

Commissioning Guide

Rockwell

Kinetix 5700

Imprint

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Technical changes:

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Dear Customer

Dear Customer,

Thank you for putting your trust in our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. We look forward to your challenging questions. We will find a solution!

Best regards,

Your SCHUNK team

Customer Management

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Please read the operating manual in full and keep it close to the product.

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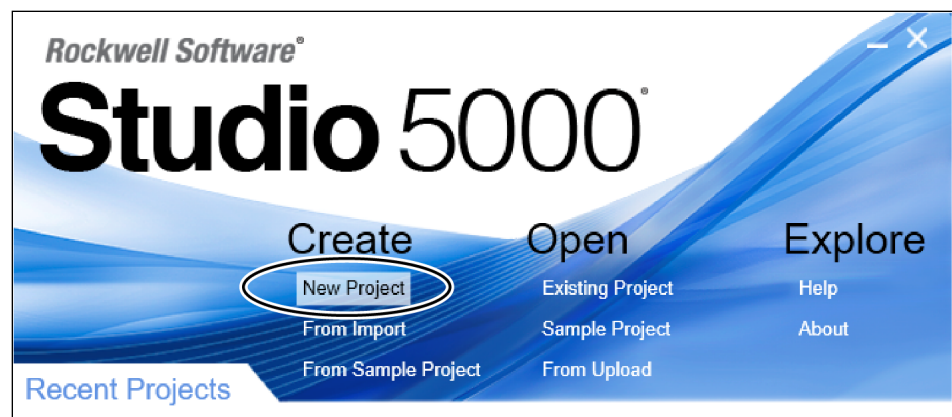
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1 About this manual

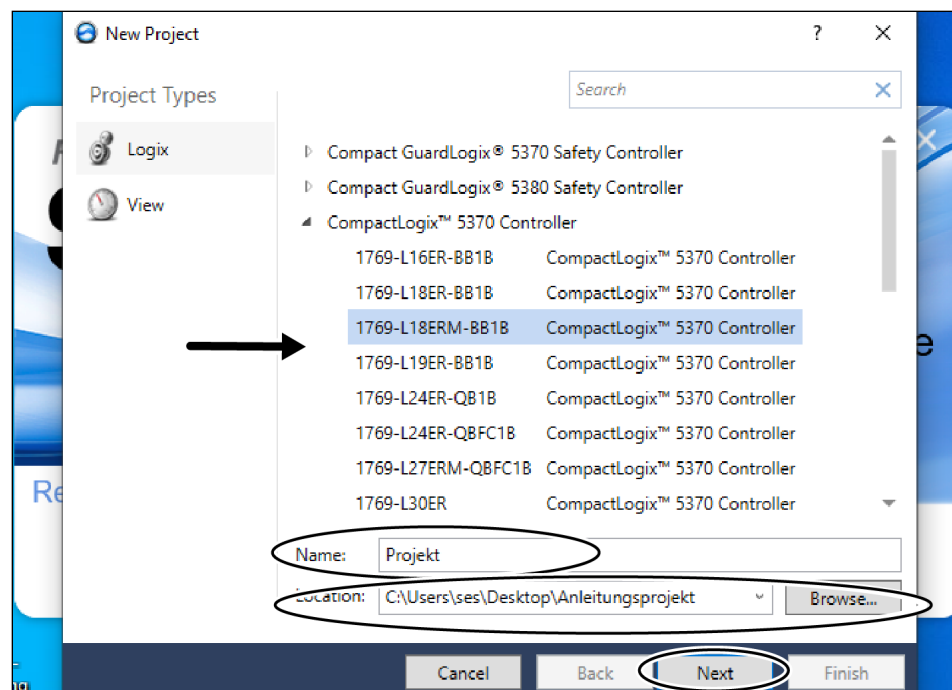
These instructions contain a step-by-step explanation of how to create a linear motor with Hiperface interface in Studio5000 using the "Motor Nameplate Datasheet."

Communication between the controller and the regulator takes place via Ethernet.

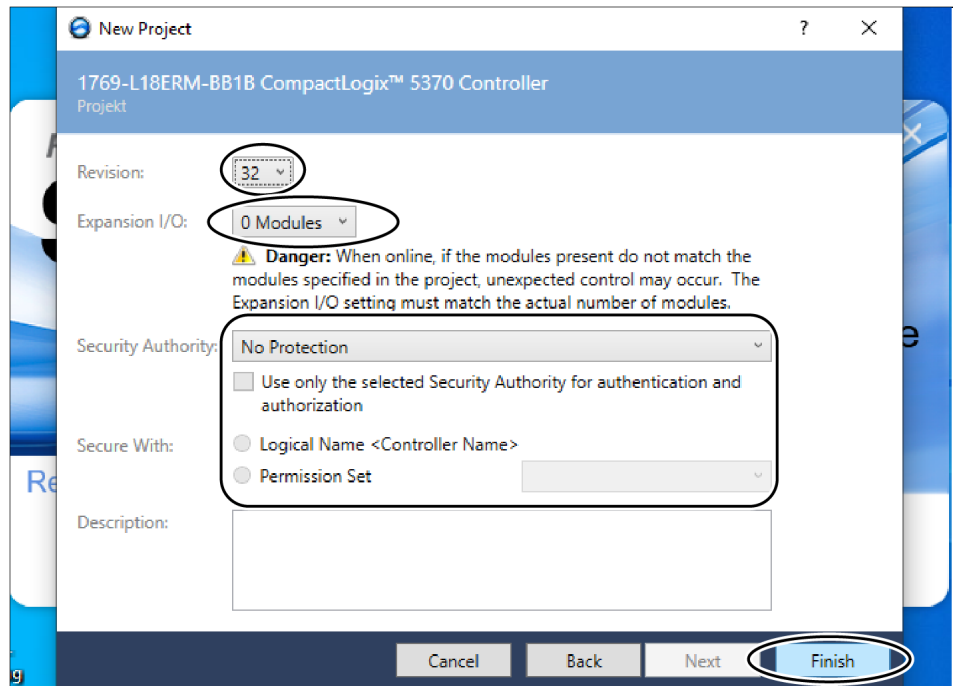
2 Create a new project



1. On the start screen, select "Create" > "New Project."

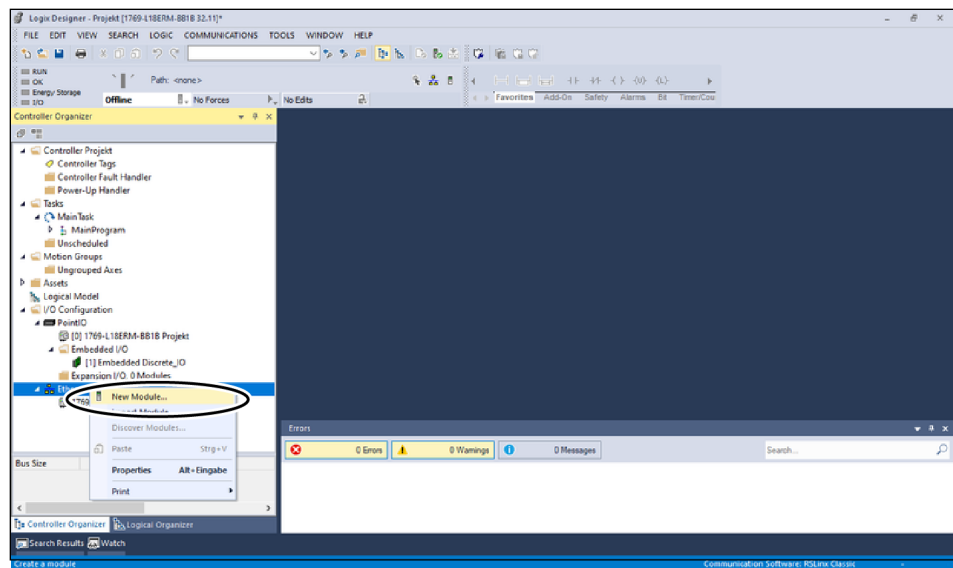


2. Select the controller.
3. Enter the project name and select the storage location.
4. Select the "Next" button.

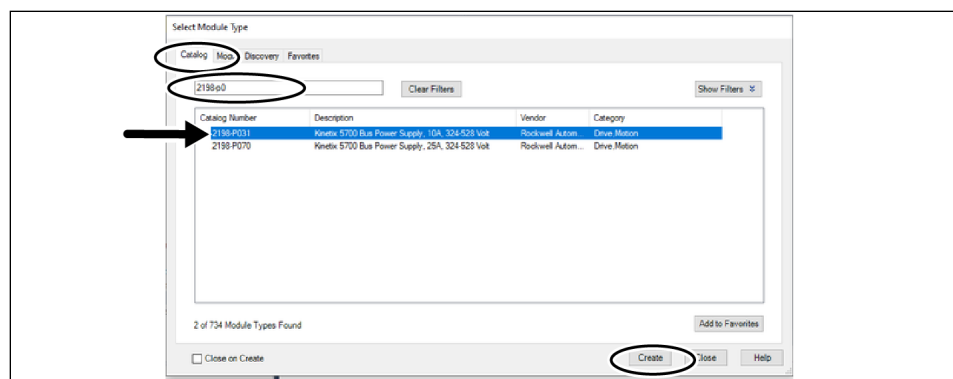


5. Select the software version under "Revision."
 6. Under "Expansion I/O", select the appropriate IO setting.
 7. Select settings for project protection under "Security Authority".
 8. Select the "Finish" button.
- ⇒ The project is created.

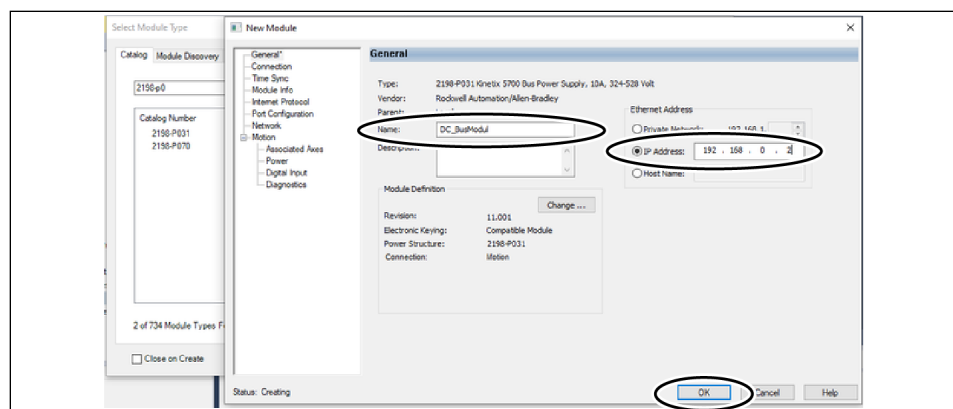
3 Creating and configuring the DC bus module



1. In the "Controller Organizer" window, under "I/O Configuration" > "Ethernet," right-click and select "New Module..."

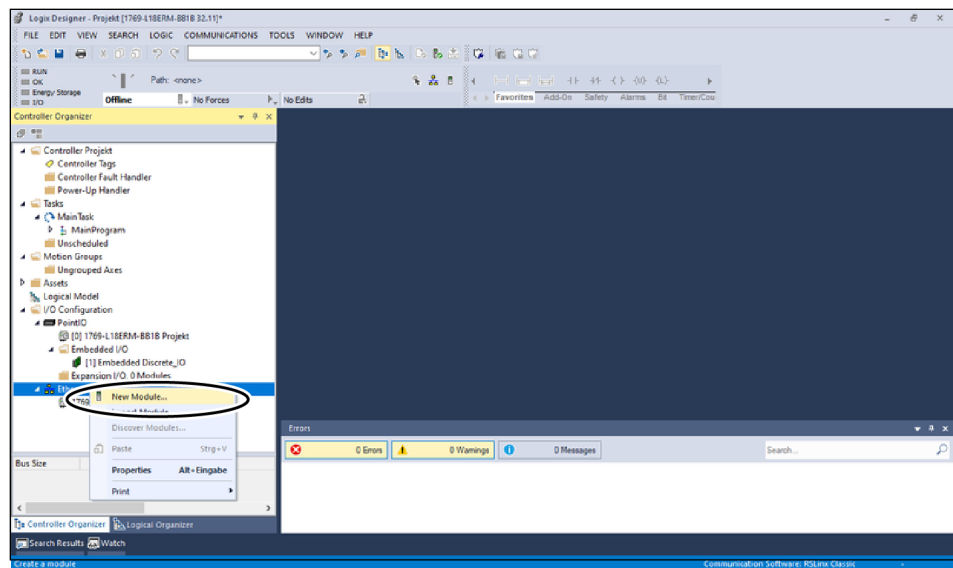


2. Search for the appropriate module in the "Catalog" tab.
3. Select the module and click the "Create" button.

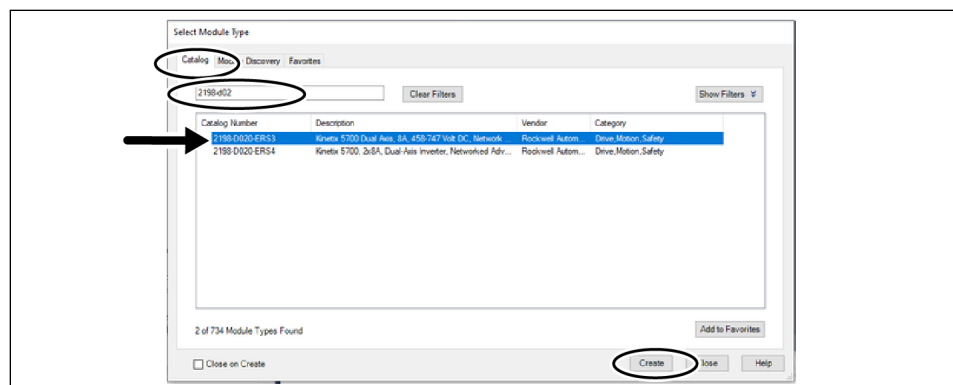


4. Enter the name and IP address.
The IP address must be in the same network as the controller.
5. Select the "OK" button.
⇒ The DC bus module is created and displayed in the project tree.

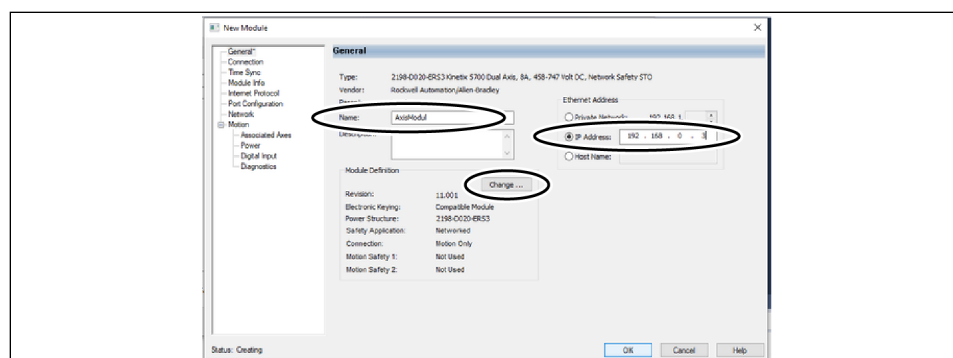
4 Creating and configuring the Axis module



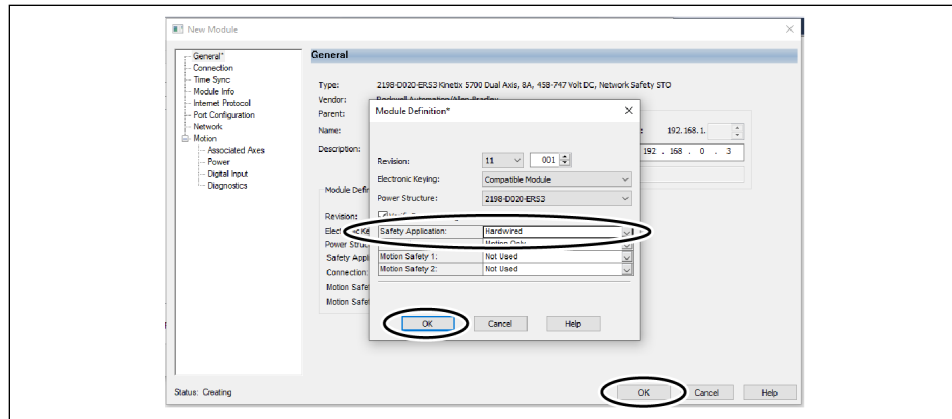
1. In the "Controller Organizer" window, under "I/O Configuration" > "Ethernet," right-click and select "New Module..."



2. Search for the appropriate module in the "Catalog" tab.
3. Select the module and click the "Create" button.

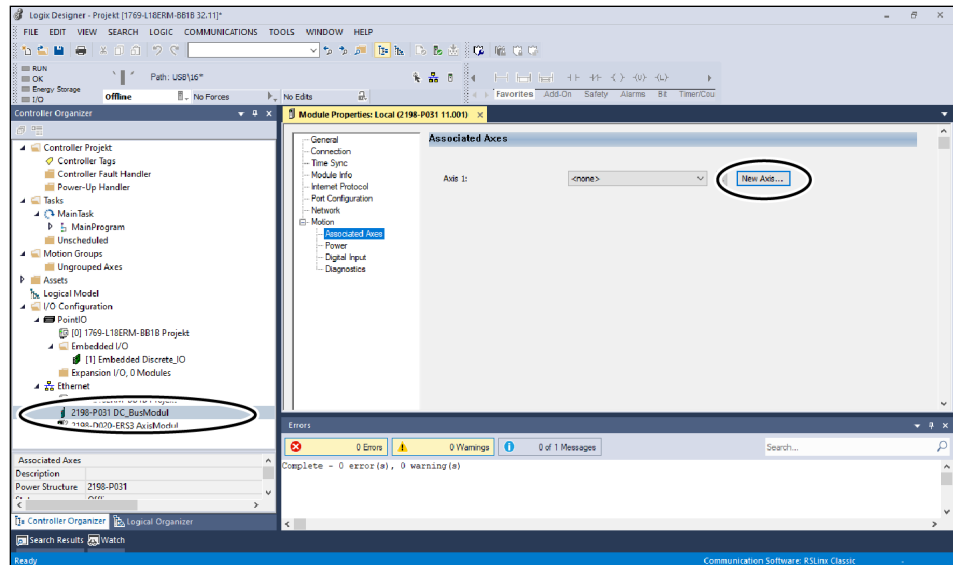


4. Enter the name and IP address.
The IP address must be on the same network as the controller.
5. Select the "Change ..." button.
⇒ The "Module Definition" window opens.

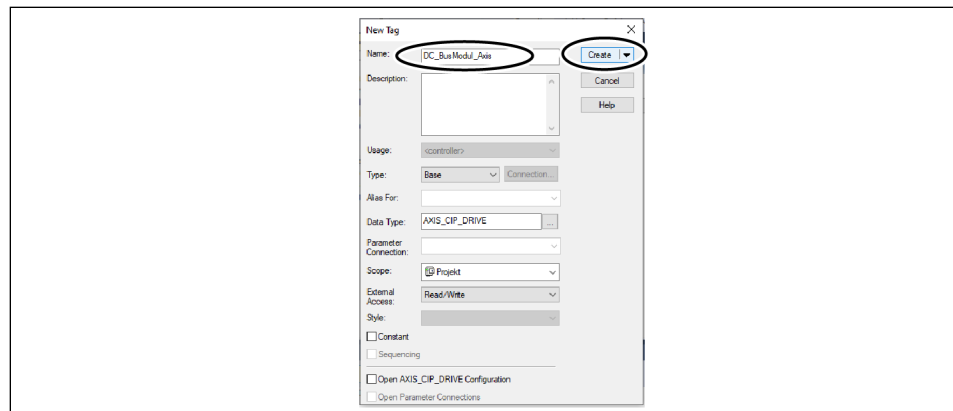


6. In the "Safety Application" line, select "Hardwired" in the selection field.
7. Select the "OK" button.
 - ⇒ The "Module Definition" window closes.
8. Select the "OK" button.
 - ⇒ The Axis module is created and displayed in the project tree.

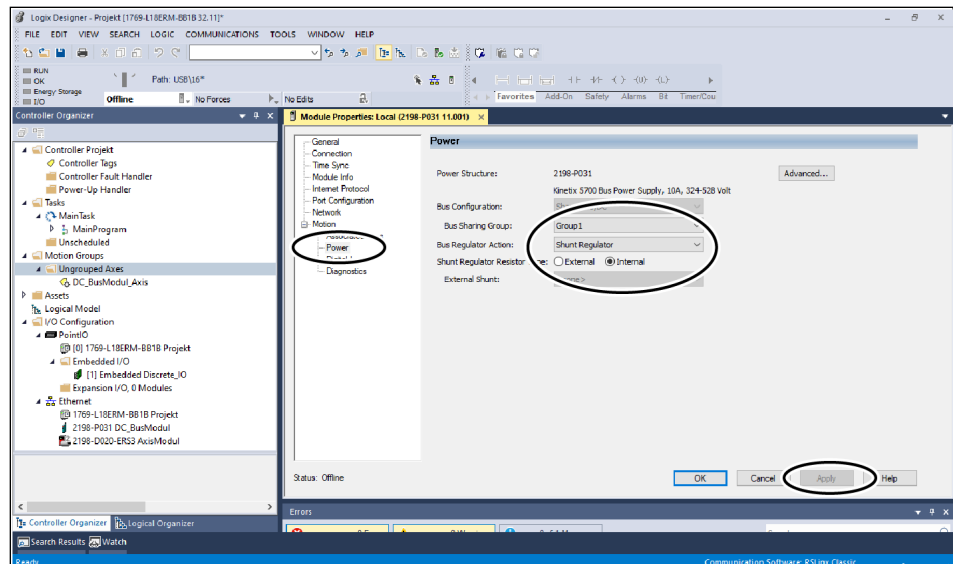
5 Configuring the DC bus module



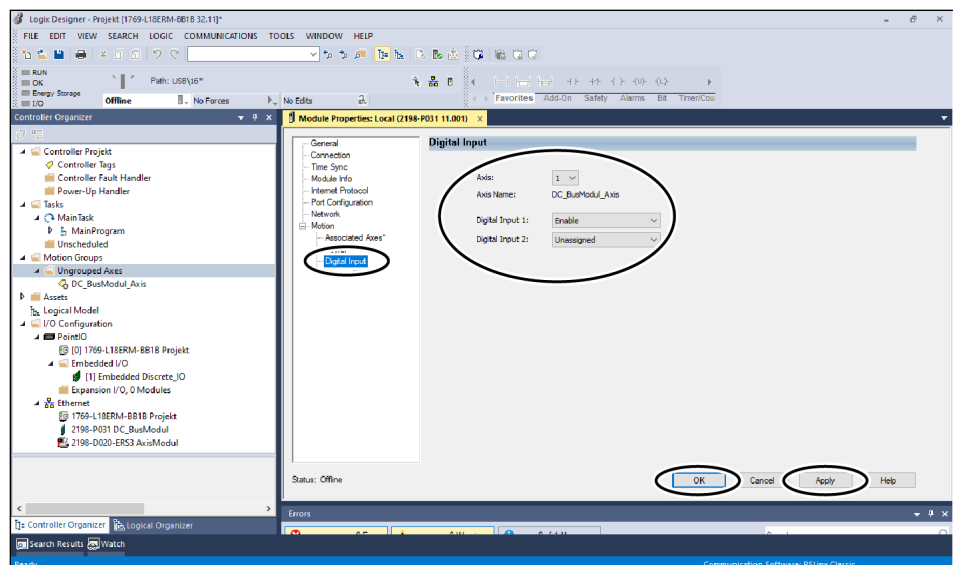
1. In the "Controller Organizer" window under "I/O Configuration," double-click on the DC bus module to be configured.
2. In the main window, select "Motion" > "Associated Axes."
3. Select the "New Axis..." button.
⇒ The "New Tag" window opens.



4. Enter the axis name in "Name" and select the "Create" button.
⇒ The axis you created will be automatically assigned to the DC bus module.

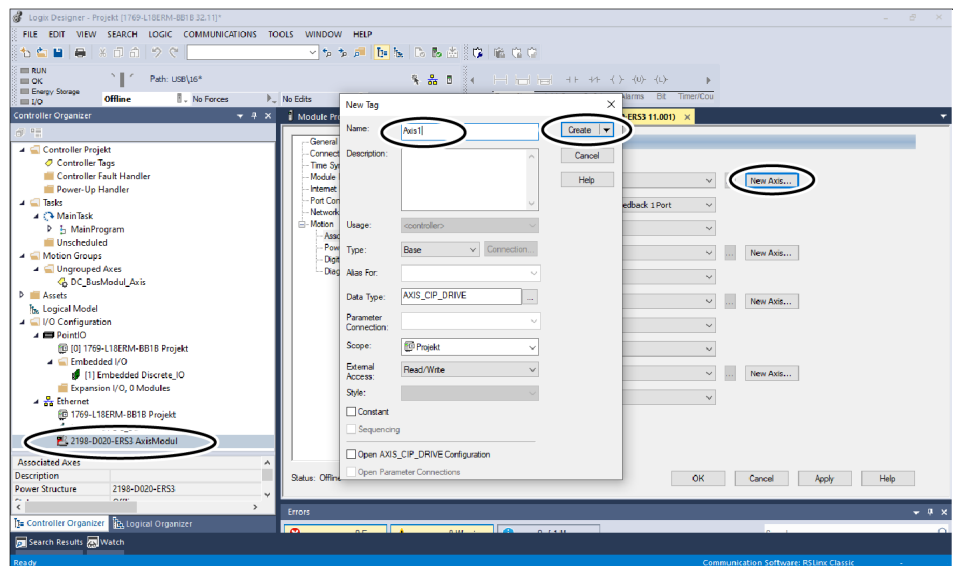


5. In the main window, select "Motion" > "Power".
6. Set values for the bus group; for a controller package, "Group 1" can be retained.
7. Configure the existing braking resistor.
8. Select the "Apply" button.

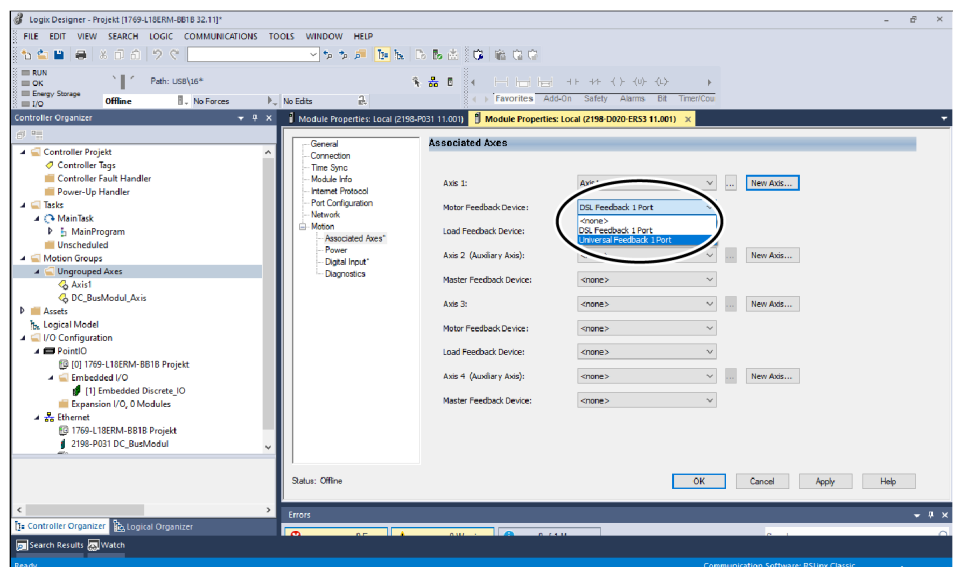


9. In the main window, select "Motion" > "Digital Input".
10. Select the settings for the digital inputs according to the required application.
11. Select the "OK" button.

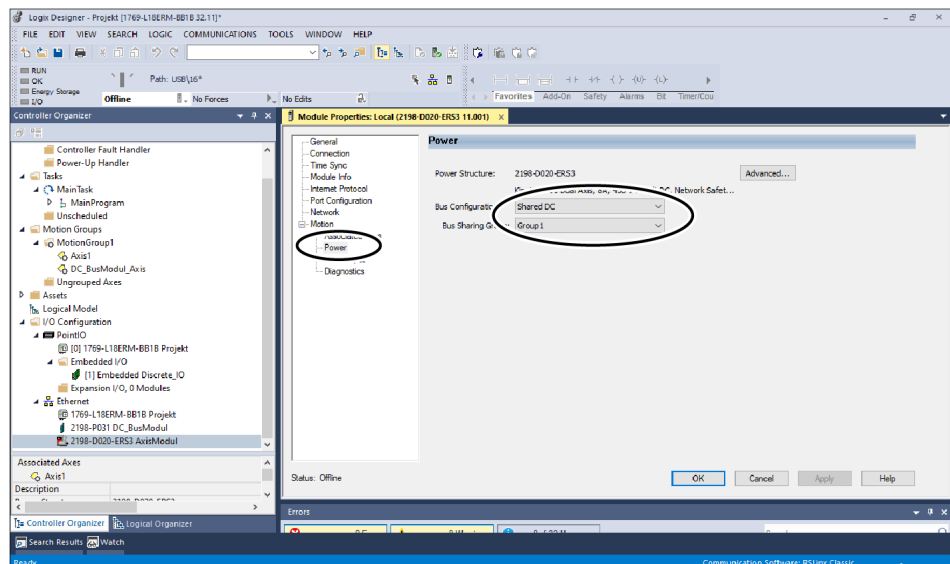
6 Configuring the Axis Module



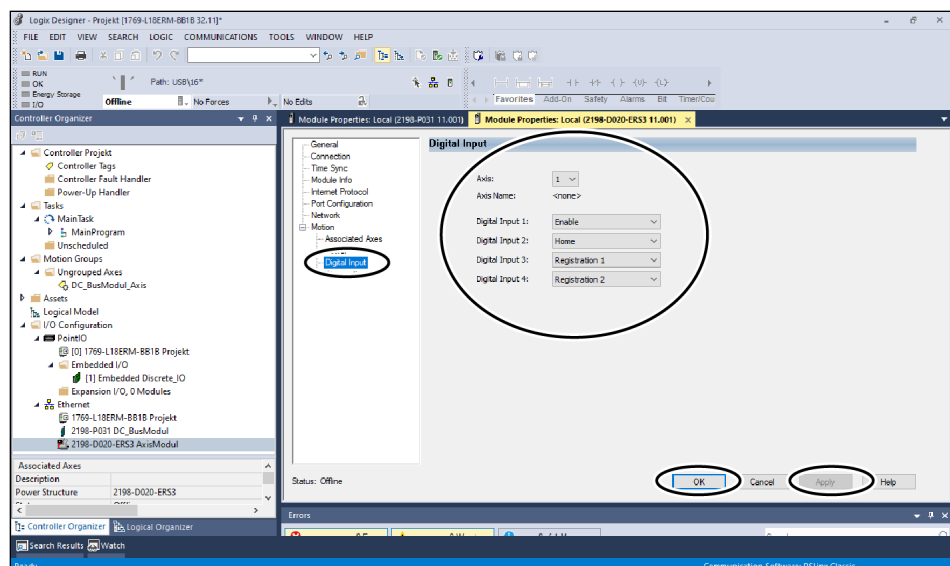
1. In the "Controller Organizer" > "I/O Configuration" > "Ethernet" window, double-click on the Axis module to be configured.
2. In the main window, select "Motion" > "Associated Axes".
3. Select the "New Axis..." button.
⇒ The "New Tag" window opens.
4. Enter the axis name in "Name" and select the "Create" button.
⇒ The created axis is automatically assigned to the axis module.



5. Under "Motor Feedback Device," select the measurement system input for the axis to be configured.
6. Select the "Apply" button.

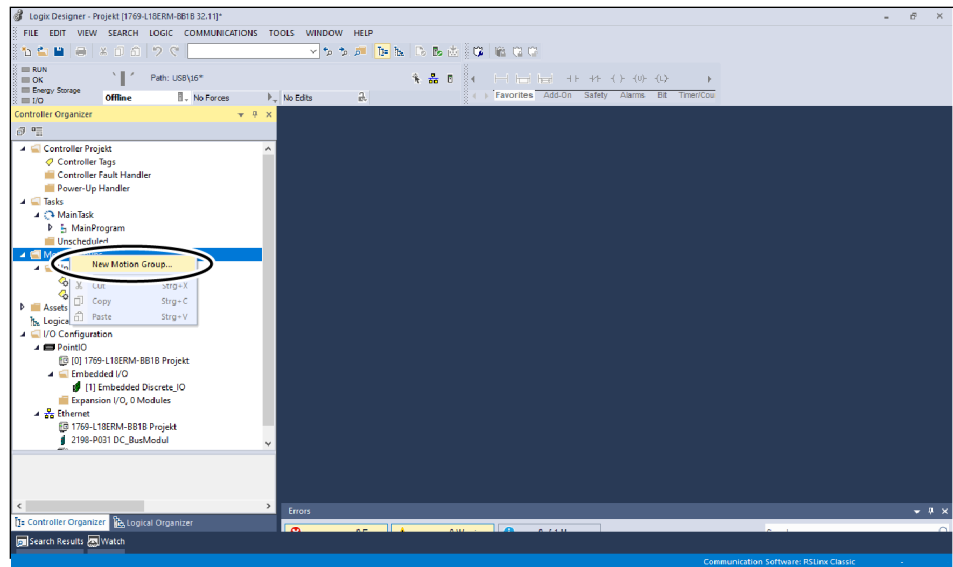


7. In the main window, select "Motion" > "Power."
8. Select the "Bus Sharing Group" of the created DC bus module.
9. Select the "Apply" button.

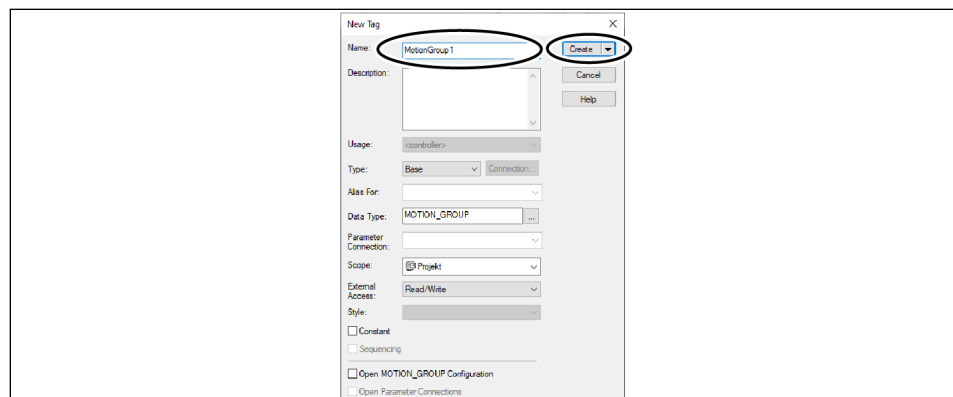


10. In the main window, select "Motion" > "Digital Input".
11. Select the settings for the digital inputs according to the required application.
12. Select the "OK" button.

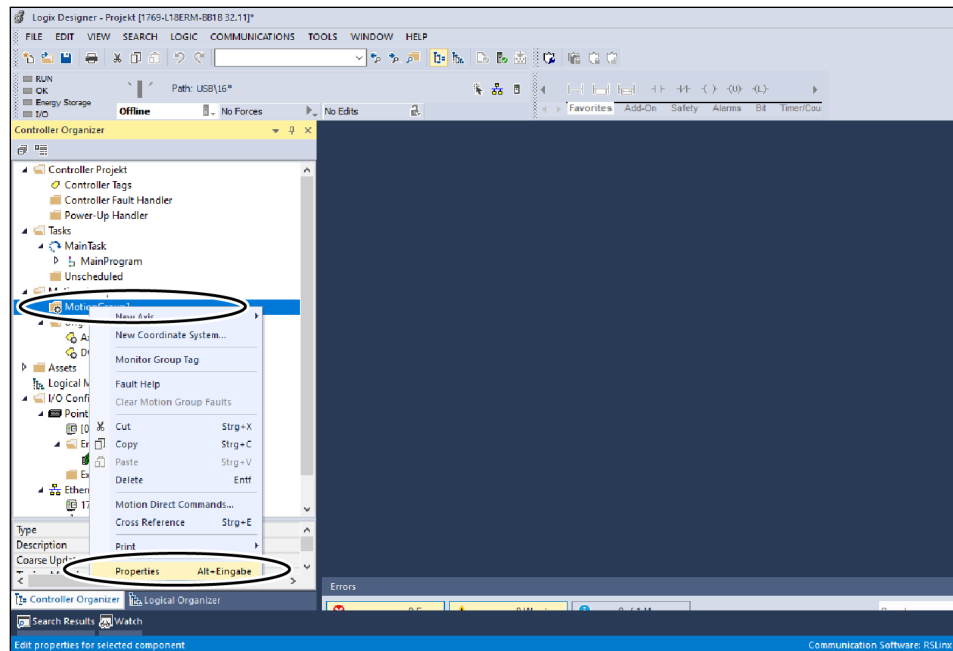
7 Creating the motion group and assigning the software axes



1. In the "Controller Organizer" > "Motion Groups" window, right-click > select "New Motion Group."
⇒ The "New Tag" window opens.

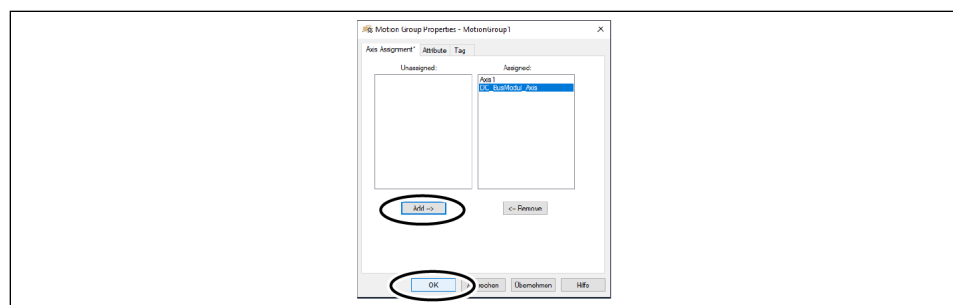


2. Enter the name of the motion group to be created in the "Name" field and select the "Create" button.
⇒ The new motion group is displayed in the "Controller Organizer" under "Motion Groups".



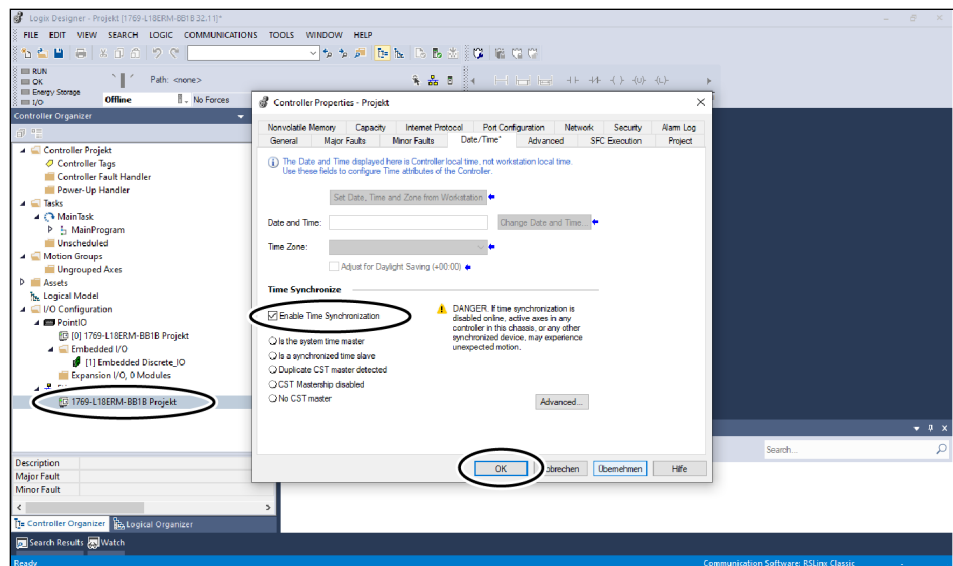
3. Select the new motion group entry and right-click > select "Properties."

⇒ The "Motion Group Properties" window opens.



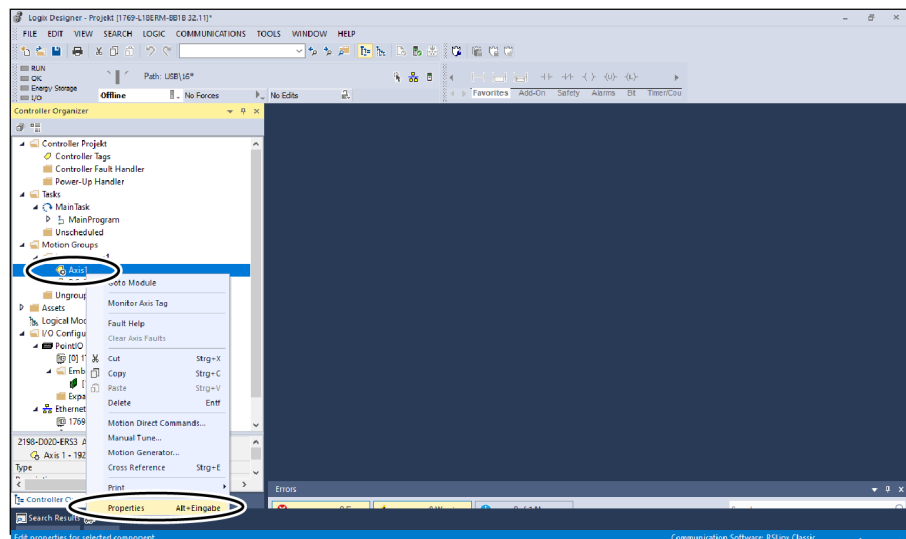
4. In the left window, select the ungrouped axes and add them to the motion group using the "Add" button.
5. Select the "OK" button.

8 Enable time synchronization in the controller

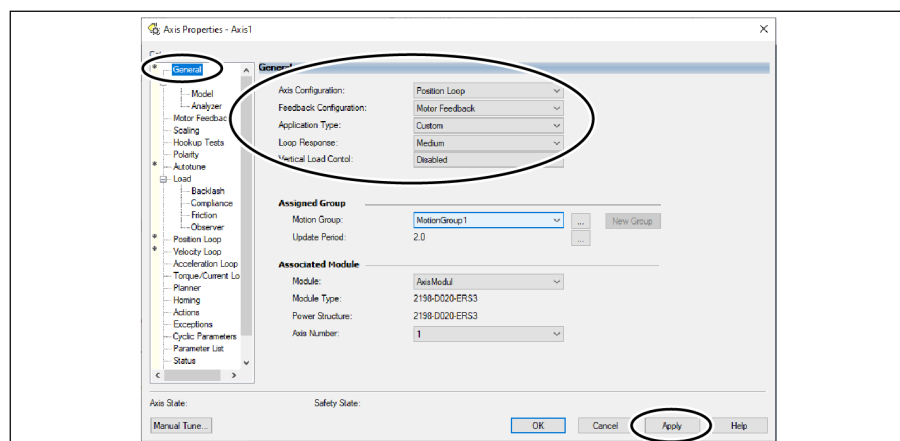


1. In the "Controller Organizer" window, under "I/O Configuration" > "Ethernet," right-click on the project and select "Properties."
2. In the Properties window, select the "Date/Time" tab.
3. Check the box next to "Enable Time Synchronization."
4. Select the "OK" button.

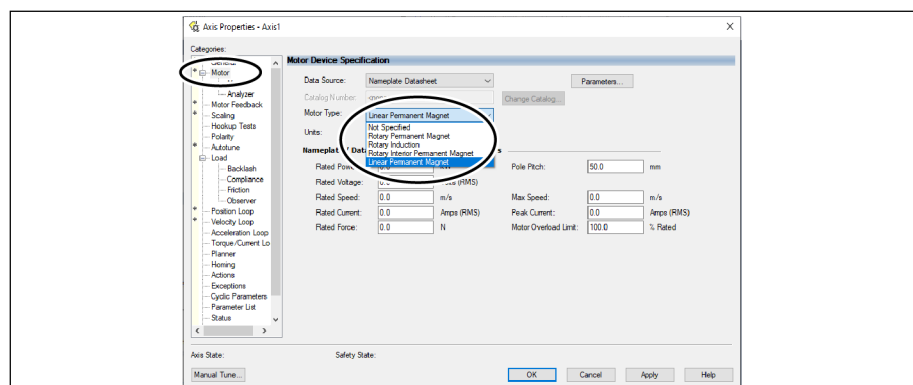
9 Configure axis



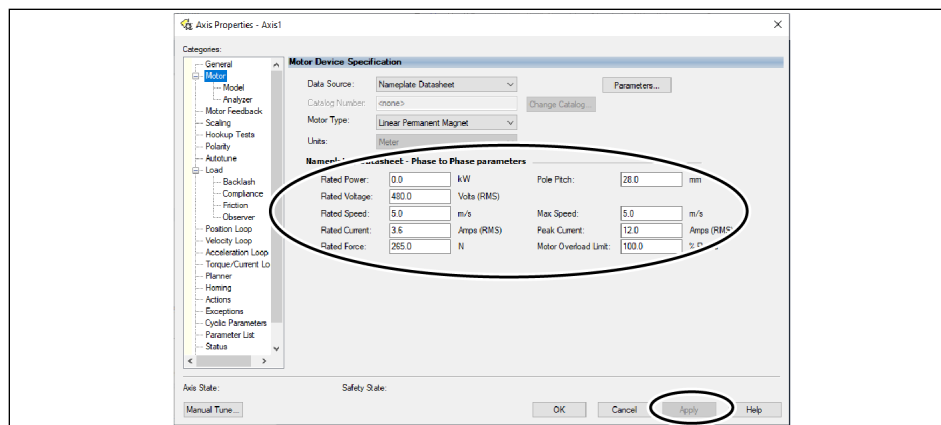
1. In the "Controller Organizer" window, under "Motion Groups" > right-click on the software axis assigned to the Axis module and select "Properties."



2. In the "Axis Properties" window, select "General."
3. Configure the basic settings for the axis.
4. Select the "Apply" button.



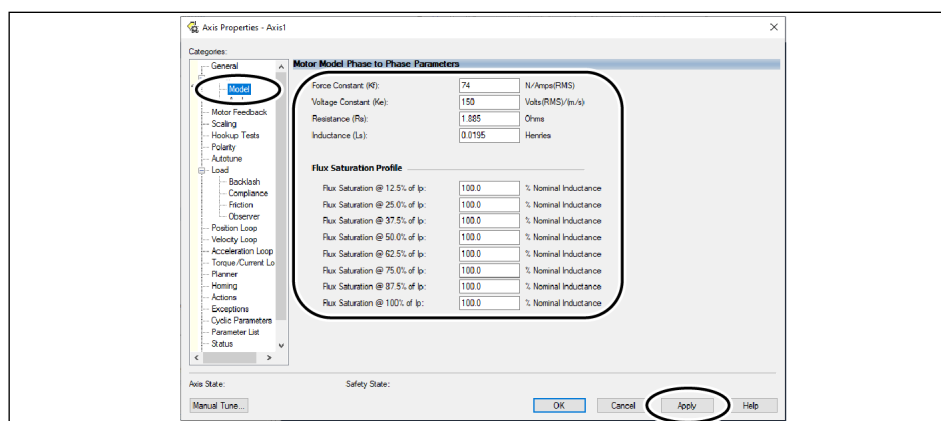
5. Select the "Motor" section.
6. In the "Motor Type" selection field, select the permanently excited linear motor / permanently excited rotary motor.



7. Enter the motor data from the data sheet.

- ⇒ Maximum speed from the data sheet = rated speed and max speed.
- ⇒ Set the voltage to the maximum voltage possible in the converter, as long as this is below the maximum DC link voltage specified in the data sheet divided by root 2.
- ⇒ The rated power is calculated from the rated power and the rated speed. ($P = F * v$)

8. Select the "Apply" button.

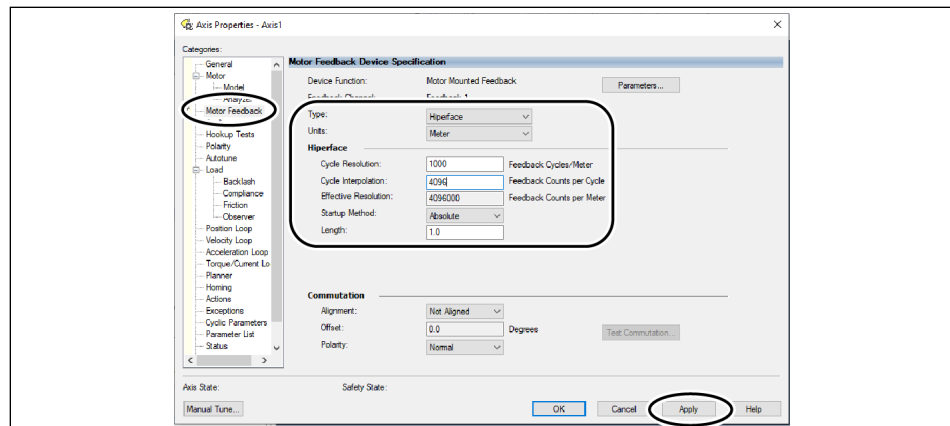


9. Select "Motor" > "Model".

10. Enter the values contained in the data sheet.

- ⇒ For resistance and inductance, the value specified in the data sheet must be divided by two.
- ⇒ Data sheet specification: Phase-phase; Value to be entered: Phase-neutral conductor

11. Select the "Apply" button.



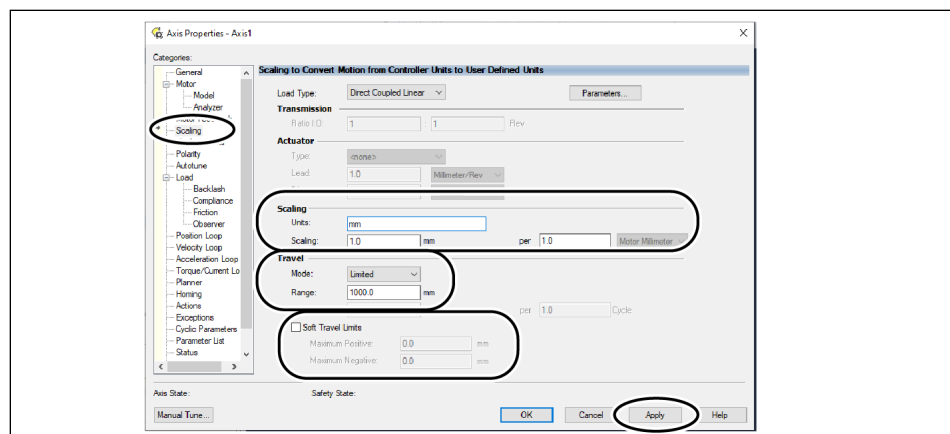
12. Select "Motor" > "Motor Feedback".

13. Select the interface of the measuring system used.

14. Configure the resolution.

- ⇒ "Cycle Resolution" refers to the division of the measuring system; with a division of one millimeter, there are 1000 division periods per meter.
- ⇒ Cycle interpolation is specified by Rockwell at 4096 for Hiperface. The length of the measuring device can be specified. (The settings shown above are for our standard linear measuring system TTK70).

15. Select the "Apply" button.

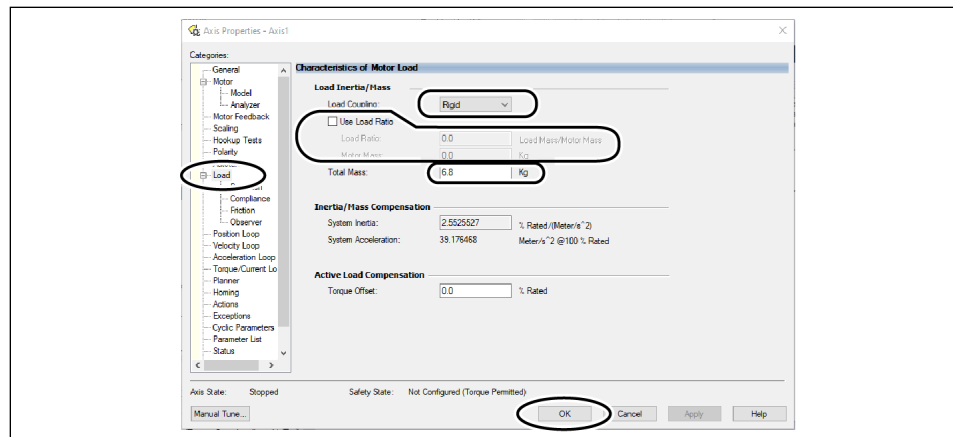


16. Select the "Motor" > "Scaling" section.

17. Specify the unit name and the scaling in relation to the controller unit, in this case millimeters.

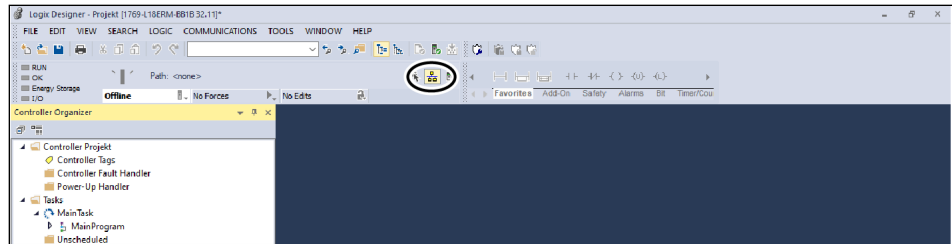
18. In addition, the maximum travel range and software limit stops in the positive and negative directions can be defined.

19. Select the "Apply" button.

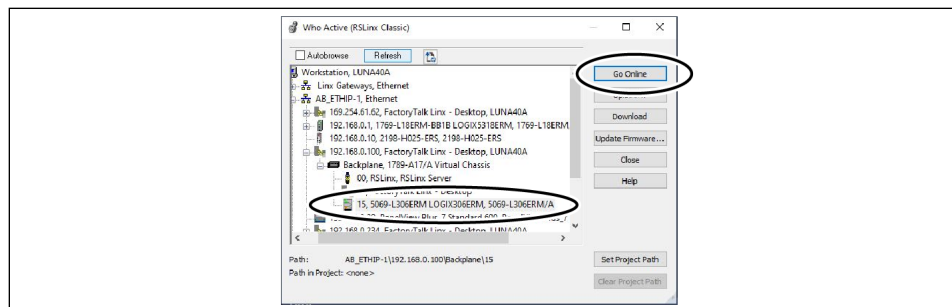


- 20.** Select the "Load" section.
- 21.** Specify the moving mass under "Total Mass" (here, the mass of the primary part of an unloaded axis).
- 22.** Under "Load Coupling," select the coupling of the additional mass (elastic or fixed coupling).
- 23.** Under "User Load Ratio," the mass can be specified as a total value or as a ratio to the motor weight.
- 24.** Select the "OK" button.

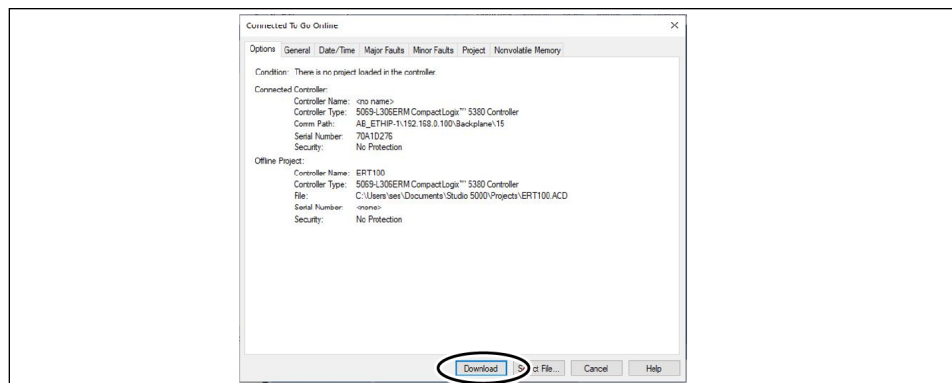
10 Establish communication connection to the controller and download the project



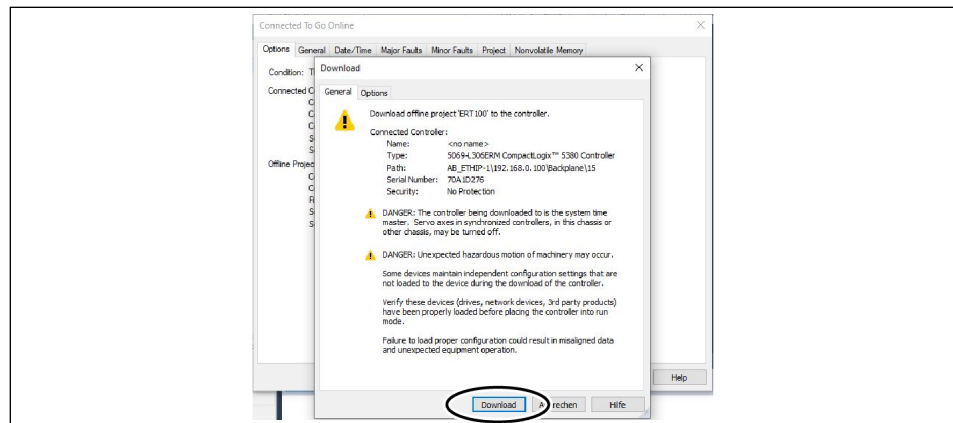
1. Select the button for connection settings in the menu bar.
⇒ The "Who Active" window opens.



2. Select the communication connection used between the programming device and the controller (in the example, a LAN connection was used).
3. Select the "Go Online" button.

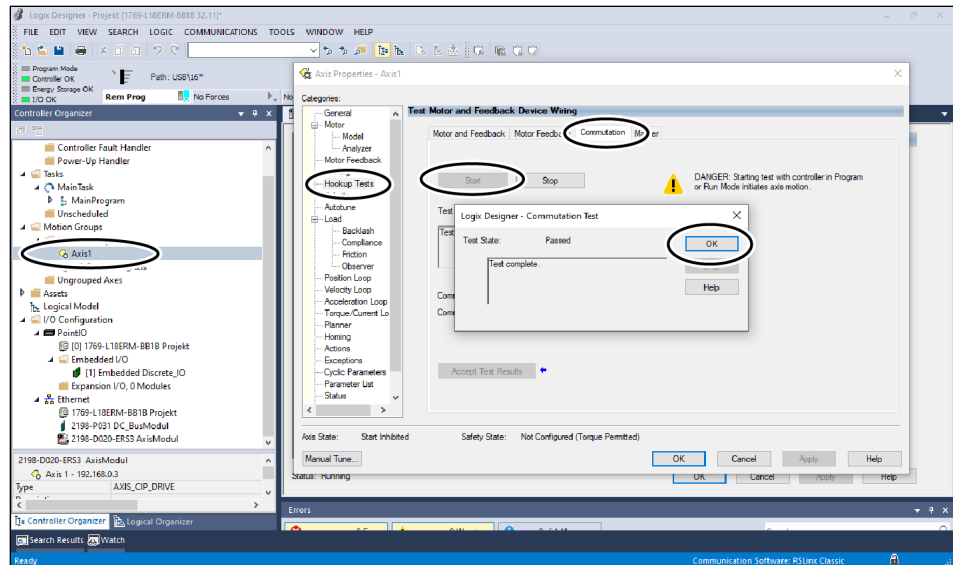


4. Select the "Download" button.
⇒ The "Download" window opens.

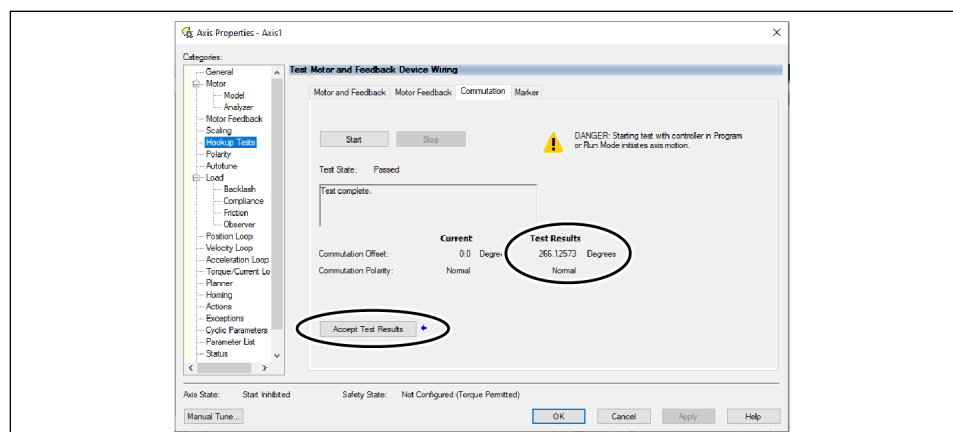


5. Select the "Download" button to confirm the download.

11 Determine the commutation angle of the axis



1. In the "Controller Organizer" > "Motion Groups" window, double-click on the axis to be configured (or right-click and select "Properties").
⇒ The "Axis Properties" window opens.
2. Under "Motor" > "Hookup Tests," select.
3. In this window, select the "Commutation" tab.
4. **WARNING! The axis moves during the test!**
Select the "Start" button to start the commutation test.
Confirm successful test.
⇒ Once the test is complete, a pop-up window with this information will open.
5. Select the "OK" button.



6. Select the "Accept Test Result" button to accept the determined commutation angle.
⇒ To verify the determined commutation angle, the test can be performed again.



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