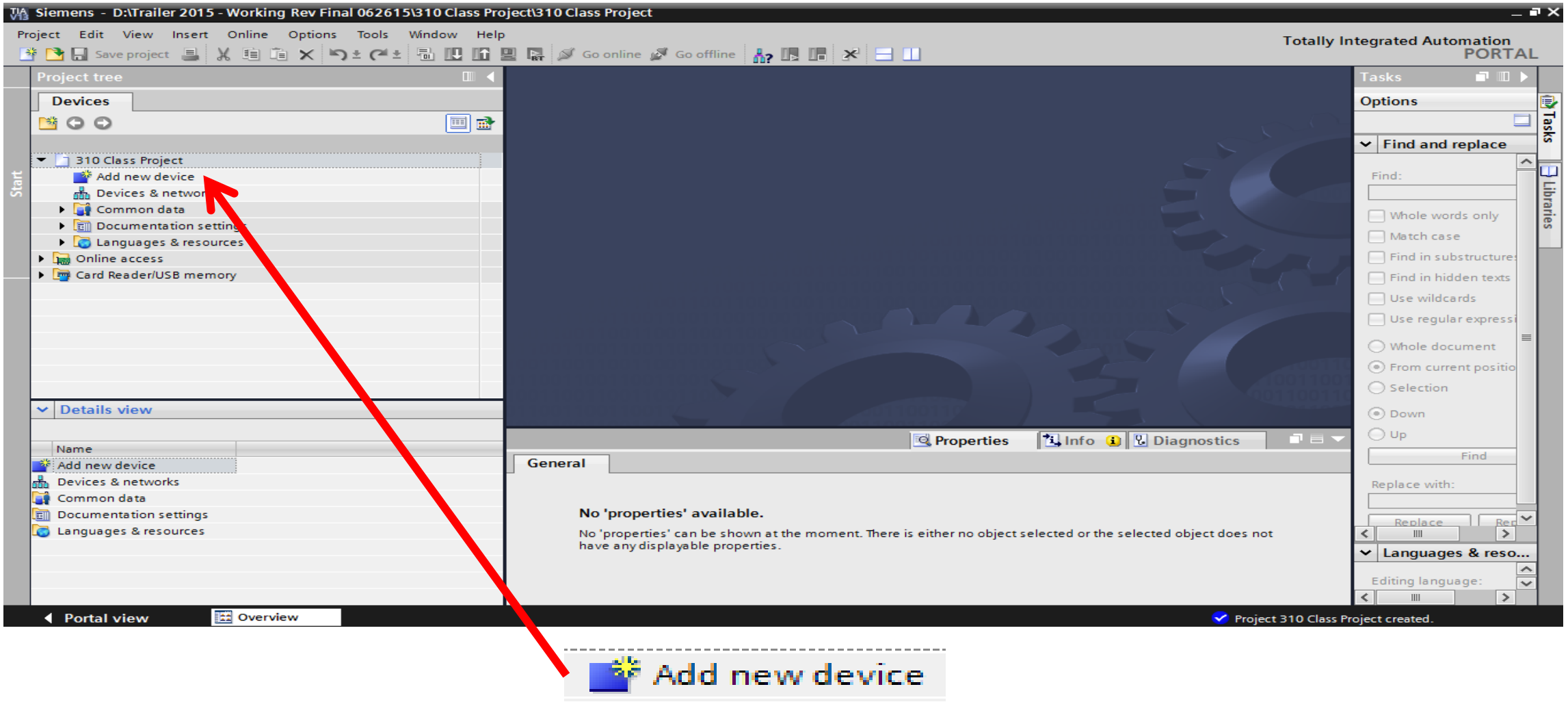
Add a New Device



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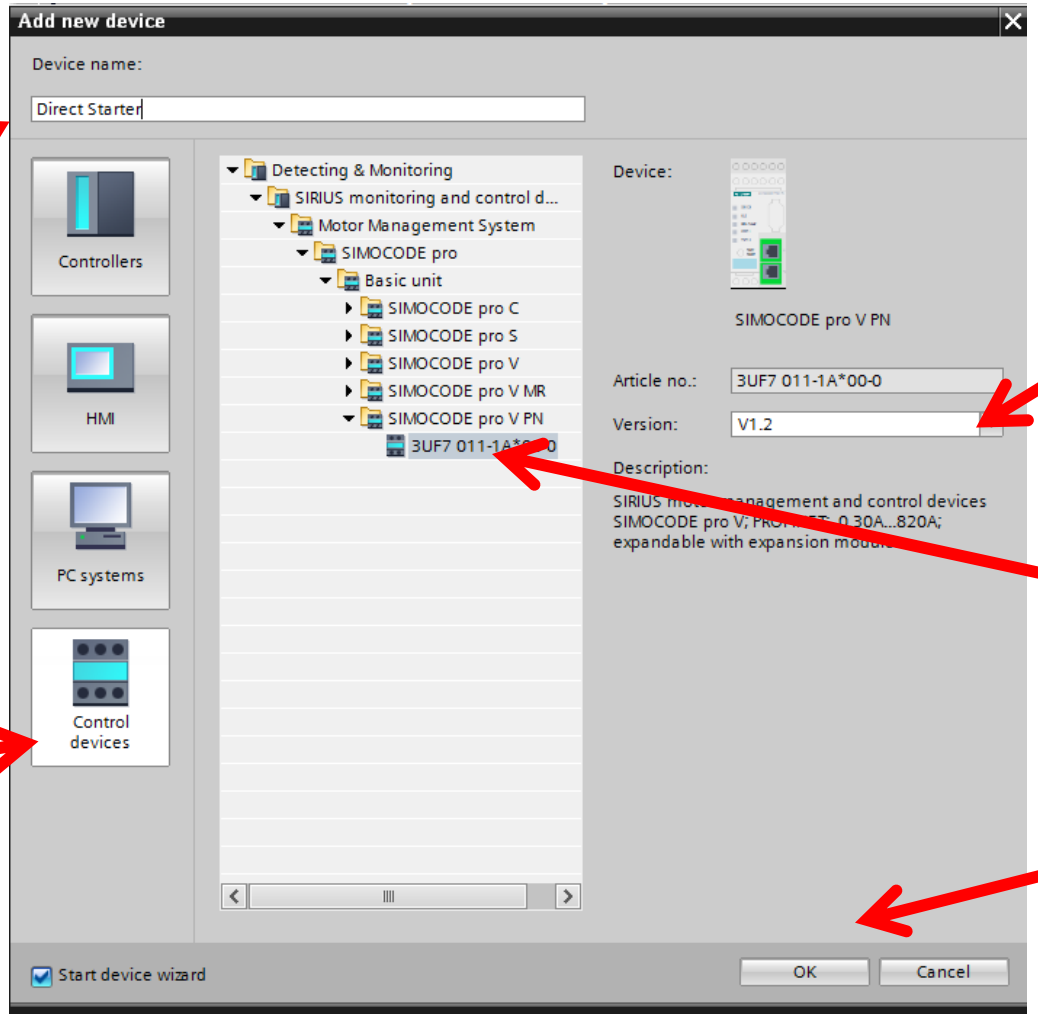
Step 1 - Select Base Unit and Version

SIEMENS



Step 4

Change name to “Direct Starter”

Step 3

Select Version

Step 2

Select SIMOCODE pro V PN

Step 1

Select Control Devices

Step 5

Select OK

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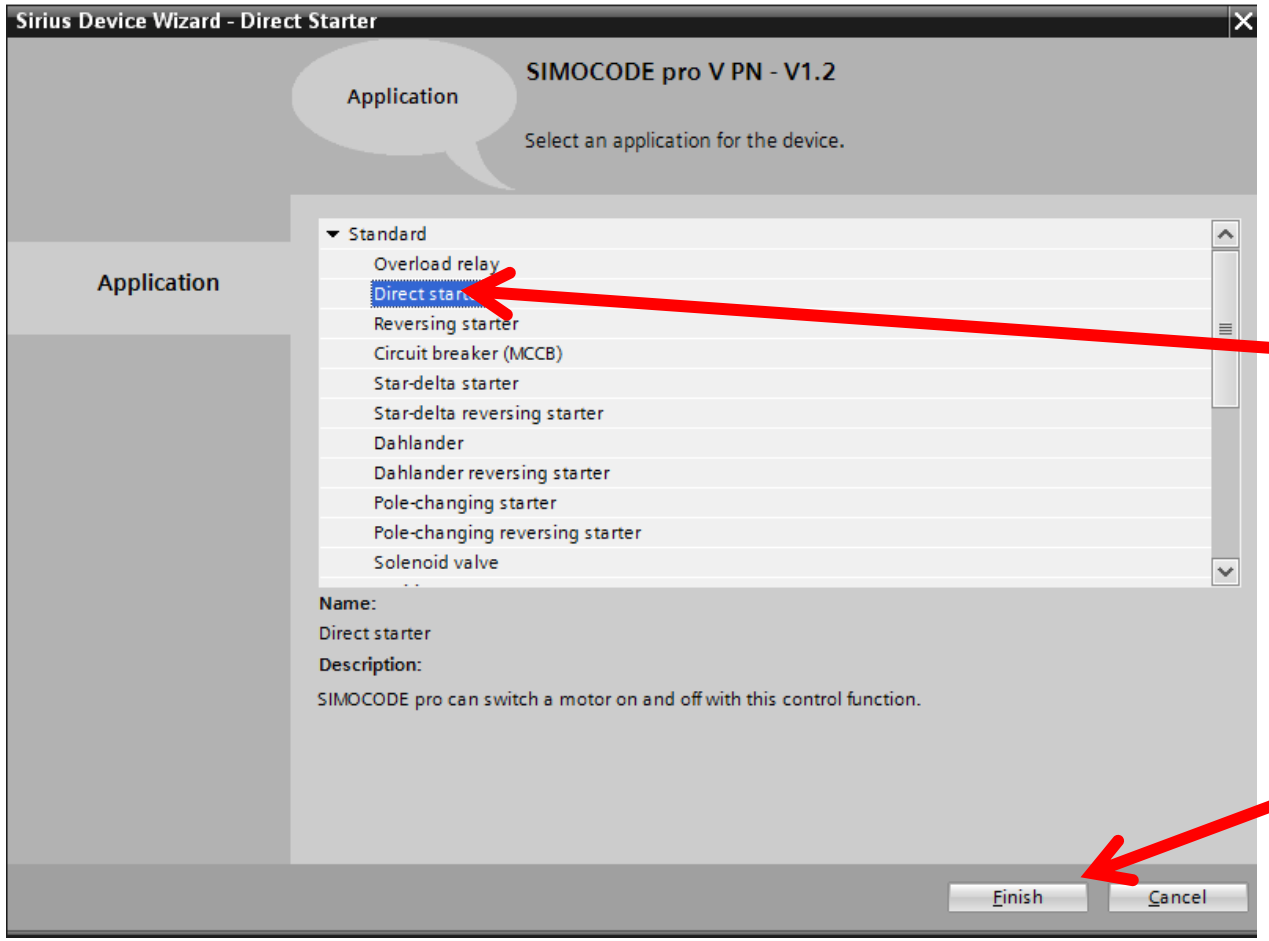
Step 2 - Select Profile (Direct Starter)



Step 1

Select “Direct Starter” Profile

Step 2

Select Finish

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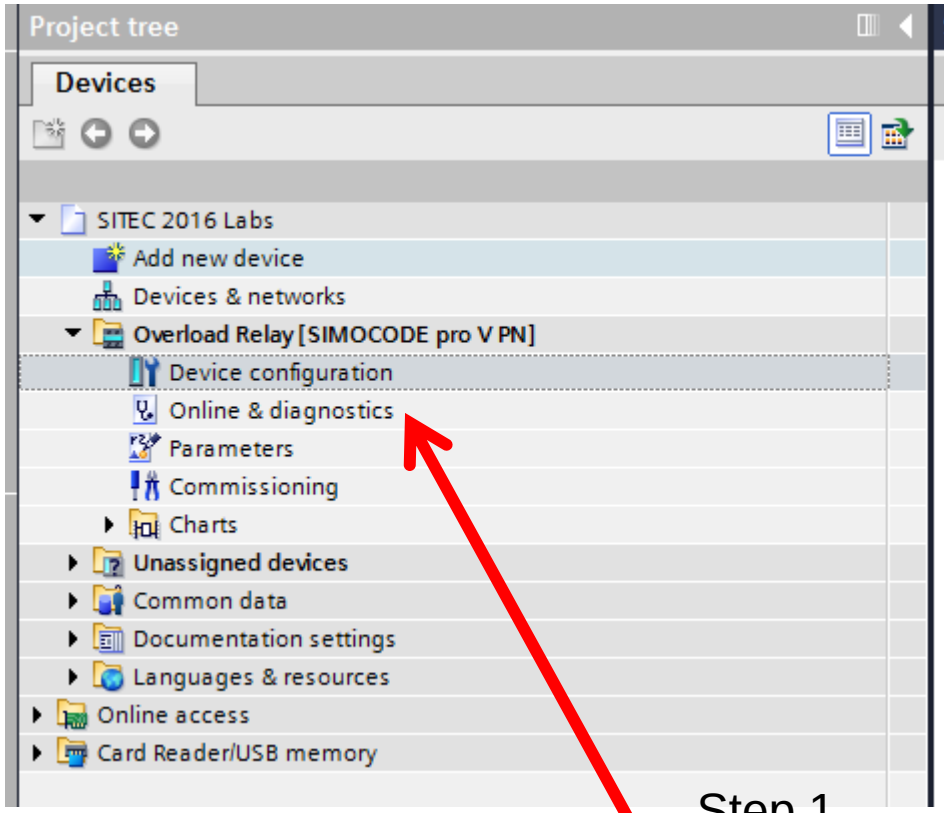
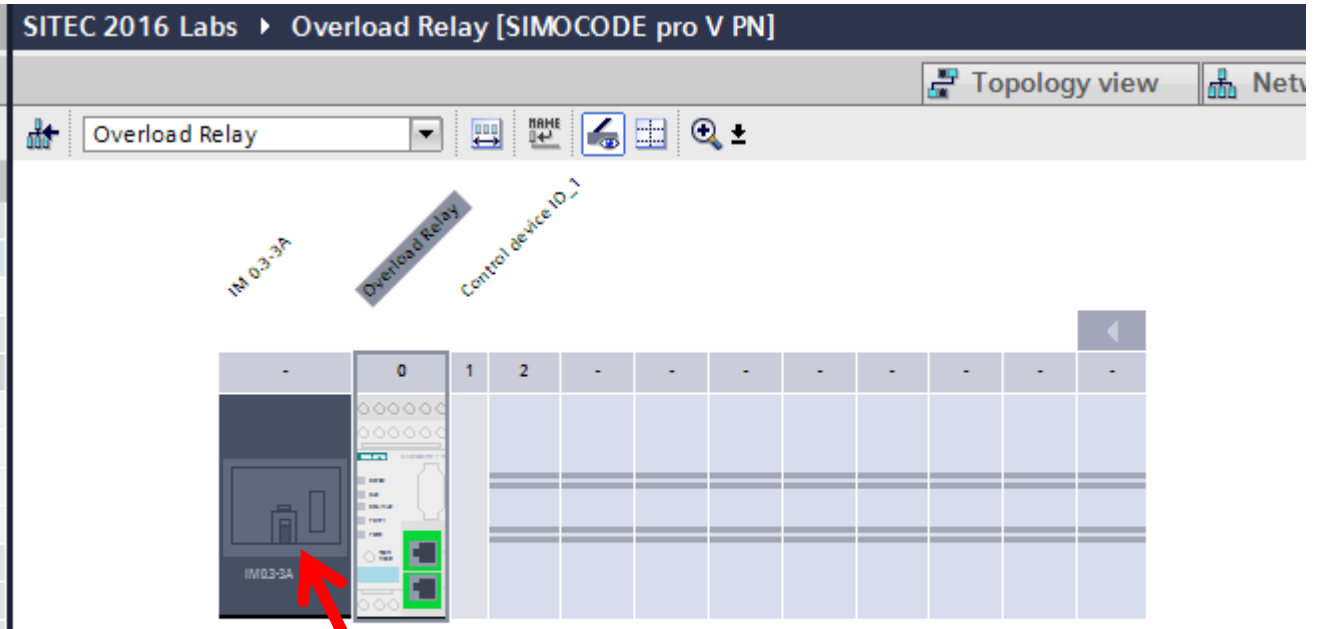
Step 3 – Match Existing Device





Step 1

Double Click on Device Configuration

Step 2

Right Click on Measuring Module and Select Change Device

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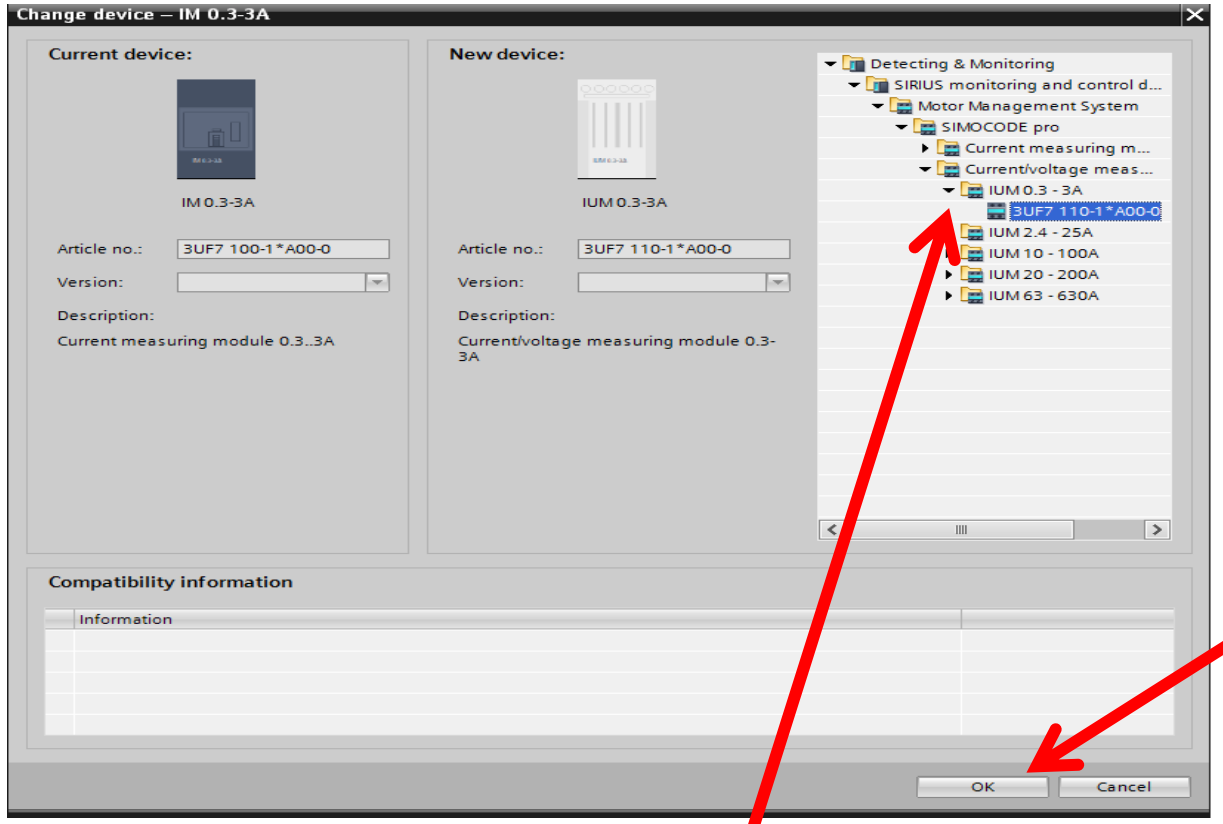
Step 3 – Match Existing Device



Step 2–

Select OK

Step 1 –

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

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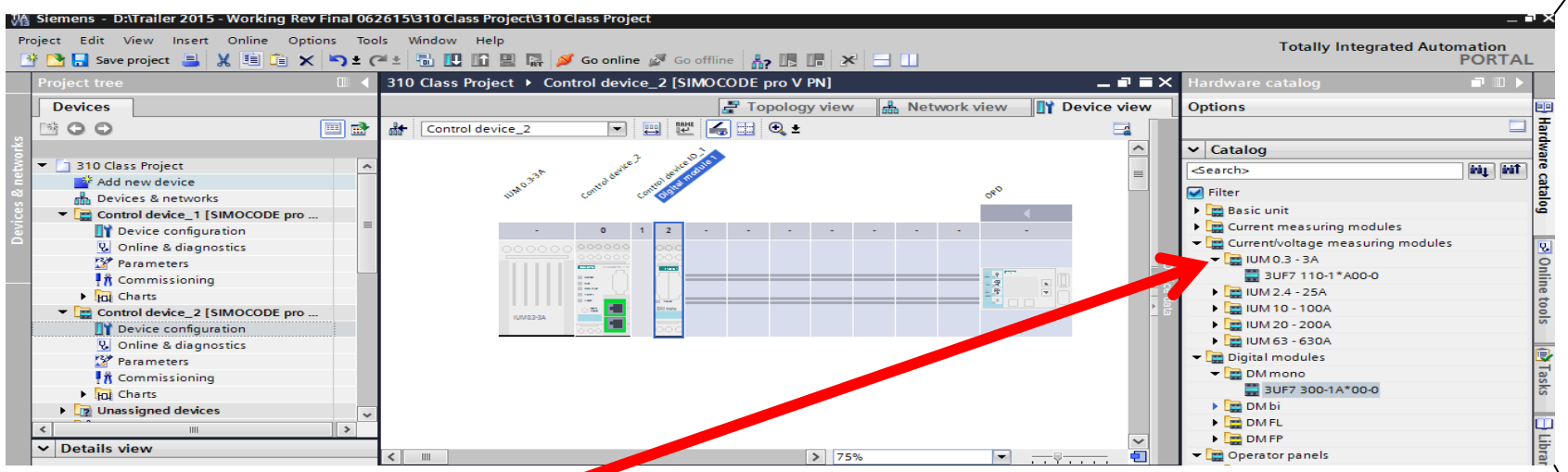
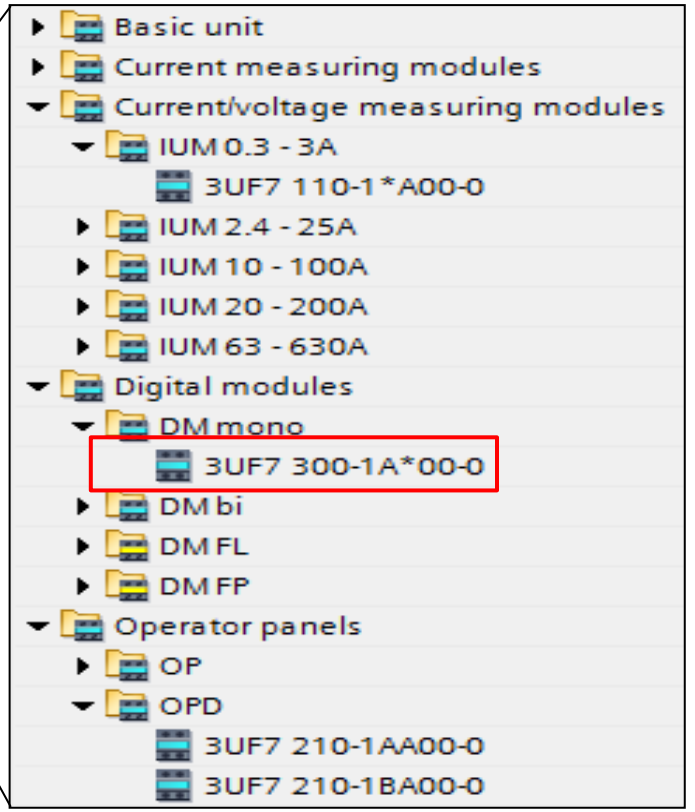
Step 3 – Match Existing Device





Step 1 –

Double Click “DM mono” to insert digital module into rack

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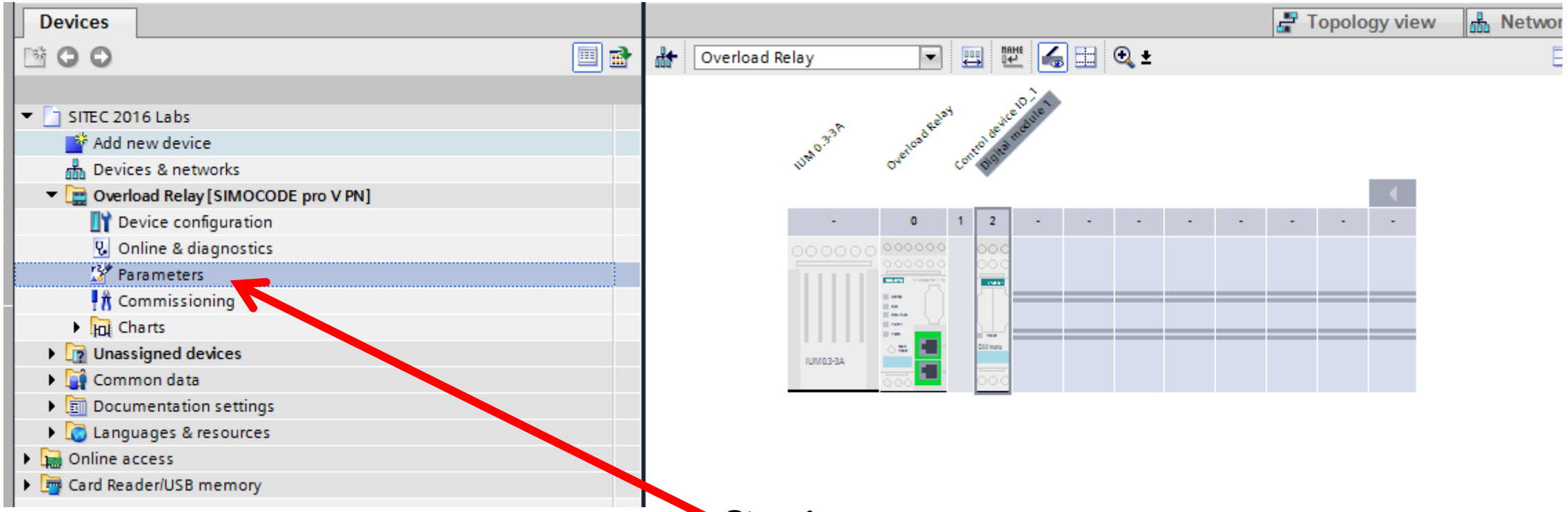
Step 4 – Select Network Address

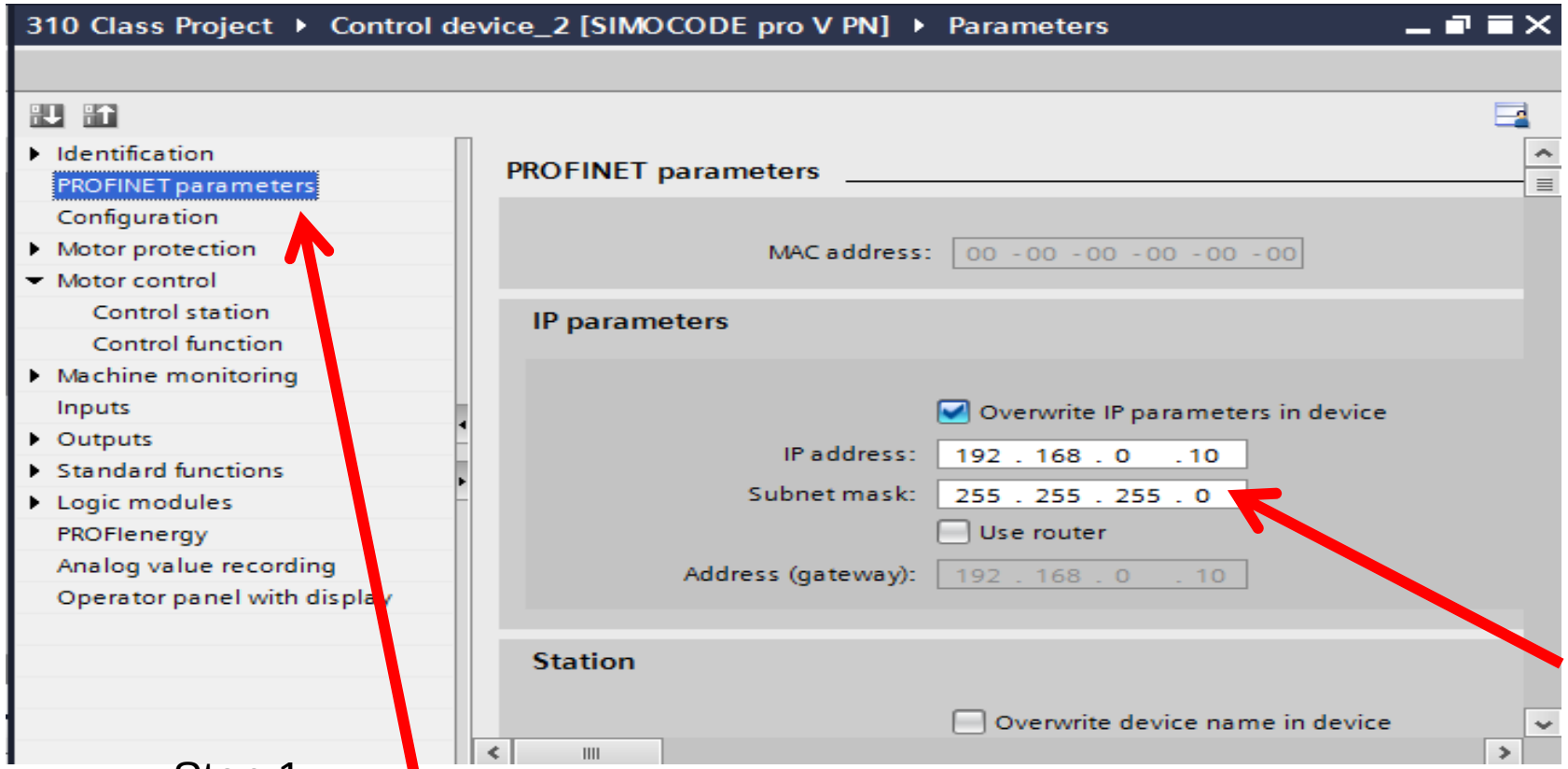


Step 1 –

Double Click Parameters

Unrestricted © Siemens 2016

Step 4 – Select Network Address

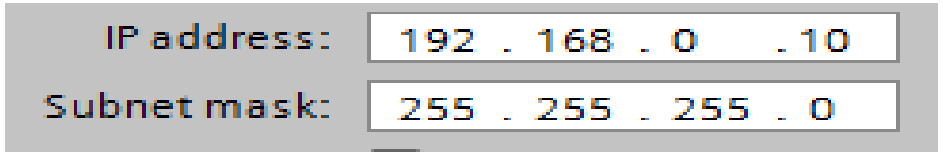


Step 1 –

Select “PROFINET parameters”

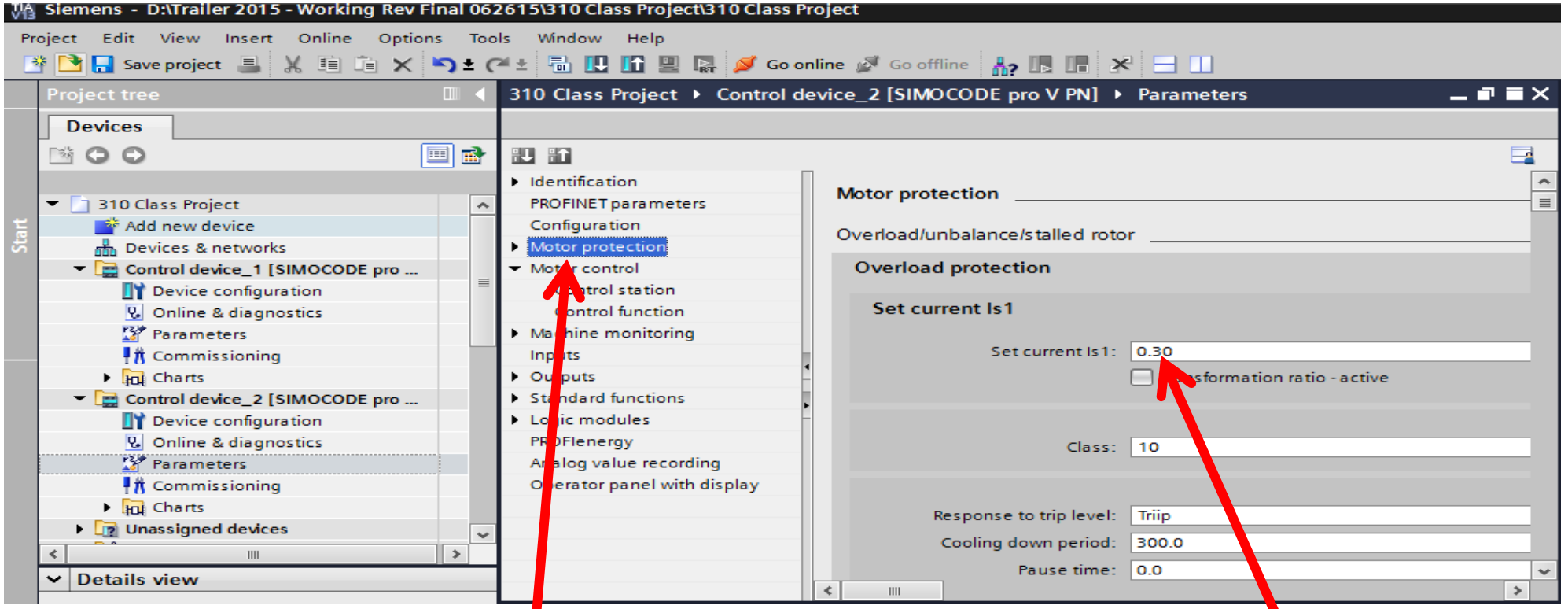
Step 2 –

Enter the PROFINET address below



Unrestricted © Siemens 2016

Step 5 – Select FLA



Step 1 –

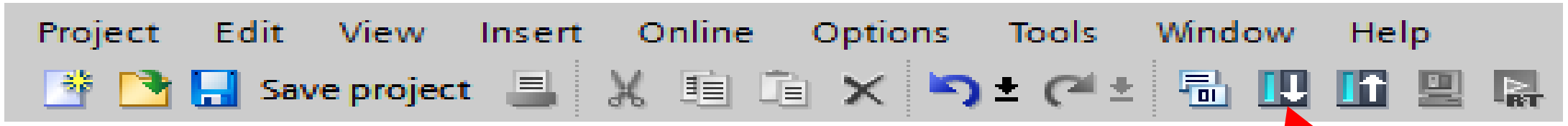
Select “Motor protection”

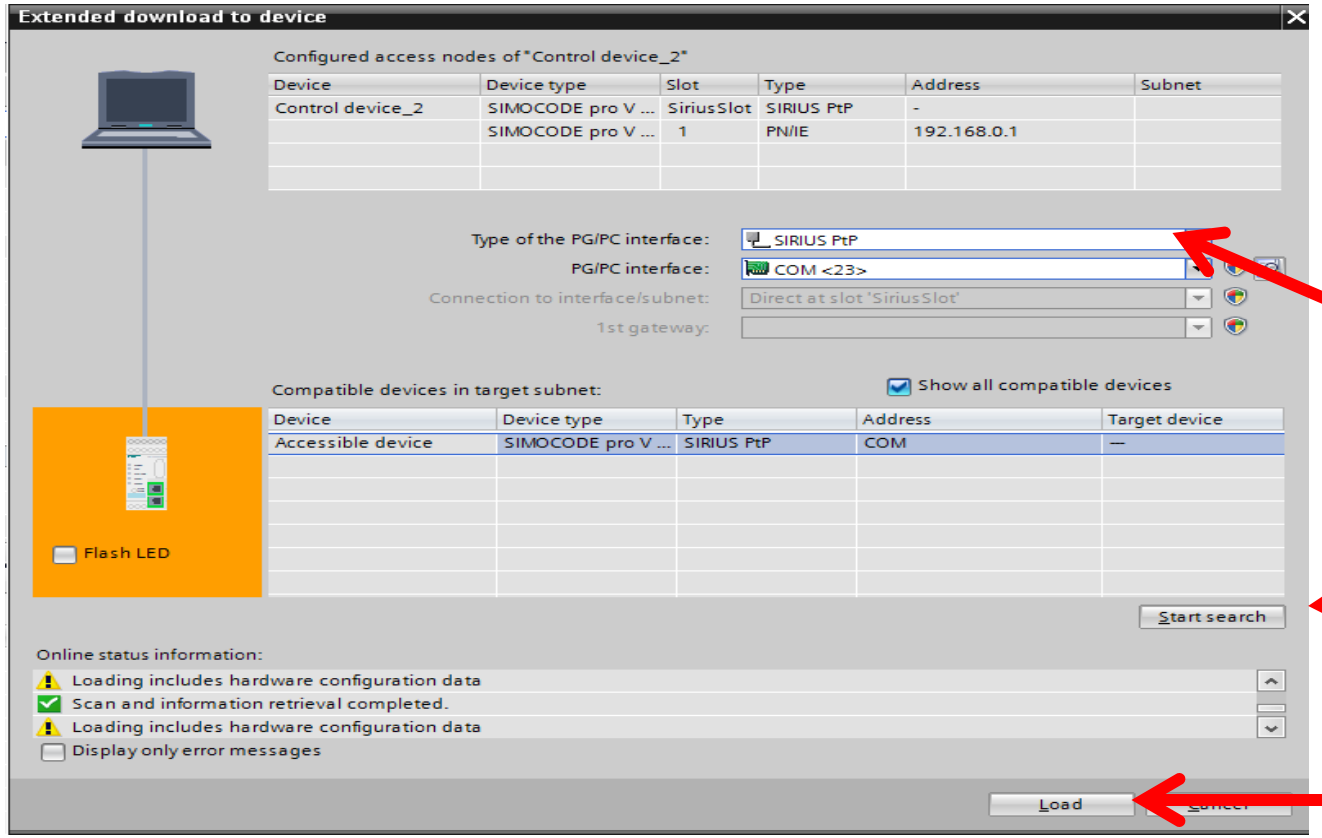
Step 2 –

The value 0.30 A is OK for the demo

Unrestricted © Siemens 2016

Download to Device

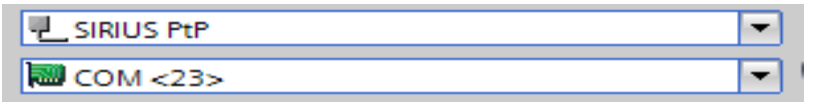




Step 1 –

Select “Load to Switching device”

Step 2 – Select “SIRIUS PtP”



Step 3 – Select “Start search”

Step 4 – Select “Load”

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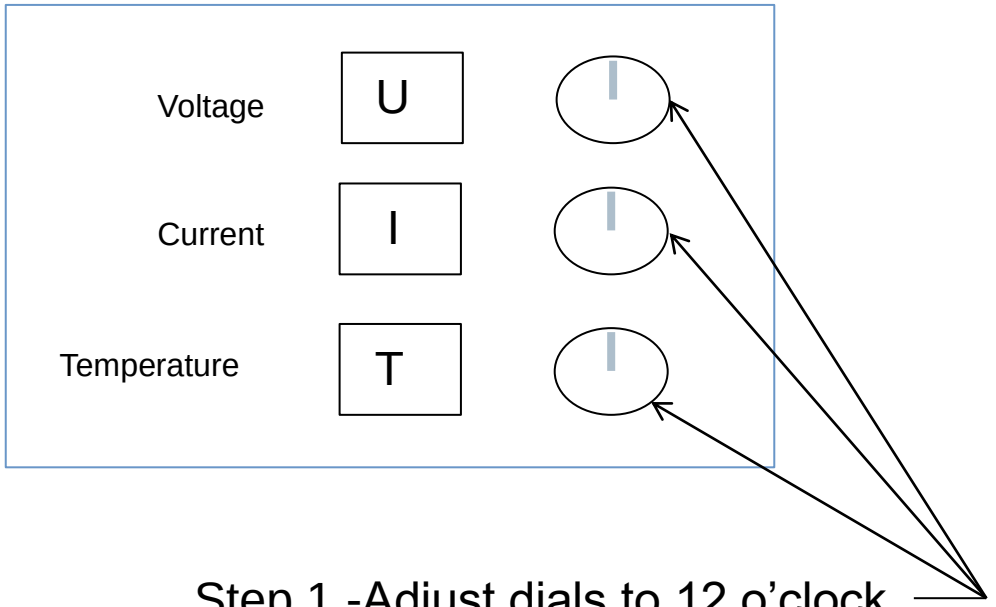
Test Direct Starter

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



Step 1 -Adjust dials to 12 o'clock

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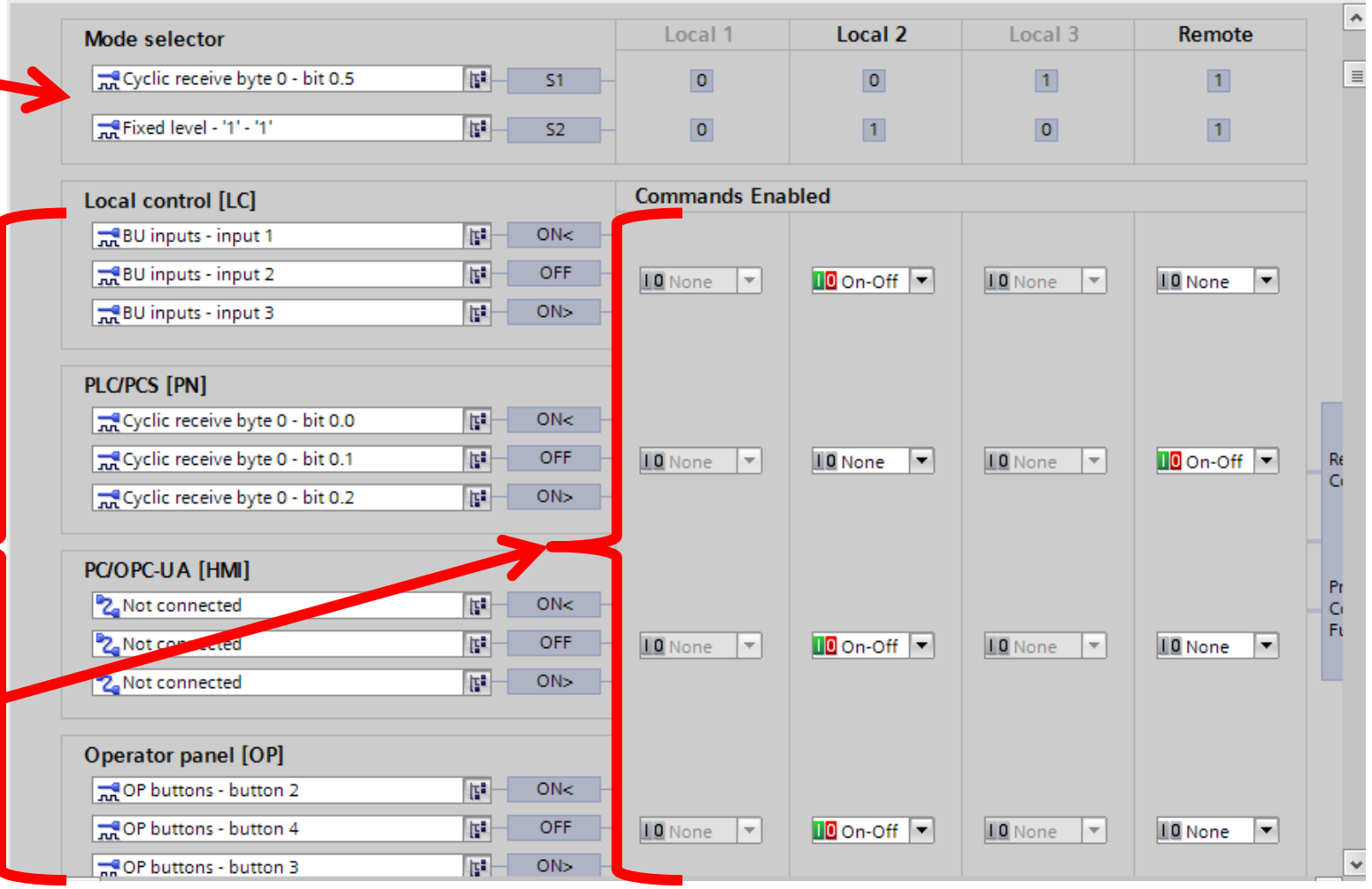
Motor Control (Control Station)

Selects local / remote mode

Commands to star/stop

Is the command active



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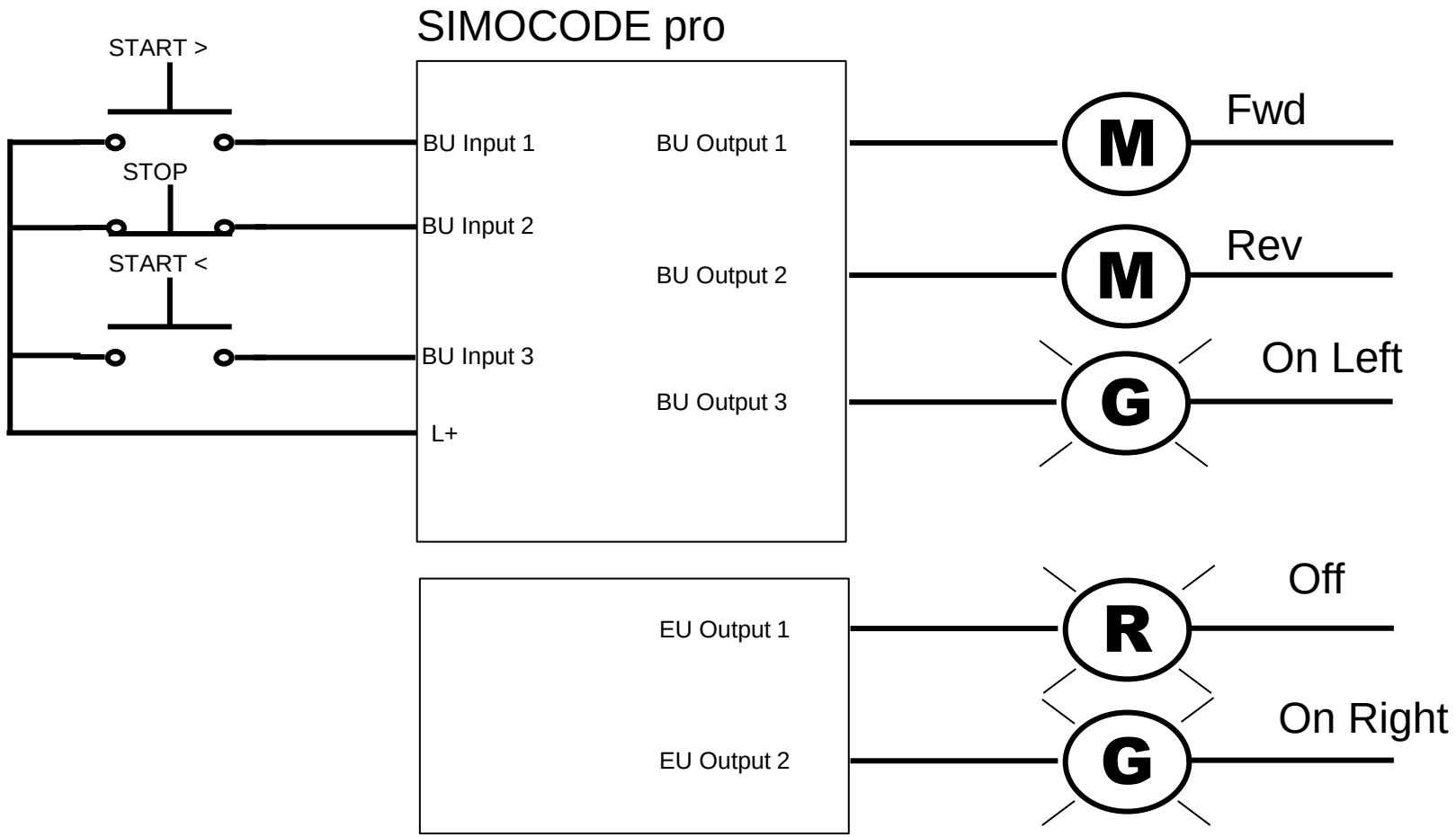
Reversing Starter with Lights

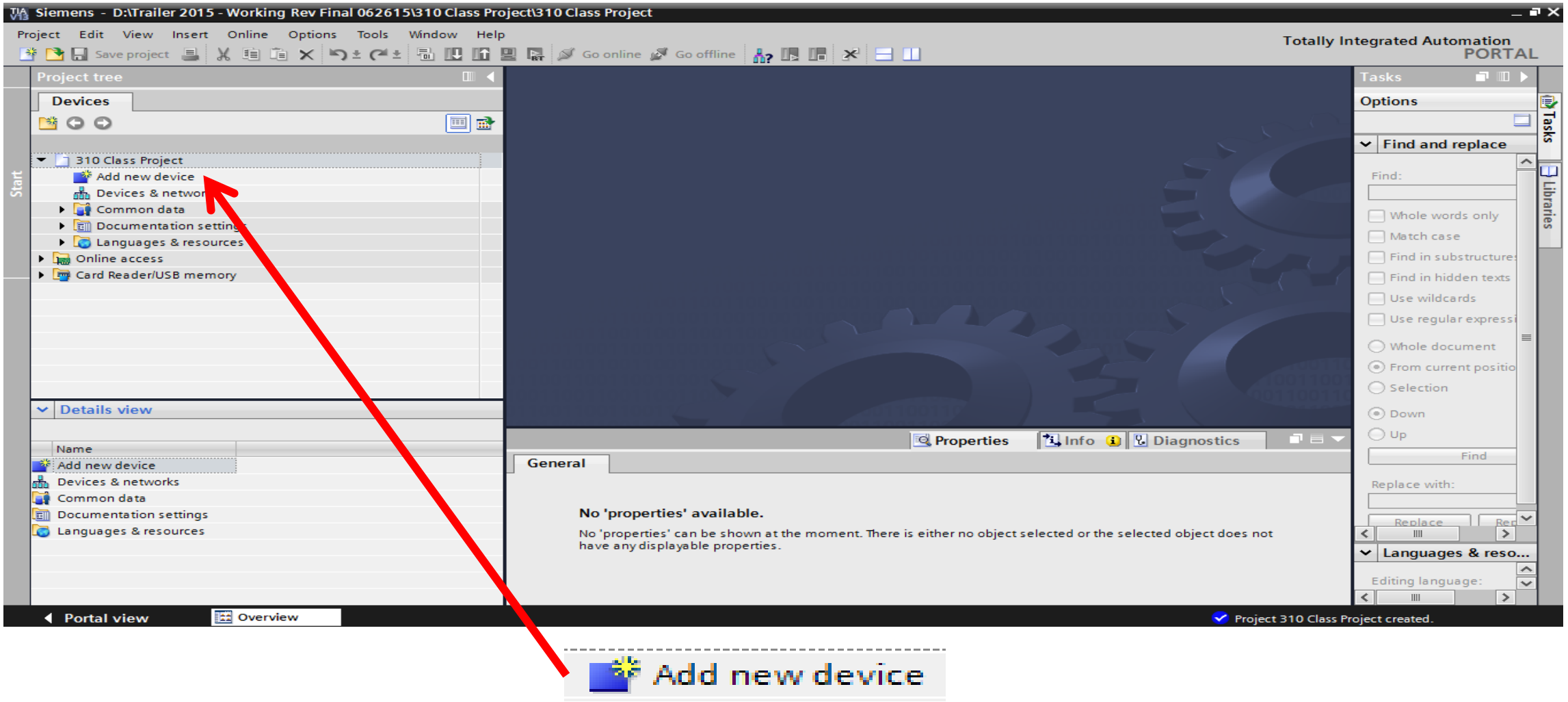
Unrestricted © Siemens 2016

Lab #6 (Reversing Starter with lights)



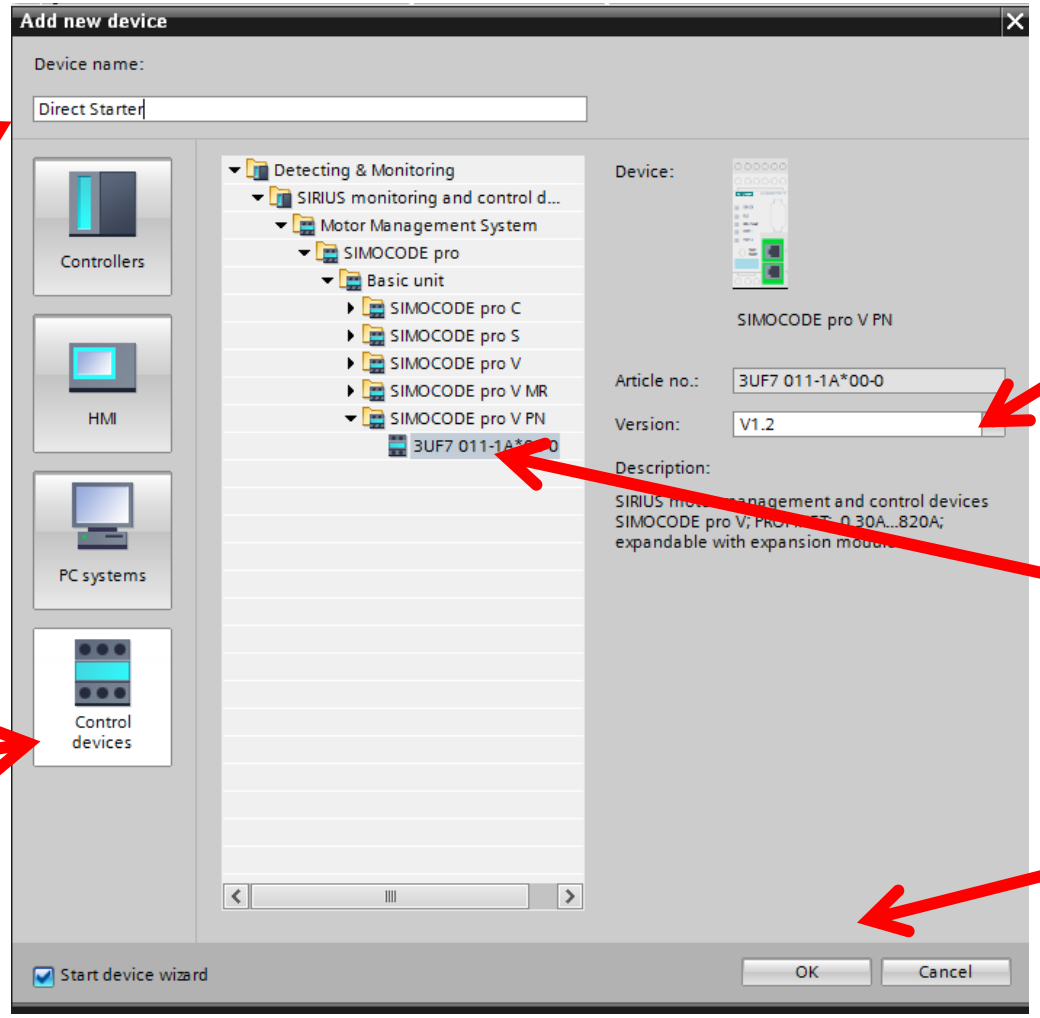
Unrestricted © Siemens 2016

Add a New Device



Unrestricted © Siemens 2016

Step 1 - Select Base Unit and Version



Step 4

Change name to “Reversing Starter”

Step 1

Select Control Devices

Step 3

Select Version

Step 2

Select SIMOCODE pro V PN

Step 5

Select OK

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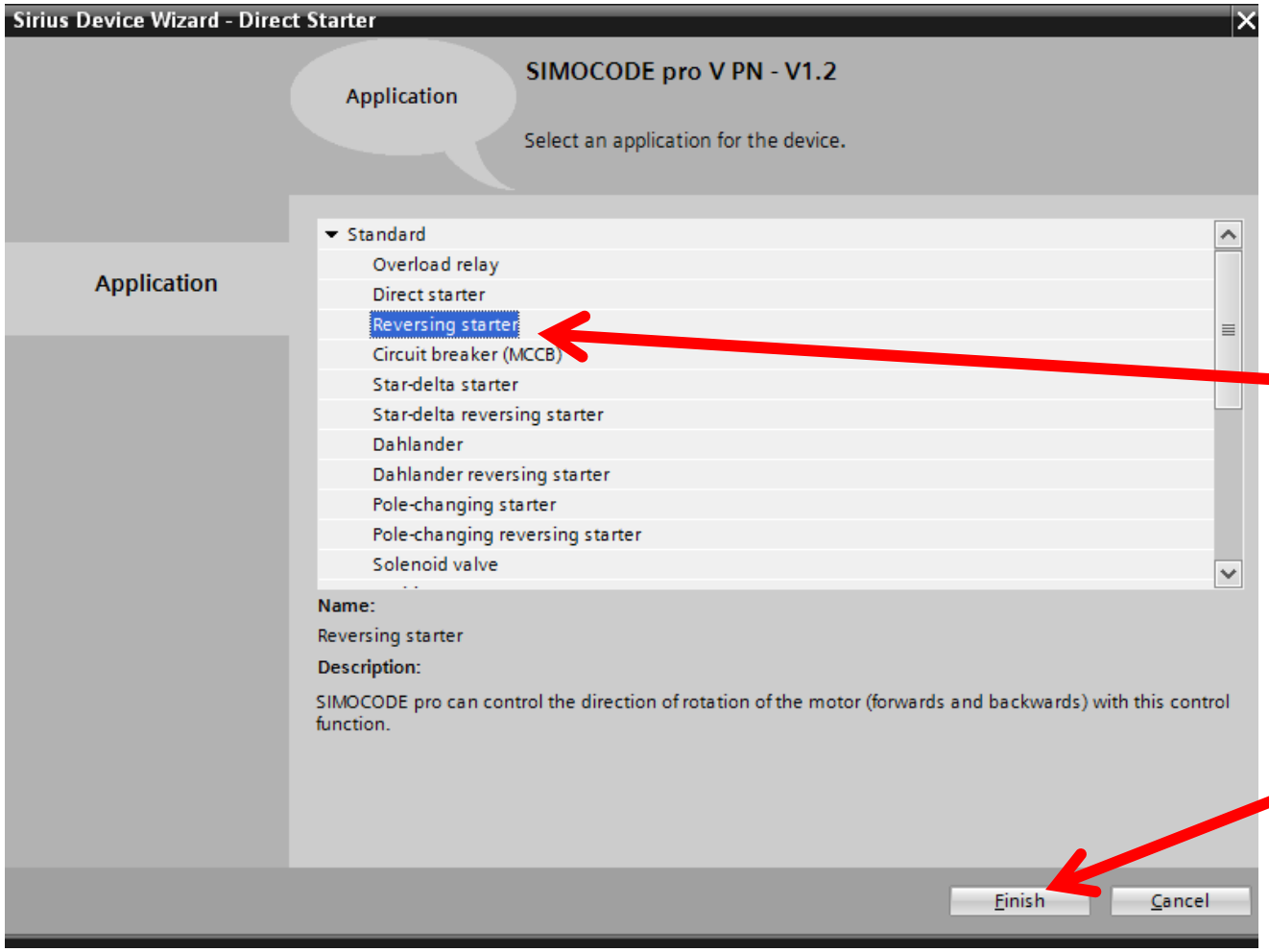
Step 2 - Select Profile (Reversing Starter)



Step 1

Select “Reversing Starter” Profile

Step 2

Select Finish

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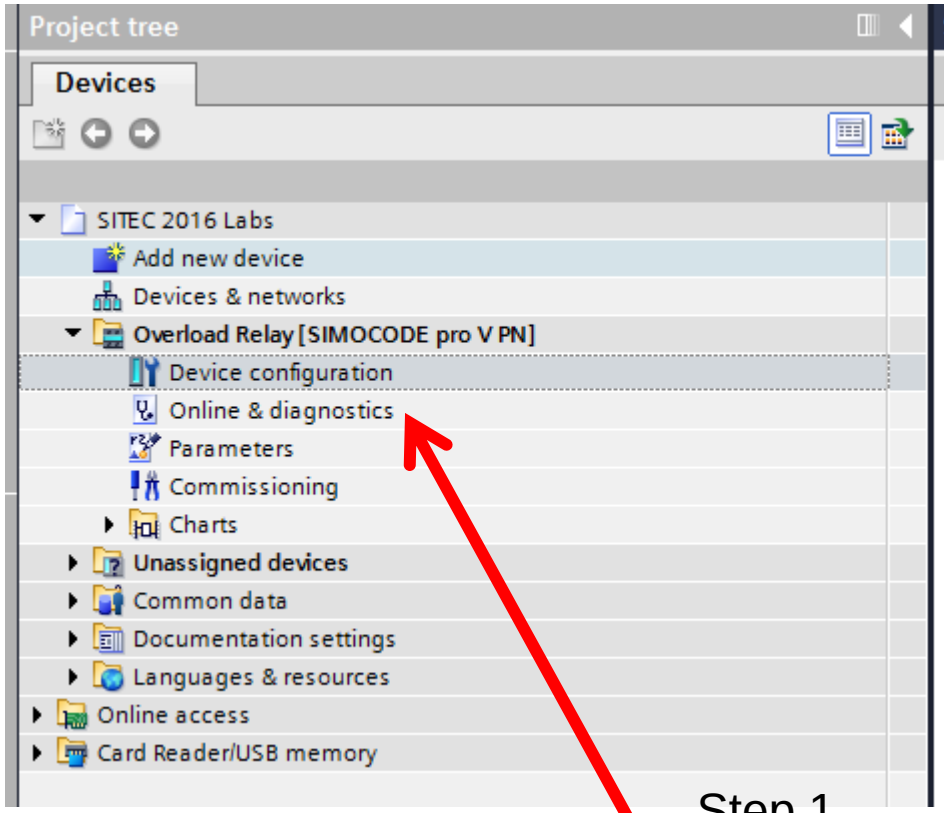
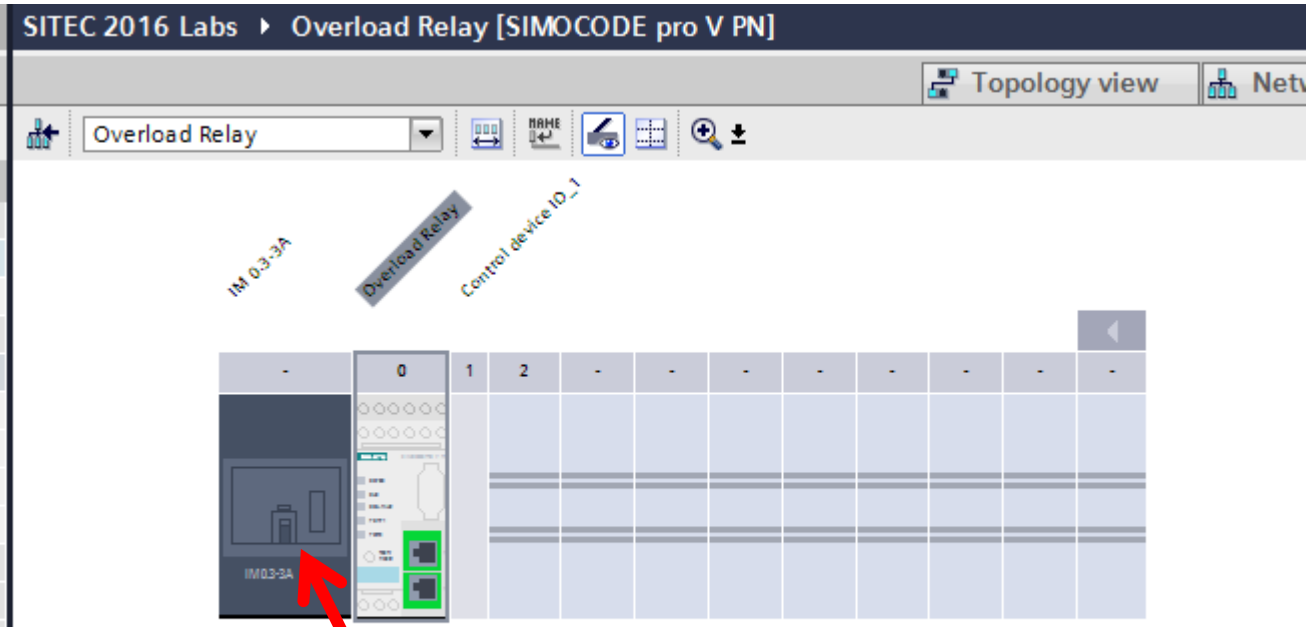
Step 3 – Match Existing Device





Step 1

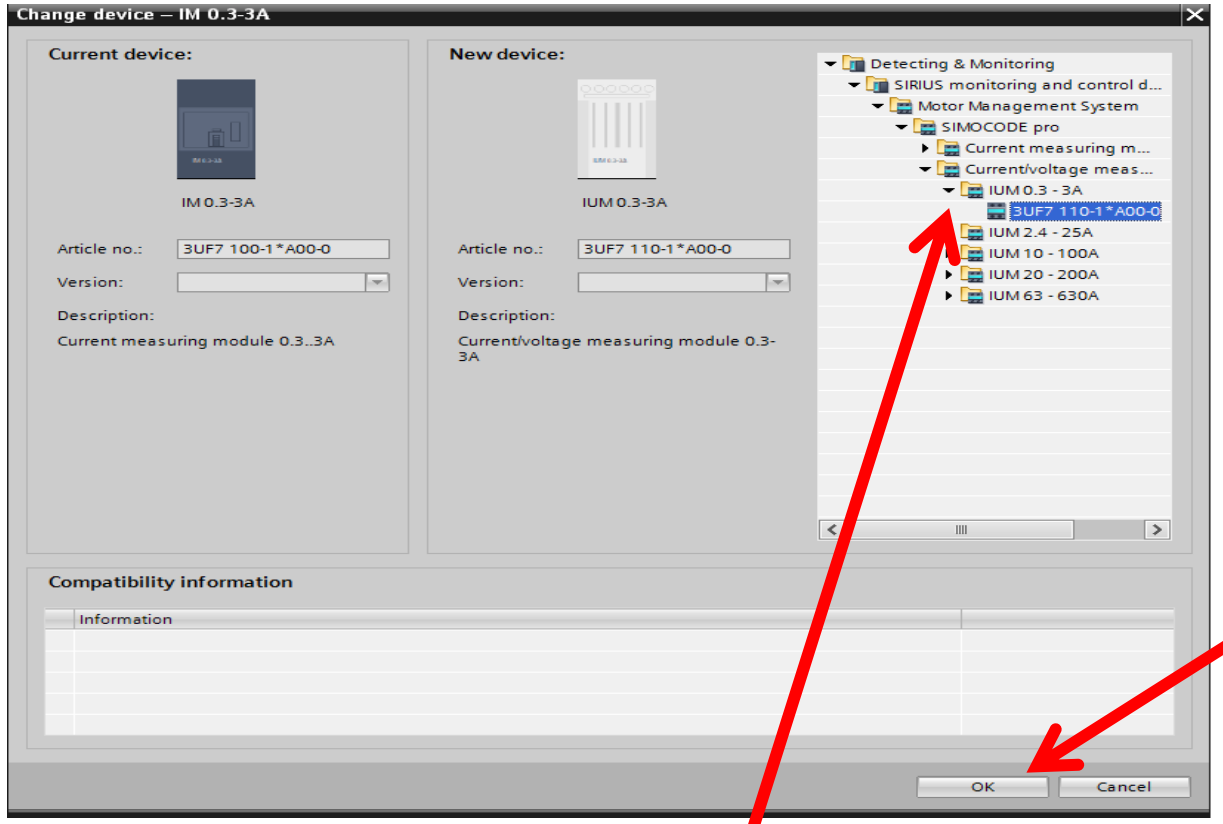
Double Click on Device Configuration

Step 2

Right Click on Measuring Module and Select Change Device

Unrestricted © Siemens 2016

Step 3 – Match Existing Device



Step 2–

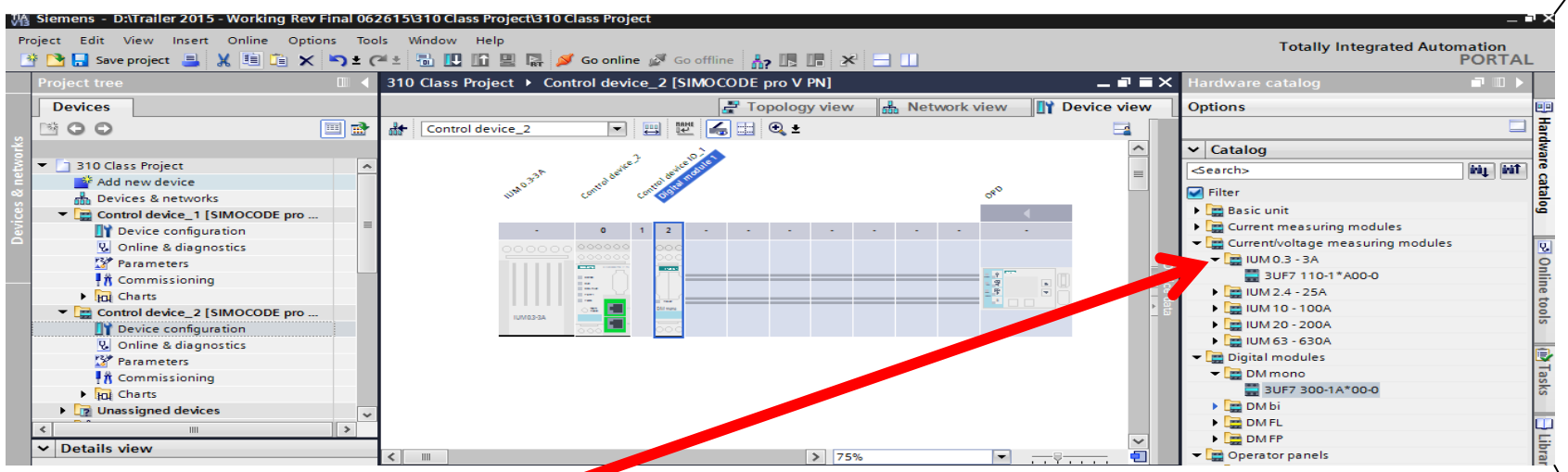
Select OK

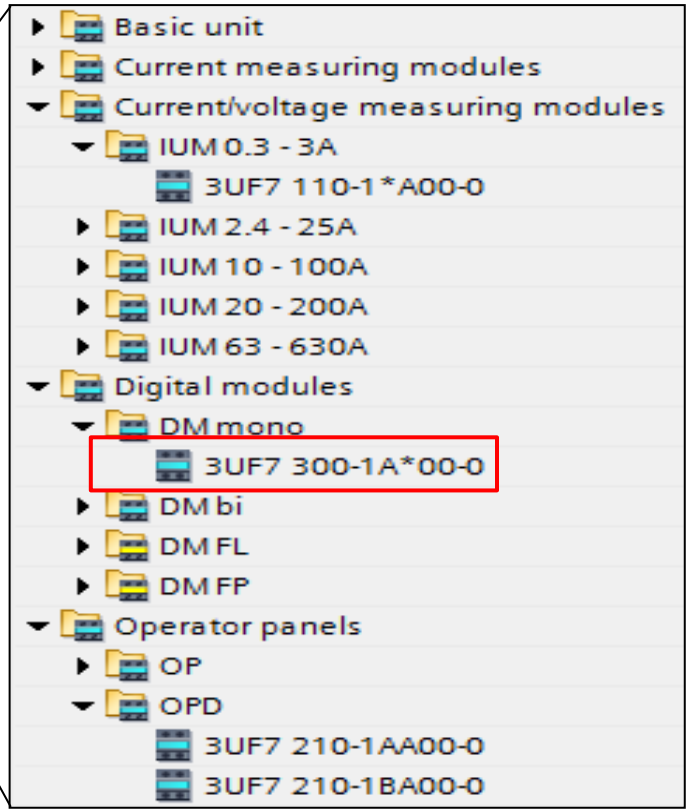
Step 1 –

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

Unrestricted © Siemens 2016

Step 3 – Match Existing Device



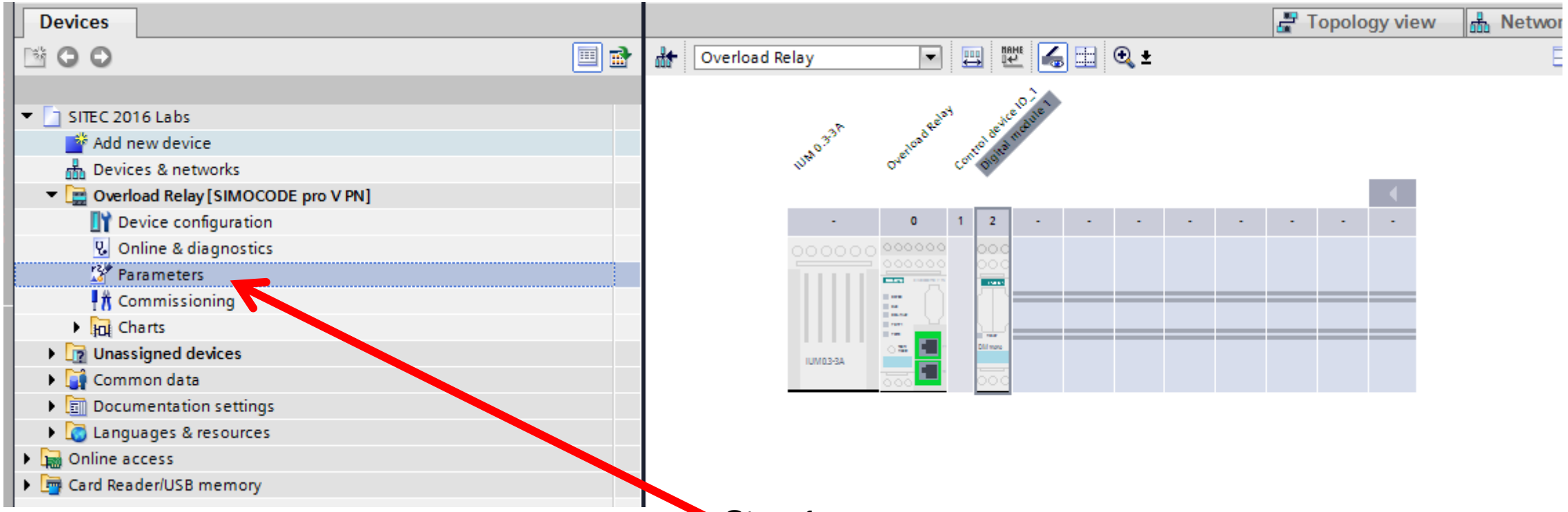


Step 1 –

Double Click “DM mono” to insert digital module into rack

Unrestricted © Siemens 2016

Step 4 – Select Network Address

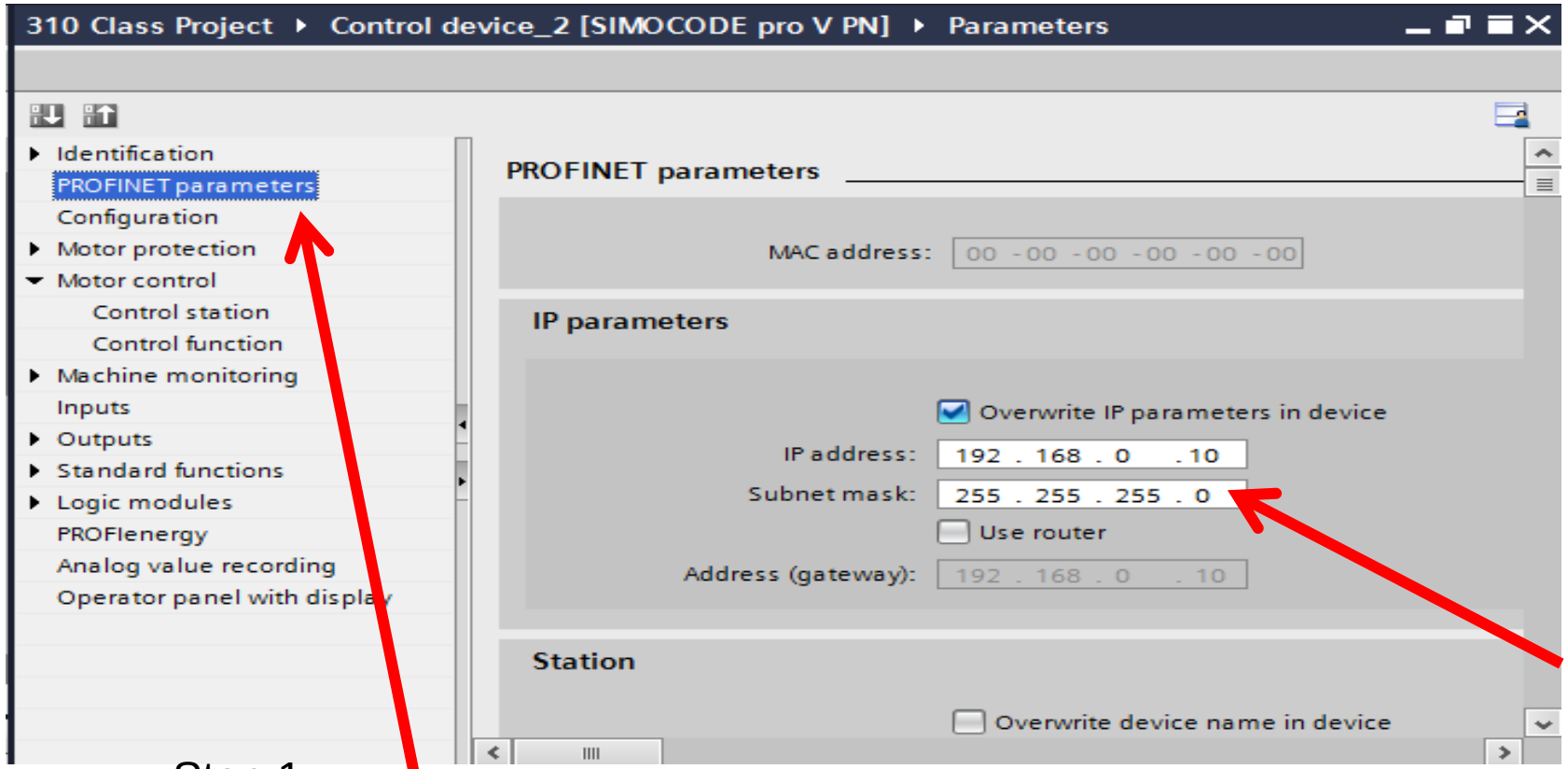


Step 1 –

Double Click Parameters

Unrestricted © Siemens 2016

Step 4 – Select Network Address

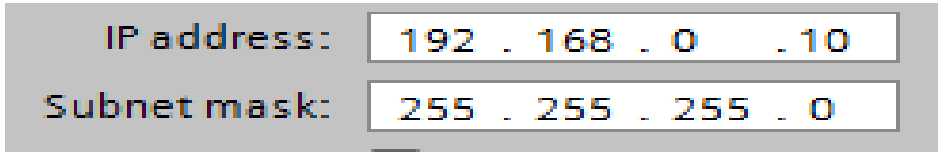


Step 1 –

Select “PROFINET parameters”

Step 2 –

Enter the PROFINET address below



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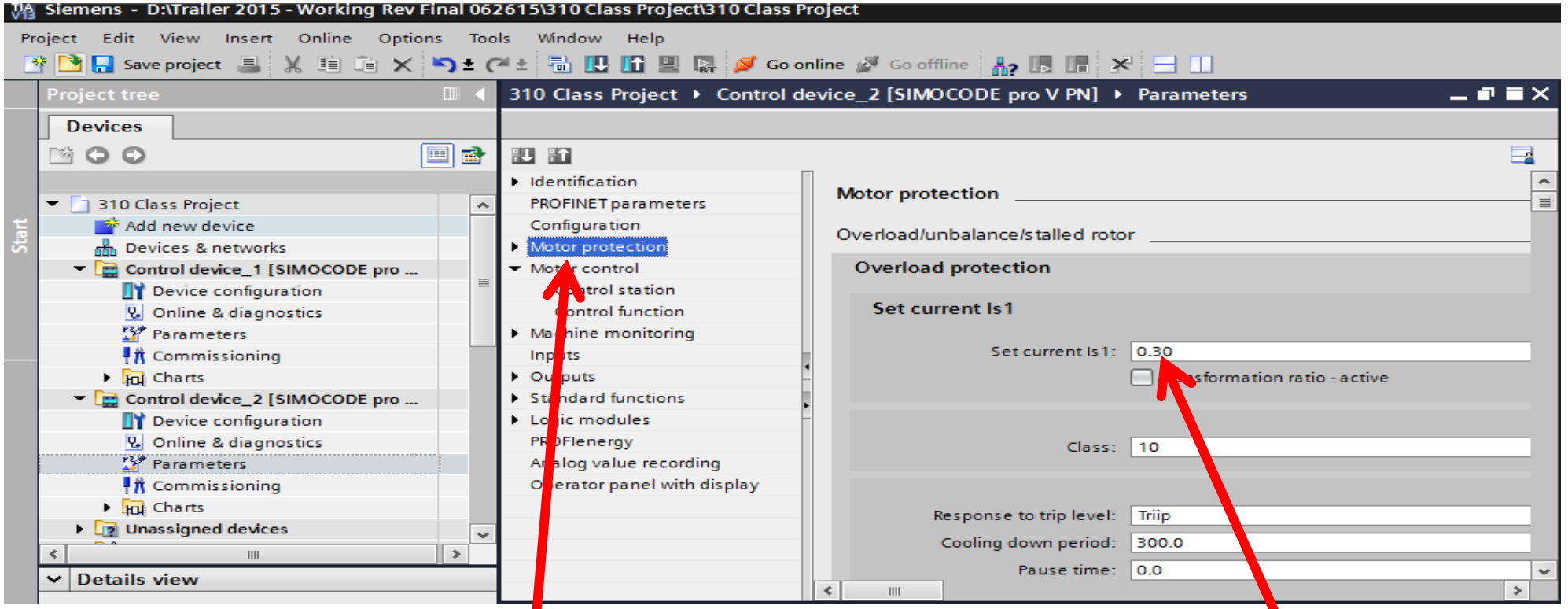
Step 5 – Select FLA



Step 1 –

Select “Motor protection”

Step 2 –

The value 0.30 A is OK for the demo

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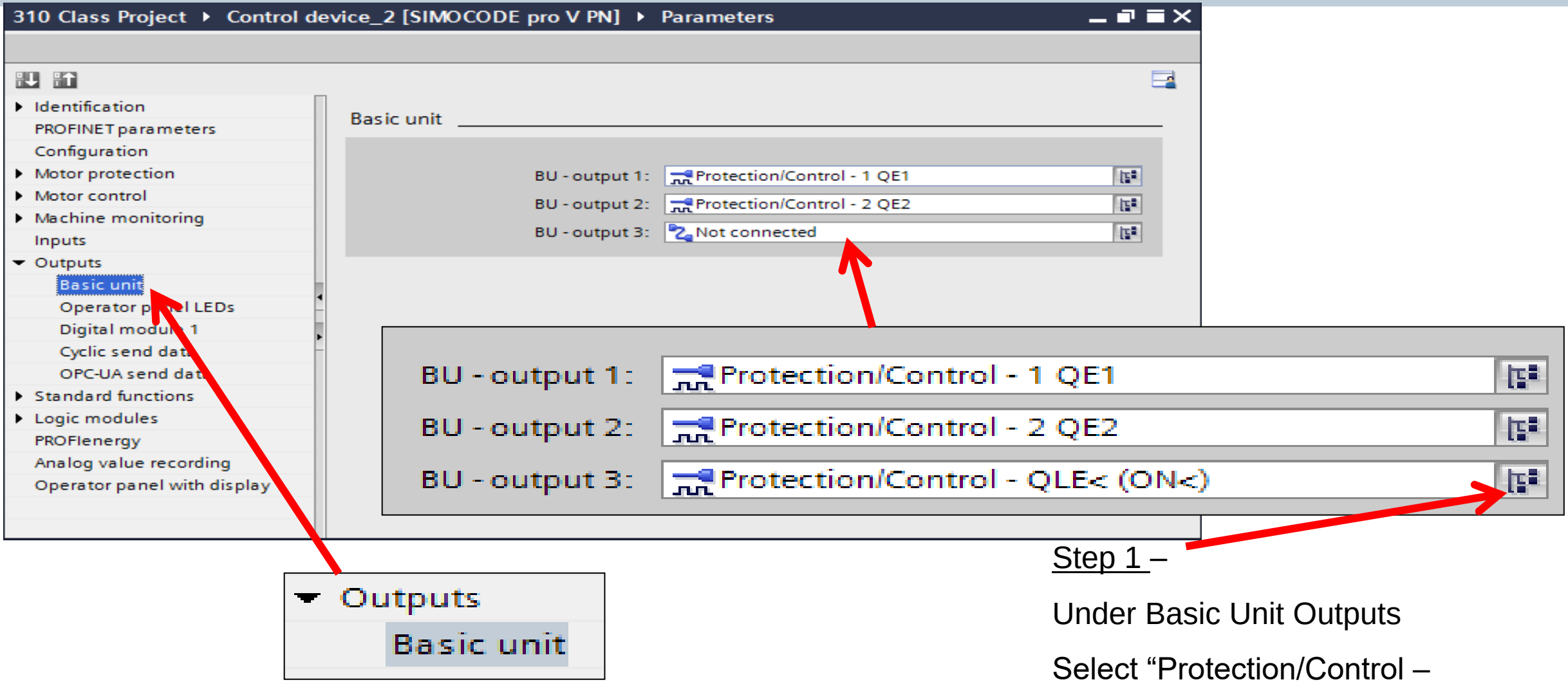
Select Outputs on Base Unit



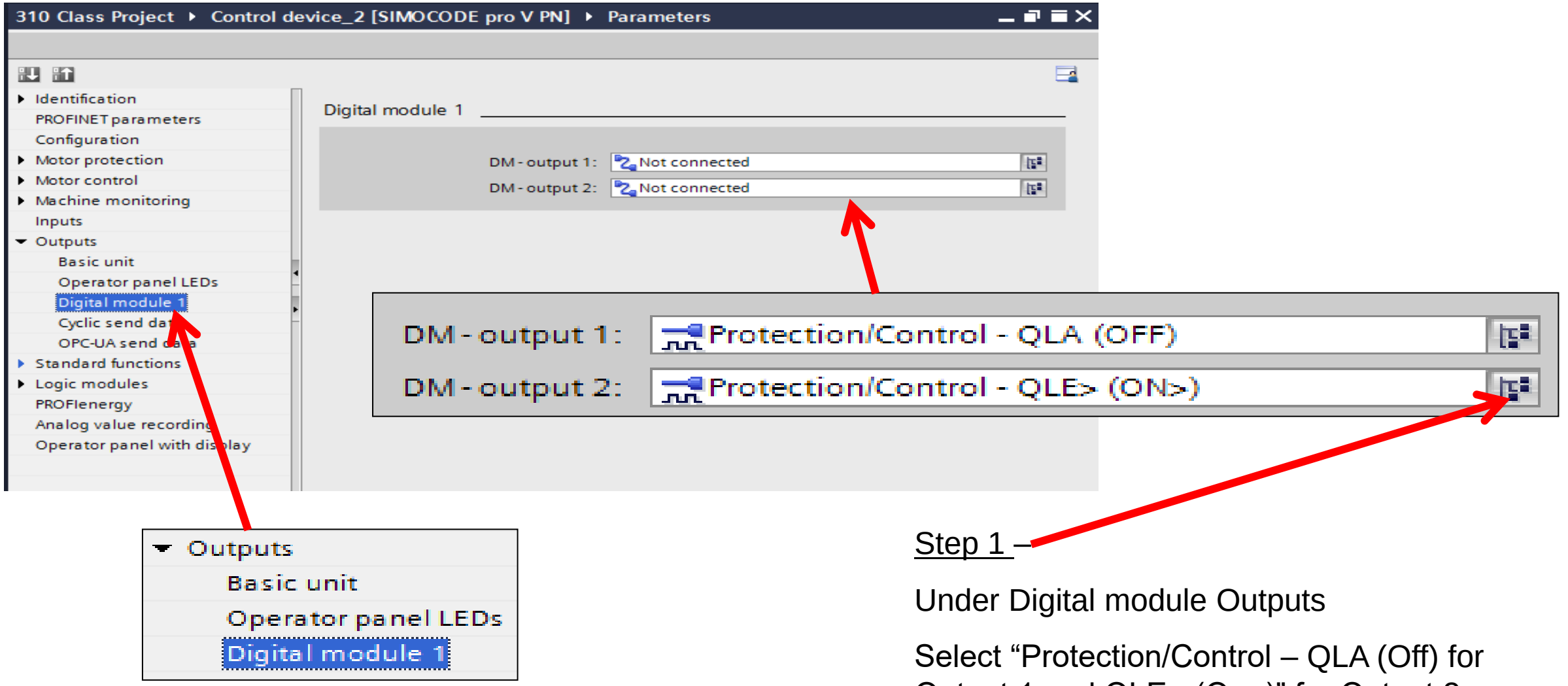
Step 1 –

Under Basic Unit Outputs

Select “Protection/Control – QLE< (On<)” fpr Output 3

Unrestricted © Siemens 2016

Select Outputs on Digital Module



Step 1 –

Under Digital module Outputs

Select “Protection/Control – QLA (Off) for Output 1 and QLE> (On>)” for Output 2

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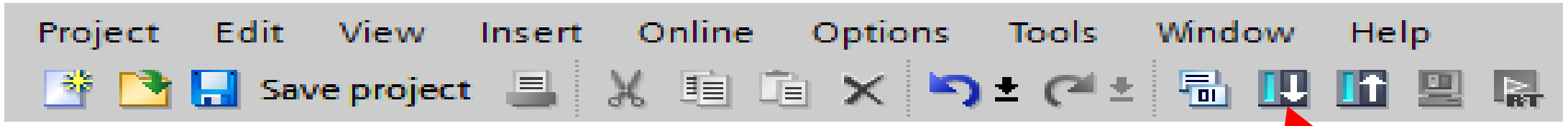
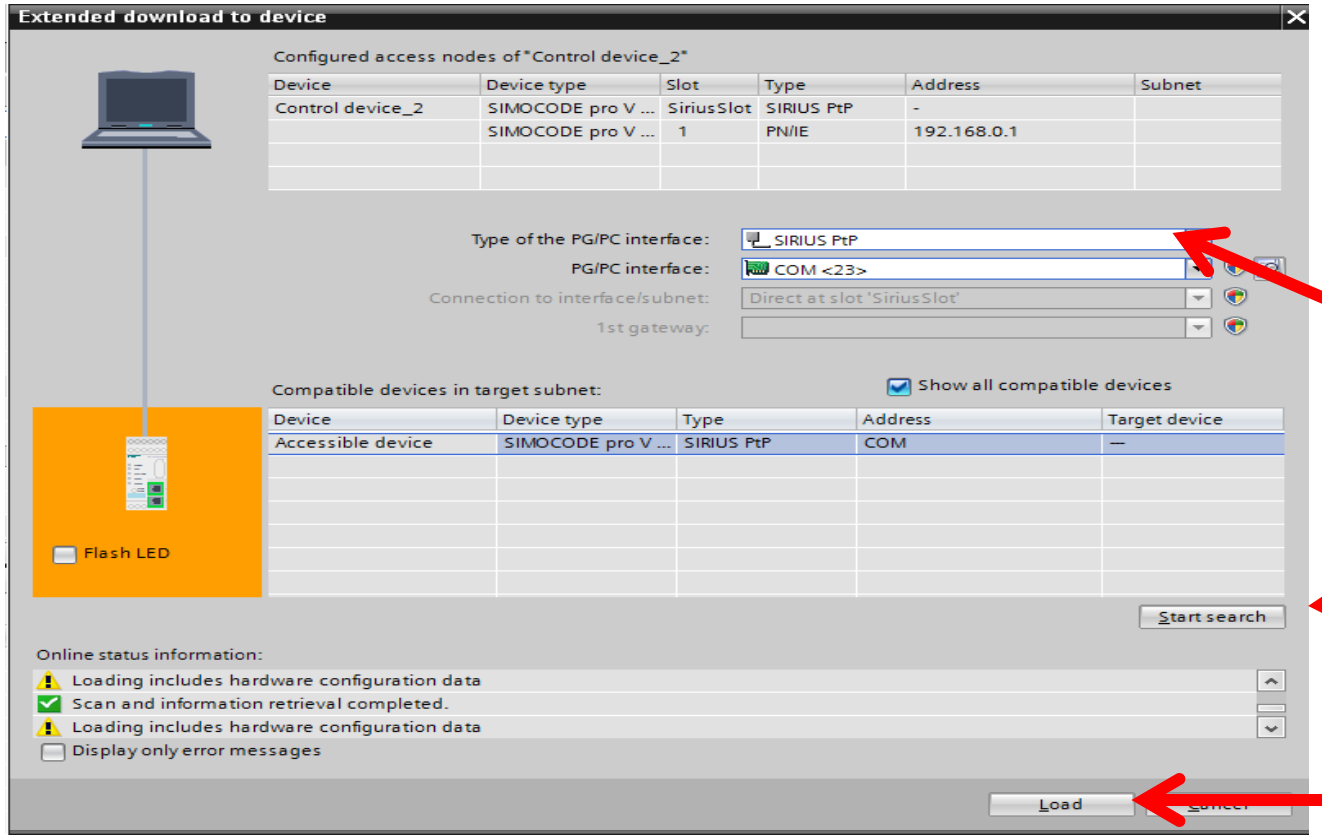
Download to Device

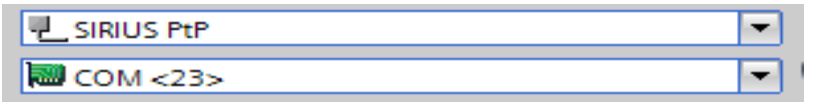




Step 1 –

Select “Load to Switching device”

Step 2 – Select “SIRIUS PtP”



Step 3 – Select “Start search”

Step 4 – Select “Load”

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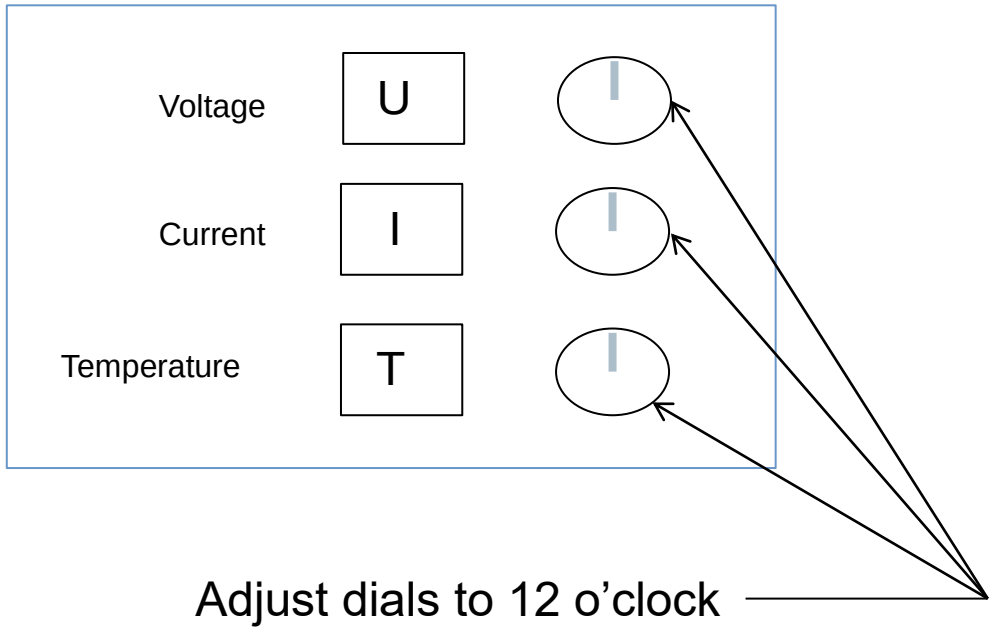
Test Reversing Starter with Lights

Fwd PB

Stop PB

Rev PB



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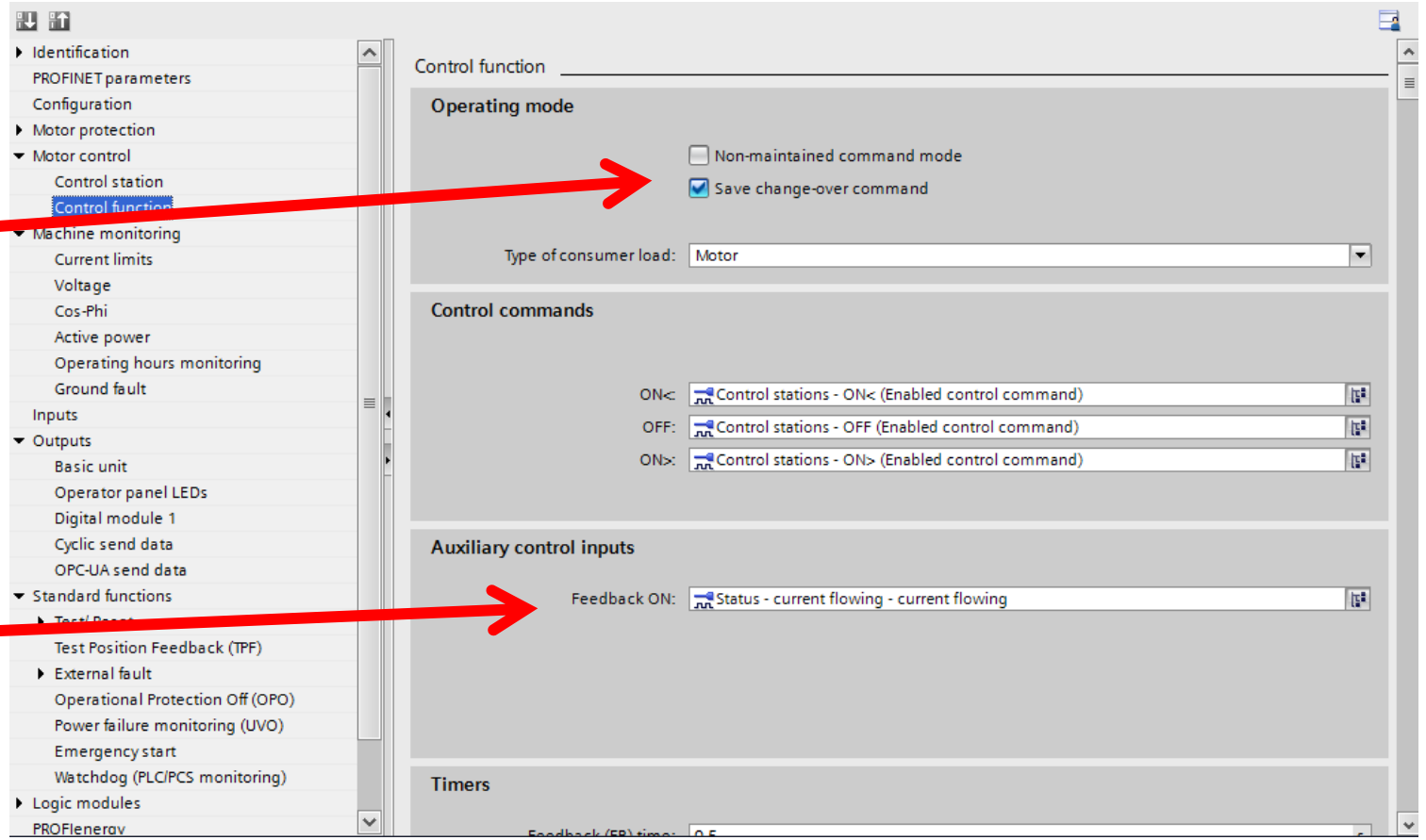
Motor Control (Control Function)

Enables direct reversal of motor

Assigns current flowing to motor running confirmation



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Open/Review a Saved Configuration

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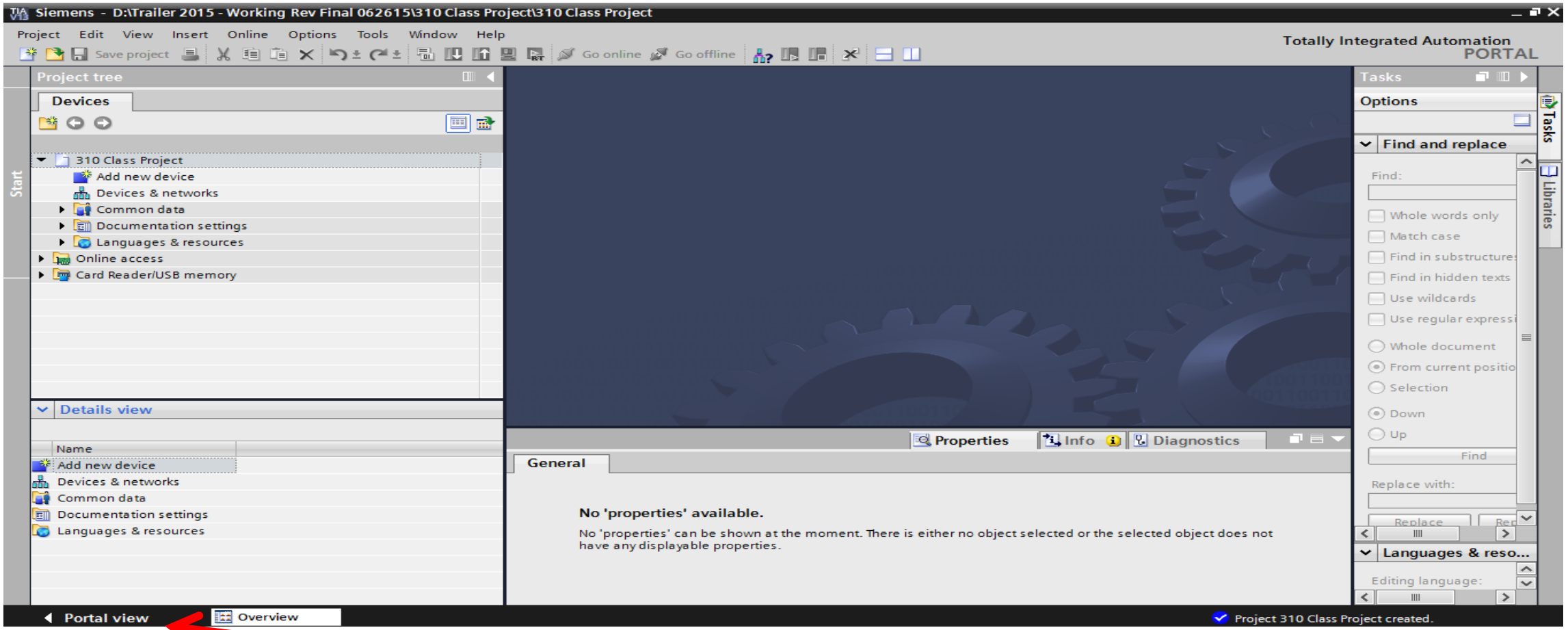
Open an existing Project



Step 1 – Select “Portal View”

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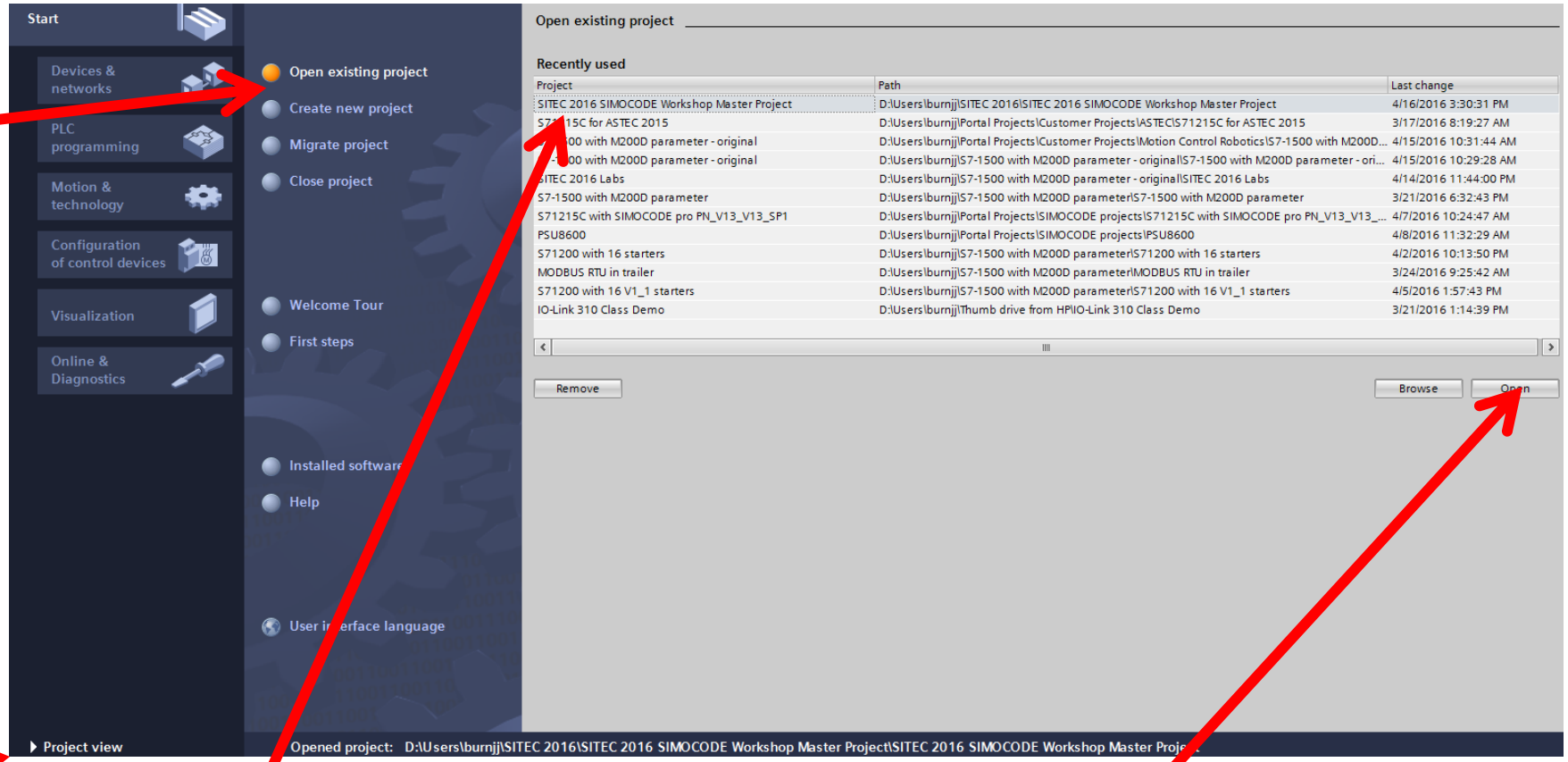
Open an existing Project



Step 1 –

Select “Open Existing Project”

Step 2 – Select “SITEC 2016 SIMOCODE Workshop Master Project”

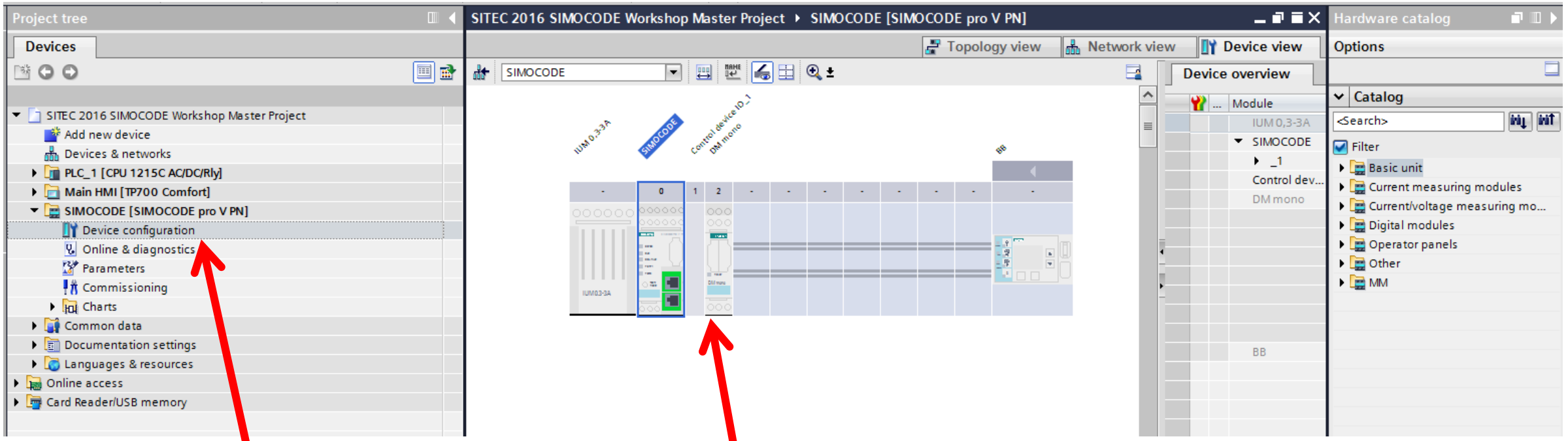
Step 3 – Select “Open”

Step 4 –

Select “Project View”

Unrestricted © Siemens 2016

Device Configuration



Step 1 -

Double Click

“Devices Configuration”

Note – Device configuration

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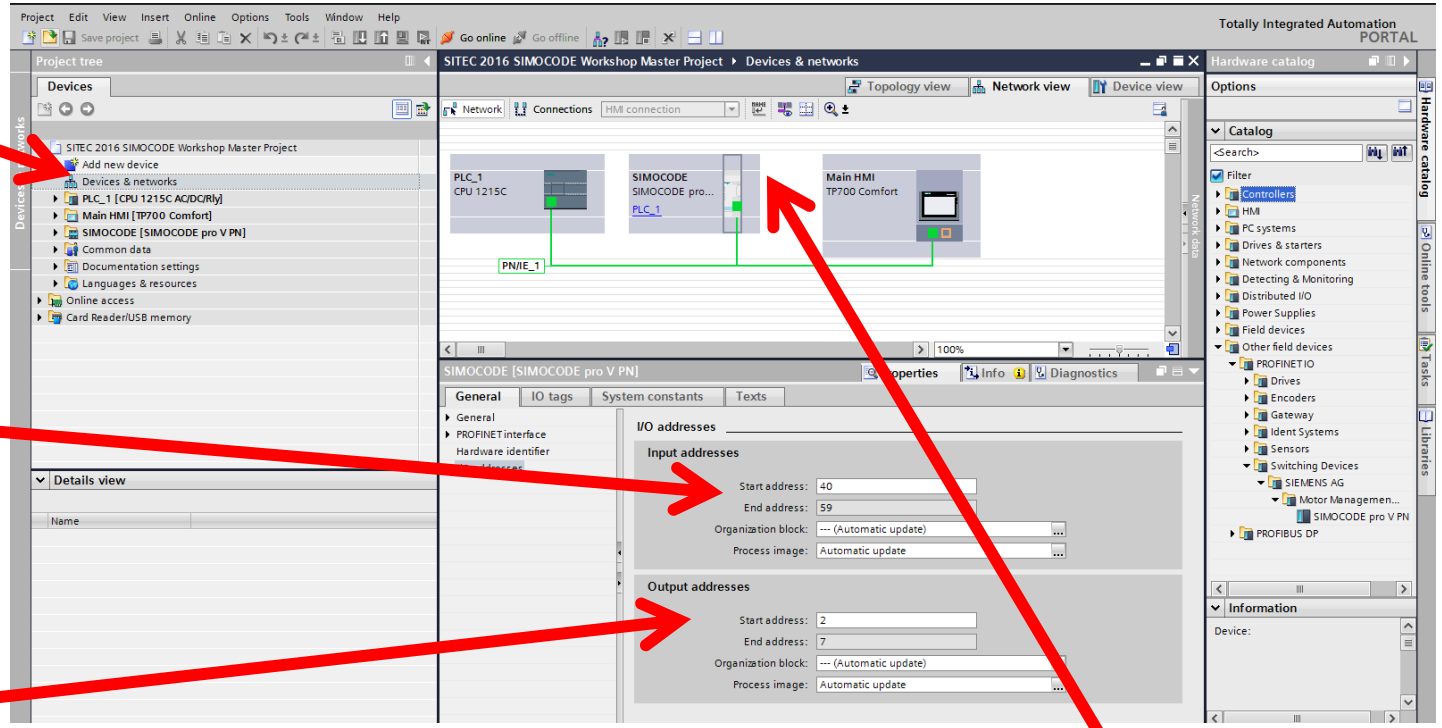
PLC I/O Addresses for SIMOCODE

Step 1 -

Double Click

Devices and Networks



Input Address

Start IB 40

End IB 59

Input Address

Start QB 2

End QB 7

Step 2 -

Click on SIMOCODE and then select Properties

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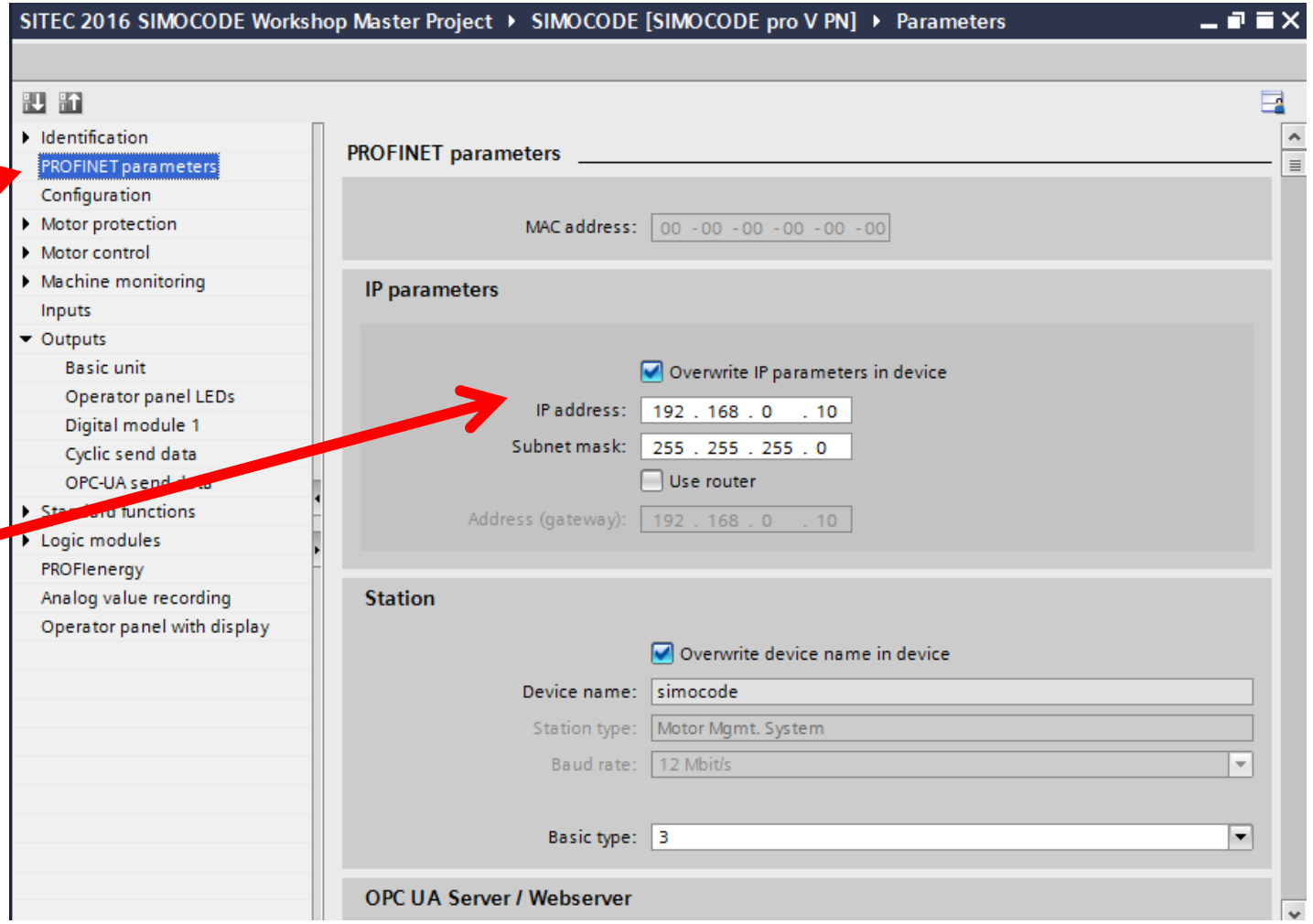
PROFINET Address



Step 1 -

Under Parameters - Click on “PROFINET parameters”

Note - SIMOCODE PROFINET address and device name

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Configuration

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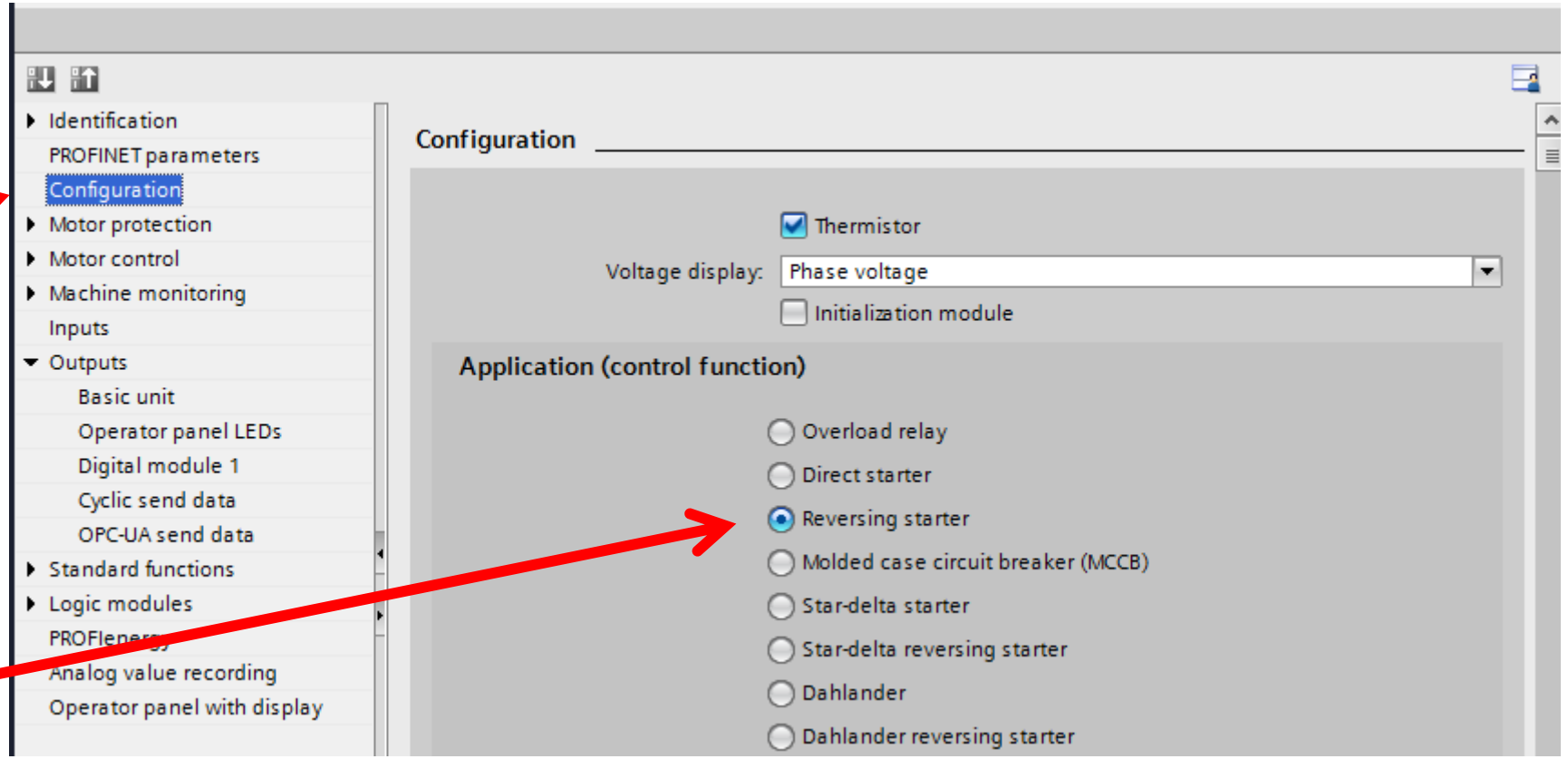
Step 1 -

Under Parameters -
Click on “Configuration”



Note - SIMOCODE selected profile
is “Reversing Starter”

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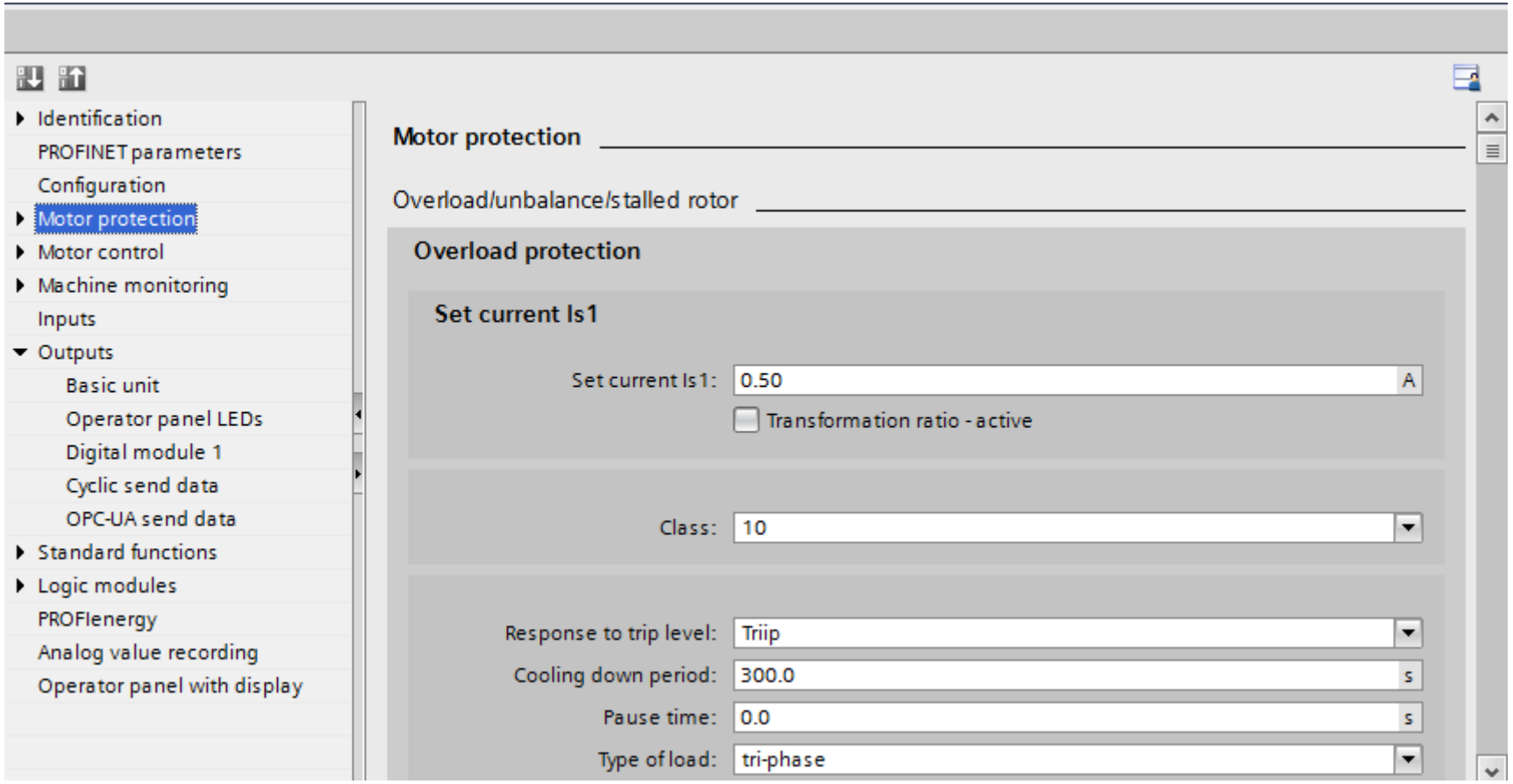
Motor Protection

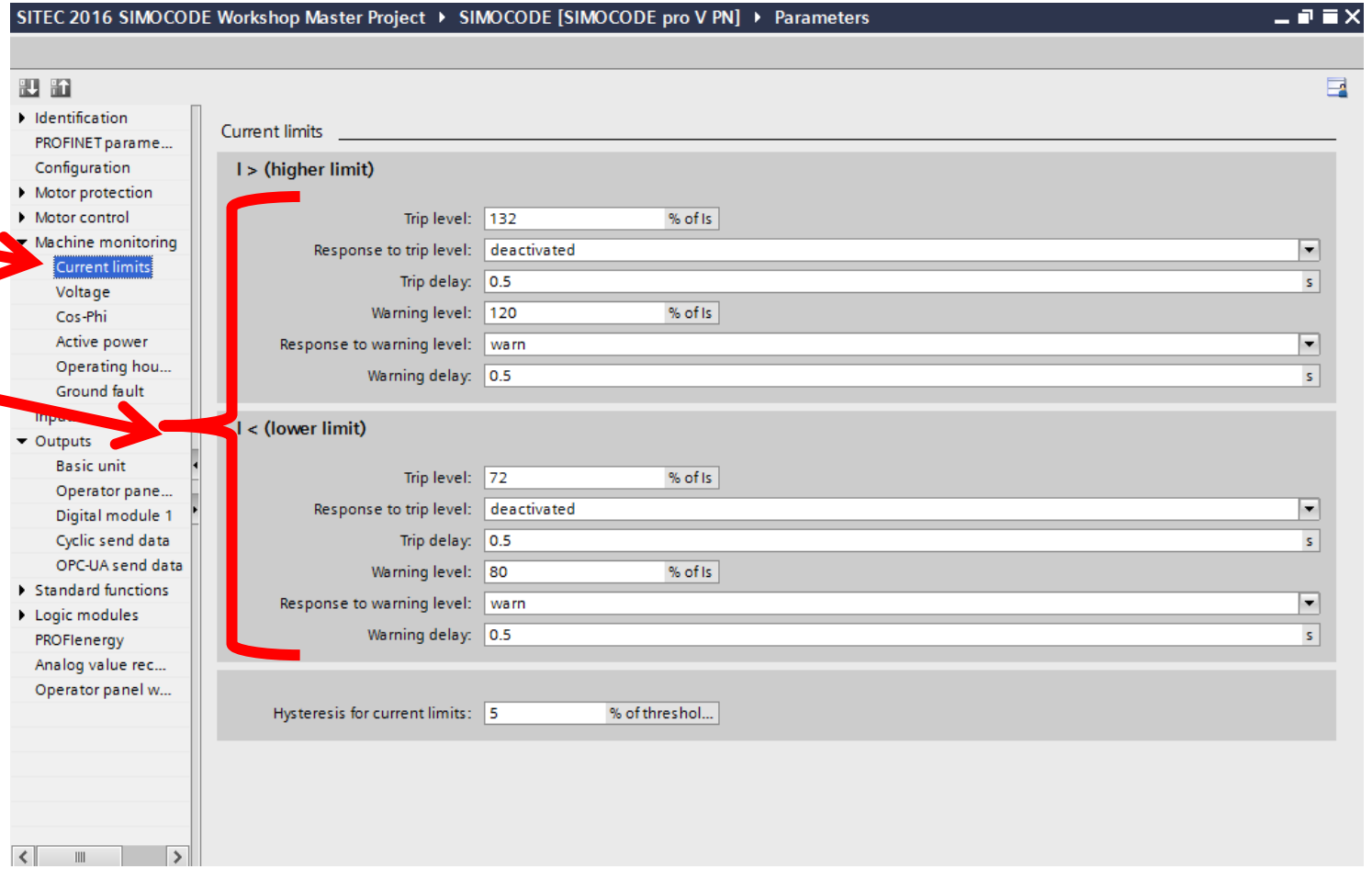


Unrestricted © Siemens 2016

Machine Monitoring

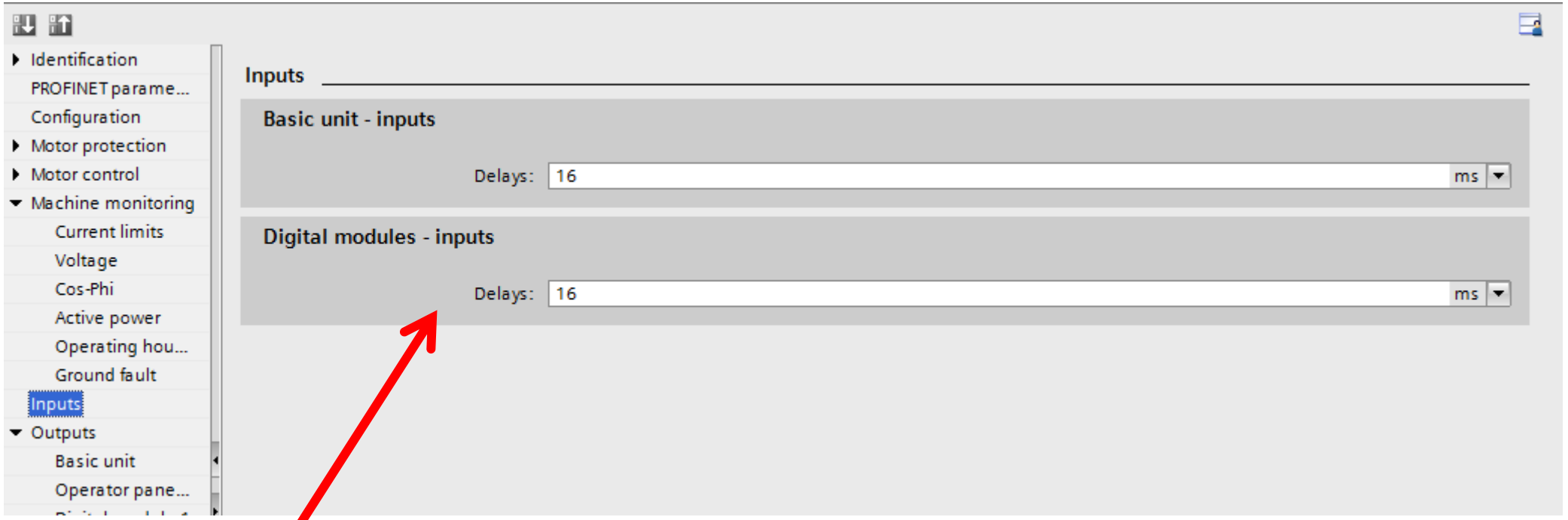
Current Monitoring

Assigns warnings above and below two setpoints



Unrestricted © Siemens 2016

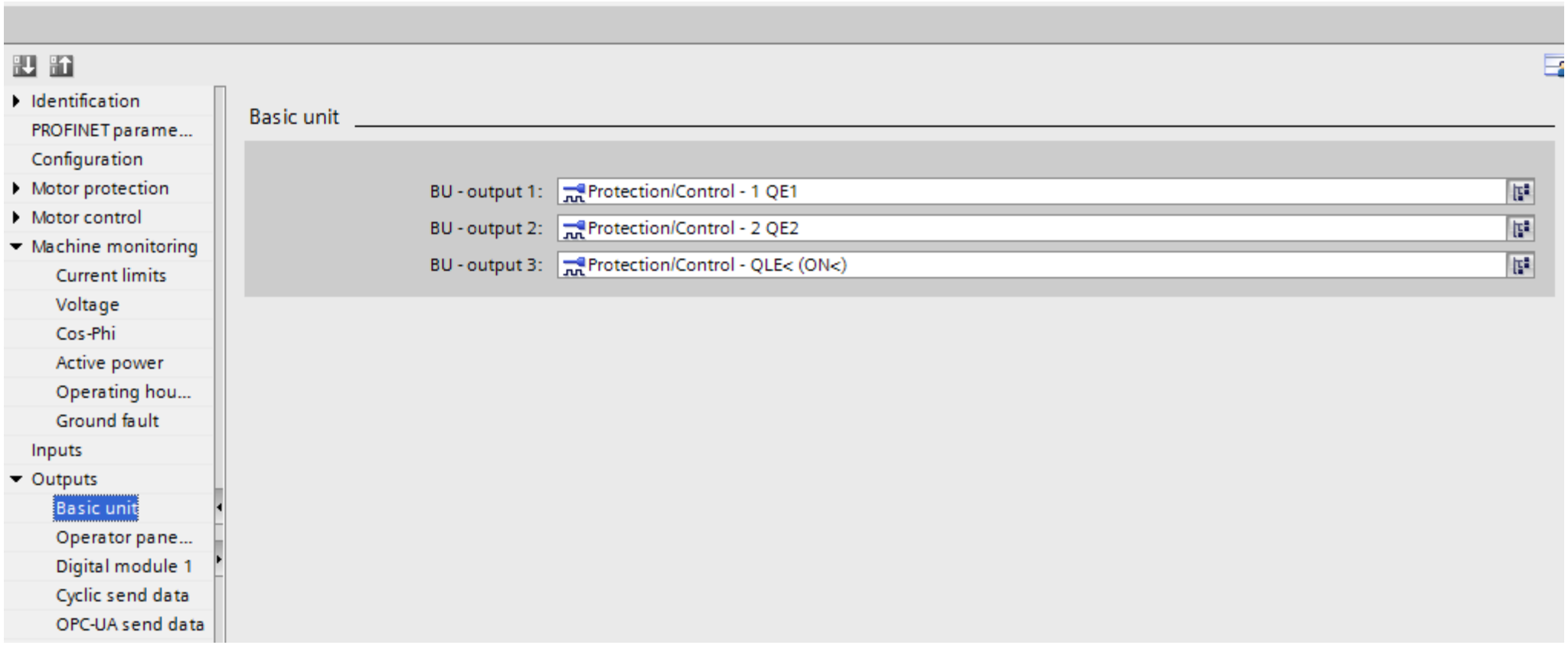
Inputs



Assign input debounce timing

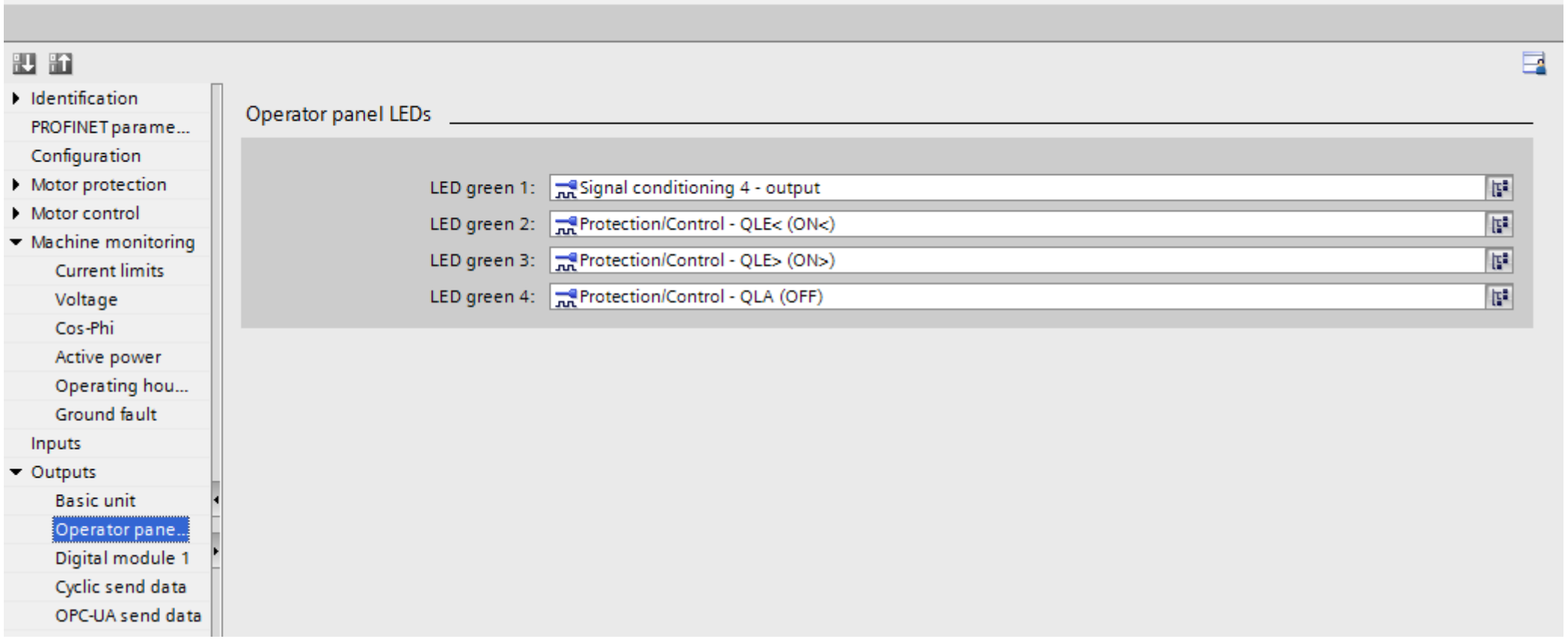
Unrestricted © Siemens 2016

Outputs (Basic Unit)



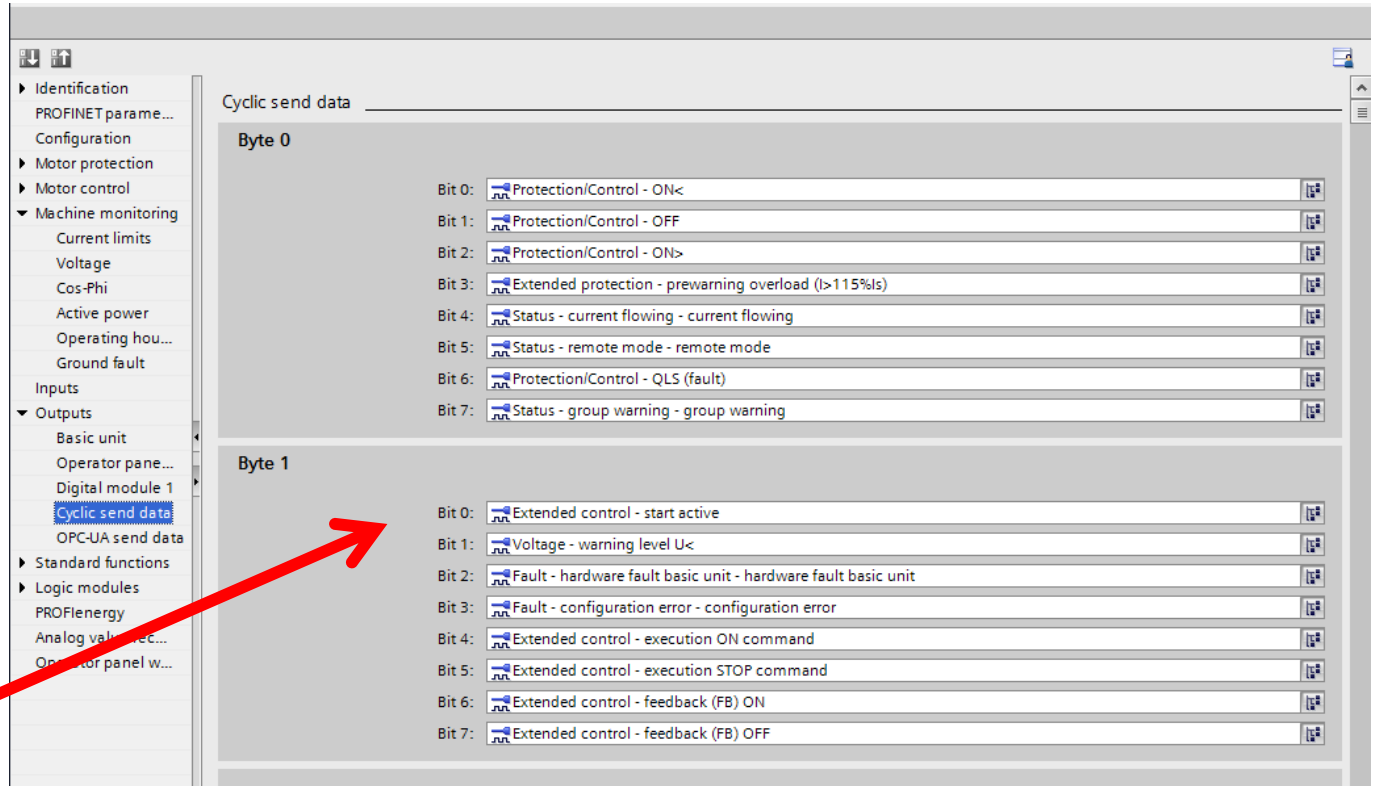
Unrestricted © Siemens 2016

Outputs (Operator Panel)



Unrestricted © Siemens 2016

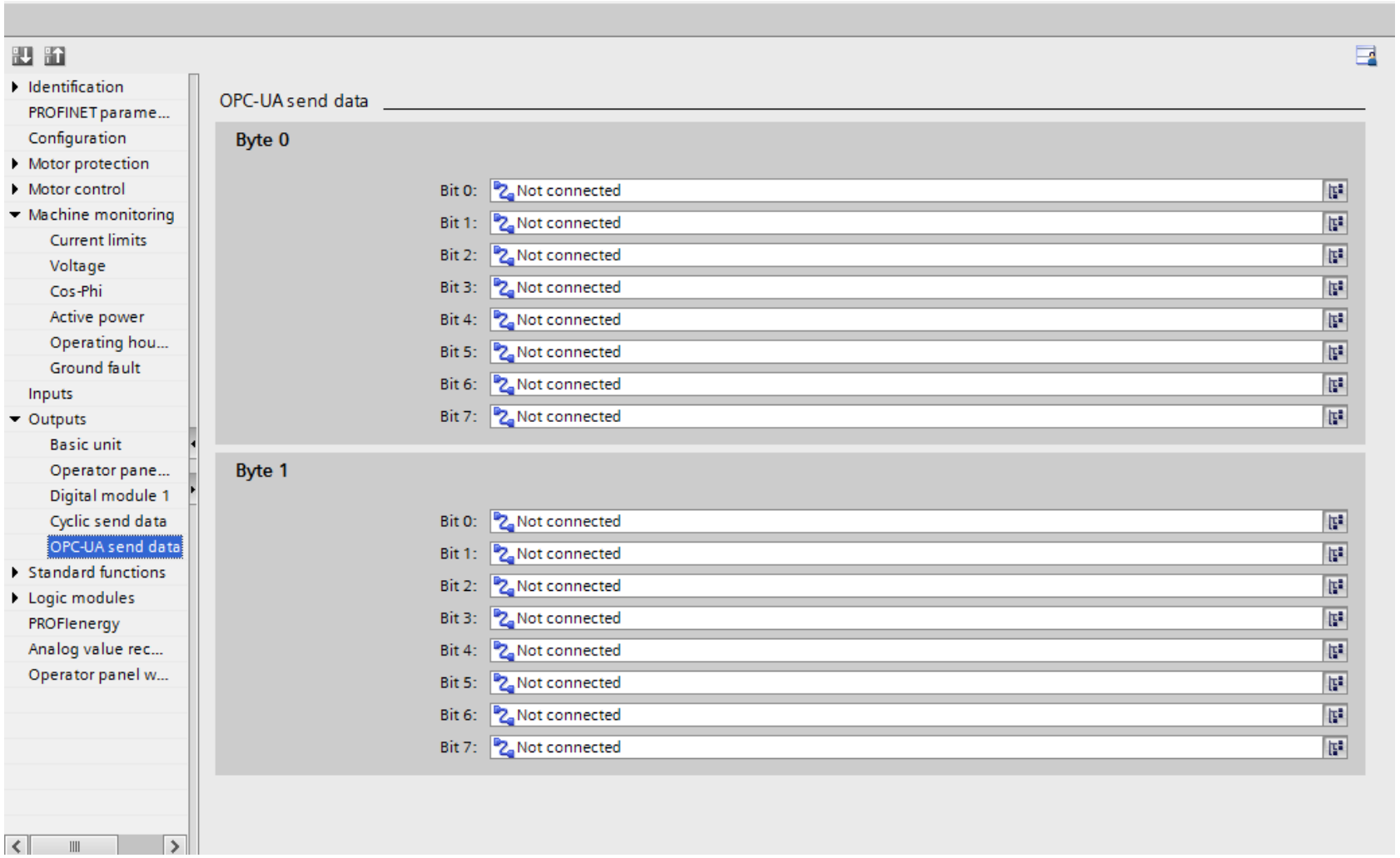
Outputs (Cyclic Send Data)



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

Unrestricted © Siemens 2016

OPC UA Server



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Standard Functions

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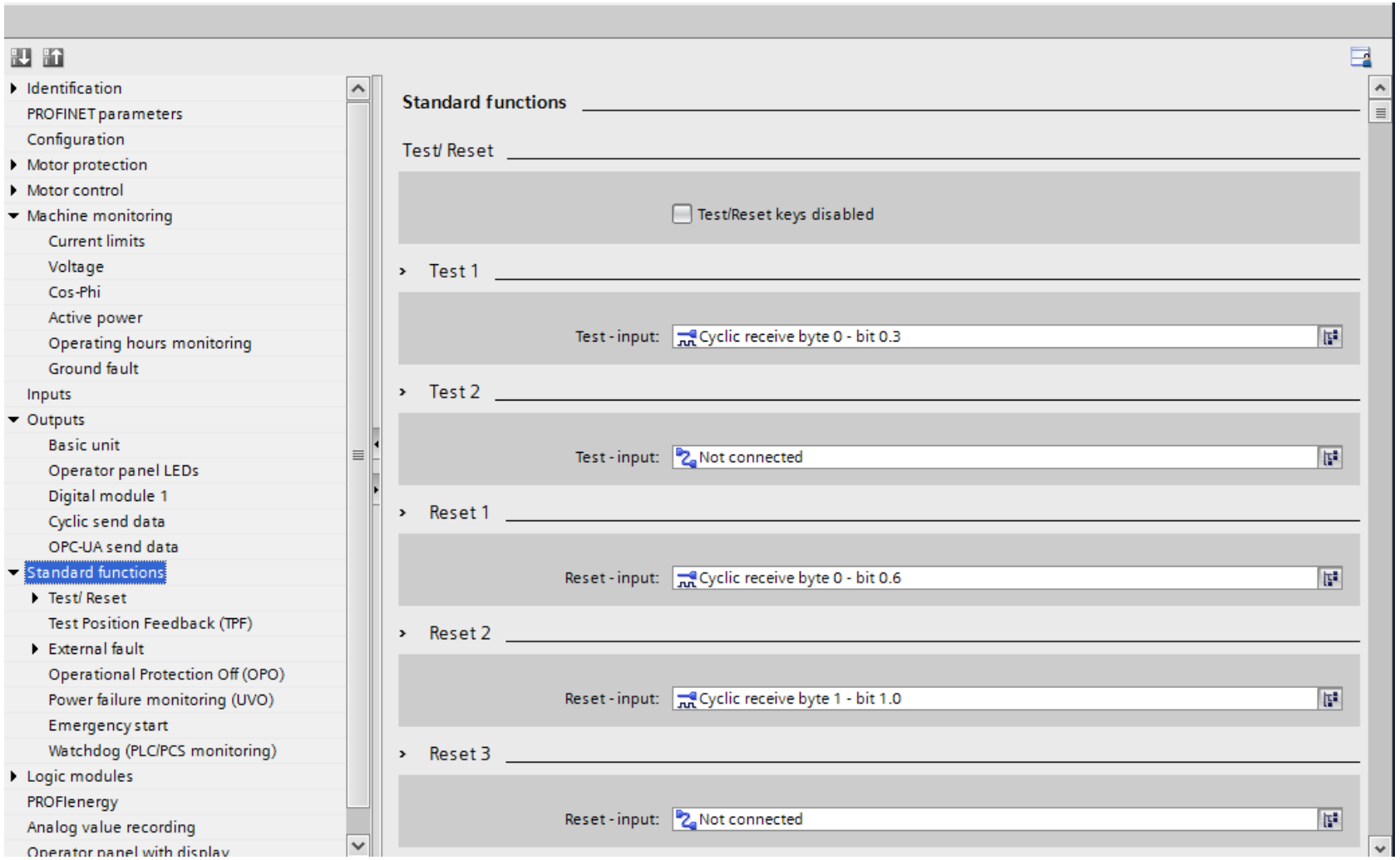
Standard Functions

SIEMENS

- Standard functions
  - Test/ Reset
  - Test Position Feedback (TPF)
  - External fault
  - Operational Protection Off (OPO)
  - Power failure monitoring (UVO)
  - Emergency start
  - Watchdog (PLC/PCS monitoring)



Unrestricted © Siemens 2016

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Logic Modules

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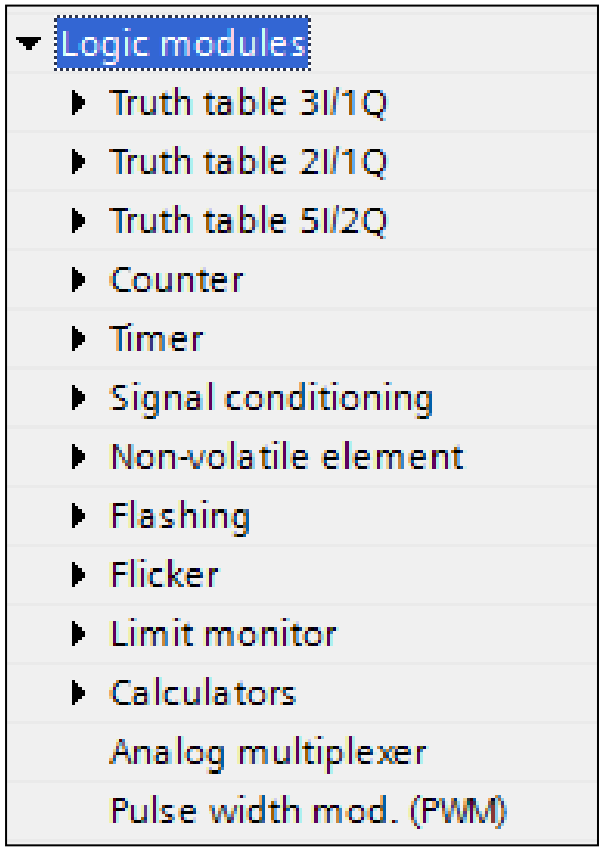
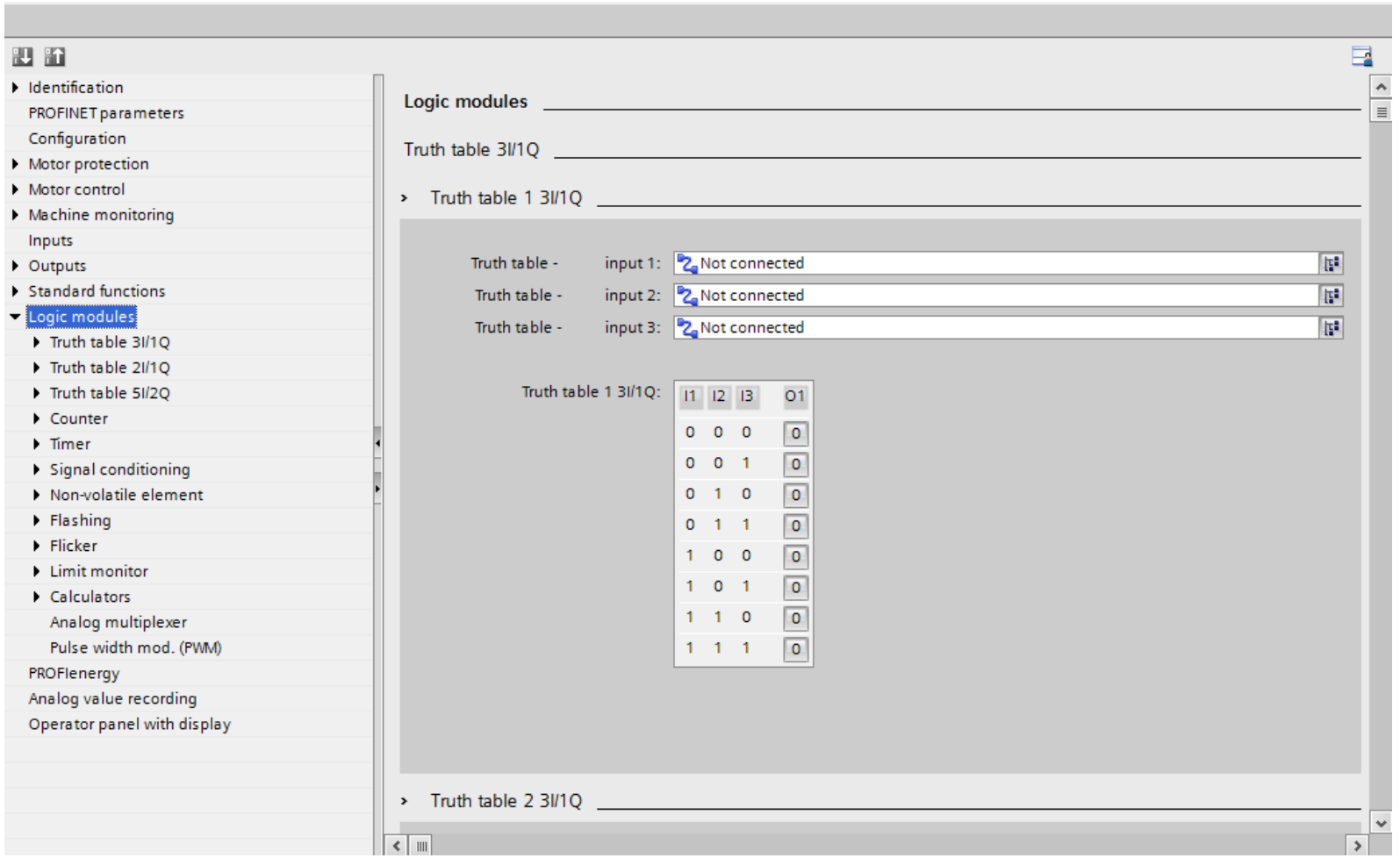
Logic Modules

SIEMENS





Unrestricted © Siemens 2016

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PLC Communications (Instructor led)

Unrestricted © Siemens 2016

SIEMENS

Maintenance and Troubleshooting

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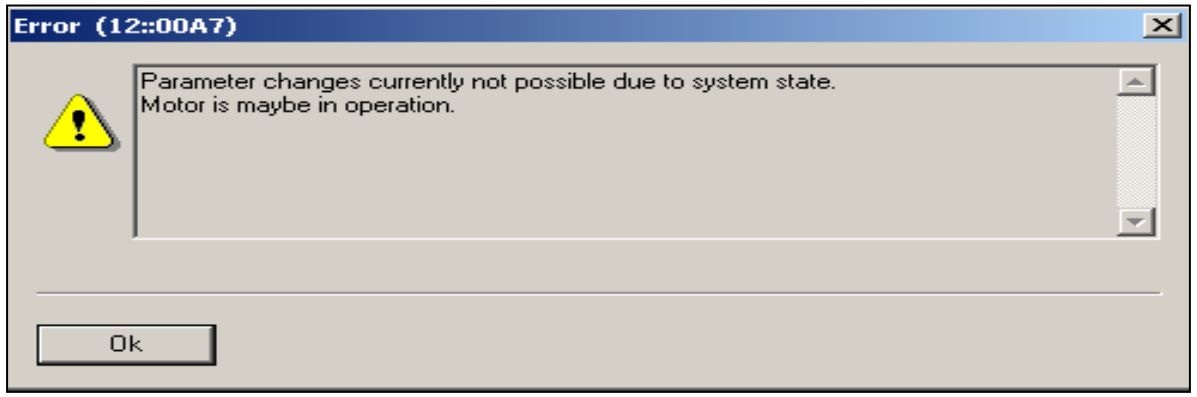
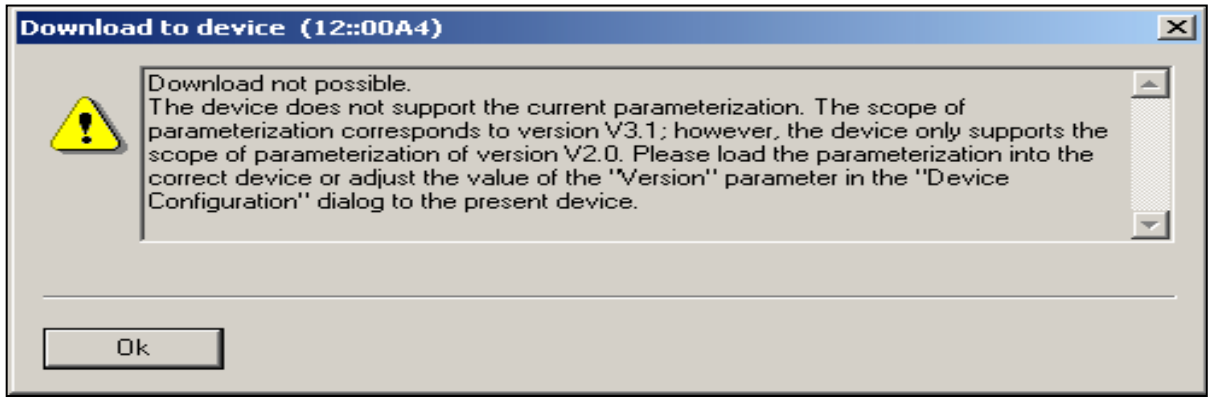
Typical Download Problems

Click Download ICON to load configuration



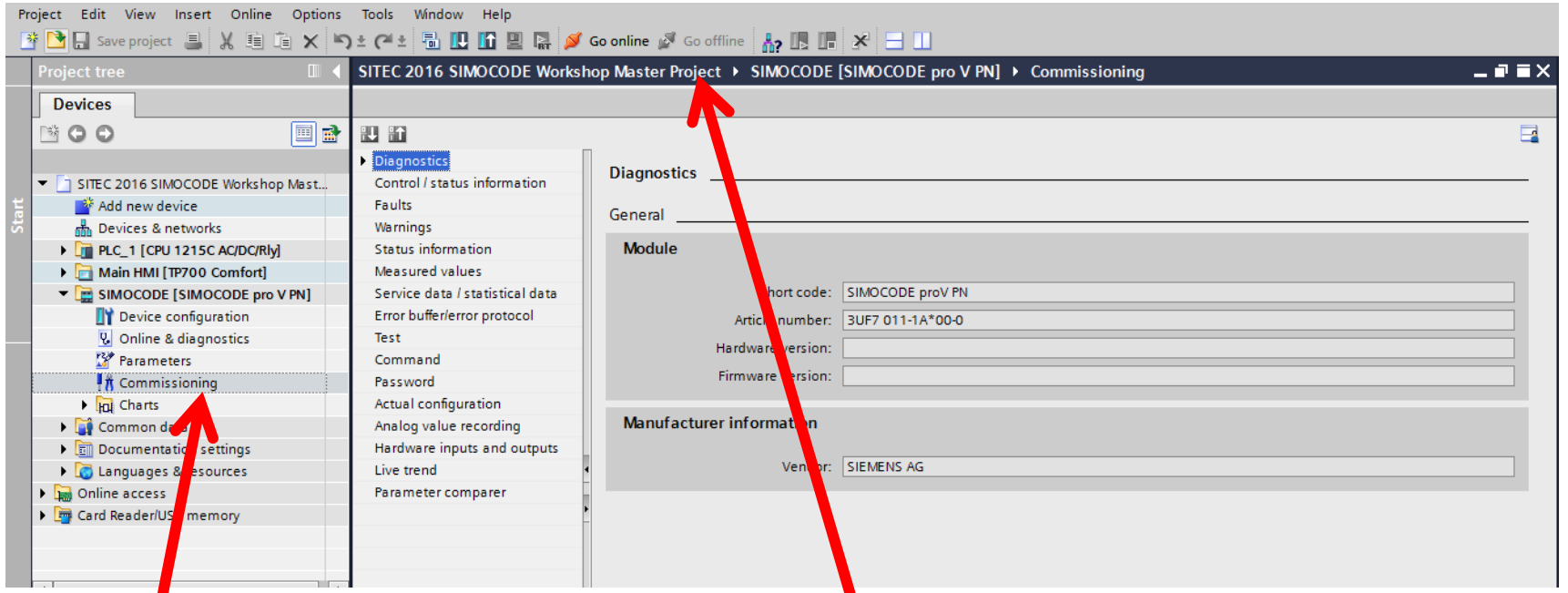
Possible causes
• In Remote • Local stop input off



Possible cause
• Configured version does not match actual version

Unrestricted © Siemens 2016

Commissioning

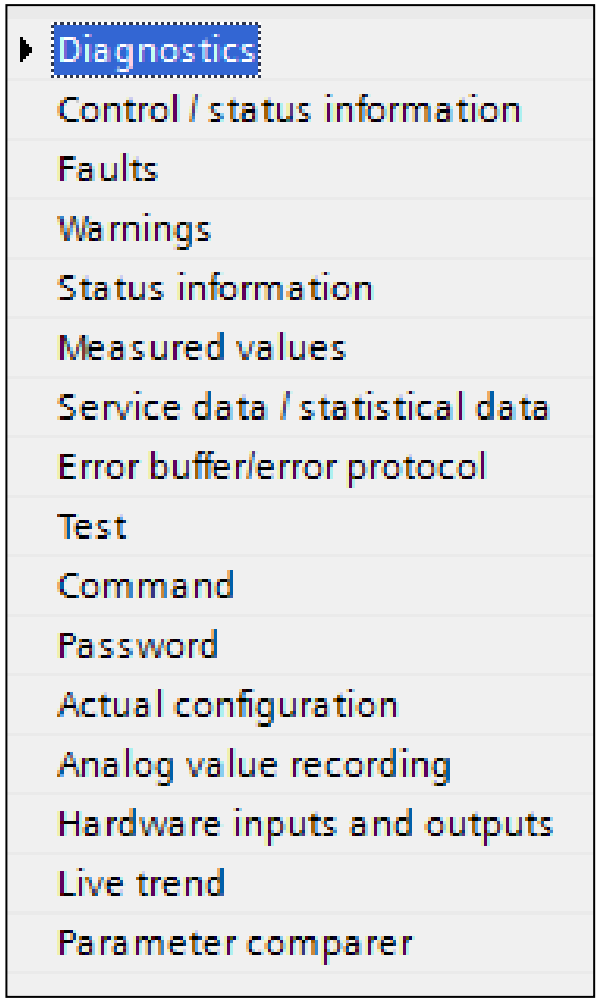


Step 1 –

Double Click “Commissioning”

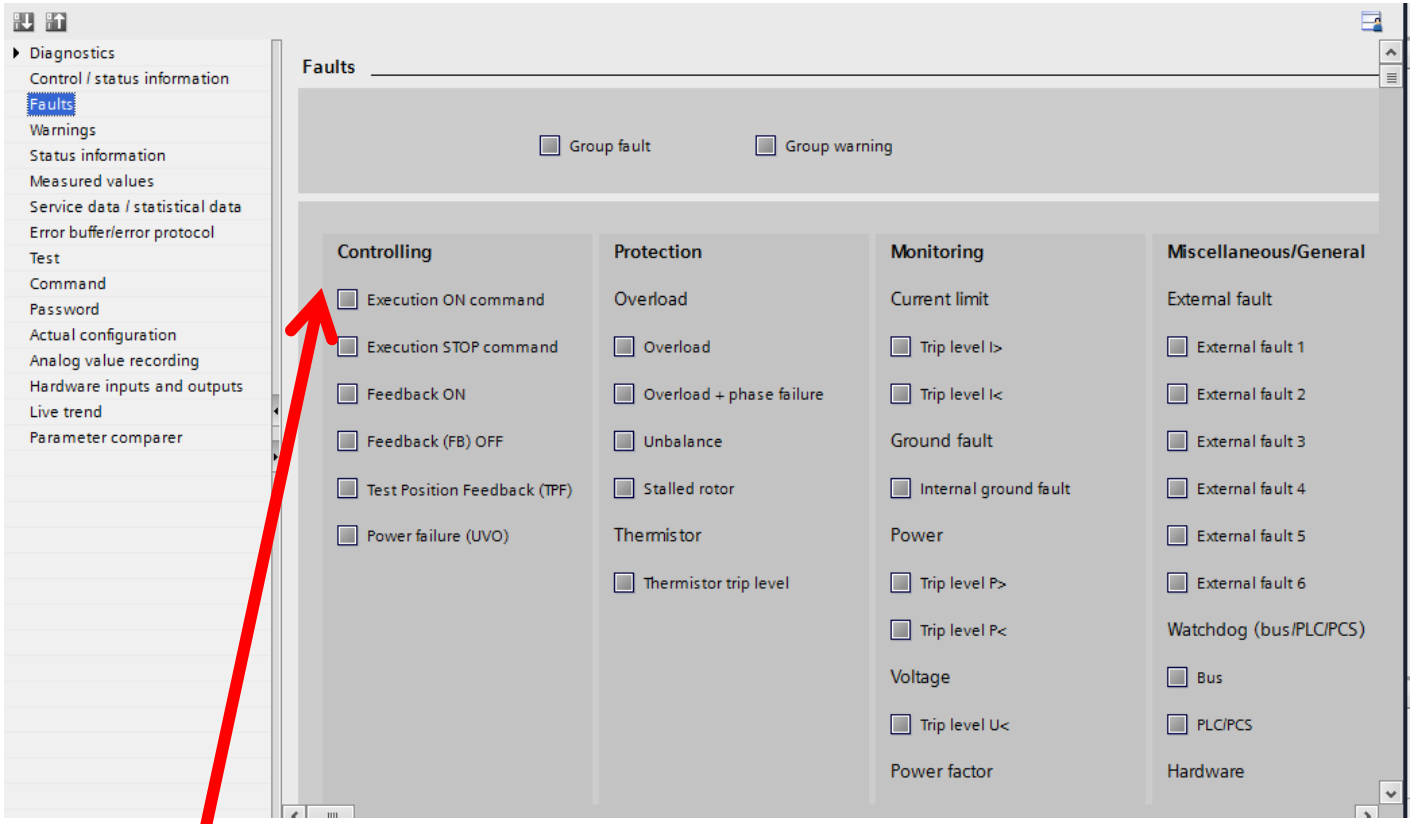
Step 2 –

Select “Go Online”



Unrestricted © Siemens 2016

Faults



Step 1 –

Turn off MSP and press local start

Note–

“Execution On Command” fault turns on

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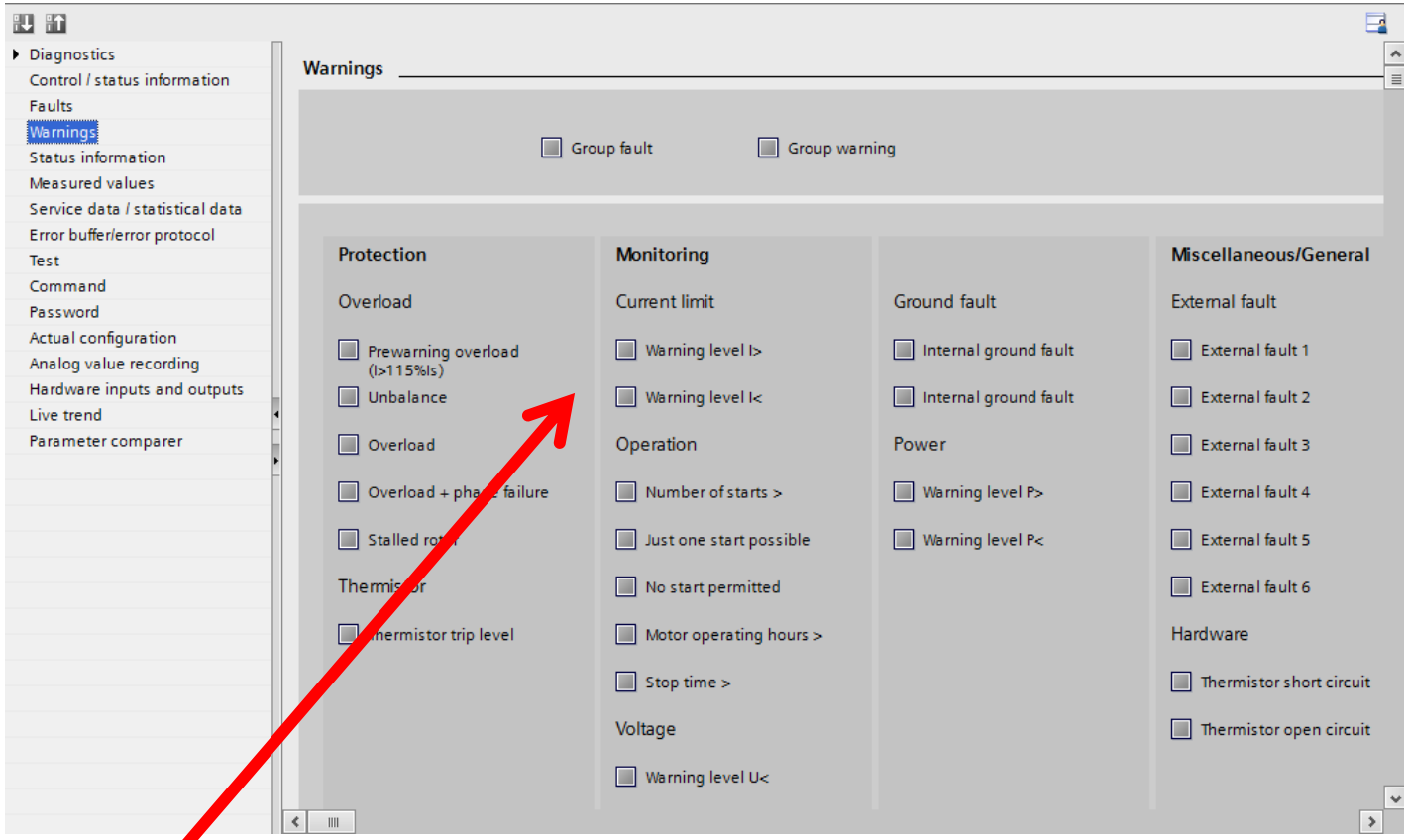
Warnings



Step 1 –

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

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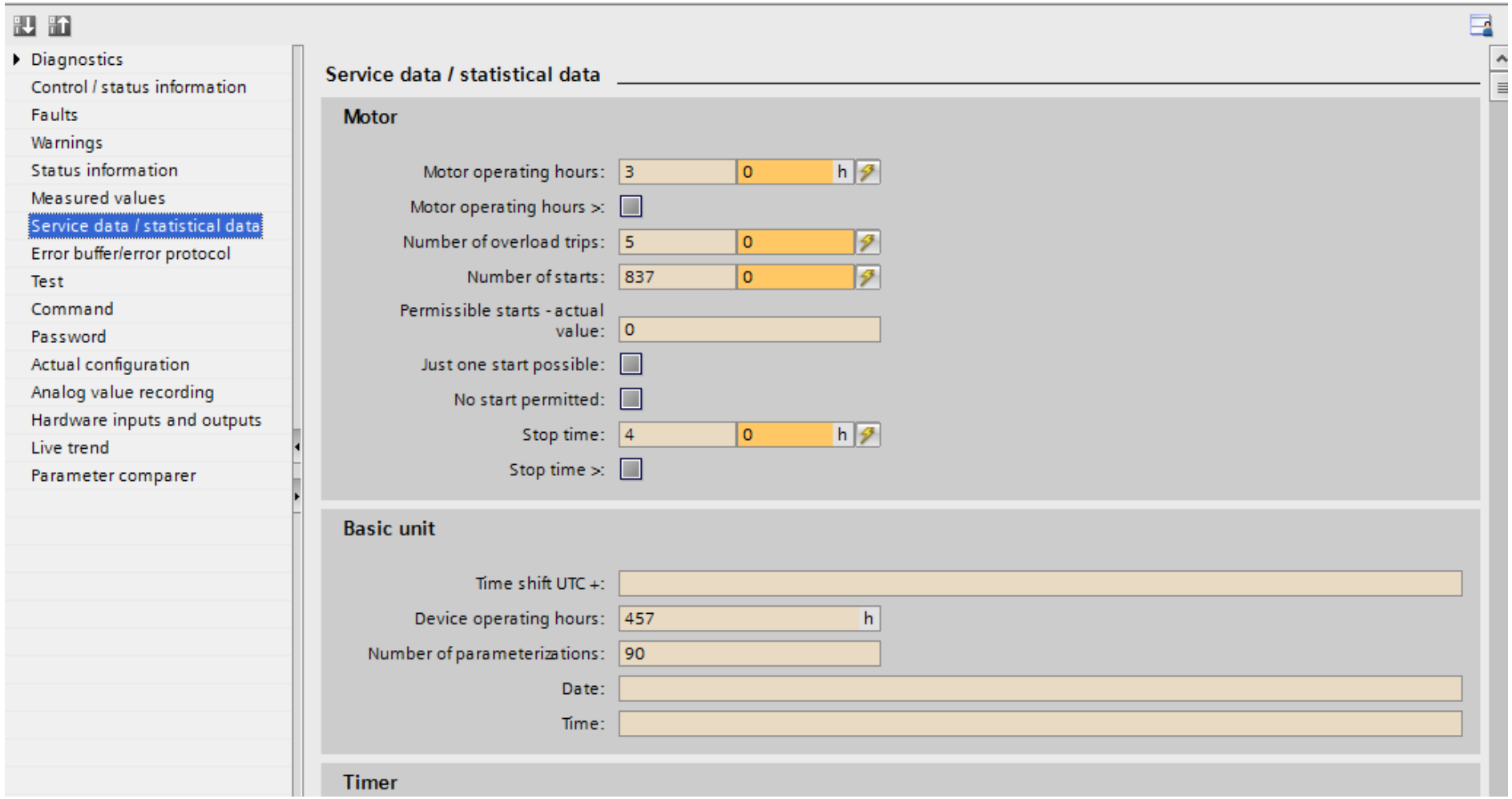
Service and Statistical Data



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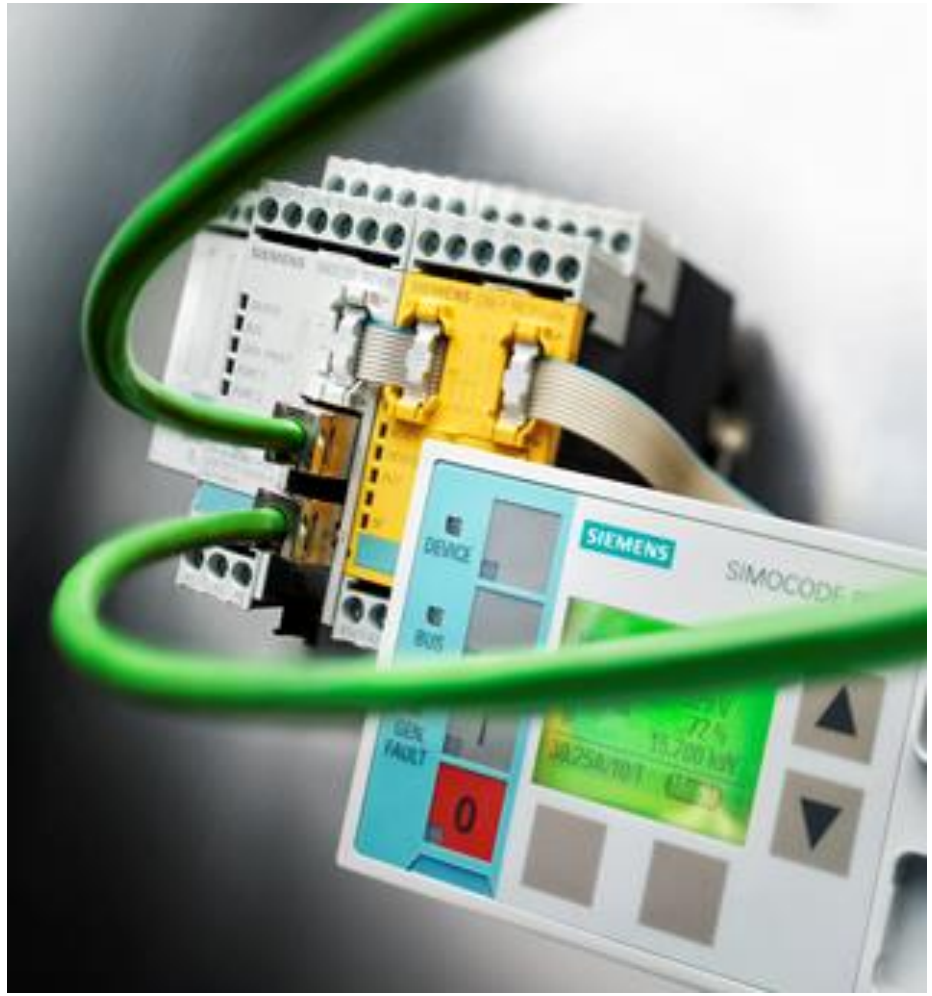

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