



April 5, 2024

# Festo CMMT-AS/ST Configuration Manual

# Overview

- 1 Introduction
- 2 Necessary software
- 3 Connection with controller
- 4 Project creation
- 5 Component selection
- 6 Configuration
- 7 Support

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# Introduction

This manual explains the configuration of Festo CMMT-AS/ST motor controller so that it can be operated from a UR robot using the NUTAI URCap Multi Axis Drive (MAD) Controller.

Note that this manual explains the minimum required configuration, so it is left pending for the user to complete other configuration options specific for their end application.

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# Necessary software


To configure the Festo CMMT-AS/ST motor controller, it will be necessary to download and install the Festo Automation Suite (FAS) software on your computer, available for Windows.

To do this, go to the Festo<sup>1</sup> website and download the latest version available, making sure that it is compatible with your CMMT-AS/ST controller, as indicated in the following slides.



<sup>1</sup> Festo official website:  
<https://www.festo.com>

# Necessary software



Automatización Didactic Empresa

Productos Soluciones Soporte Educación Tendencias Sobre Festo Carreras

Inicio de sesión Cesta de la compra Spain **FESTO**




festo automation suite

Productos 1 Productos Didácticos 0 **Descargas 1** Temas 0

Puesta a punto  
**Festo Automation Suite**  
Parameterisation, programming and maintenance of electronic devices by Festo

System Requirements:  
Windows 10 Version 1607 or higher  
Windows 11  
32 or 64 bit

Más

	Version 2.6.0.481 <a href="#">Más</a>	2.6.0.481	 SHA-512	English [en] ▾	469 MB	
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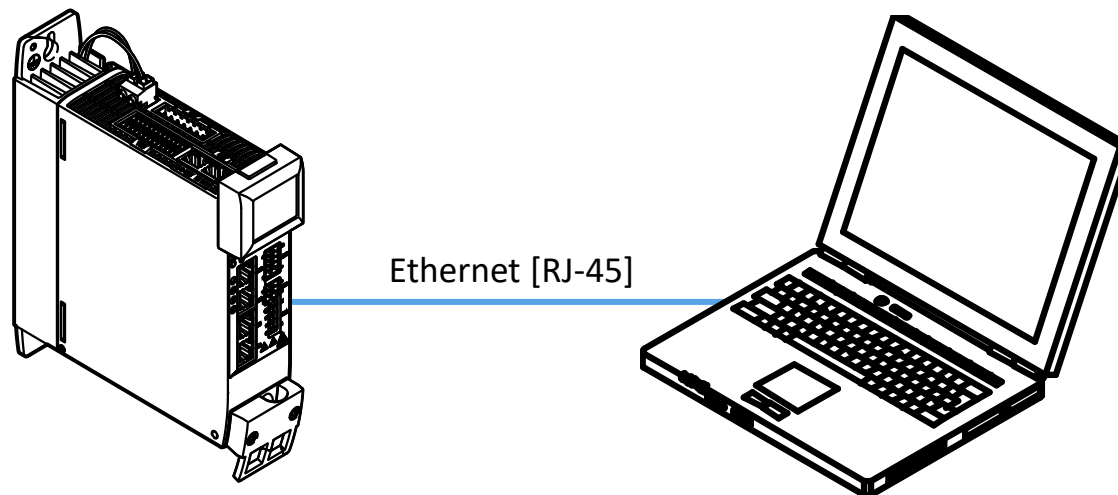
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# Connection with controller

Connect your Festo CMMT-AS/ST controller to your computer —directly or through a switch—via Ethernet.



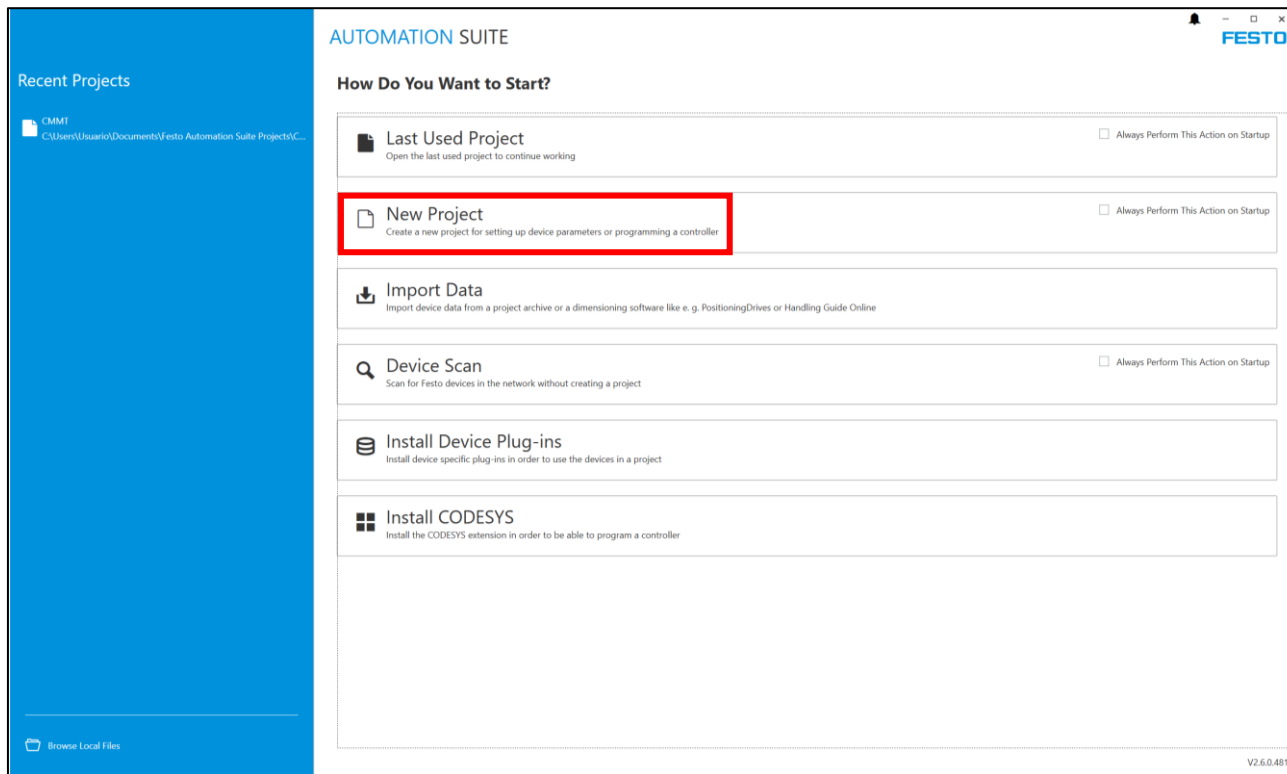
# Overview

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# Project creation



Start the *Festo Automation Suite* application and click *New Project*.

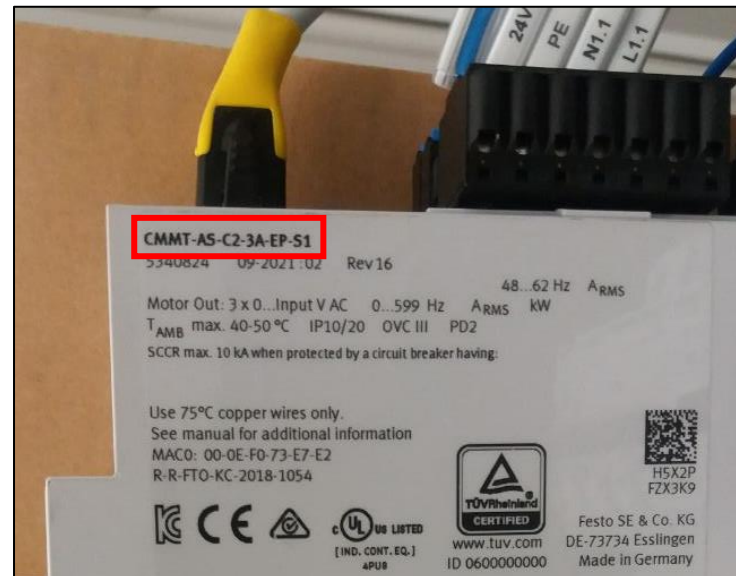


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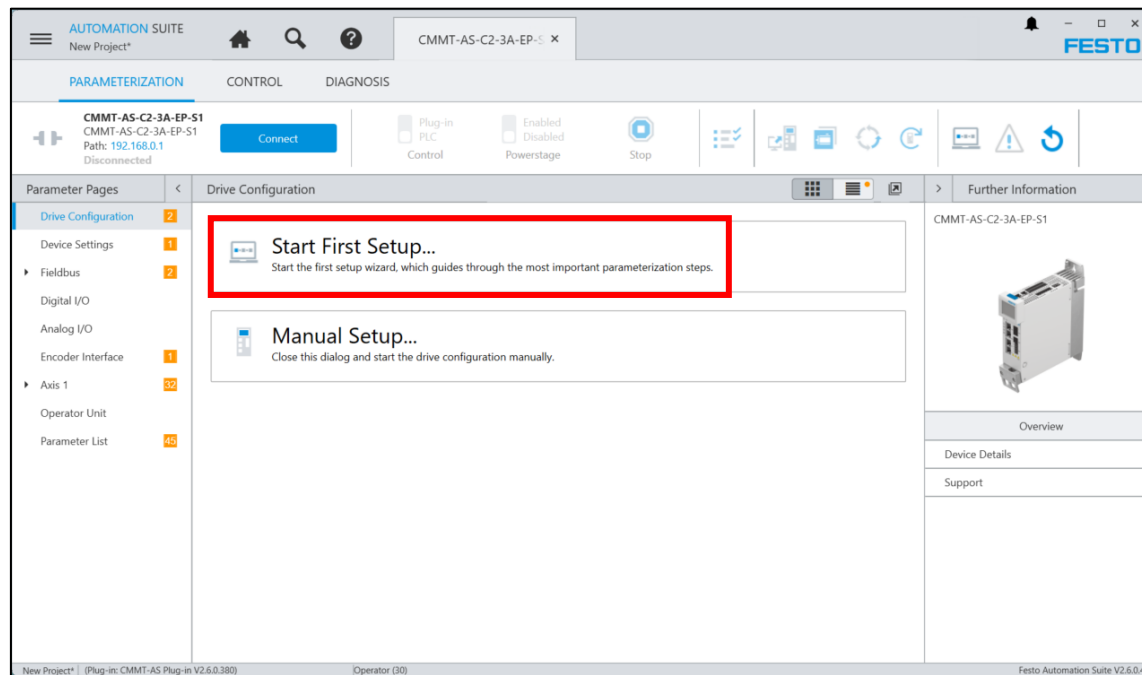
# Component selection

Once the project is created, first indicate the model of your CMMT-AS/ST motor controller and click on the result found.



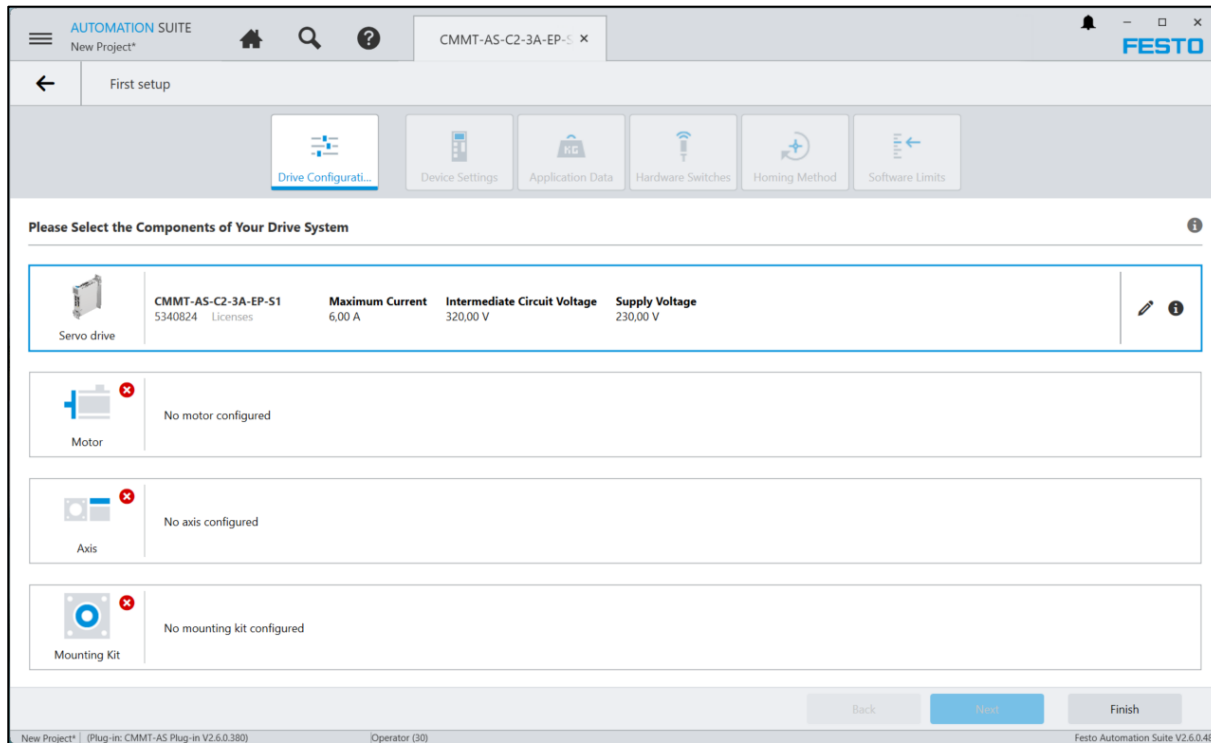
# Component selection

Then, click on the image of your controller and wait for the controller plug-in to load. Once loaded, select the type of configuration to perform. In this case, the *Start First Setup* option will be selected.



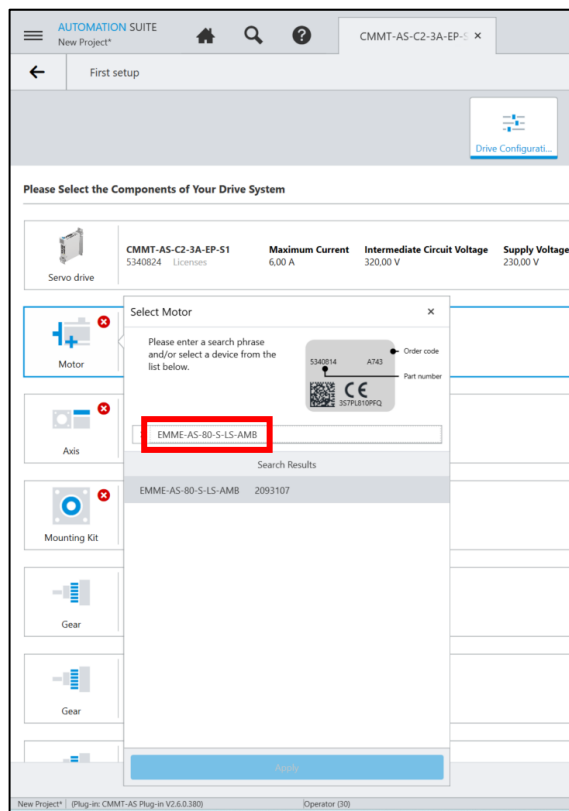
# Component selection

Next, the rest of the system components will be configured: motor, axis, gear, etc.



# Component selection

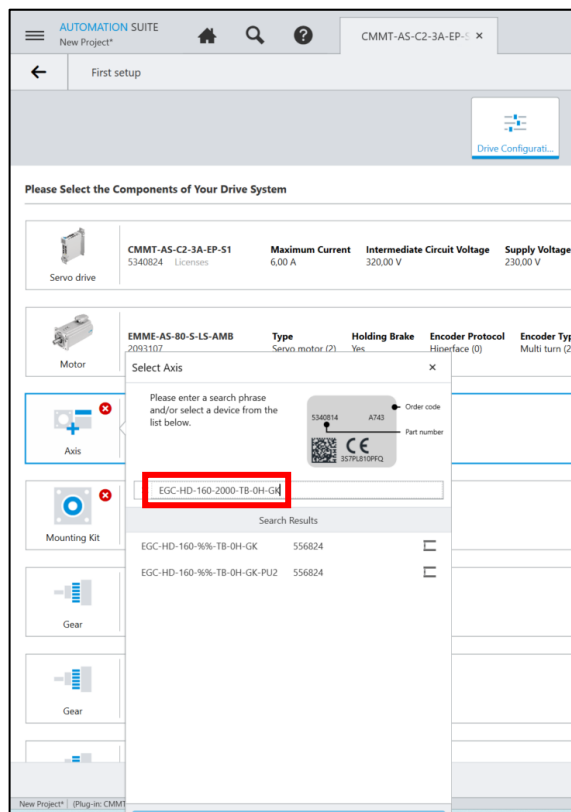
We will start by indicating the motor to use.





# Component selection

We will continue indicating the axis to use.




# Component selection

Once the axis has been indicated, we will choose the units we want to use.

 Axis	<b>EGC-HD-160-2000-TB-0H-GK</b> 556824	<b>Axis Size</b> 160	<b>Feed Constant</b> 125,00 mm/rev	<b>Working Stroke</b> 2000,00 mm	<b>Design</b> Single axis (0)	 
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Select Axis

**EGC-HD-160-2000-TB-0H-GK**  
556824

Search Results

Selected Component

Actual user unit

Metric [m, m/s, ...] (6)

Motion

Linear

Technology

Tooth belt

Axis Size

160

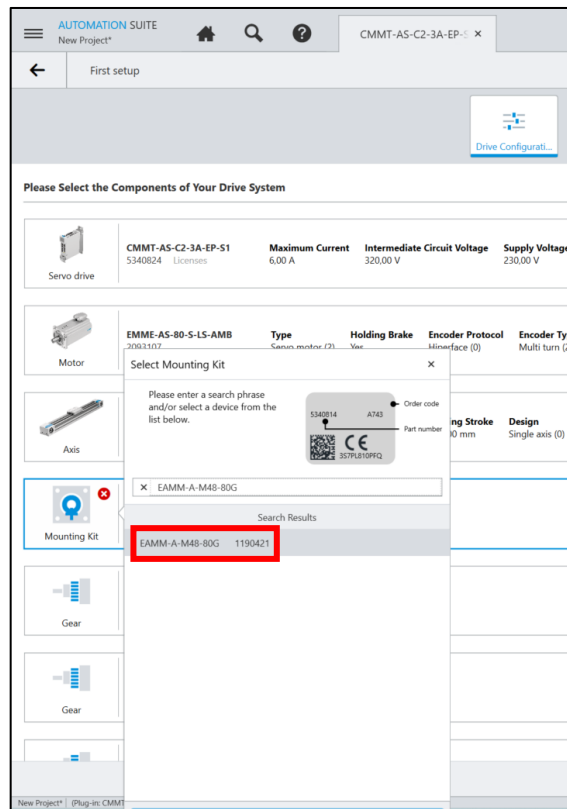
Working Stroke

2000,00

mm

# Component selection

Subsequently, we indicate the mounting kit to be used.



The screenshot shows the 'First setup' screen in the AUTOMATION SUITE. The main heading is 'Please Select the Components of Your Drive System'. On the left, a sidebar lists components: Servo drive, Motor, Axis, Mounting Kit (selected), Gear, and Gear. The main area displays the selected components and their specifications.

Component	Model	Maximum Current	Intermediate Circuit Voltage	Supply Voltage
Servo drive	CMMT-AS-C2-3A-EP-S1 5340824	6,00 A	320,00 V	230,00 V

Component	Model	Type	Holding Brake	Encoder Protocol	Encoder Type
Motor	EMME-AS-80-S-LS-AMB 2062107	Servo motor (2)	Yes	Interface (0)	Multi turn (2)

**Select Mounting Kit**

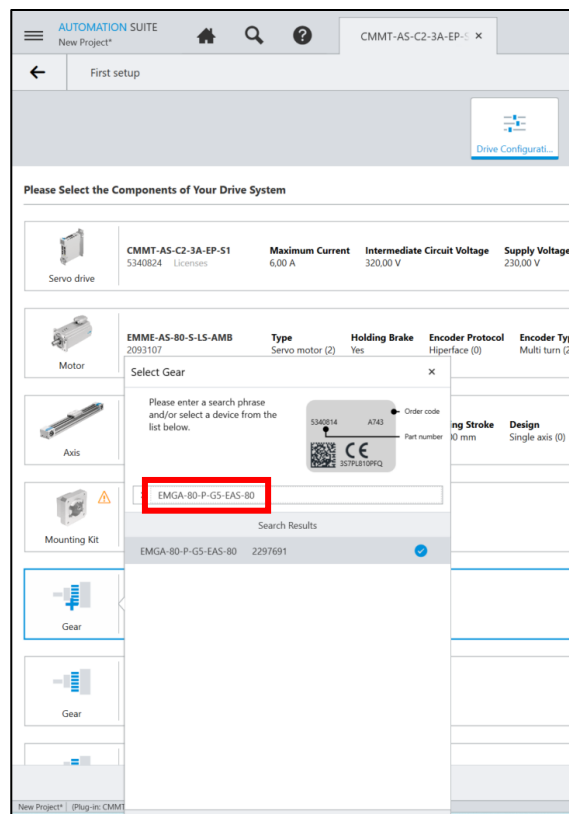
Please enter a search phrase and/or select a device from the list below.

Search Results:

Model	Part number
EAMM-A-M48-80G	1190421

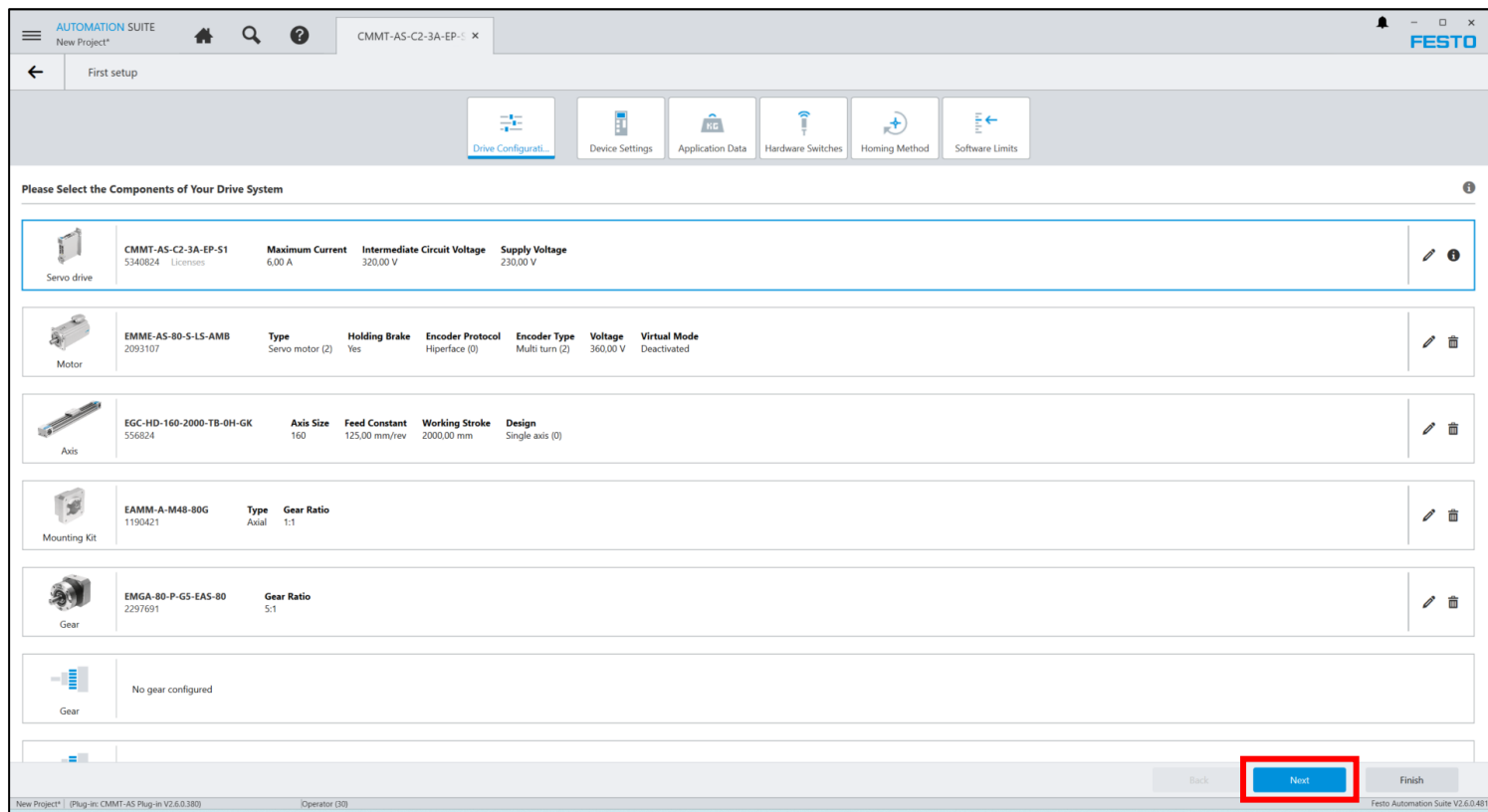
# Component selection

Finally, we indicate the gear to be used.



# Component selection

Finally, verify that the configuration is correct and click *Next*.



The screenshot shows the 'First setup' window of the FESTO Automation Suite. The window title is 'AUTOMATION SUITE' and 'New Project\*'. The main heading is 'Please Select the Components of Your Drive System'. Below this, there are several rows of component selection options, each with an icon, a name, and various specifications. The 'Servo drive' row is highlighted. The 'Motor' row shows 'EMME-AS-80-S-LS-AMB' with specifications like 'Type: Servo motor (2)', 'Holding Brake: Yes', 'Encoder Protocol: HiPerface (0)', 'Encoder Type: Multi turn (2)', 'Voltage: 360,00 V', and 'Virtual Mode: Deactivated'. The 'Axis' row shows 'EGC-HD-160-2000-TB-0H-GK' with specifications like 'Axis Size: 160', 'Feed Constant: 125,00 mm/rev', 'Working Stroke: 2000,00 mm', and 'Design: Single axis (0)'. The 'Mounting Kit' row shows 'EAMM-A-M48-80G' with 'Type: Axial' and 'Gear Ratio: 1:1'. The 'Gear' row shows 'EMGA-80-P-G5-EAS-80' with 'Gear Ratio: 5:1'. There is also a row for 'Gear' with 'No gear configured'. At the bottom right, there are three buttons: 'Back', 'Next' (highlighted with a red box), and 'Finish'.

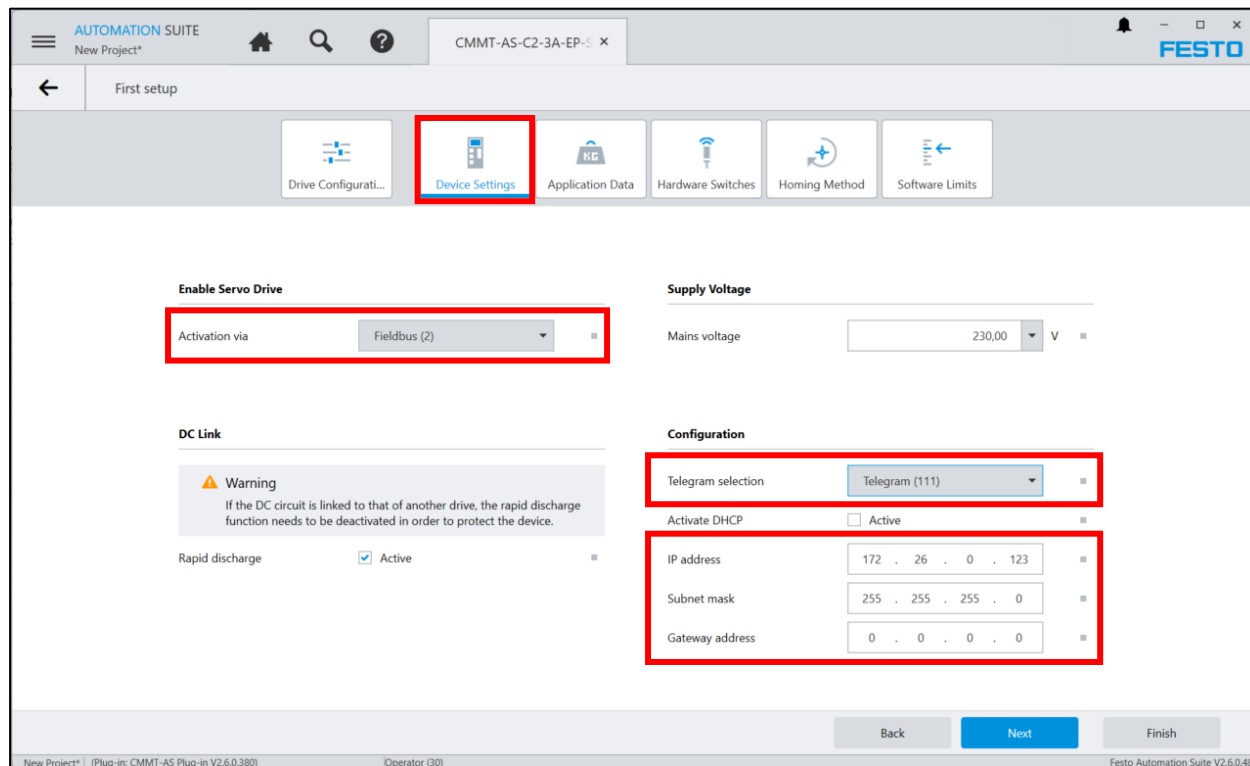
Component	Name	Specifications
Servo drive	CMMT-AS-C2-3A-EP-S1 5340824	Maximum Current: 6,00 A Intermediate Circuit Voltage: 320,00 V Supply Voltage: 230,00 V
Motor	EMME-AS-80-S-LS-AMB 2093107	Type: Servo motor (2) Holding Brake: Yes Encoder Protocol: HiPerface (0) Encoder Type: Multi turn (2) Voltage: 360,00 V Virtual Mode: Deactivated
Axis	EGC-HD-160-2000-TB-0H-GK 556824	Axis Size: 160 Feed Constant: 125,00 mm/rev Working Stroke: 2000,00 mm Design: Single axis (0)
Mounting Kit	EAMM-A-M48-80G 1190421	Type: Axial Gear Ratio: 1:1
Gear	EMGA-80-P-G5-EAS-80 2297691	Gear Ratio: 5:1
Gear	No gear configured	

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# Configuration

First of all, the device configuration is done. Select the *Fieldbus (2)* activation via, telegram *111* and configure the desired IP address.



**AUTOMATION SUITE**  
New Project\*

CMMT-AS-C2-3A-EP

First setup

Drive Configurati... **Device Settings** Application Data Hardware Switches Homing Method Software Limits

**Enable Servo Drive**

Activation via: Fieldbus (2)

**Supply Voltage**

Mains voltage: 230,00 V

**DC Link**

**Warning**  
If the DC circuit is linked to that of another drive, the rapid discharge function needs to be deactivated in order to protect the device.

Rapid discharge: ☒ Active

**Configuration**

Telegram selection: Telegram (111)

Activate DHCP: ☐ Active

IP address: 172 . 26 . 0 . 123

Subnet mask: 255 . 255 . 255 . 0

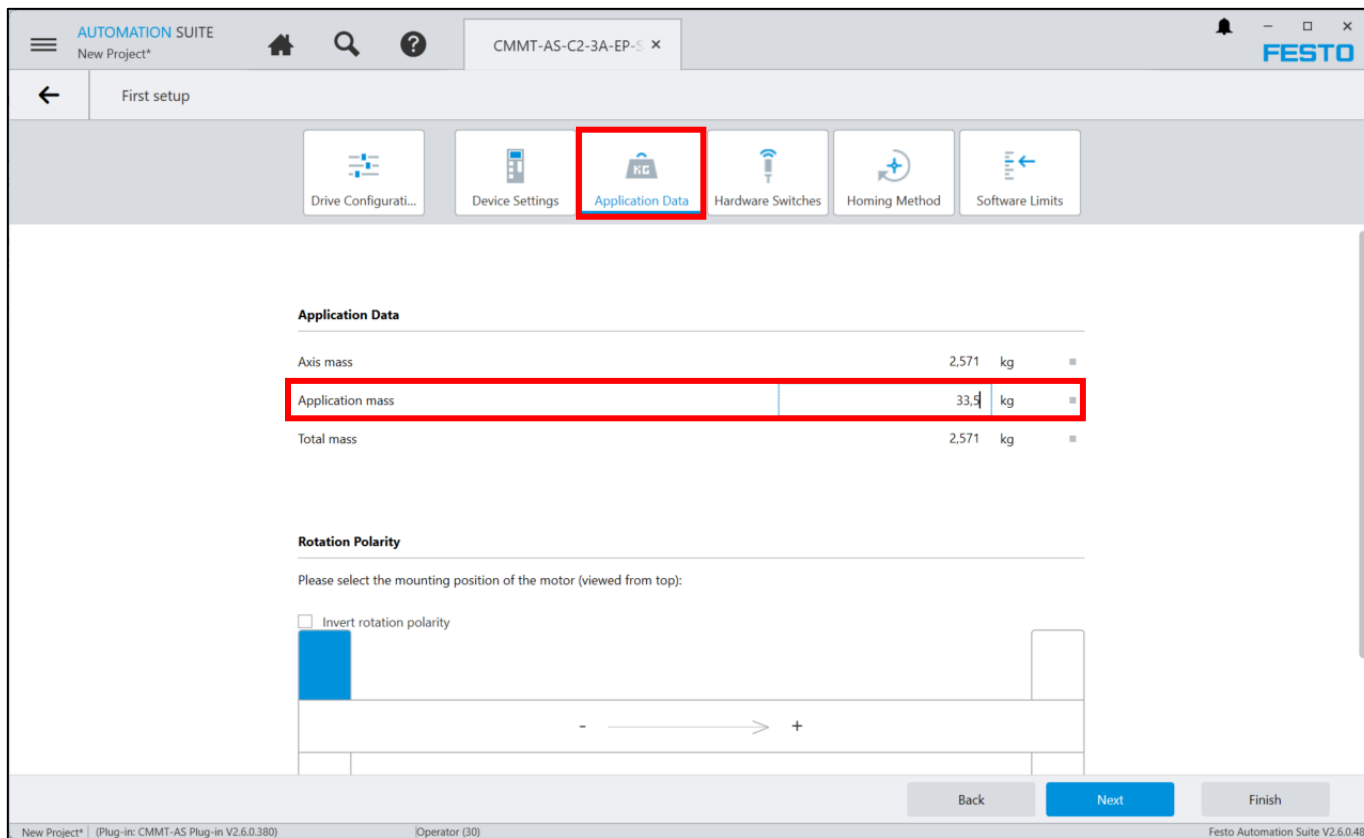
Gateway address: 0 . 0 . 0 . 0

Back Next Finish

New Project\* | (Plug-in: CMMT-AS Plug-in V2.6.0.380) | Operator (30) | Festo Automation Suite V2.6.0.481

# Configuration

Subsequently, the approximate total load is configured in the application data.



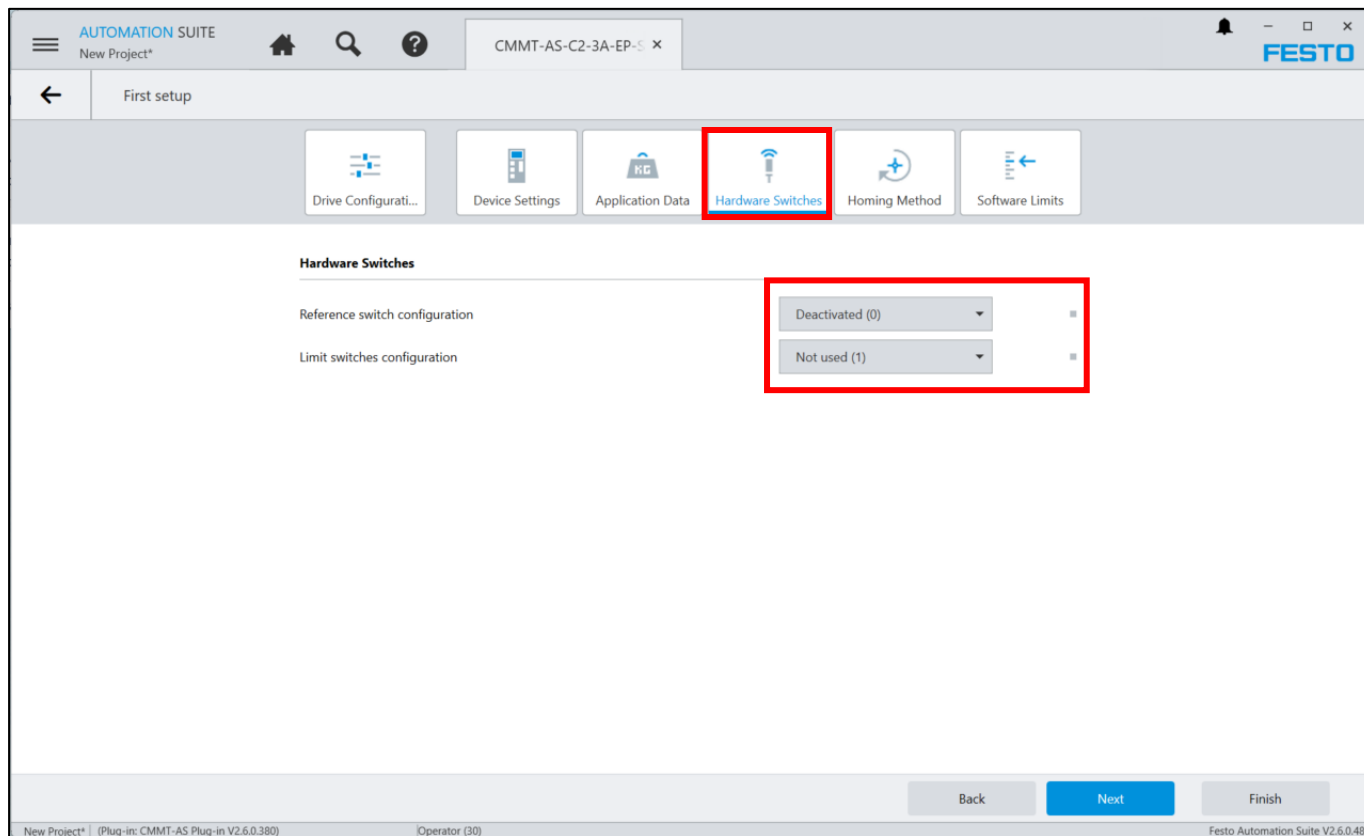
The screenshot shows the 'Application Data' configuration screen in the FESTO AUTOMATION SUITE. The 'Application Data' tab is selected and highlighted with a red box. Below the tab, the 'Application mass' field is highlighted with a red box and contains the value '33.9 kg'. The 'Axis mass' is '2,571 kg' and the 'Total mass' is '2,571 kg'. The 'Rotation Polarity' section is also visible, with a checkbox for 'Invert rotation polarity' and a diagram showing the motor mounting position.

Parameter	Value	Unit
Axis mass	2,571	kg
Application mass	33.9	kg
Total mass	2,571	kg



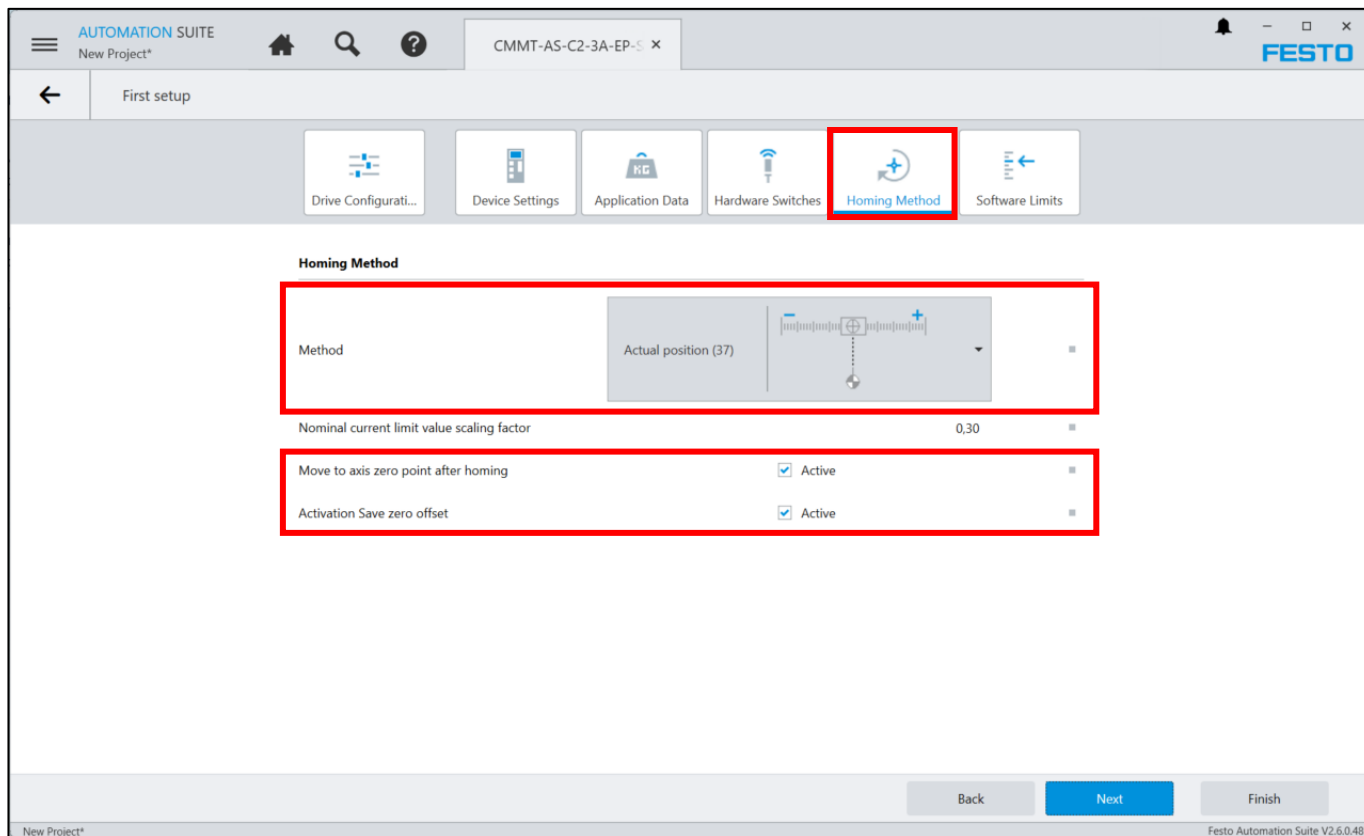
# Configuration

Next, the hardware limits are configured, if any.



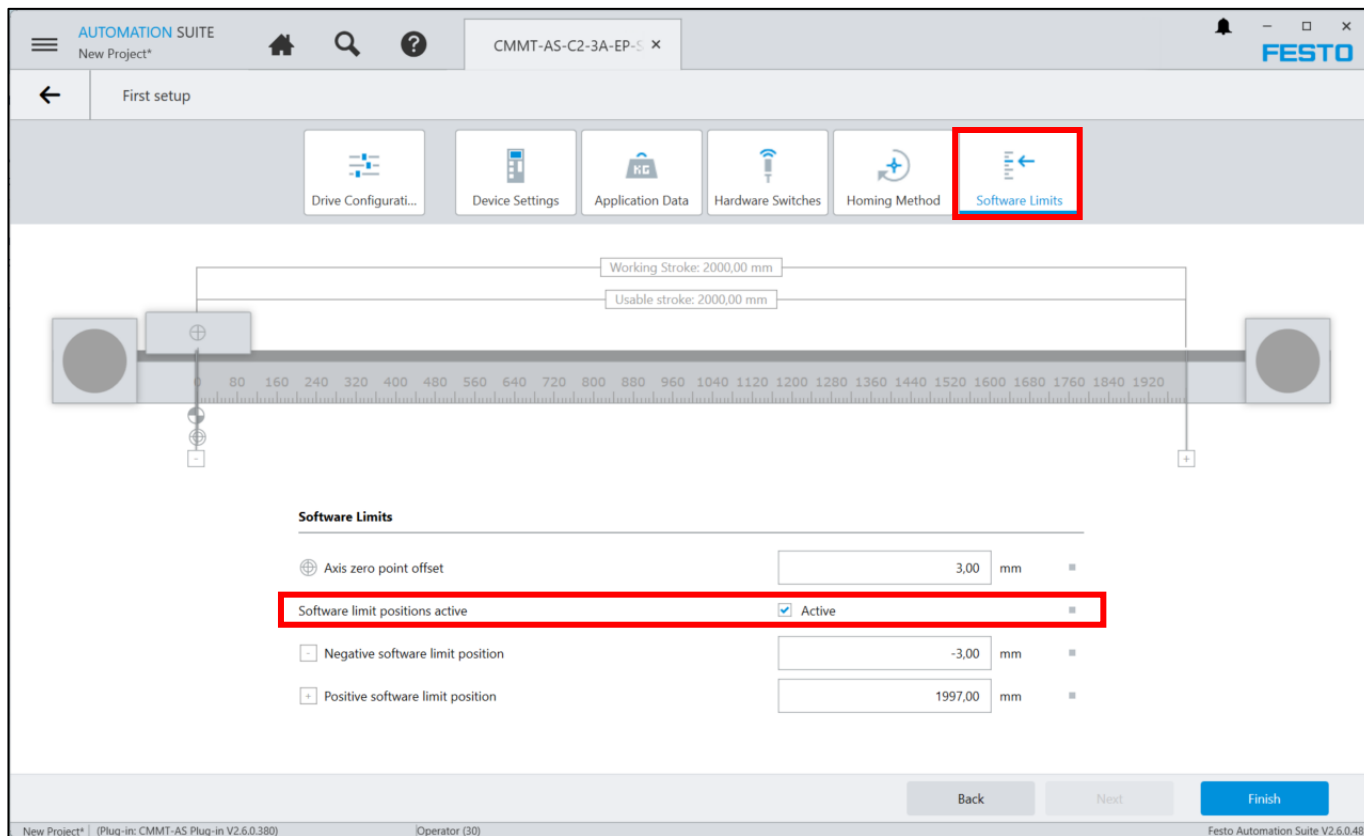
# Configuration

Next, the desired homing method is configured.



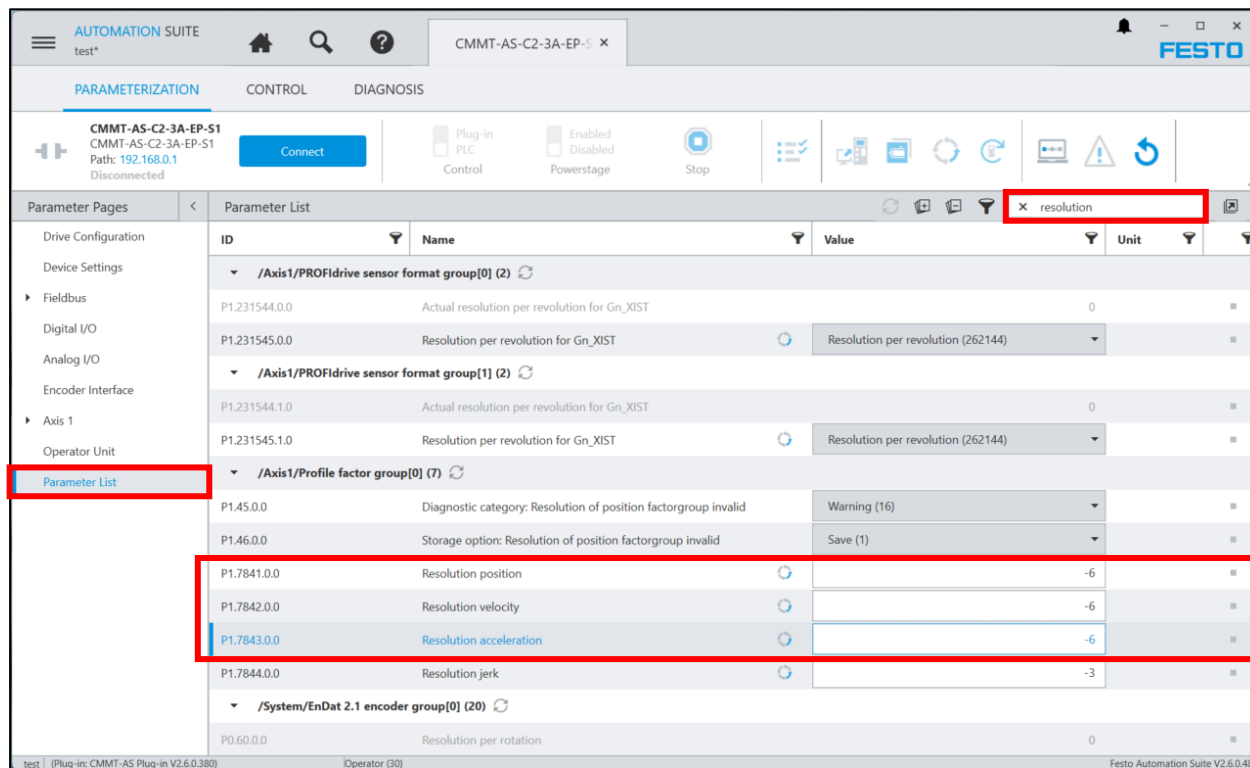
# Configuration

Finally, the software limits are enabled, which can later be configured from the URCap.



# Configuration

Next, we access the *Parameter List* tab and configure the resolution of the position, velocity and acceleration with a value of -6.

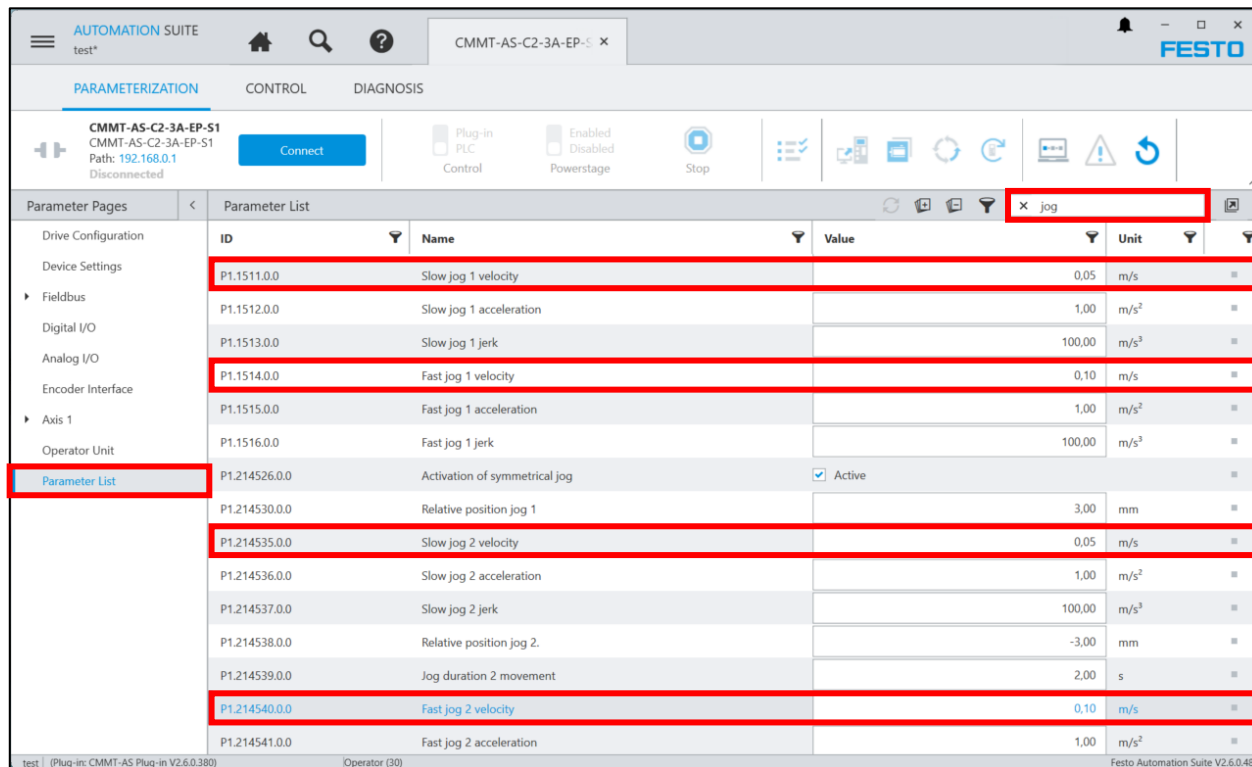


The screenshot shows the FESTO Automation Suite interface. The 'Parameter List' tab is selected in the left sidebar. The main table displays parameters for the CMMT-AS-C2-3A-EP-S1 device. A red box highlights the 'resolution' filter in the top right corner. Another red box highlights the parameters P1.7841.0.0 (Resolution position), P1.7842.0.0 (Resolution velocity), and P1.7843.0.0 (Resolution acceleration), all of which have a value of -6.

ID	Name	Value	Unit
/Axis1/PROFIdrive sensor format group[0] (2)			
P1.231544.0.0	Actual resolution per revolution for Gn_XIST	0	
P1.231545.0.0	Resolution per revolution for Gn_XIST	Resolution per revolution (262144)	
/Axis1/PROFIdrive sensor format group[1] (2)			
P1.231544.1.0	Actual resolution per revolution for Gn_XIST	0	
P1.231545.1.0	Resolution per revolution for Gn_XIST	Resolution per revolution (262144)	
/Axis1/Profile factor group[0] (7)			
P1.45.0.0	Diagnostic category: Resolution of position factorgroup invalid	Warning (16)	
P1.46.0.0	Storage option: Resolution of position factorgroup invalid	Save (1)	
P1.7841.0.0	Resolution position	-6	
P1.7842.0.0	Resolution velocity	-6	
P1.7843.0.0	Resolution acceleration	-6	
P1.7844.0.0	Resolution jerk	-3	
/System/EnDat 2.1 encoder group[0] (20)			
P0.60.0.0	Resolution per rotation	0	

# Configuration

Later, from the same tab, we configure the desired speeds for manual movement (Jog) in the slow and fast phase.

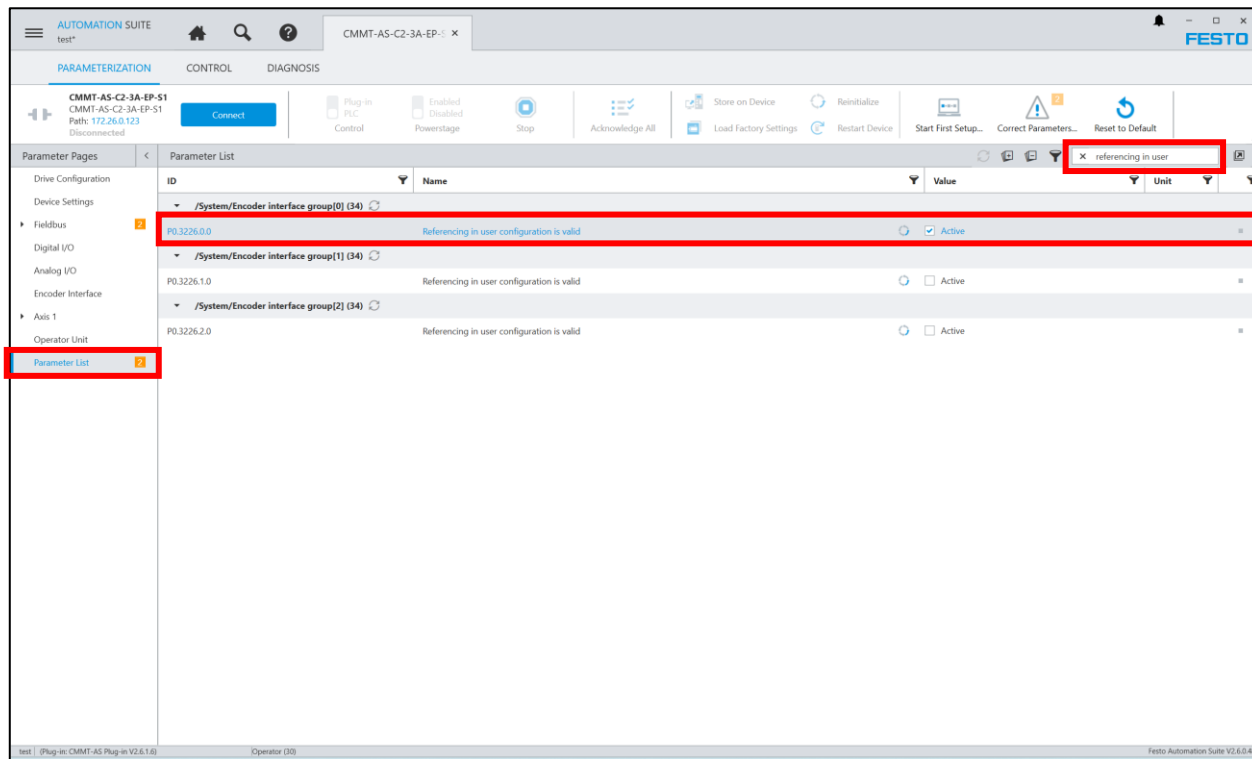


The screenshot displays the FESTO Automation Suite interface, specifically the 'PARAMETERIZATION' tab. The 'Parameter List' table is shown, with several rows highlighted in red, indicating the configuration of jog speeds. The highlighted rows are:

ID	Name	Value	Unit
P1.1511.0.0	Slow jog 1 velocity	0.05	m/s
P1.1512.0.0	Slow jog 1 acceleration	1.00	m/s <sup>2</sup>
P1.1513.0.0	Slow jog 1 jerk	100.00	m/s <sup>3</sup>
P1.1514.0.0	Fast jog 1 velocity	0.10	m/s
P1.1515.0.0	Fast jog 1 acceleration	1.00	m/s <sup>2</sup>
P1.1516.0.0	Fast jog 1 jerk	100.00	m/s <sup>3</sup>
P1.214526.0.0	Activation of symmetrical jog	<input checked="" type="checkbox"/> Active	
P1.214530.0.0	Relative position jog 1	3.00	mm
P1.214535.0.0	Slow jog 2 velocity	0.05	m/s
P1.214536.0.0	Slow jog 2 acceleration	1.00	m/s <sup>2</sup>
P1.214537.0.0	Slow jog 2 jerk	100.00	m/s <sup>3</sup>
P1.214538.0.0	Relative position jog 2	-3.00	mm
P1.214539.0.0	Jog duration 2 movement	2.00	s
P1.214540.0.0	Fast jog 2 velocity	0.10	m/s
P1.214541.0.0	Fast jog 2 acceleration	1.00	m/s <sup>2</sup>

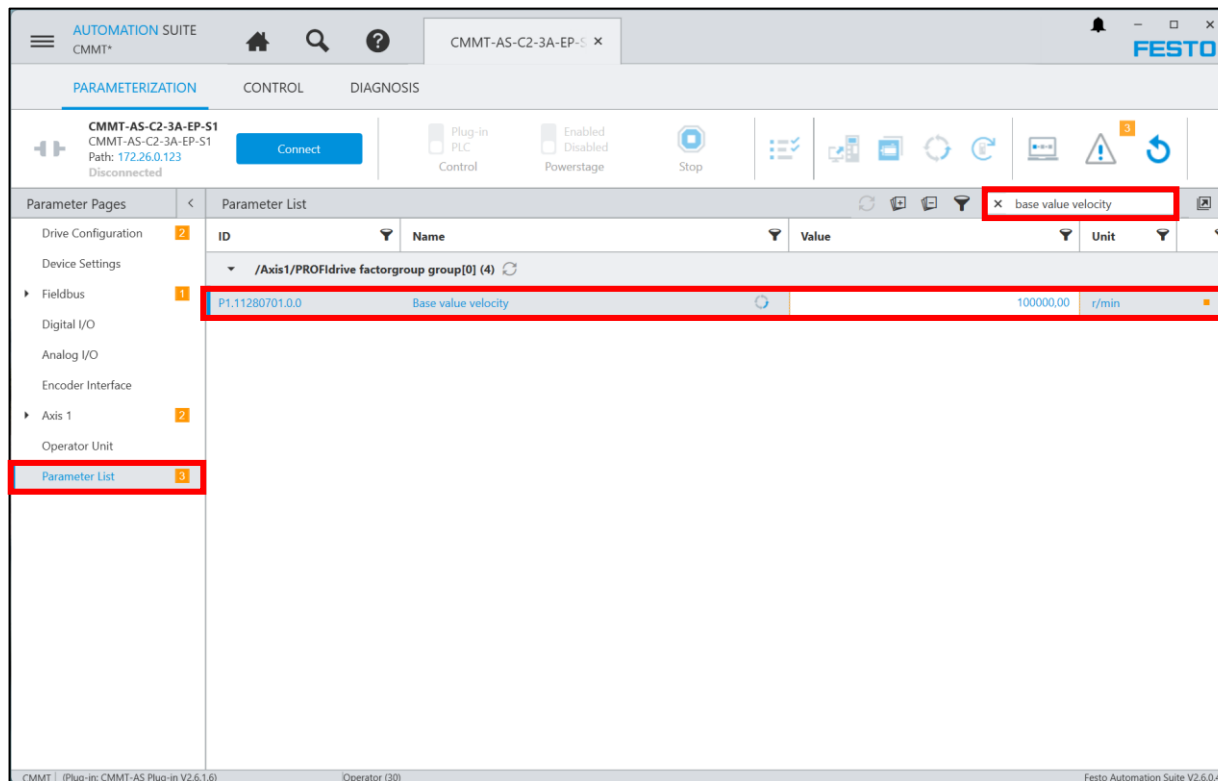
# Configuration

We also verify that the *Referencing in user configuration is valid* parameter is enabled.



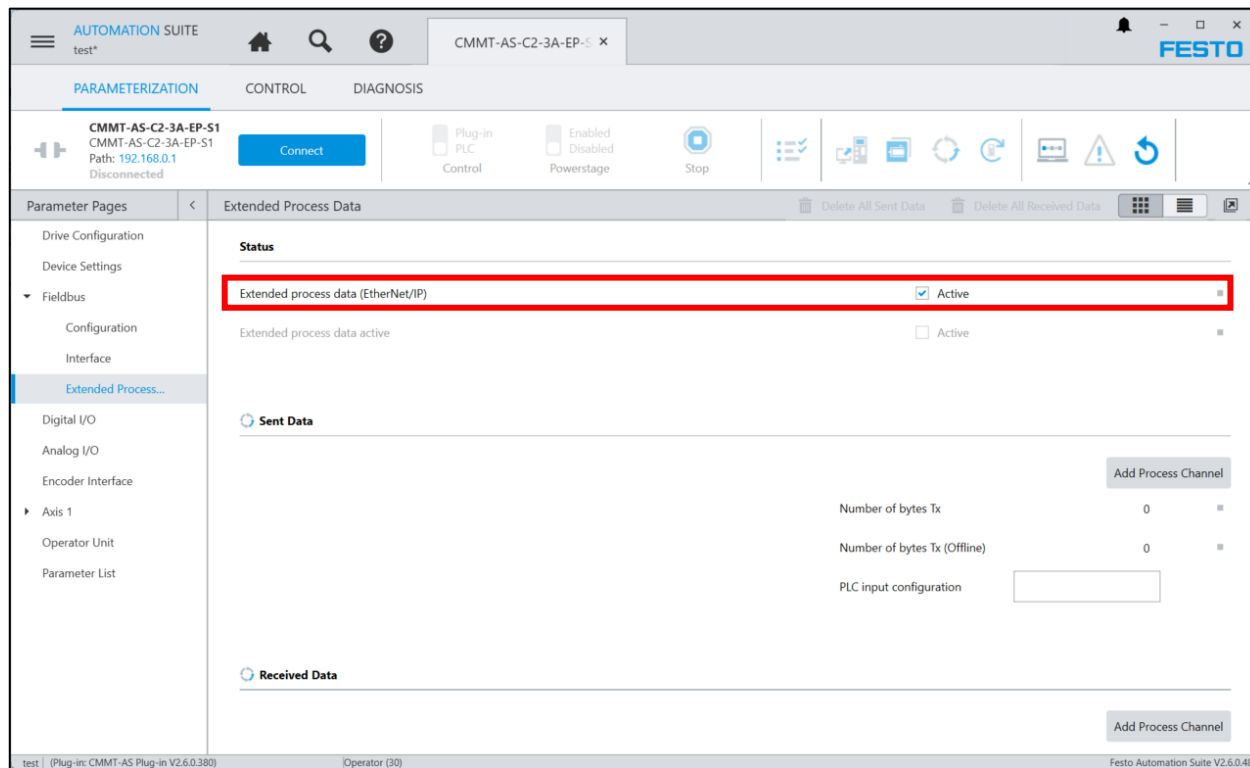
# Configuration

Finally, we make sure to configure the *Base value velocity* parameter with a value of 100000, regardless of the units used.



# Configuration

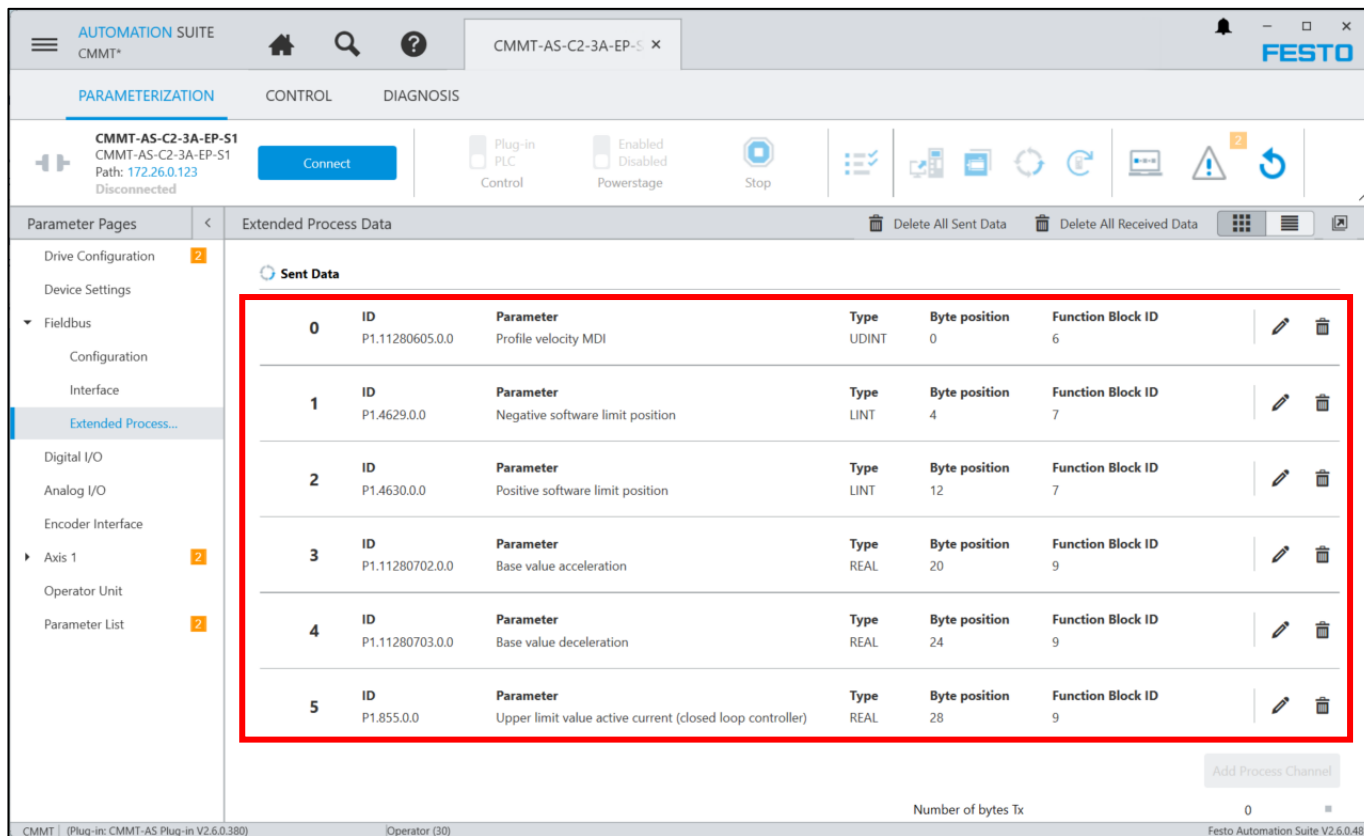
Once the previous configuration has been made, we access *Fieldbus -> Extended Process Data* and verify that its status is *Active*.





# Configuration

Later, we add the following parameters in the *Sent Data* section.



**Parameter Pages**

- Drive Configuration
- Device Settings
- Fieldbus
  - Configuration
  - Interface
  - Extended Process...
- Digital I/O
- Analog I/O
- Encoder Interface
- Axis 1
- Operator Unit
- Parameter List

**Extended Process Data**

**Sent Data**

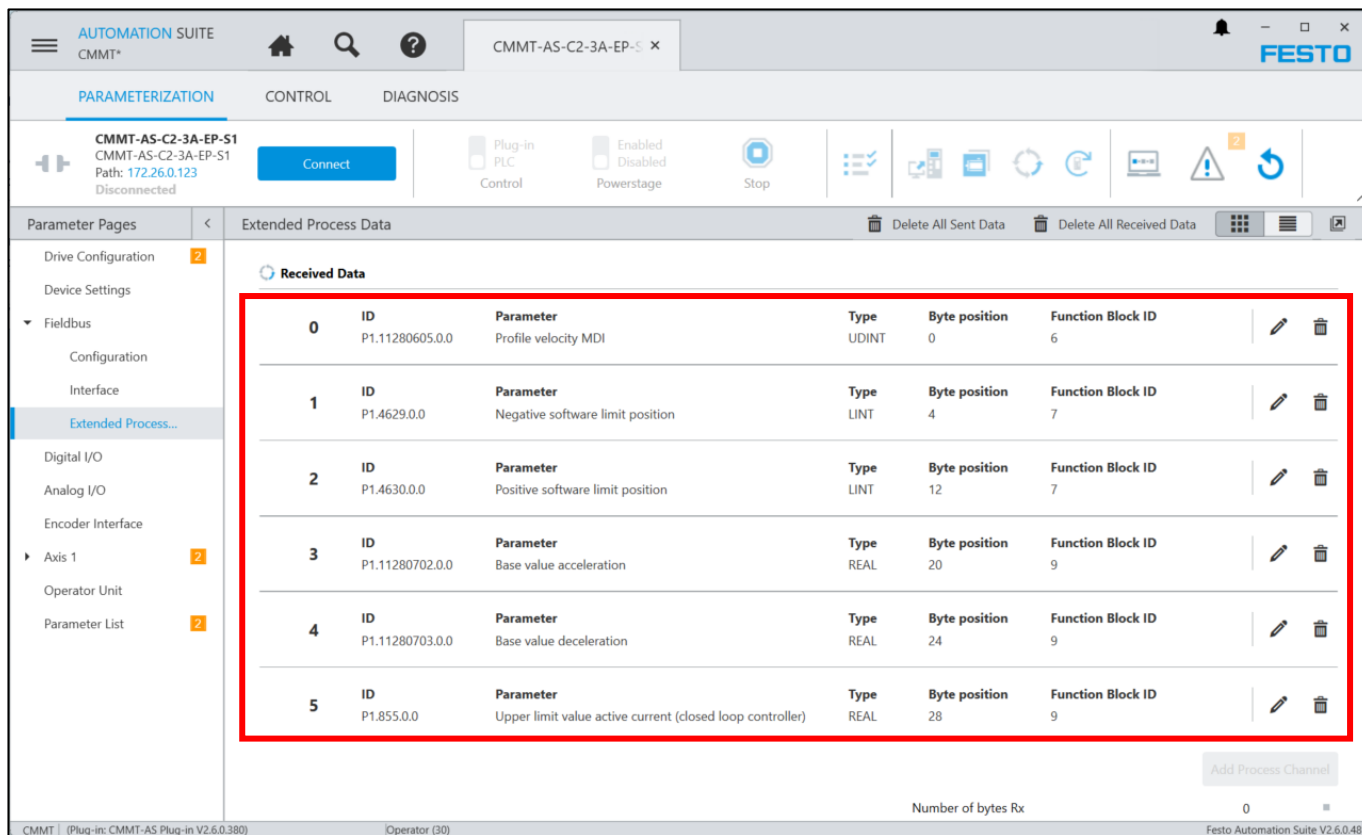
ID	Parameter	Type	Byte position	Function Block ID
0	P1.11280605.0.0 Profile velocity MDI	UDINT	0	6
1	P1.4629.0.0 Negative software limit position	LINT	4	7
2	P1.4630.0.0 Positive software limit position	LINT	12	7
3	P1.11280702.0.0 Base value acceleration	REAL	20	9
4	P1.11280703.0.0 Base value deceleration	REAL	24	9
5	P1.855.0.0 Upper limit value active current (closed loop controller)	REAL	28	9

Number of bytes Tx: 0

Festo Automation Suite V2.6.0.481

# Configuration

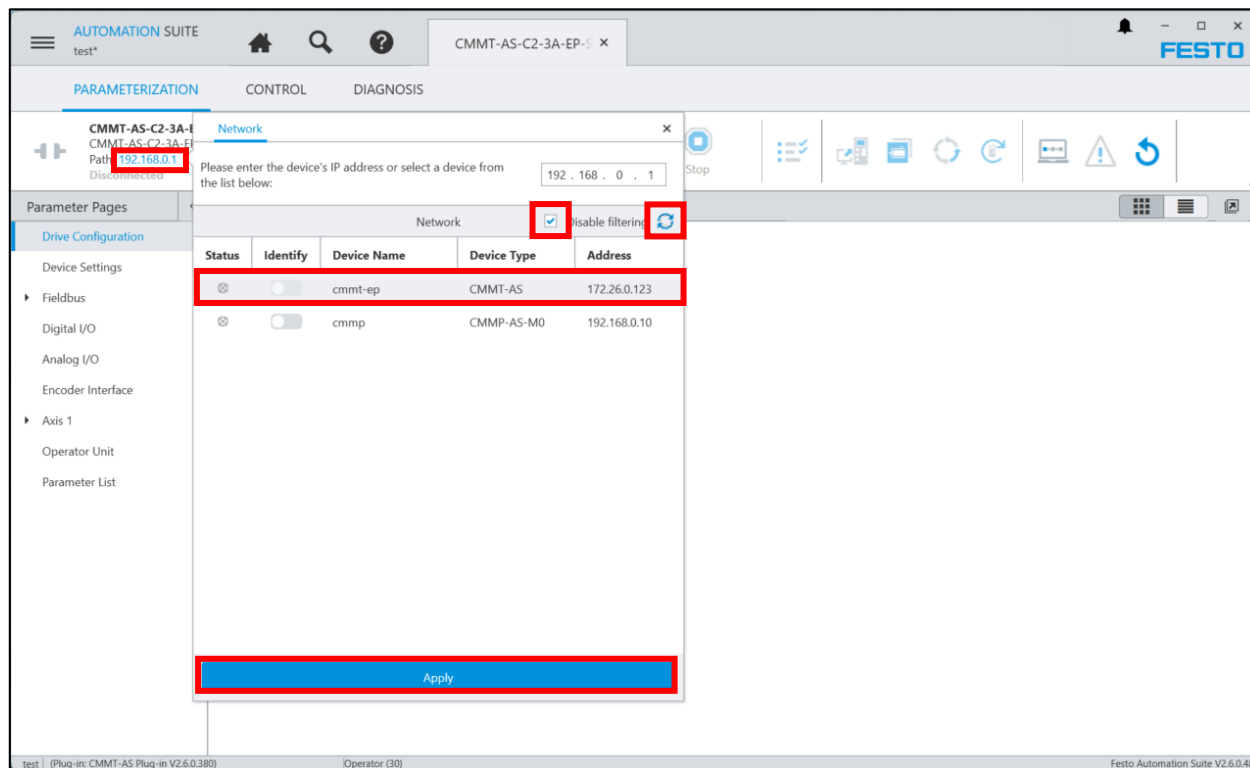
Similarly, we add the same parameters in the *Received Data* section.



ID	Parameter	Type	Byte position	Function Block ID
0	P1.11280605.0.0 Profile velocity MDI	UDINT	0	6
1	P1.4629.0.0 Negative software limit position	LINT	4	7
2	P1.4630.0.0 Positive software limit position	LINT	12	7
3	P1.11280702.0.0 Base value acceleration	REAL	20	9
4	P1.11280703.0.0 Base value deceleration	REAL	24	9
5	P1.855.0.0 Upper limit value active current (closed loop controller)	REAL	28	9

# Configuration

Once the configuration is complete, we will connect to the controller. To do this, we click on the IP address, perform a search and select it.



# Configuration

Afterwards, we connect to the controller and download our configuration in the parameters synchronisation.

?

Parameter synchronisation

The following parameters mismatch. Please choose whether you want to transfer the parameters from the project to the device or vice versa.

ID	Name	Value in project	Unit	Value on device	Unit
P0.557.0.0	Trace delay	1715		1716	
P0.558.0.0	Recording length	2287		2289	
P0.3223.0.0	Zero point offset from user configuration	0,00	r	-88,121129065	r
P0.3226.0.0	Referencing in user configuration is valid	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
P0.3239.0.0	Serial number motor reference configuration			U7280545G	
P0.11618.0.0	Velocity filter filter time constant	0,001	s	0,002	s
P0.12002.1.0	Subnet mask	4294967040		4294901760	
P0.12003.1.0	Gateway address	0		2887385089	
P1.80.0.0	Current controller amplification gain (reactive curr	18,95591		33,61274	
P1.81.0.0	Current controller integration constant (reactive ci	13223,04		23641,86	
P1.82.0.0	Current controller amplification gain (active curren	18,95591		33,61274	
P1.83.0.0	Current controller integration constant (active curi	13223,04		23641,86	
P1.220.0.0	Position controller amplification gain	16,28033		27,00838	
P1.222.0.0	Minimum correction velocity	-0,10	m/s	-60,00	r/min

Write to device

Read from device

Cancel

Connected Device

Identify

☐

Device Name

CMMT-AS-C2-3A-EP-S1

Device Type

CMMT-AS-C2-3A-EP-S1

IP-Address

3232235543

Product key

H5X2PFZX3K9

Plug-in version

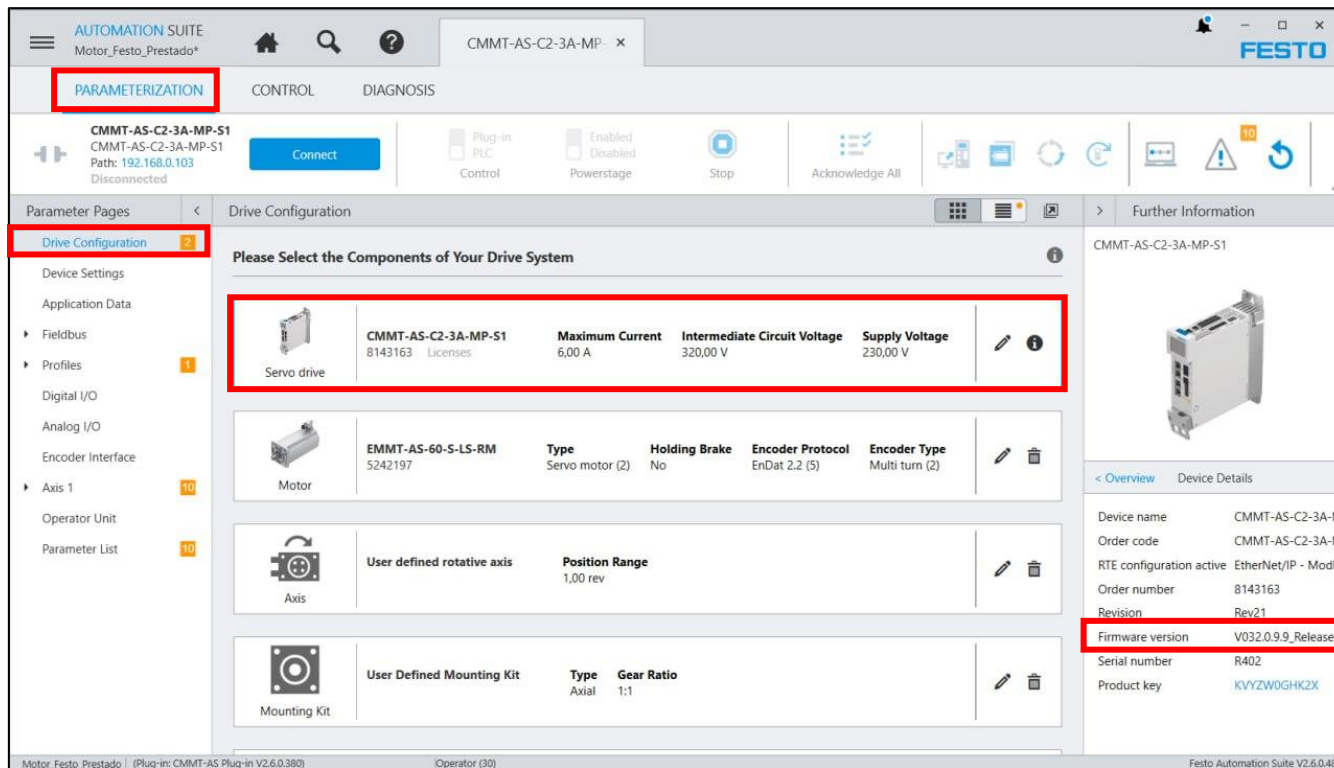
2.6.0.380

Firmware version

V20.0.5.78\_release

# Configuration

Finally, to avoid possible incompatibilities, it is necessary to verify the firmware version of the motor controller (see next slide).



# Configuration

Depending on your motor controller model, verify that the firmware version is the following to avoid possible connection problems:

- CMMT-AS-...-MP:  
Firmware 32.0.9.9.
- CMMT-ST-...-MP:  
Firmware 32.0.10.10.
- CMMT-AS-...-EP  
Firmware 24.0.2.94 and modify the timeout using the following [instructions](#).

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**i** For further information, please contact:



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