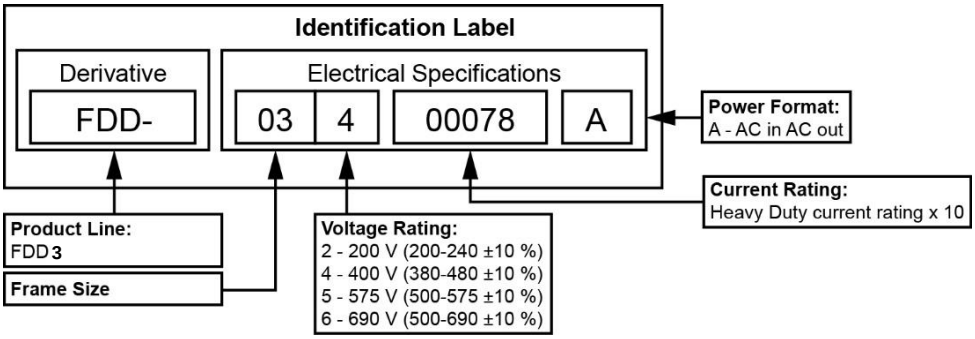
FDD 3000 Commissioning Quick-Start Guide

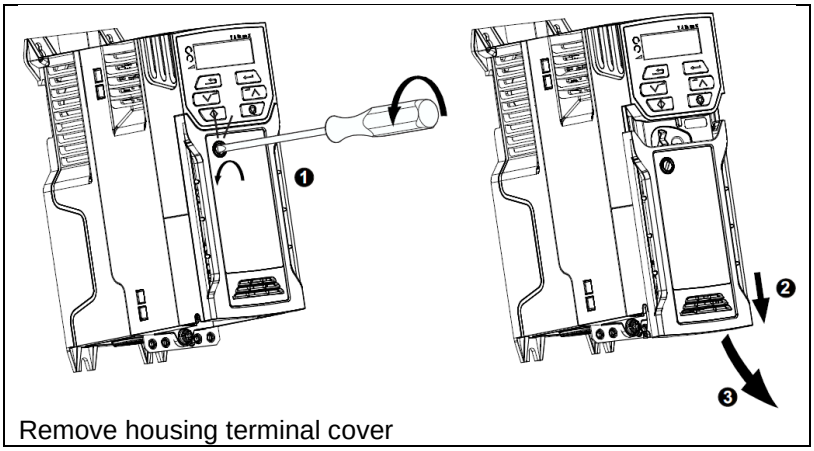
This document serves as a quick guide for wiring, starting, and controlling an FDD 3000 AC drive via CANopen and Sigmatek CPU. For more detailed information, see the operating manual of the respective FDD.

1 Checking the Contents of Delivery and Mains Voltage Compatibility

- Check whether the power supply is compatible with the voltage range of the FDD.
  Mains voltage _____ Volts / Voltage range of the AC drive _____ Volts
  For details, see the product key on the right panel of the FDD.



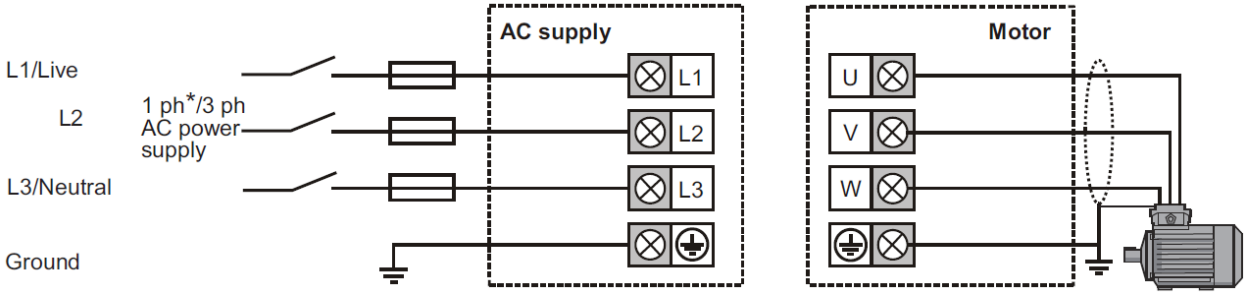
2 Assembling the FDD and Wiring the Power Element



Remove housing terminal cover

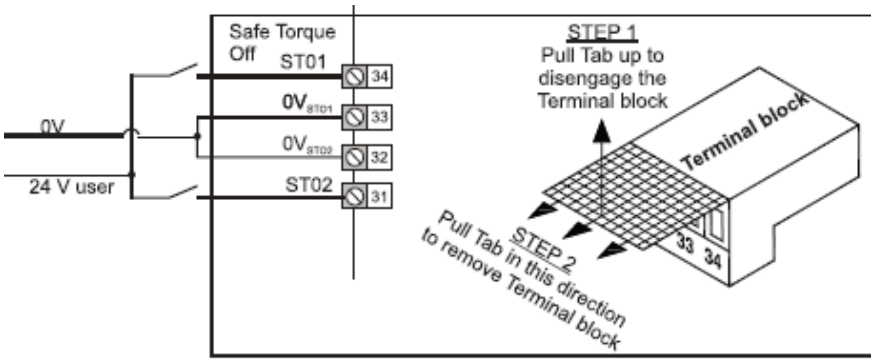
The wiring can only be installed when NO power is applied.

- Ensure there is a proper connection to ground.
- Check the rated power of the power switch or fuse
- Check whether the motor voltage is compatible with the FDD voltage. Motor voltage _____ Volt.
- Connect motor to the FDD
- Connect FDD to the supply. However, do not turn the power on yet
  Single-phase supply => connect supply voltage to L1 and L3



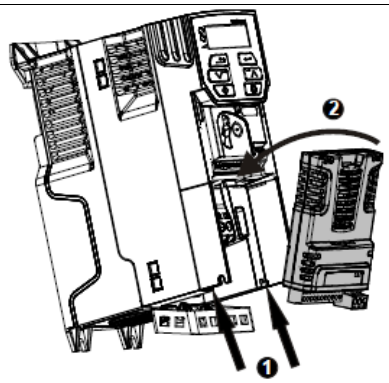
3 Wiring the STO (Safe Torque Off)

- The terminal block is located int he slot for the communication module and is removed for the wiring.



4 Wiring the CANopen bus connection

- For the pin assignment on the CPU side, see the manual for the CPU used (download from SIGMATEK website).



Remove the protective cover from the slot with a screwdriver and install the communication module.

- Wire the CANopen communication module. Install terminating resistor (120 Ω, 0.25 W) between CAN-H and CAN-L of the last participant.

Pin assignment: **Pin 1**: 0 V external power supply (black)
Pin 2: CAN-L negative data line (blue)
Pin 3: Cable screen (braided shield)
Pin 4: CAN-H positive data line (white)
Pin 5: +24 V external power supply (red)

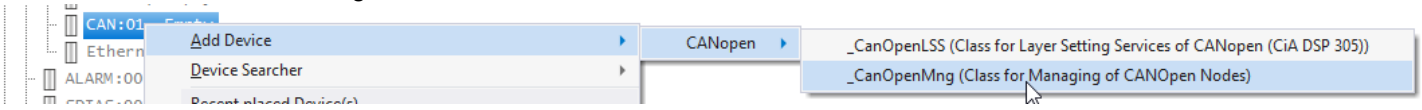
The additional +24 V supply (**Pin 1** and **Pin 5**) does not have to be connected. It serves as a back-up supply for the control component if the power supply fails.

5 Voltage Supply FDD

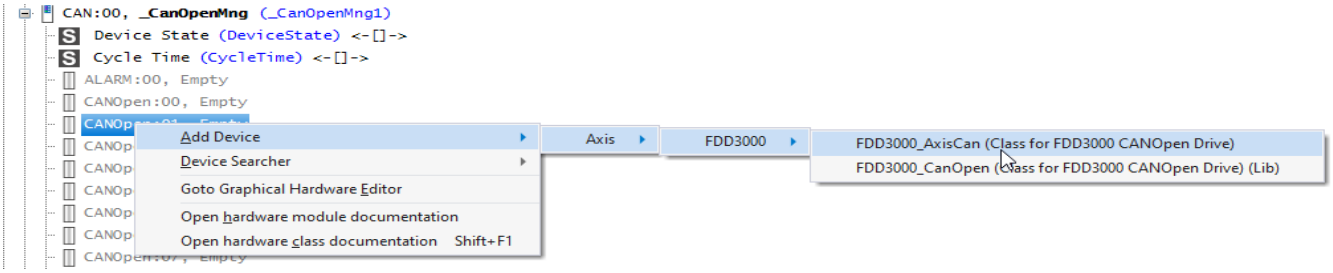
- Check wiring
- Turn the FDD supply voltage on

6 Commissioning the SIGMATEK CPU

- Wire the CPU supply voltage as described in the manual of the respective CPU.
- Start LASAL CLASS 2 and create a new project
- Open the hardware editor
- Add the CPU used to the project
- Extend the tree structure of the CPU so that the CAN interfaces are visible
- Add the CanOpen Manager to the CAN interface used to communicate with the FDD. For this purpose, open the context menu with a right-click on the interface.



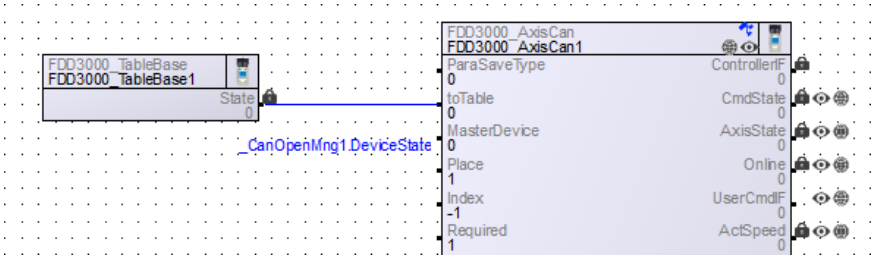
- Open the tree structure of the CANopen manager and add the FDD3000 AC drive to the desired CAN slot. Right-click on a slot to open the context menu. The “CanOpen:00” slot corresponds to the node number 0 and is reserved for programming the communication module via the bus. Node numbers can be freely assigned starting from “CANOpen:01” (node number 1) upwards.



- By selecting “FDD3000_AxisCan”, a corresponding class is placed in HW_Network.

The “FDD3000_CanOpen” corresponds to an older version. It should not bd used, as the class is no longer supported.

7 Placing a Table for the Motor Data



- ParaSaveType = 0
  The parameters of TableBase (or a derivation thereof) are sent when starting the FDD.
- ParaSaveType = 1
  The parameters are stored in the CPU and sent when starting the FDD.

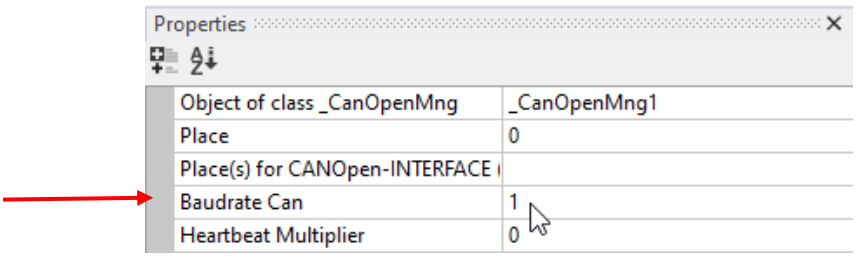
  A TableBase must also be placed here since the table contains the data structure for the SRAM data.

- ParaSaveType = 2
  The parameters are stored in the CPU as a RAM files and when starting the FDD.

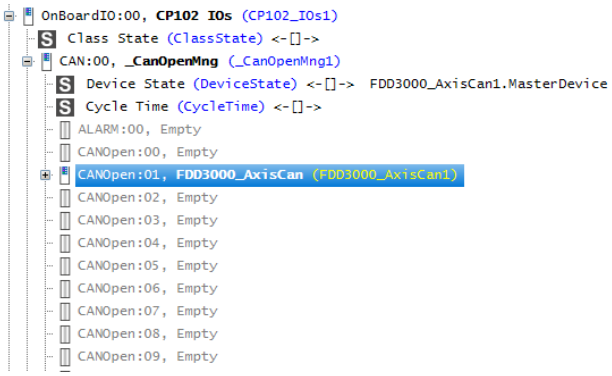
  A TableBase must also be placed here since the table contains the data structure for the RAM file.

8 Configuration of the PLC CAN Communication

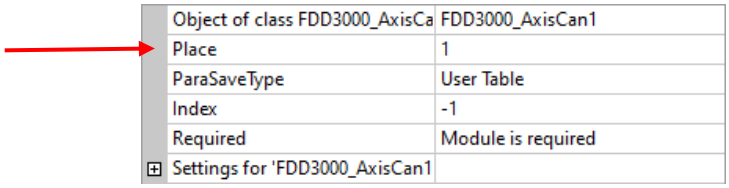
- Baud rate configuration of the CAN communication in the application.
  Select the "_CanOpenMng" class in the tree structure of the hardware editor to display the class properties. The Baud rate is set vie the "Baud rate Can" parameter. The CPU and AC drive are delivered with preconfigured Baud rate of 500 kbits/s.



- Select the node number configuration in the application from the tree structure of the hardware editor of the "FDD3000_AxisCan" class.

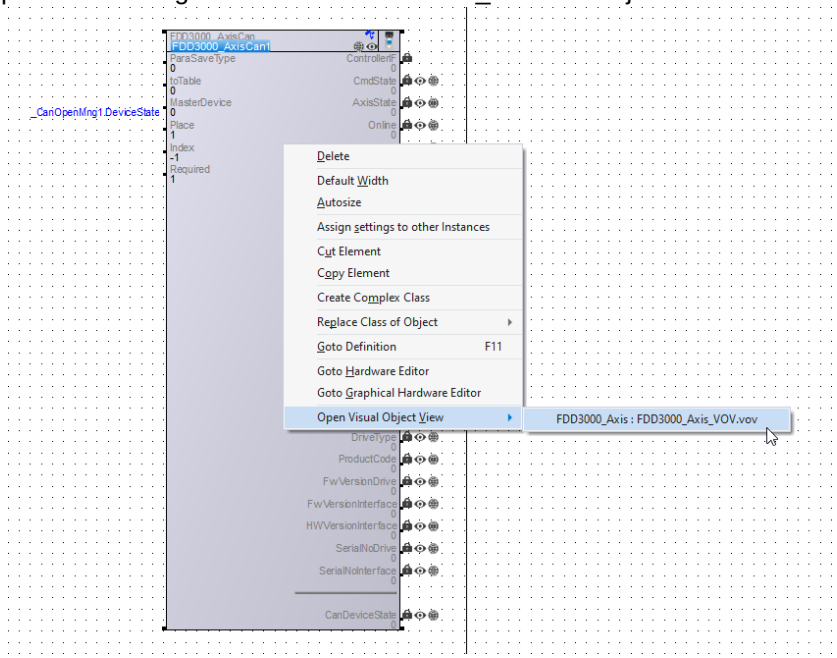


- In the properties, the desired node number (CAN-ID) can be set in the value “Place”.



9 Configuration of the Drive CAN communication over VOV

- Configuration of the drive CAN communication via the VOV.
  The VOV is thereby opened with a right-click on the FDD3000_AxisCan object.

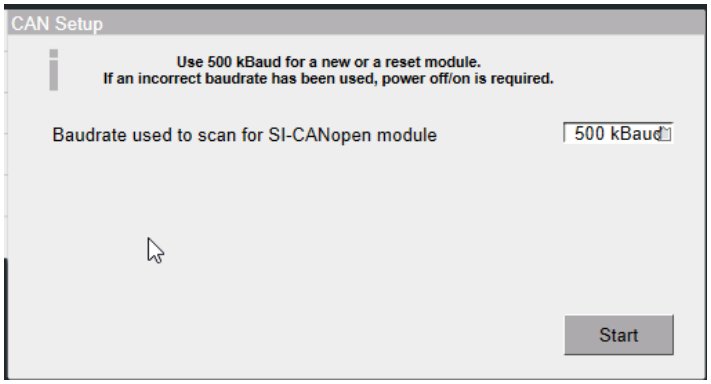


- When configuring the CAN communication over the VOV, the node number and Baud rate are always sent. The process for changing the Baud rate, as well as the node number is therefore identical.
  In the VOV, the page on which the communication settings for the controller can be made, opens using the “CAN SETUP” button.
- In this menu, the CAN object number (NodeID) and Baud rate can be set by SI-Canopen. The CanOpen LSS protocol is thereby used.

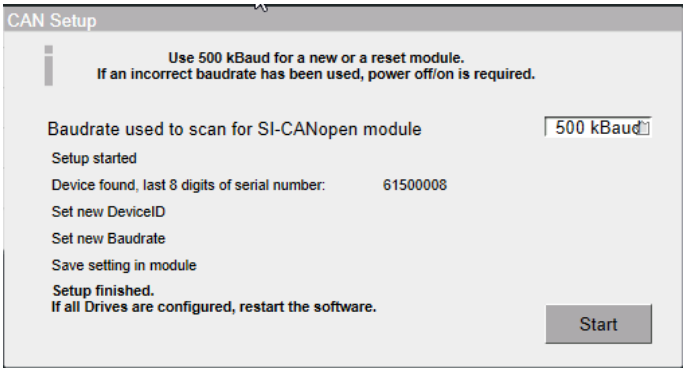
Ensure that only one FDD 3000 is connected with SI-Canopen on the CAN bus.

- The SI-Canopen is delivered with NodeID=0 and Baudrate=500kbps configured. NodeID=0 means deactivated, and the SI-Canopen only reacts to LSS command.
- Since this is the default setting of the SI-Canopen, the Can-participant search and configuration of the NodeID and baud rate is performed with 500kbps by default. This can cause problems with longer cable lengths and prevent the setup. In this case, the Baudrate must be configure using the display on the FDD 3000 (See following section). The changed Baudrate can then be set in the VOV as the Baudrate for the SI-Open.
- When the search is performed with a Baudrate that does not match the SI-Canopen Baudrate, communication errors occur. This can cause the FDD 3000 to change to a “BusOff” status and need to be turned on then off to be accessible on the CAN bus again. This response should only occur when another NodeID is already configured in the SI-Canopen as 0.

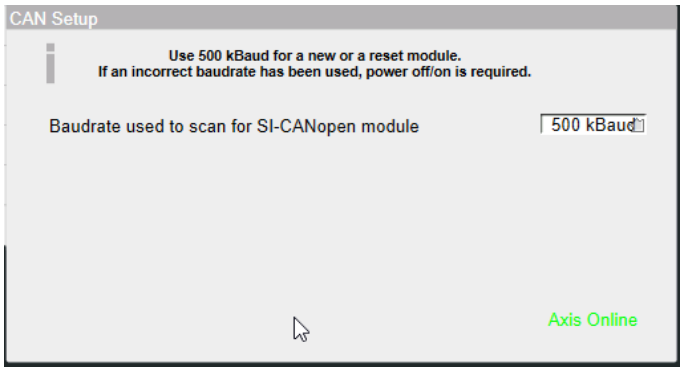
- The configuration is started via the “Start” button.



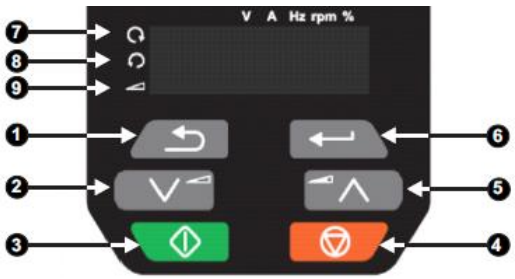
- Setup complete



- If the axis is already communicating, the setup cannot be started.



10 Configuration of the Drive CAN Communication via the Drive Display



1. Escape button
2. Down button
3. Start button (green)
4. Stop/Reset button (red)
5. Up button
6. Enter button
7. Run forward indicator
8. Run reverse indicator
9. Keypad reference indicator

- Node number configuration (NodeID)
  - Press Enter (6)
  - Select “Pr. 10” using Up/Down (2/5)
  - Press Enter (6)
  - Start processing with the Enter key
  - Select “ALL” using UP/Down (2/5)
  - Press Enter (6), then Escape (1)
  - Press Enter (6), select 1.00.000 with the Up/Down buttons (module slot 1)
  - Press Enter (6), select 1.01.000 with the Up/Down (2/5) (CanOpen parameter)
  - Press Enter (6), select 1.01.004 with the Up/Down (2/5) (Node Address)

  - Press Enter (6), start processing with the Enter key
  - Select the desired node number with Up/Down (2/5)

  - Press Enter (6), return to the start with the Escape key

After these steps, the drive must be reset so that the new node number can be activated!

- Press Enter (6)
- Select 1.01.002 with the Up/Down buttons (2/5) and Enter (6)

- Press Enter (6), start processing with the Enter key
- Select “On” with the with the Up/Down buttons (2/5)

- Press Enter (6), reset is triggered

After these steps, the configuration must then be saved.

- Select 1.01.000 with the Up/Down buttons (2/5) and Enter (6)

- Press Enter (6), start processing with the Enter key
- Select “Save” with the Up/Down buttons (2/5)

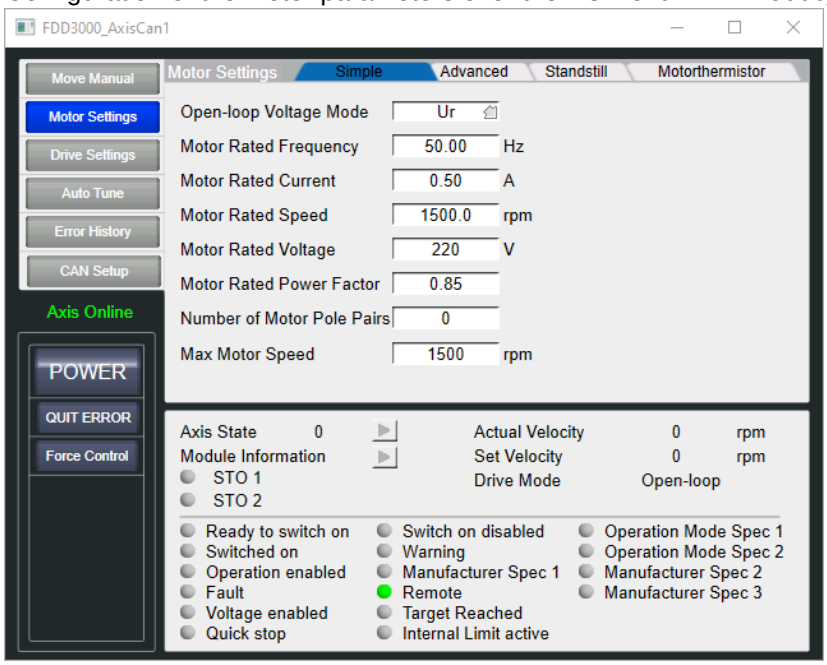
- Press Enter (6)
- Press Stop/Reset (4), the parameters are then saved

11 Starting Communication

- Compile the project and load it into the CPU.
- Set the CPU in RUN mode. The connection is started while booting.

12 Configuring the Motor Parameters

- The motor parameters are always sent from the class to the drive.
- Configuration of the motor parameters over the VOV of the “FDD3000_AxisCan” class.

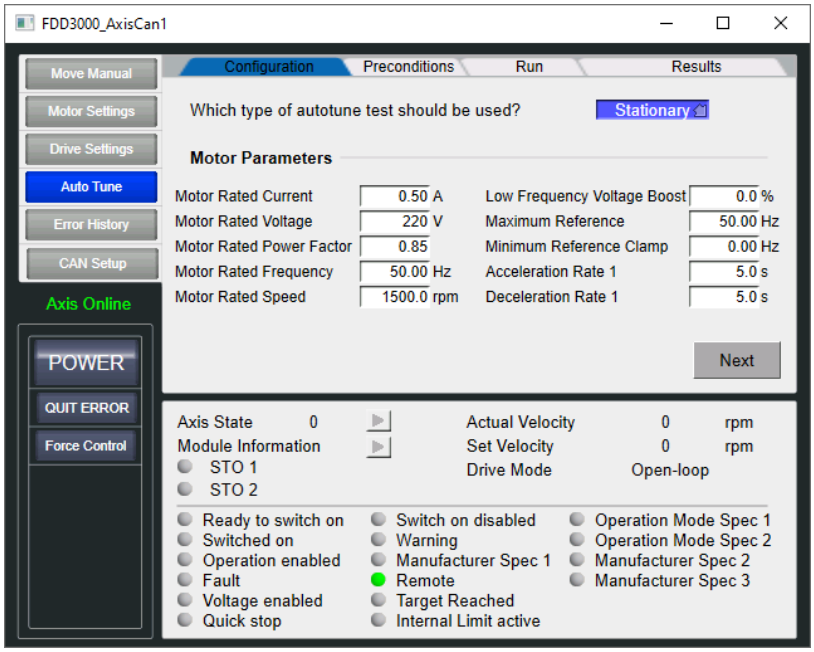


- The motor parameters are immediately sent with a change to the FDD.

> If ParaSafeType = 1 or ParaSafeType = 2, the changed values are stored in the SRAM or the RAM file
> .
> If ParaSafeType = 0, the changed values must be adapted in the table or in their derivation since the values take effect with the next start.

13 Running the Autotune Function

- Using the autotune function, the FDD automatically determines parameters for optimal operation. This step is not required. The autotune function is started through the VOV of the “FDD3000_AxisCan class”.
  A selection can be made between the “stationary” (motor not turning) and “rotating” (motor turning) autotune function. With a stationary autotune, very good results are achieved for most applications. The dynamic autotune however, measures the motor parameters in detail. Whenever possible, dynamic autotuning is recommended. To start, one of the two buttons is pressed.



14 Performing a motion

- The motor can be operated via the “Move Manual” menu in the “FDD3000_AxisCan” class.