emotron
DEDICATED DRIVE
A CG Product

EmoSoftLift 2.0

User Manual

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Contents

1 Introduction and Overview of Functions

The PC application *EmoSoftLift 2.0* provides a user-friendly interface to communicate with Emotron devices such as the Lift Interface and DSV Adapter for powering lift applications.

Necessary equipment:

- Device capable of connecting to *EmoSoftLift 2.0:*
  - Lift Interface V2.1 (or higher) with firmware **V2.12** or higher
  - DSV Adapter with firmware **V1.02** or higher
- Windows PC with *EmoSoftLift 2.0* and at least one **USB 2.0 port**
- Cable with 1x **USB Type A** and 1x **Micro USB Type B**

EmoSoftLift 2.0 functionalities include:

- ***Connecting*** with devices via USB
- ***Reading*** parameter sets from proprietary files
- Visualizing the current ***device status***
- Changing ***parameter sets*** of connected device or read file
- ***Comparing*** parameter sets and transmission of parameter values in batches
- Recording, reading and analysing ***actual values in graph form*** (Trend)
- Visualizing ***error protocol memory*** of connected device
- ***Log*** errors occurring during the connection including status information
- ***Saving*** and ***printing*** parameter sets, trend recordings, device status information and error protocols

2 Installation and Setup

The following section provides a brief guide for the installation of the application and the manual installation of necessary drivers for the communication via USB. The latter is usually only necessary if the driver installation during the normal installation process is not completed.

Additionally, this section includes the settings at first application start-up.

2.1 Installation

1. Unpack the ZIP folder “EmoSoftLift 2.0.zip”.
2. Double click the application file “EmoSoftLift 2.0 Setup.msi” in the unpacked folder to start the installation wizard.
   2.1. Choose your preferred location for the installation of the application on your local drive (C :\) and click “**Continue**” (Figure 1).

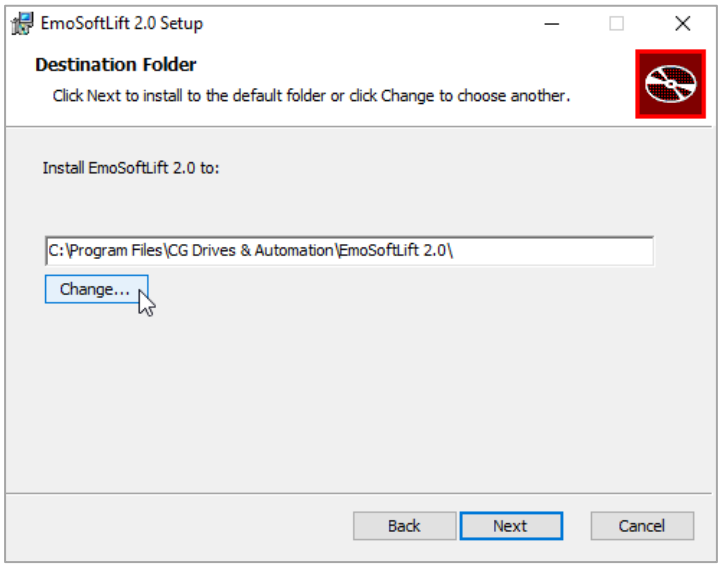


Figure 1: Choose installation folder

   2.2. Click “**Install**” to start the installation process.
   2.3. If the necessary USB driver by Texas Instruments is not present on the PC yet, a separate dialog opens to ask for permission (Figure 2). Please agree by clicking “**Install**”.

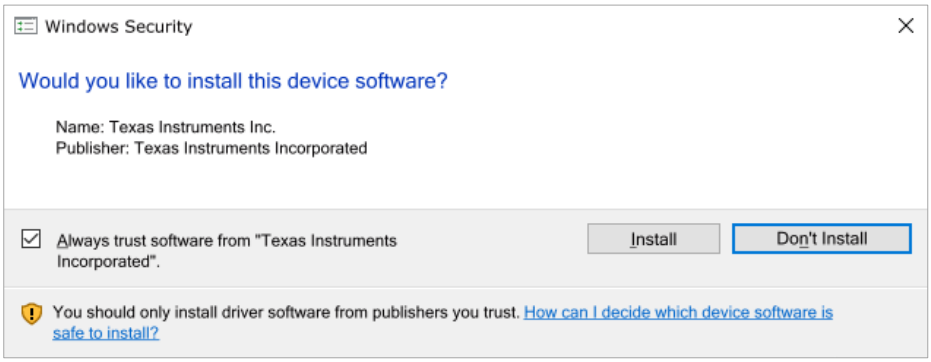


Figure 2: Driver installation

   2.4. Close the wizard after successful installation.

2.2 Manual Driver Installation

In order to use the USB communication functionalities of *EmoSoftLift 2.0* with an active device it is necessary to install the corresponding device drivers on the PC running the software. The **standard installation process** via the wizard **includes and installs the necessary files** as long as user permission is given.

In case of the application installation completing without the necessary drivers, the following steps detail the manual installation:

1. Open the installation folder of the application “EmoSoftLift 2.0”.
2. Open the sub folder “drivers”.
3. Right-click the file “**usb_dev_bulk.inf**“ to open he context menu and click “**Install**“ (Figure 3).

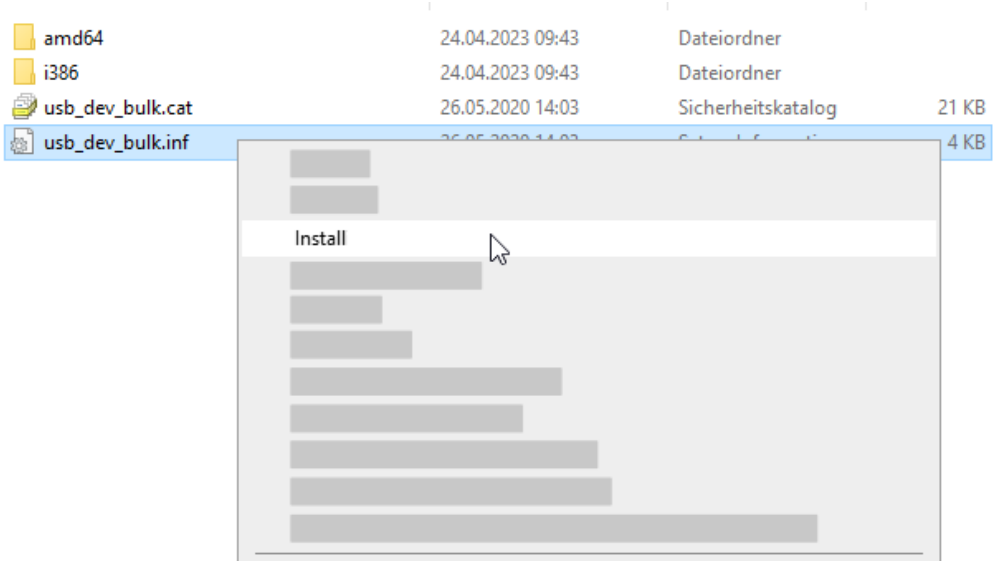


Figure 3: Installation via context menu

If file extensions are not visible, you can enable this setting in the File Explorer tab “View” by checking the option “File name extension“.

4. You may be asked for permission to install the drivers by the dialog window shown in Section 2.1 (Figure 2). Click “**Install**” to proceed.

A dialog window will notify the successful installation of the driver.

2.3 First Application Start-up

At first start-up of a new version of *EmoSoftLift 2.0*, you will encounter a short setup dialog before getting access to the application functionalities.

Please choose your preferred language for the application (Figure 4). You can change this at any point in time in the program settings.

Confirm the settings (Figure 5) in order to continue to the main application.

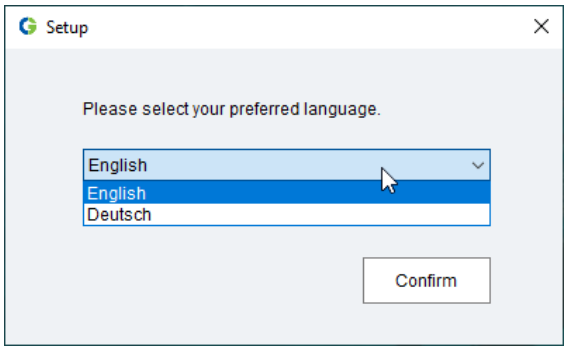


Figure 4: Choosing the preferred language

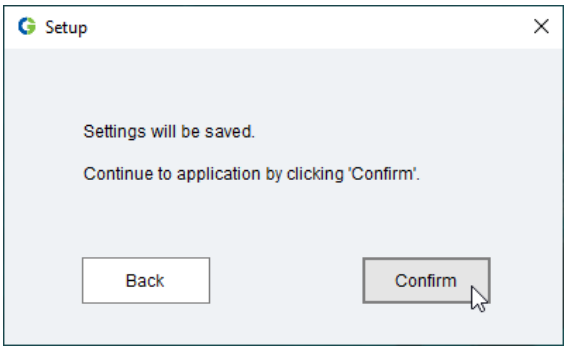


Figure 5: Confirmation of settings

3 User Interface Structure

The *EmoSoftLift 2.0* user interface is comprised of several sections (see Figure 6).

> In case of display issues with the software, please check the zoom factor in Windows display settings and reset them to 100%.
> A restart of the software may be necessary afterwards for the setting to take effect.

The left side contains a global menu with the **device list (A)** with all connected and read devices.

Under the device list, you can see the buttons for **saving** and **printing (B)** the parameter set of the currently displayed device.

The button **(C)** allows a direct transfer of a parameter set from a previously saved file to a connected device.

At the bottom left corner **(D)**, you can find buttons to open the program settings and user manual.

The entire right side **(E)** shows information of the currently displayed device, the contents of which depending on the selected tab.

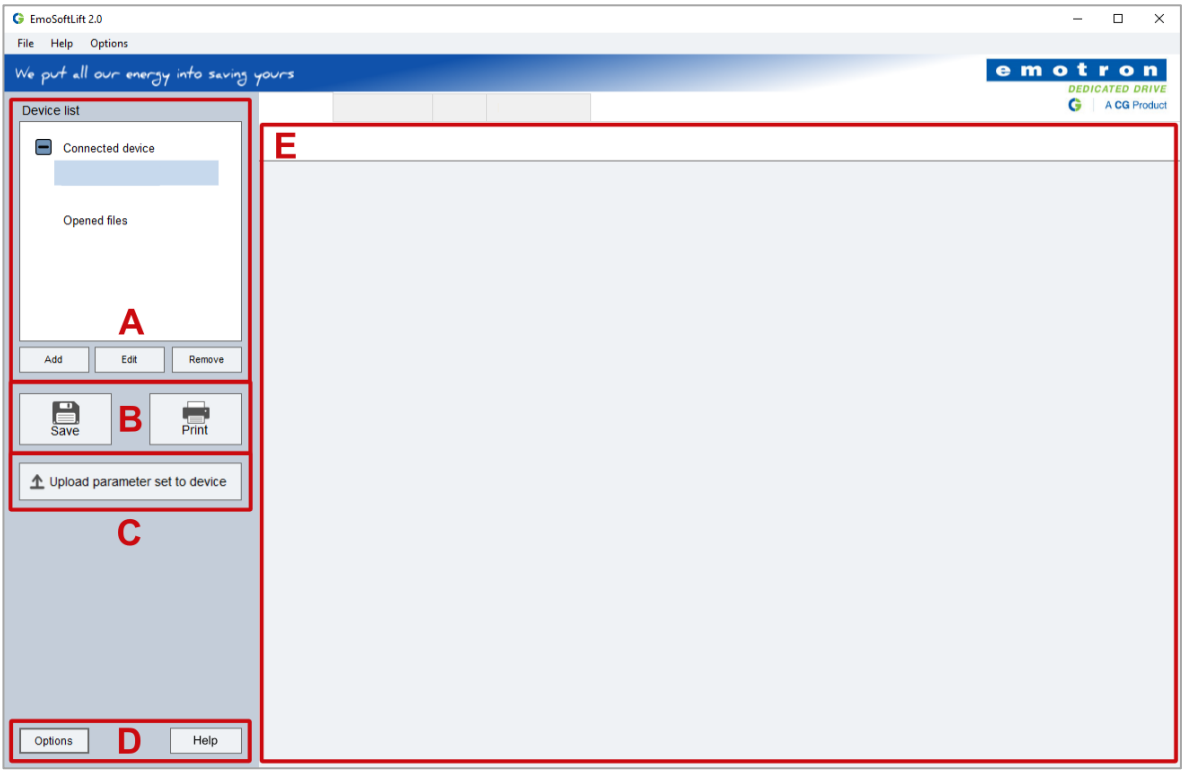


Figure 6: Overview of the EmoSoftLift 2.0 user interface

3.1 Device List

The **device list (A)** is part of the global menu, meaning that it is always available as long as all dialog windows are closed.

The devices are grouped into connected devices from an active USB connection and opened parameter set files. Switching between different devices is possible by clicking on the respective list item.

The buttons directly under the device list enable adding another device, as well as renaming and removing the currently selected device from the list.

Clicking **"Add"** opens the dialog window "Add device" to connect to an active device or read a parameter set file. More information in Section 4 – *Add a* Device.

By pressing the "**Edit**" button or using the context menu on the respective device list item, you can rename the currently displayed device in the software. The designated text box in the device list switches into edit mode automatically. You can confirm these changes by pressing the Enter key, the ✔ button next to the text box or by selecting a different control in the user interface.

Alternatively, you can change the device name in the program settings under the tab „Connection Settings", see Section 10.1 – *Connection Settings*.

The device name is visible in all relevant tabs of the main view area, as well as shown in all files saved from this device to facilitate identifying the device.

The software assigns the default name of an active device at the start of the USB connection, which denotes the current date and the firmware running on the device.

The software does not communicate the default or user chosen name to the device itself. Manual changes are only reflected in the software and saved files.

In order to add more Meta information to the selected device, you can also open the customer information dialog by using the context menu on the device list item or by double clicking on the ⓘ **icon** next to the device name in any of the tabs in the main view. This allows you to enter data about e.g. customer data, location, associated project and the device itself (Figure 7).

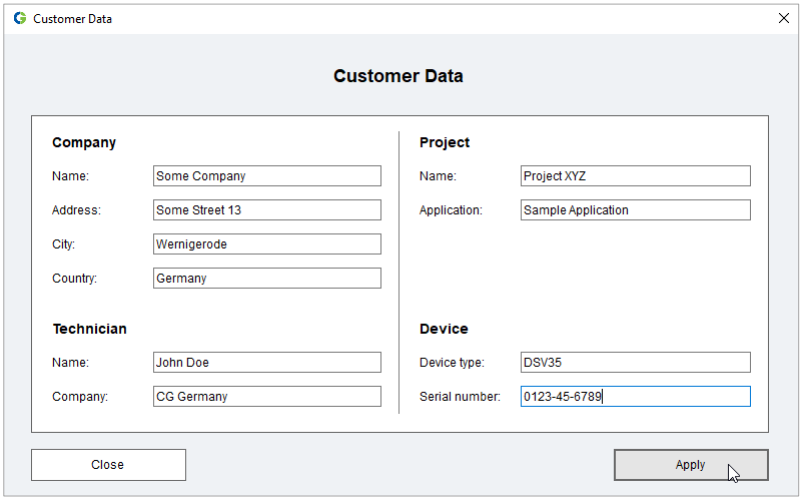


Figure 7: Customer information

This customer specific information is added to the headers of all saved PDF and text files exported from the specified device but the device itself **does not** retain this information.

Clicking the "**Remove**" button under the device list allows you to remove the currently selected item from the list by disconnecting the active USB connection or disposing of the parameter set file item.

EmoSoftLift 2.0 does **not automatically write back changes** made to **parameter set files** into the corresponding files on the PC. Therefore, unsaved changes will be lost when removing a parameter set file.

3.2 Save and Print

When the device list contains at least one item, you can save the corresponding parameter set as PDF or text file by using the buttons under the device list. This holds true both for active USB connections and parameter sets read from text files.

The "**Save**" button allows you to write the parameter set information into a CSV formatted text file that can later be read back into *EmoSoftLift 2.0*.

Clicking on "**Print**" opens a dialog with the preview of the PDF of the selected device's parameter set, which you can save on your local drive or send directly to a connected printer.

When printing the current parameter set, the resulting PDF will always show the currently visualized drive level mode (Hz or mm/s). This allows you for example to save the parameter set of a device running in parallel mode with the drive level parameters in Hz and mm/s by switching the selected view mode in the parameter list view. More information on this topic in Section 7.4 – *Switching Drive Level Parameter View Mode*.

Similarly, you can also save the following data by pressing the corresponding "**Save**" and "**Print**" buttons in several tabs of the main view:

- Diagnosis data
- Error protocols
- Trend recordings

3.3 Transfer parameter set directly

If a device is actively connected to EmoSoftLift 2.0, it is possible to choose a parameter set file from Windows file explorer and send it to the device directly. A dialog window will short the progress of this data transfer.

This transfer is possible regardless of firmware versions of the parameter set file or the connected device. Therefore, some parameters may be skipped if certain Meta data does not match accordingly between different firmware versions.

The same is the case for some parameters for which no write access is granted, as they are only calculated in the Lift Interface and DSV Adapter.

Values of numeric parameters will always be held to their valid ranges. It is not possible to send values of choice parameters, which are not assigned in the connected device's firmware.

Afterwards, all sent parameters will be marked with the icon ⇄ and their value may be compared to the previous value according to the rightmost column.
For comparison of parameter values prior to the transfer, please note the comparison function available through the parameter list tab, more information see Section 7.6 – *Comparing Parameter Sets*.

4 Add a Device

In order to add a new device to the user interface, it is necessary to open the corresponding dialog window. This happens automatically at every application start-up and is usually available afterwards by pressing the "**Add**" button under the device list in the global menu.

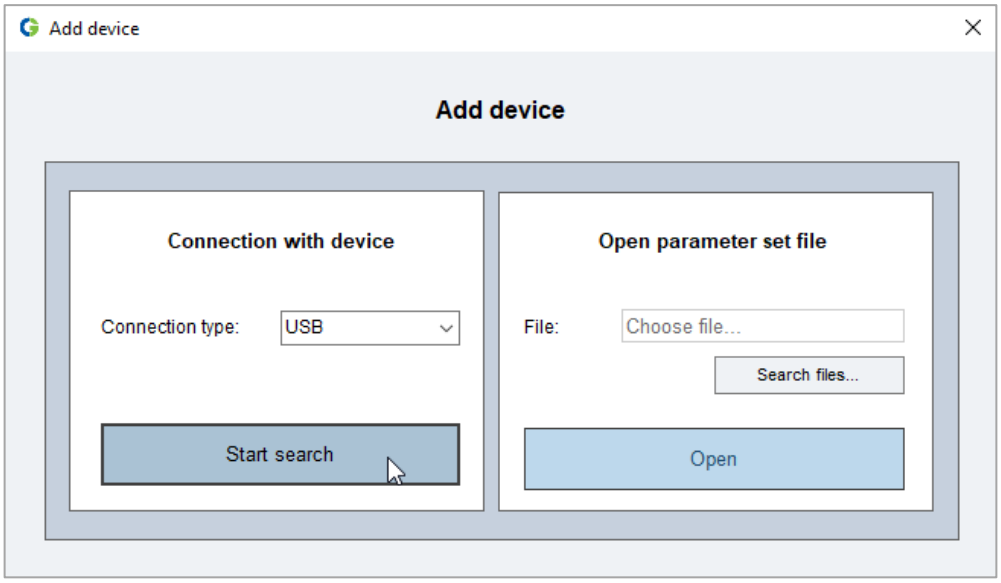


Figure 8: Dialog window "Add device"

4.1 Connecting via USB

Some conditions to fulfil before starting a new USB connection:

1) Device with power supply and necessary firmware version
2) Cable connecting device's micro USB port and PC's USB 2.0 (or higher) port
3) If device connects to DSV unit and motor, unit is not currently powering the motor to run.

Connecting to the device while the DSV unit is powering the motor can lead to the micro controller in the connected device not reacting to the USB communication. In this case, you may need to **reboot** both the device and DSV unit.

Therefore, we recommend ensuring that the **DSV unit is not running** when starting the connection in EmoSoftLift 2.0.

Clicking "**Start Search**" initiates the start of the connection between *EmoSoftLift 2.0* and the device.

Reading all the necessary data may take a few seconds. Afterwards, the view automatically switches to the activated Diagnosis view (see Section 5).

If one of the above-mentioned conditions is not fulfilled, you will see the notification in Figure 9.

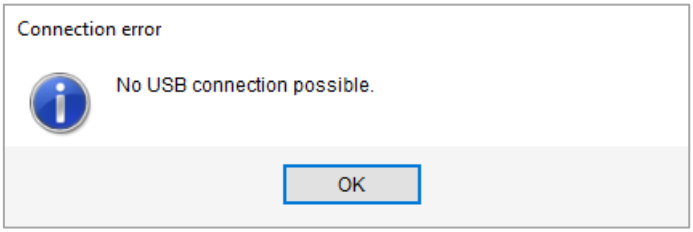


Figure 9: Notification about connection error

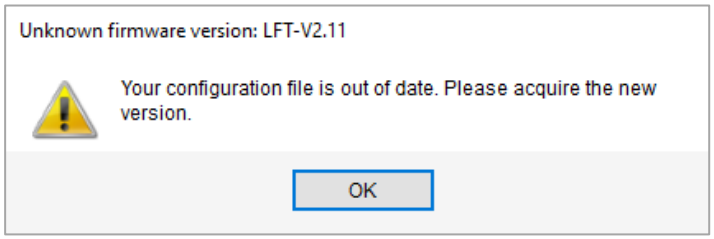


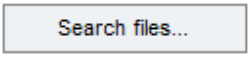
Figure 10: Notification about incompatible firmware version

Among other things, the software checks the firmware running on the connected device and compares it to the known firmware versions defined in its device configuration file. If the communicated firmware version is not defined within EmoSoftLift 2.0, you will be asked to update your device configuration file according to the notification in Figure 10.

For more information about updating the device configuration file with the new firmware version, please refer to Section 10.3 – *Replace Device Configuration File*.

4.2 Reading a Parameter Set File

The dialog window "**Add device**" (Figure 8) also allows you to read a parameter set file to show its contents in *EmoSoftLift 2.0*.



Clicking on "**Search Files…**" opens a file dialog to choose the file you would like to open. After confirming this choice, the text box updates its contents to show the file name and path.

Afterwards, pressing the "**Open**" button starts the process of reading the parameter set information. After the successful conclusion, the view switches to the parameter list.

If the firmware version saved in the parameter set file is unknown to the software, it will show the notification seen in Figure 10.

For more information about updating the device configuration file with the new firmware version, please refer to Section 10.3 – *Replace Device Configuration File*.

5 Diagnosis View

The diagnosis view shows a quick overview of the status of the connected device and its settings. It is only available during an active USB connection.

All diagnosis information is updated automatically. By default, this happens roughly **every 250ms**.

You can save this status data as a plain text or PDF file by pressing the corresponding buttons "**Save diagnosis data**" or "**Print diagnosis data**" respectively at the top right corner.

The visual structure of the diagnosis view depends on the type of the connected device. Therefore, we highlight the two versions separately in this section.

5.1 Lift Interface

A lift interface is used when installing a new lift application or replacing another company's device for the lift drive. The replacement of other companies' units is seamlessly possible thanks to the different simulations that you can set for the lift interface to mimic the previous device's communication patterns.

The diagnosis view for lift interfaces is divided into five sections (see Figure 11):

A) Device status
B) Actual values
C) Input/output
D) Relays status
E) DIP switch position

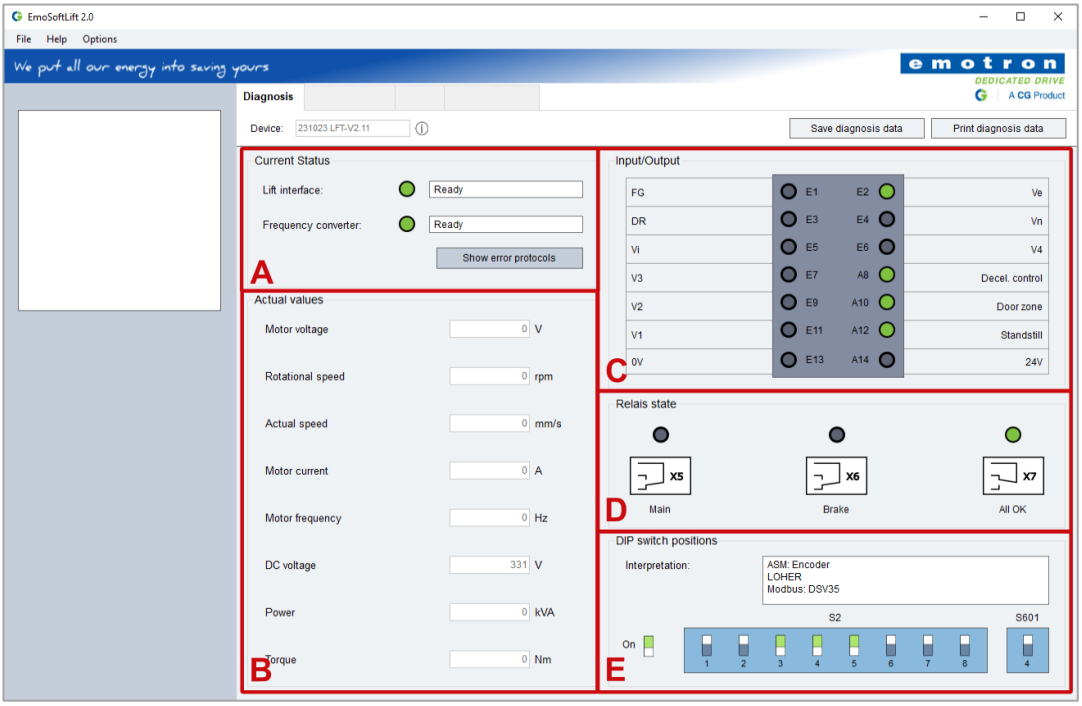


Figure 11: Diagnosis view for the lift interface

The **device status (A)** shows any potentially present error for both the lift interface and the connected DSV unit. By clicking the button "**Show error protocols**", you can navigate to the respective tab for more information (see Section 9 – *Error Protocols*).

The **actual values (B)** match with the data available in the trend view, see Section 8 – *Trend View*.

The **I/O block (C)** shows the status of the inputs and outputs on block X1 of the lift interface. The labels for each pin adjust automatically based on the simulation set by the DIP switch position.

The **relay status (D)** shows the status of blocks X5, X6 and X7 of the lift interface.

The **DIP switch position (E)** visualizes the status of DIP switch blocks S2 and S601 as well as its verbal interpretation. These DIP switches decide the operational settings of the device, including machine and encoder type, operational mode (bus or parallel, including chosen simulation) and the Modbus protocol.

5.2 DSV Adapter

The DSV adapter is a specialized device for the exchange of the Emotron DSV 5444/5445. Due to their connector compatibility, it allows a plug-and-play installation of a new DSV 15/35 device.

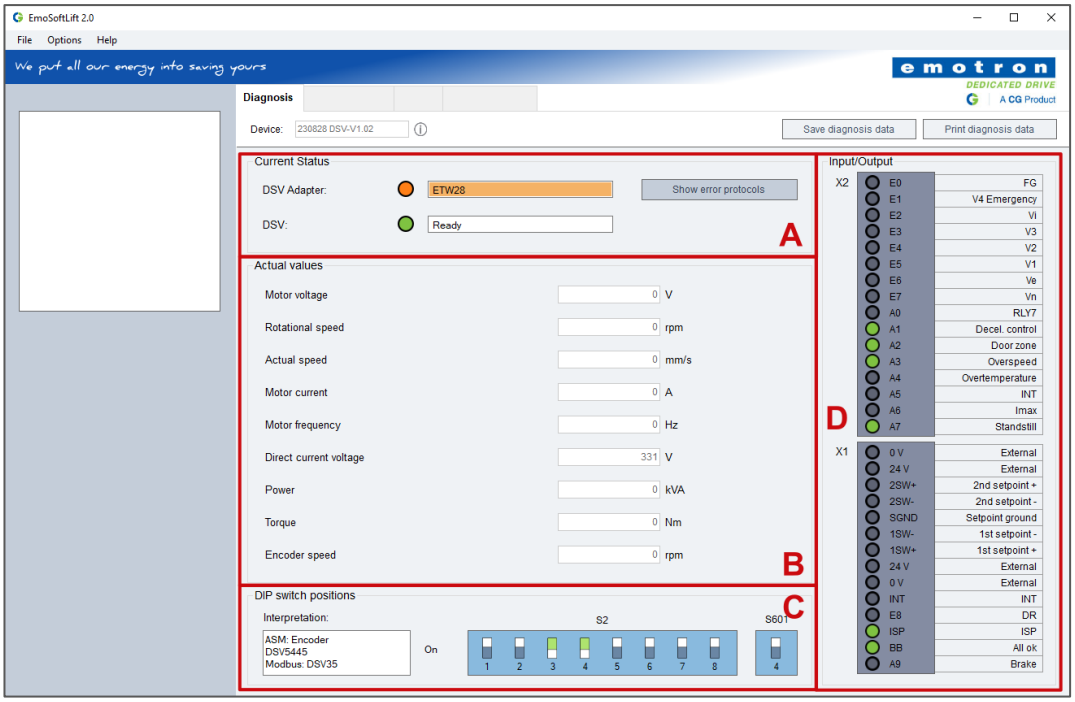


Figure 12: Diagnosis view for the DSV adapter

The diagnosis view for lift interfaces is divided into five sections (see Figure 12):

A) Device status
B) Actual values
C) DIP switch position
D) Input/Output

The **device status (A)** shows any potentially present error for both the DSV adapter and the connected DSV unit. By clicking the button "**Show error protocols**", you can navigate to the respective tab for more information (see Section 9 – *Error Protocols*).

The **actual values (B)** match with the data available in the trend view, see Section 8 – *Trend View*.

The **DIP switch position (C)** visualizes the status of DIP switch blocks S2 and S601 as well as its verbal interpretation. These DIP switches decide the settings of the device, including machine and encoder type, operational mode (bus or parallel, including simulation) and the Modbus protocol.

In contrast to the lift interface view, the **I/O block (D)** shows the status of the inputs and outputs on blocks X1 and X2 of the DSV adapter. The labels on these pins are static and equal to the physical setup of the device because they do not need adjustment according to the current simulation.

6 Quick Start

The quick start view includes the most important parameters to configure a device to allow a simple test drive of the elevator in a short amount of time.

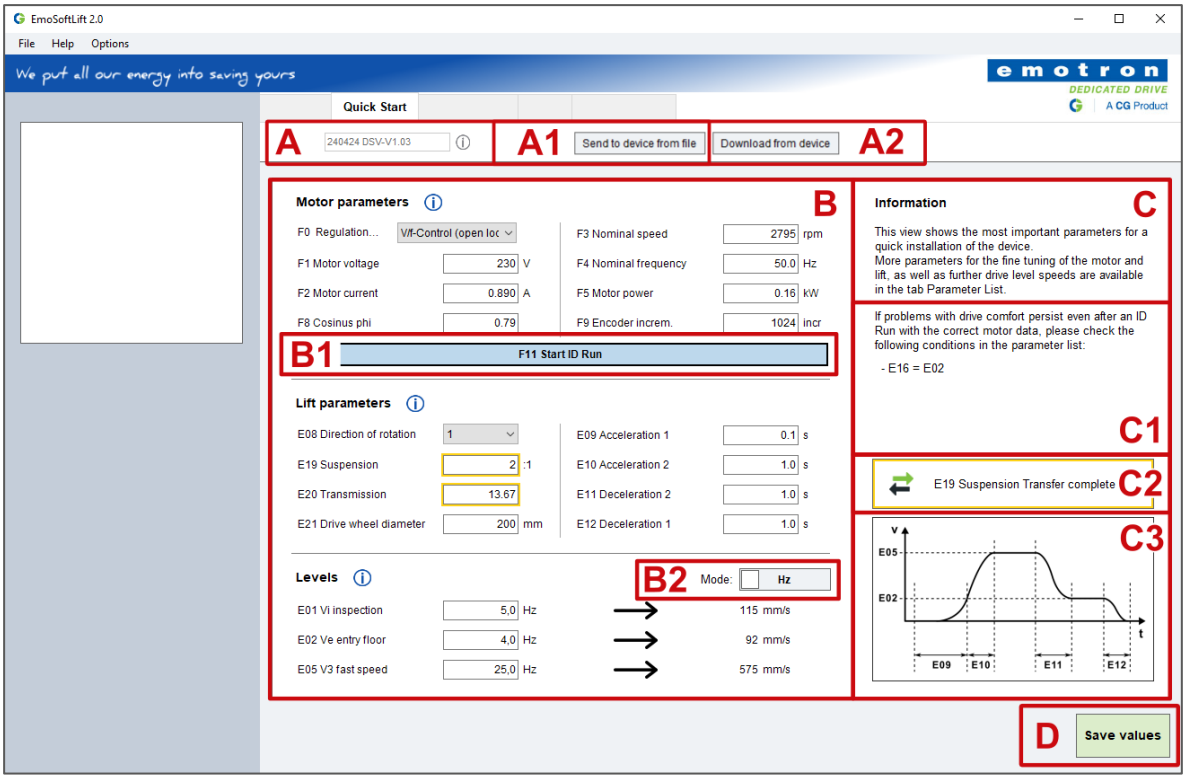


Figure 13: Quick start overview

The **tab header** (**A**) contains both the visualization of the device's information as well as buttons for sending a parameter set from a file to the device (**A1**) and downloading the parameter set from the device again (**A2**). You can find more information about these functions in sections 7.6 - *Comparing Parameter Sets* and 7.2 - *Updating the Parameter Set* respectively.

As seen in Figure 13, there are three groups for these parameters in section **B**, one each for general motor and lift data and a separate group for three of the available drive level speeds.

Additionally, the area on the right (**C**) shows some information about the view itself and its status, some help for next steps in the parameterization process (**C1**). There is also a diagram (**C3**) showing a typical drive curve to correlate the parameters for the drive level speeds, acceleration and deceleration times.

Finally, the **button D** initiates **saving** all values that are currently set in the device.

The success of data transfer and saving operations are visualized in the software by highlighting and changing the border color of the respective input field. Additionally, an **info panel** (**C2**) on the right will denote the latest operation.

6.1 Motor Identification Run (ID Run)

After parameterization and checking for correct motor data, **button B1** starts an **extended motor identification run (ID run)**. Alternatively, the corresponding parameter is also included in the parameter list in the respective tab. Please follow the instructions in the software. You will be guided through the process in a separate window, as seen in Figure 14.

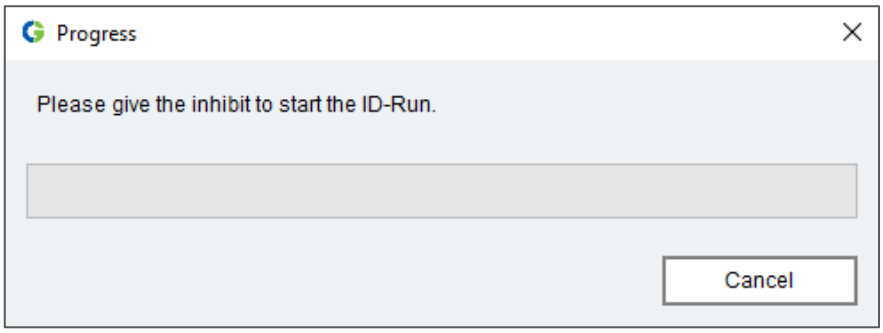


Figure 14: User guidance through the ID run

The ID run calculates a configuration for the motor regulator parameters that are only visible in the parameter list tab according to the previously set motor data. Therefore, the regulators rarely need further adjustments for a basic installation and test drive. If any motor parameters are changed later on however, another ID run may be necessary.

6.2 Automatic Calculation of Drive Level Speeds

Additionally, please note that the settings of the motor and lift parameters in the quick start view are necessary for the calculation of the drive speeds in Hz and mm/s respectively. In case of unusual calculation results, please make sure the motor and lift data is correct.

The drive level speeds are always shown in both Hz and mm/s. The calculation from the device's expected unit into the other one occurs automatically after every time a relevant value is changed. Clicking **button B2** causes the parameter mode of the user inputs to switch.

When working with the switched parameter mode, any input of the drive level speeds will be automatically calculated for the original unit as well.

7 Parameter List

The parameter list view contains information about the relevant parameters that can be adjusted within the device. The specific parameters are determined by the firmware version running on the device and are adjusted automatically for each device.

The parameters can be divided into motor and lift parameters. Both of them contain several sub-groups to facilitate navigation within the parameter set:

Motor parameters	Lift parameters
Drive	Drive levels
Regulators	Properties
	Character

The tab header (A) includes buttons to compare and transfer parameter set data between devices (A1), read the parameter set from the device again (A2), switch the current parameter mode (A3), as well as a search function (A4).

For every parameter in the list (B), you can see its ID, name, value and unit where appropriate. Additionally, the previously set value is visible as a baseline for changes. Some parameters cannot be changed manually but are instead calculated from other parameter values. In this case, the line in the list is highlighted by the ⓘ icon.

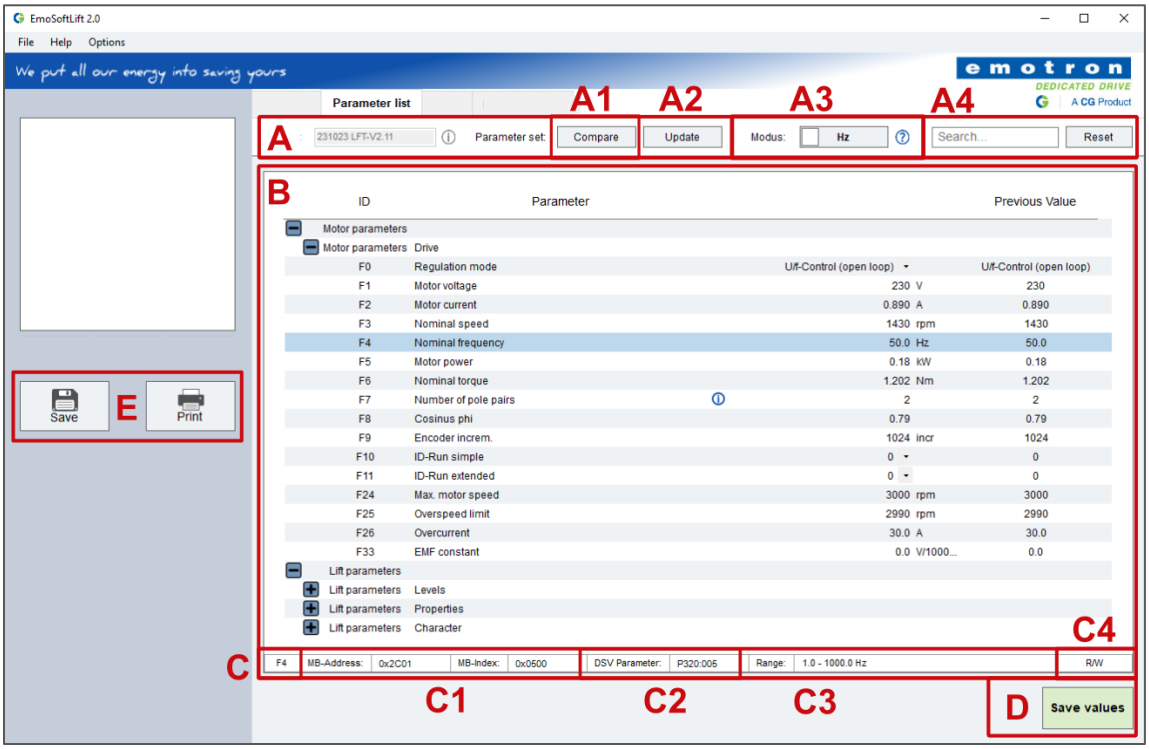


Figure 15: Parameter list overview

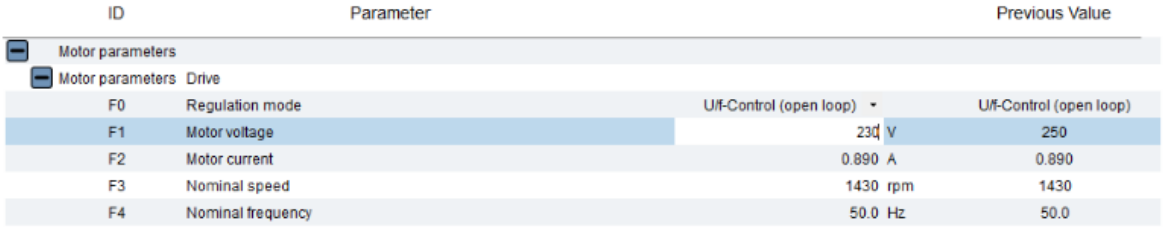
Upon selecting a parameter line in the list, the hint line (C) at the bottom shows additional information about the parameter. This includes the Modbus address and index (C1), the address of the respective DSV parameter (C2) and the valid value range (C3). The rightmost cell (C4) also shows the Read and Write access for the parameter. If the user can directly change the value, this will show “R/W”, while “R” indicates only having Read access for this parameter.

Clicking the button “**Save Values**” (D) initiates the save operation within the connected device for all currently set values.

The buttons in (E) allow saving the current parameter set as text or PDF file and printing it directly.

7.1 Changing Parameters of a Connected Device

As long as Write access is given, you can change the value of any parameter in the parameter list. Confirmation of the new value is given upon leaving the value cell through click or by pressing the Enter, Tab or arrow keys. This initiates sending the new value to the device.

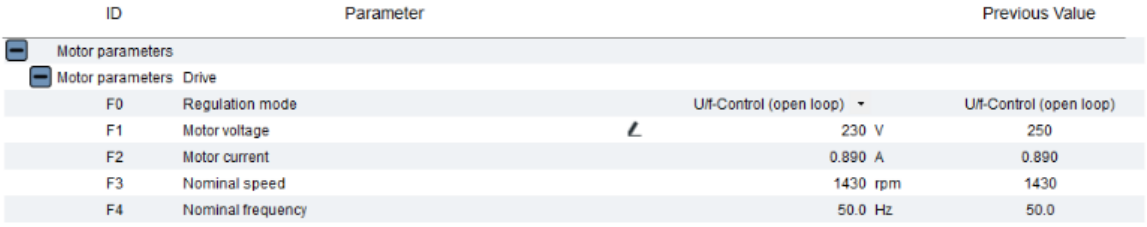


ID	Parameter		Previous Value
Motor parameters			
Motor parameters	Drive		
F0	Regulation mode	U/f-Control (open loop)	U/f-Control (open loop)
F1	Motor voltage	230 V	250
F2	Motor current	0.890 A	0.890
F3	Nominal speed	1430 rpm	1430
F4	Nominal frequency	50.0 Hz	50.0

Figure 16: Changing a parameter value

In the case of freely chosen numeric values, the valid range of values is also checked before transmission. Therefore, if a value beyond the valid range is entered, the nearest valid value will be shown in the parameter list and sent to the device instead.

Regardless of the parameter type, the ✎ icon (Figure 17) is shown left of the new value to indicate the change. This icon may stay for a few seconds or immediately jump to the next step, depending on the USB connection and PC workload.



ID	Parameter		Previous Value
Motor parameters			
Motor parameters	Drive		
F0	Regulation mode	U/f-Control (open loop)	U/f-Control (open loop)
F1	Motor voltage	230 V	250
F2	Motor current	0.890 A	0.890
F3	Nominal speed	1430 rpm	1430
F4	Nominal frequency	50.0 Hz	50.0

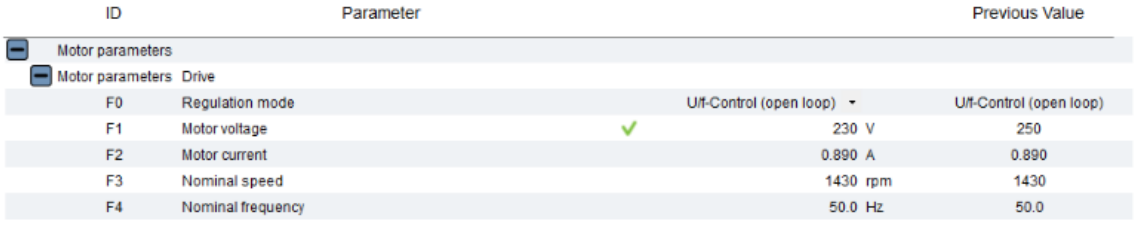
Figure 17: Indicating user change of the parameter value

As soon as the value has been successfully transmitted to the connected device, the previous icon will be replaced by ⇄ (Figure 18). At this point, the value is present in the DSV unit parameter set as well and will be used for calculations and powering the motor accordingly. However, losing power supply will result in the values resetting to their original value.

ID	Parameter		Previous Value
Motor parameters			
Motor parameters	Drive		
F0	Regulation mode	U/f-Control (open loop)	U/f-Control (open loop)
F1	Motor voltage	230 V	250
F2	Motor current	0.890 A	0.890
F3	Nominal speed	1430 rpm	1430
F4	Nominal frequency	50.0 Hz	50.0

Figure 18: Show successful transmission of new value

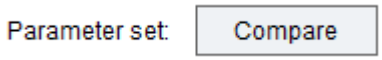
Click on "**Save Values**" to save the values within the DSV unit for good. After this is completed successfully, all newly saved values are marked with a green checkmark icon ✓ (Figure 17).



ID	Parameter		Previous Value
Motor parameters			
Motor parameters	Drive		
F0	Regulation mode	U/f-Control (open loop)	U/f-Control (open loop)
F1	Motor voltage	230 V	250
F2	Motor current	0.890 A	0.890
F3	Nominal speed	1430 rpm	1430
F4	Nominal frequency	50.0 Hz	50.0

Figure 19: Saving values completed successfully

7.2 Updating the Parameter Set



While a device is connected, pressing the button "**Update**" starts the process of downloading the parameter set from the connected device again. This may override previous changes.

A dialog window will display the progress as shown in Figure 20. This process may take a few seconds to a minute in total, depending on the specifications and workload of the PC.

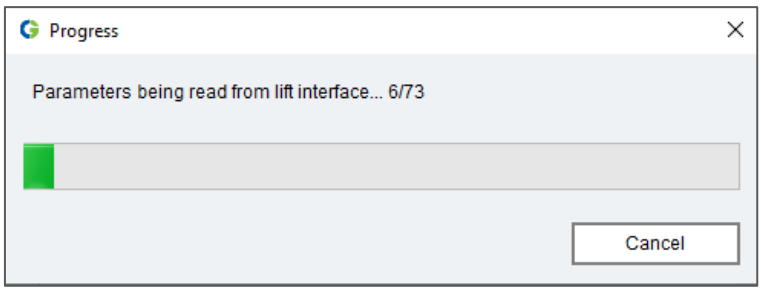
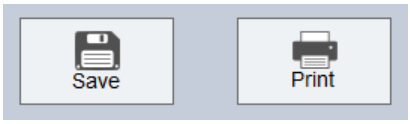


Figure 20: Showing progress of downloading parameter set from device

7.3 Work with Parameter Set Files

When opening parameter set files with EmoSoftLift 2.0, the same information and parameters may be changed as with a connected device. Merely the value within the column "Original value" is not changed. Instead, it always refers to the value originally read from the file.

Changes are not automatically written back into the file from which the data was read.



Saving the changed parameter set can always be done by utilising the buttons "**Save**" or "**Print**" in the global menu to write into a new or existing file through the default file dialog, or print it directly.

7.4 Switching Drive Level Parameter View Mode

Based on the DIP switch position set on a connected device, EmoSoftLift 2.0 interprets if the device is running in bus or parallel mode. This information is used to determine if drive level parameter values E00 – E06 are read and sent in mm/s or Hz.

However, the user interface allows switching the view mode by toggling the respective control to enable a more user-friendly experience.

The text within this toggle button shows the currently active view mode. After initially reading the data, the view mode always corresponds to the expected mode based on the DIP switch position.

Before switching the view mode, it is important to note that the calculations of the drive levels occurs based on the values of several parameters. Therefore, we recommend verifying the following parameters to ensure correct conversion results:

a) E19 – Suspension
b) E20 – Transmission
c) E21 – Drive wheel diameter
d) F7 – Number of pole pairs

Due to rounding operations, conversions between units may result in small deviations of 1-2 mm/s or 0.1 Hz.

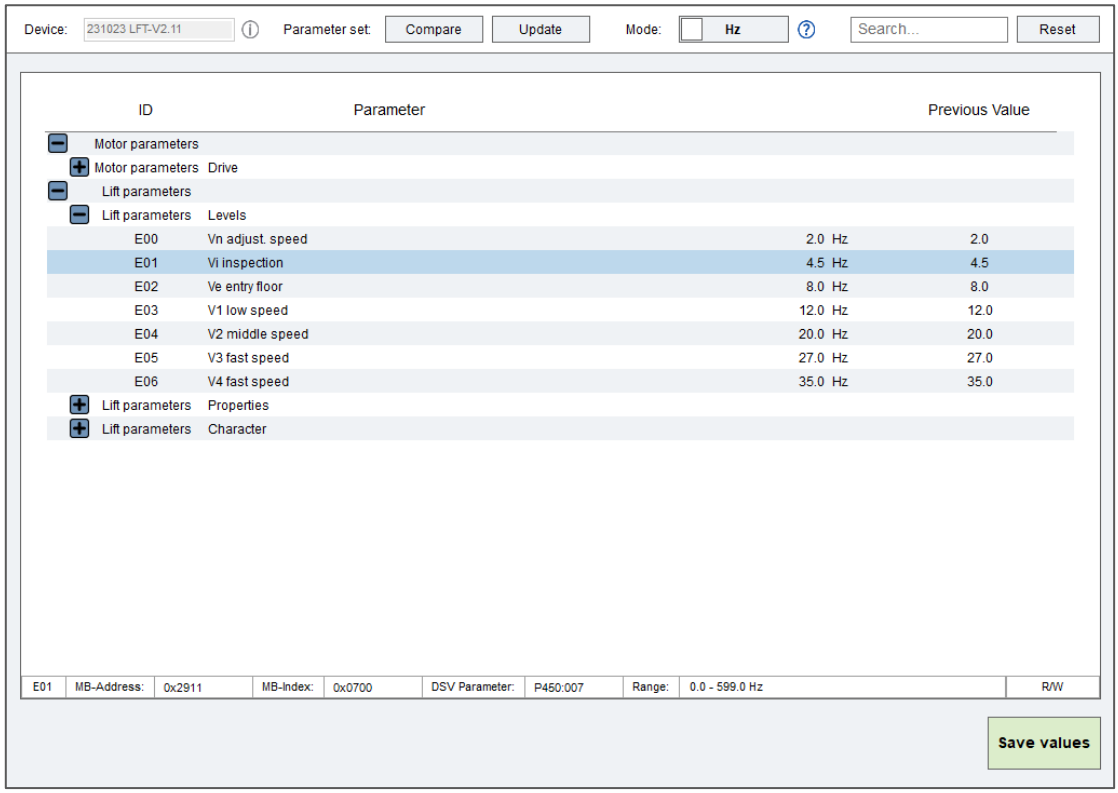


Figure 21: Drive level parameter mode Hz

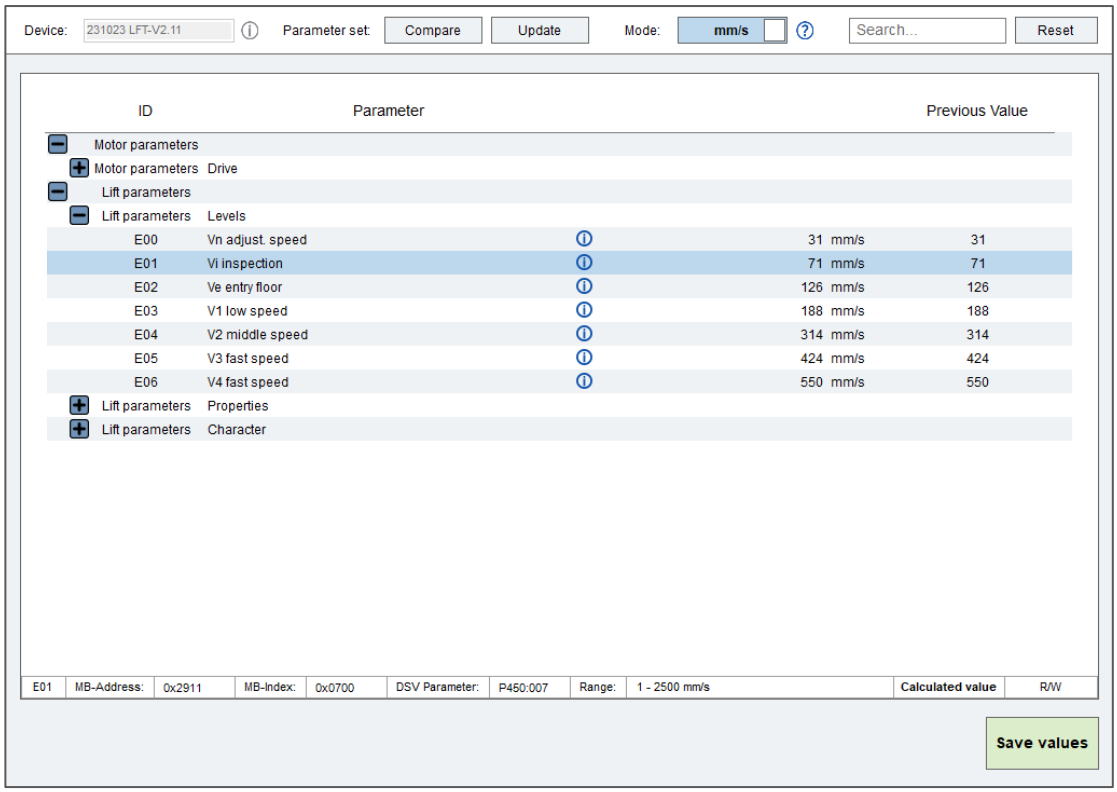


Figure 22: Drive level parameter mode mm/s

Changing and sending new values to the device is possible regardless of the current parameter mode. Conversion between the two units is automatically applied within *EmoSoftLift 2.0*.

7.5 Search Function

The text box at the upper right of the parameter list tab enables searching for specific parameters by name. Any parameters not fitting the current search term is invisible for the duration of the search (Figure 23).

Clicking on the "**Reset**" button next to it or leaving the text box when it is empty resets the parameter list to its previous state.

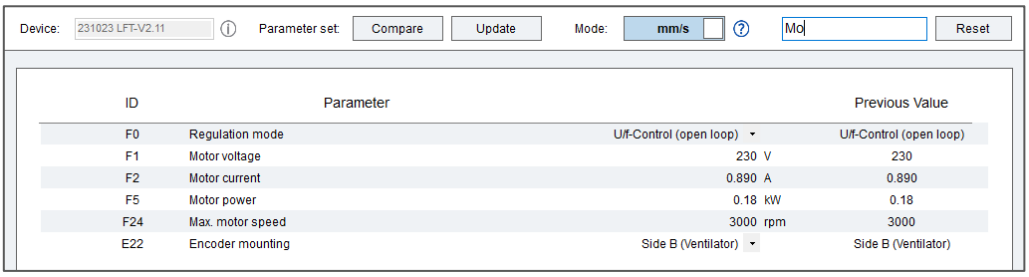


Figure 23: Results of search function

7.6 Comparing Parameter Sets

The button "**Compare**" opens a dialog window for comparing parameter sets (Figure 22).

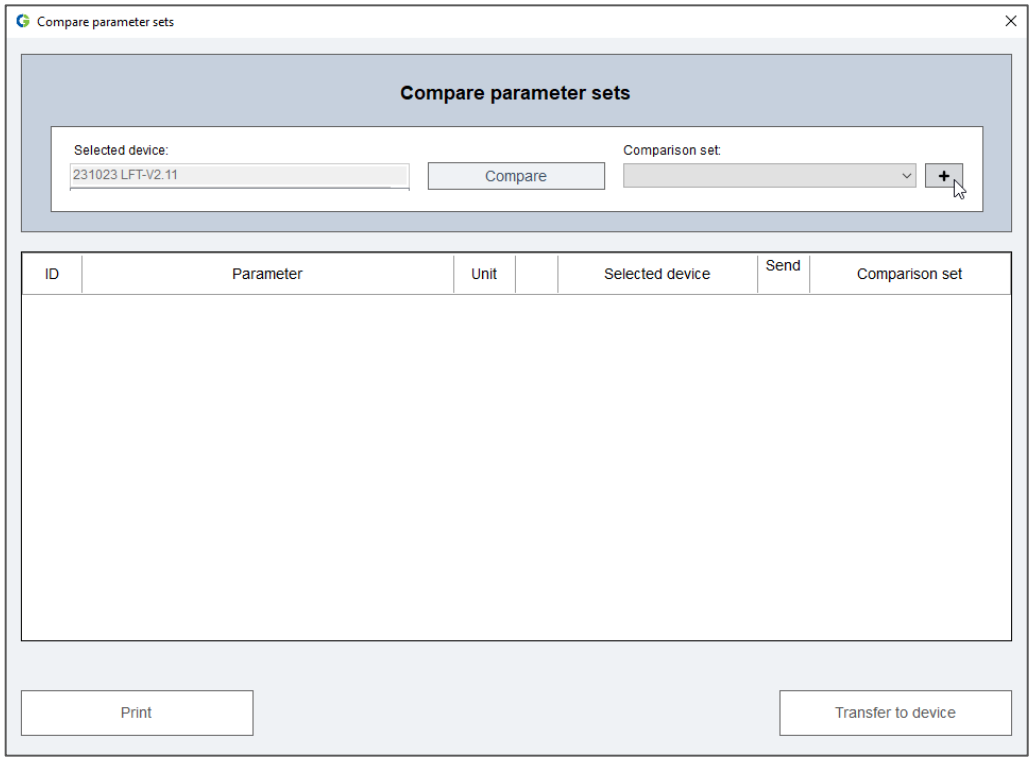


Figure 24: Initial view of comparison dialog without another parameter set available

The currently displayed device is always one of the compared sets. All other devices are visible in a dropdown list on the right to choose from for the second comparison parameter set.

In case the desired parameter set is not yet loaded in the software, you can click on the "**+**" button to open the "**Add Device**" dialog. For more information regarding this dialog, please refer to Section 4 – *Add a Device*.

Any device added through this method is also available in the device list afterwards.

When the desired comparison device is selected, clicking "**Compare**" executes the comparison.

The parameter sets are loaded into the data table and differences in parameter values are highlighted by displaying them in **bold font** (Figure 25).

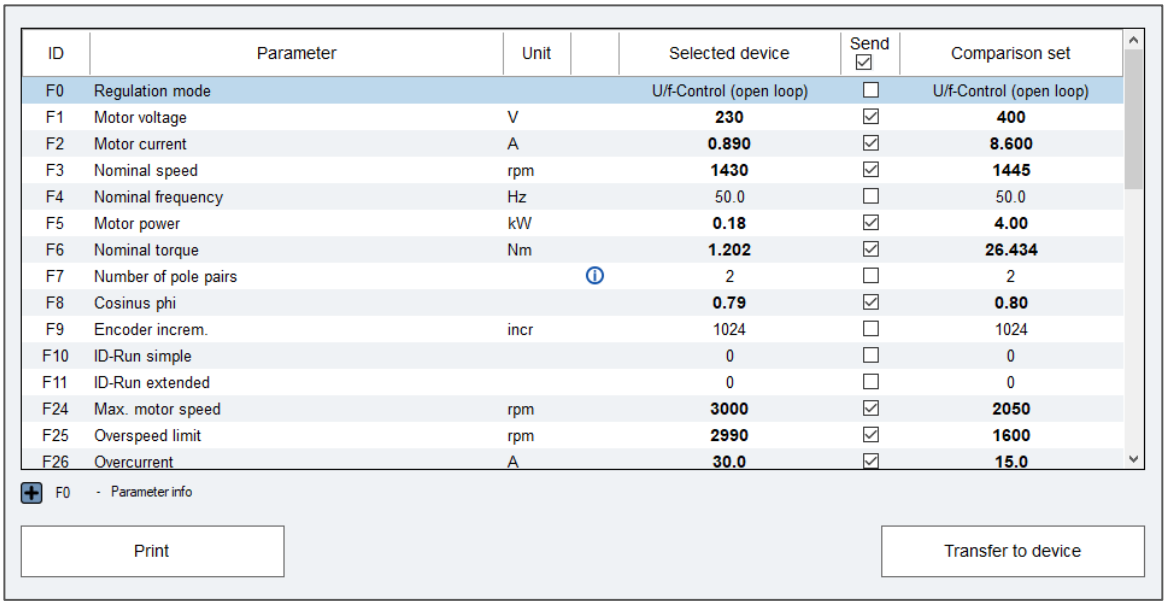
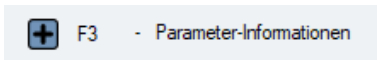


Figure 25: Comparison table between two parameter sets

In addition to the differences in parameter values, there may also exist differences in Meta data due to different drive level mode or firmware versions.

In this case, the details of these discrepancies are available by clicking on the "**+**" button under the main comparison table. The description text and differences are also highlighted in bold font (Figure 26).



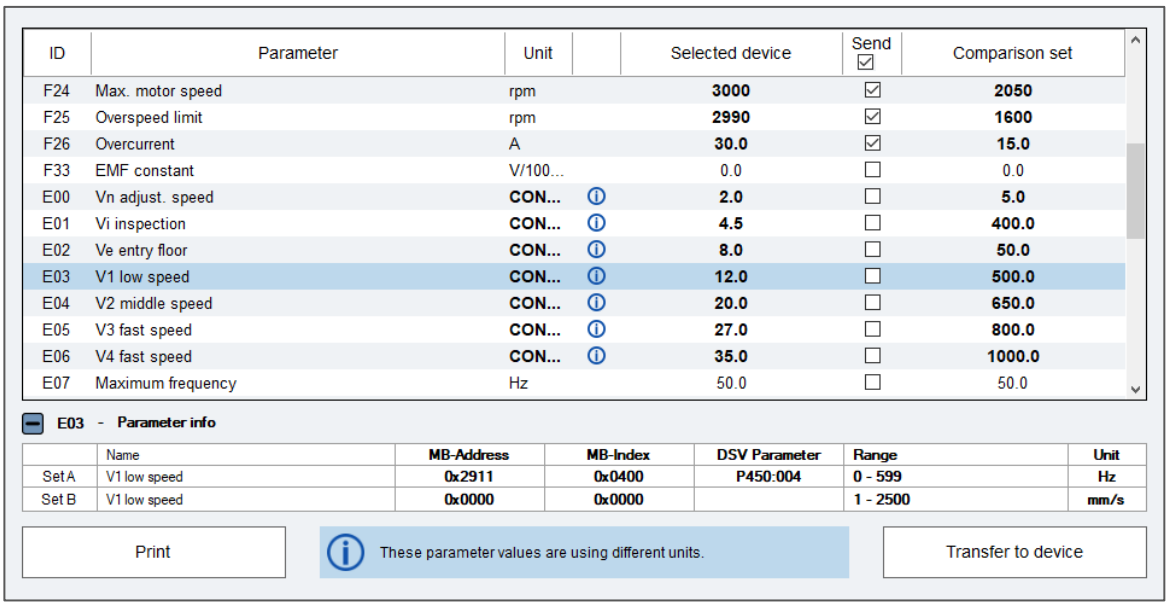
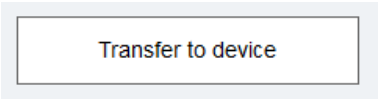


Figure 26: Differences between Meta data of parameters using the example of differing drive level parameter mode

If the currently selected device (Set A) is an active USB connected device, the values of the second parameter set can also be directly sent to the connected device in one batch. The checkboxes in the column "Send" indicate the selection of parameter values to transmit.

By default, all values with different values are selected during the comparison process. The only exceptions are parameters without Write access and those with discrepancies due to incompatible firmware versions or different Meta data (Figure 26).



Start the process of transmitting the previously selected parameter values by clicking “**Send to device**”.

This **cannot be done** while the device is **running** and **powering the motor**. In case it is attempted, the operation will halt until the device status allows for the execution of this process.

A dialog window shows the progress of the batch transmission of parameter values. After the operation is completed successfully, both the progress and comparison dialogs are automatically closed.

8 Trend View

The trend view displays the driving performance of the device based on transmitted actual values. The tab is divided into the following areas:

A) Tab header with different options to provide trend recordings
B) Main graph view with dynamically labelled axes
C) Side menu with actual value table as selection interface and the active sampling rate
D) Mini graph for navigation within the trend recording
E) Overview table with actual values at cursor positions

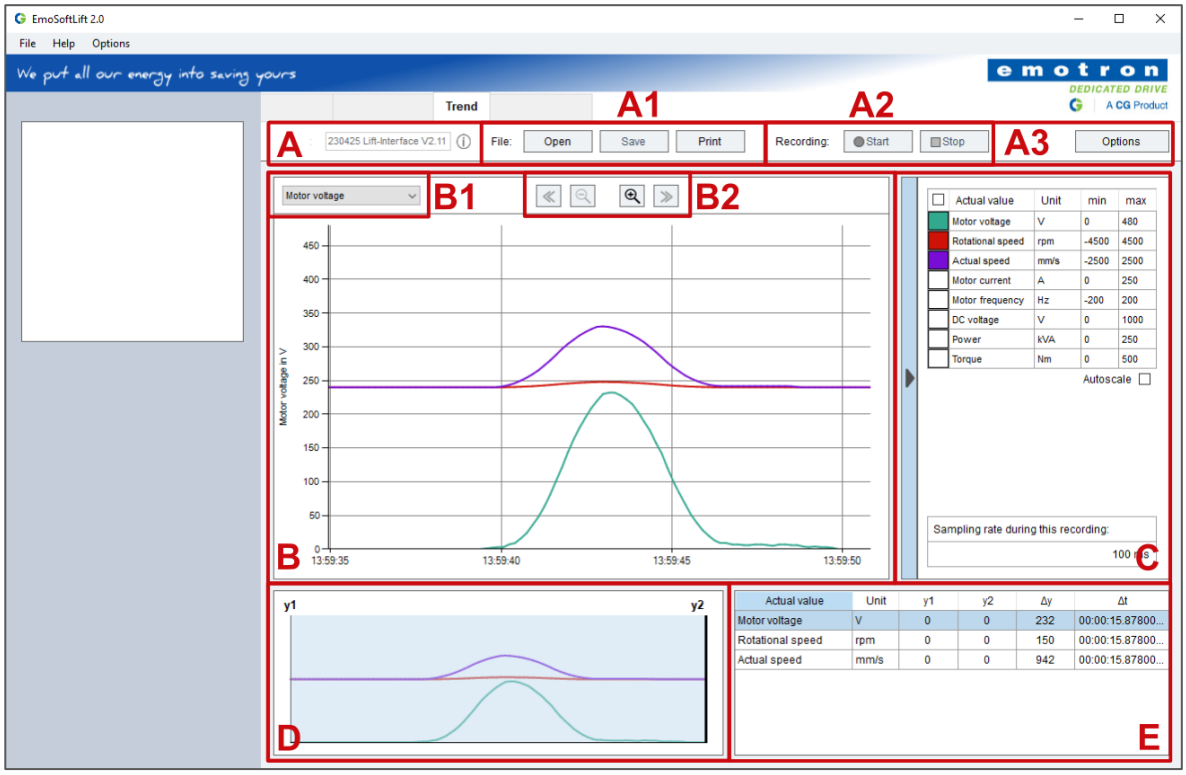


Figure 27: Trend tab overview

The buttons in **(A1)** allow saving or printing the current trend recording as PDF or CSV formatted text file. The latter of which can also be opened and read by the software again for later analysis.

Starting and stopping a new trend recording while a device is actively connected is possible by using the buttons in **(A2)**.

The **"Settings"** button **(A3)** opens a dialog window, which shows the trend view specific settings. For more information about these settings, please refer to Section 8.4 – *Trend Settings*.

Above the **main graph** in **(B)**, you can use the **drop down list (B1)** to choose between the different Y-axes and the group of **navigation functions** within the graph in **(B2)**.

The **actual value table (C)** serves as the method to select the actual values to be visualized in the main graph as well as the scale of the Y-axis. Underneath the table, you can see the current **sampling rate**, which is set to **100ms** by default.

8.1 Record Trend

After successfully connecting to a device via USB the trend view will update as shown in Figure 28.

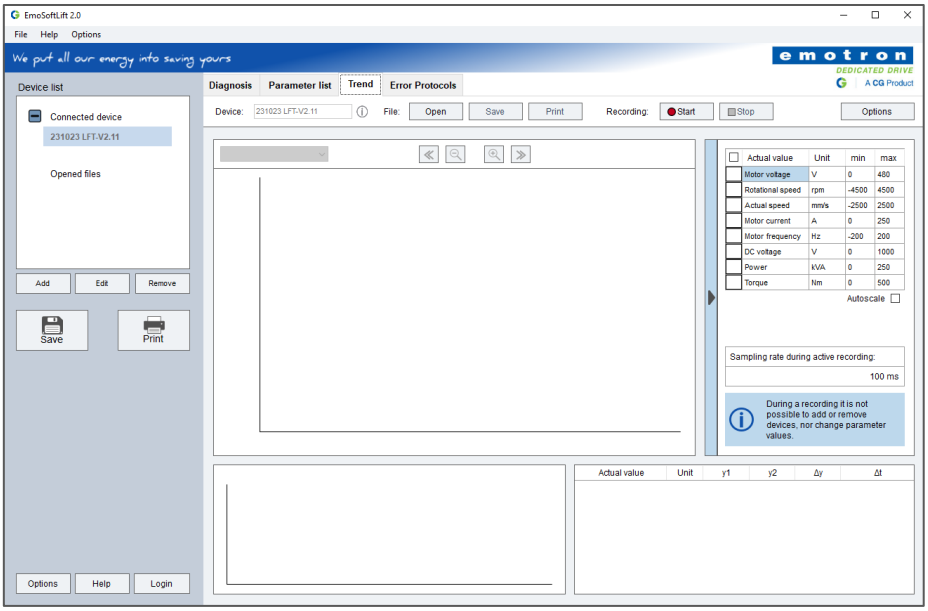


Figure 28: Trend view before any user input

8.1.1 Choose Actual Values

In order to start a new trend recording, please ensure that at least one of the actual values in the table on the right is selected for the recording by clicking the button in the first column of the respective row as shown in Figure 29.

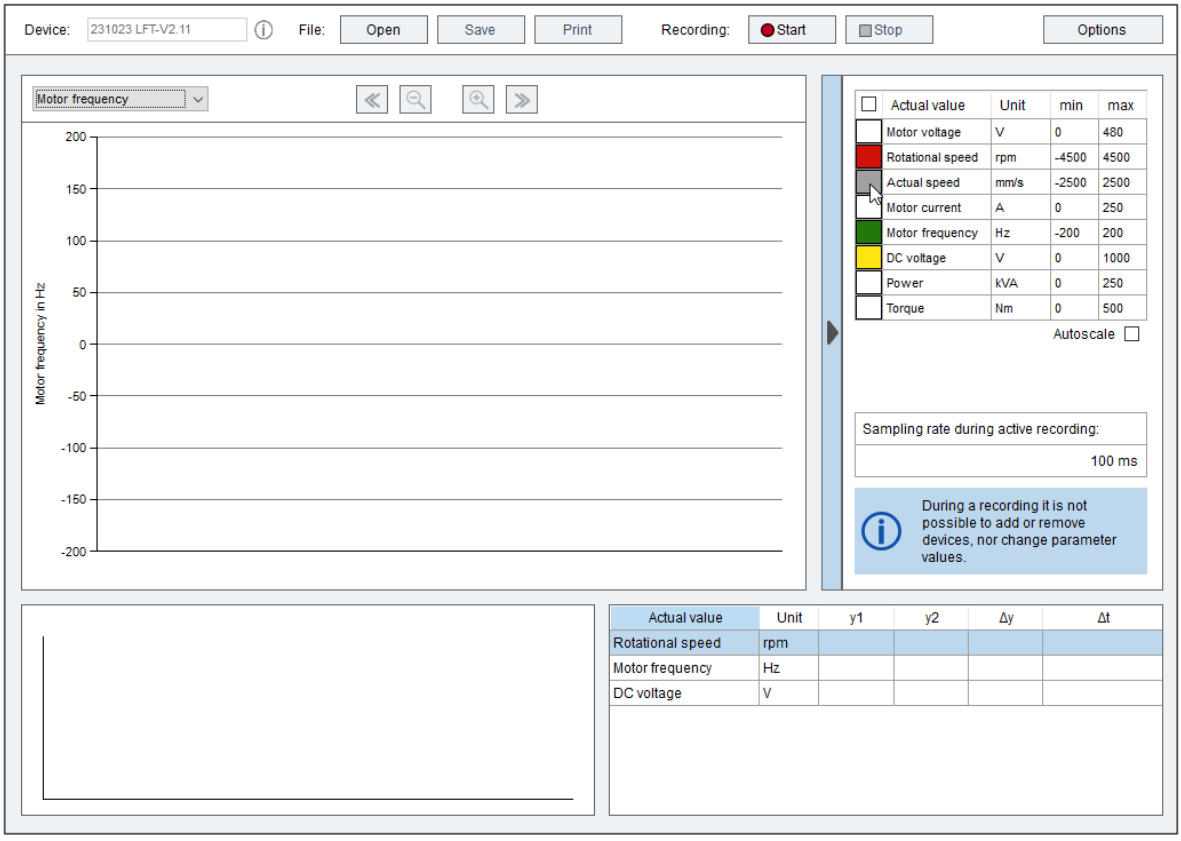


Figure 29: Selection of actual values for visualisation in the trend-recording graph

This selection causes the main graph to be updated and the previously white button in the first column will reflect the actual value's assigned colour.

This selection can be done for any number of actual values. You can switch between the Y-axes in the main graph by using the drop down list in the top left.

As an alternative to the manual single selection of actual values, you can also adjust the trend settings (see Section 8.4 – *Trend Settings*) to record all actual values. The selection in the actual value table will only affect the visualization in this case.

8.1.2 Adjust Y-Axes

Default minimum and maximum values are defined for every actual value in the device configuration file. In order to improve visibility and readability, you can adjust the scale of the Y-axes manually using the actual value table as shown in Figure 30. In this case, the maximum for the motor frequency has been lowered from 200 to 60.

By clicking into the respective field of minimum or maximum, the field turns editable for you to enter your desired value. By leaving the cell through click or press of enter, tab or arrow keys, the value is confirmed.

In case of invalid value, e.g. values outside of the possible range, it is replaced by the nearest valid value within range.

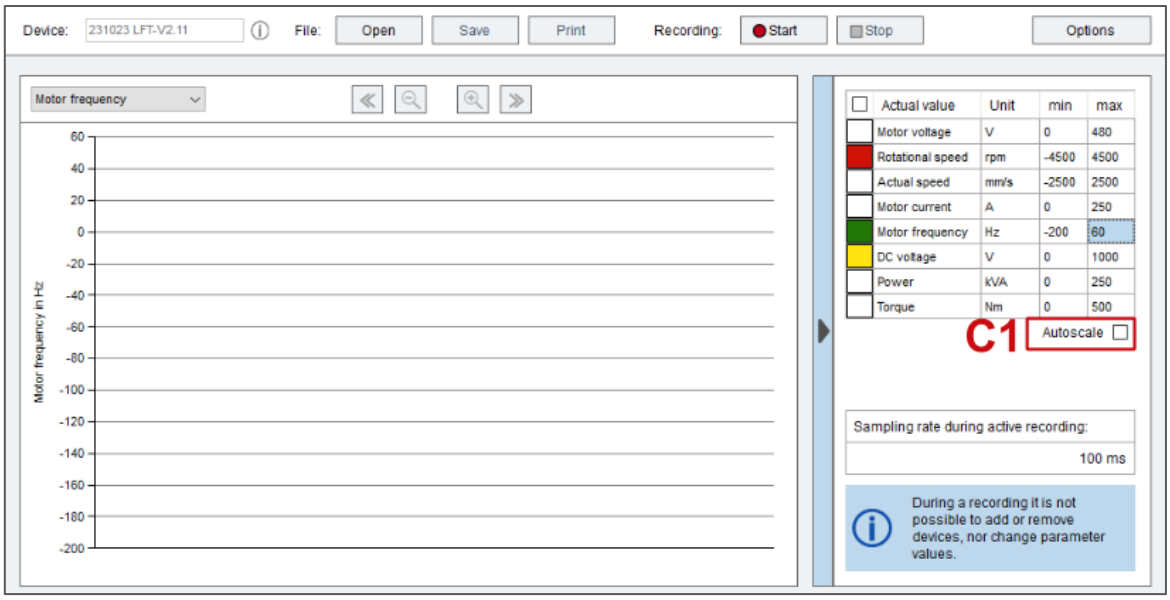


Figure 30: Adjusting Y-axis scale with the help of the actual value table columns "min" and "max"

Additionally, you can use the checkbox for **automatic scaling (C)** of all Y-axes. However, any manual changes afterwards reset this checkbox.

8.1.3 Start and Stop Recording

If at least one actual value is selected or the aforementioned setting (see Section 8.4.2 – *Recording Settings*) is adjusted accordingly, you can start the recording by clicking "**Start**".

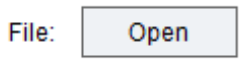
As long as the trend recording is active, the graph updates with the current actual values and provides a visualisation of the driving behaviour of the unit. The current sampling rate is displayed in the right-hand menu under the actual value table.

During the recording, further actual values for visualisation can be selected or hidden at any time. Min/max limits of the visualisation can be set in the table and it is possible to switch between the different Y-axes.

Navigation to other tabs is also possible at any time, but it is not possible to parameterise the unit while it is in Run.

Click the "**Stop**" button to stop the recording.

8.2 Read Trend Recording from File



Clicking "**Open**" opens a file dialog to choose a trend-recording file to read. For compatibility reasons, this is only possible with files that were recorded by and saved from *EmoSoftLift 2.0*.

Data read from files cannot be saved again as a plain text file. However, printing and saving as PDF is always possible.

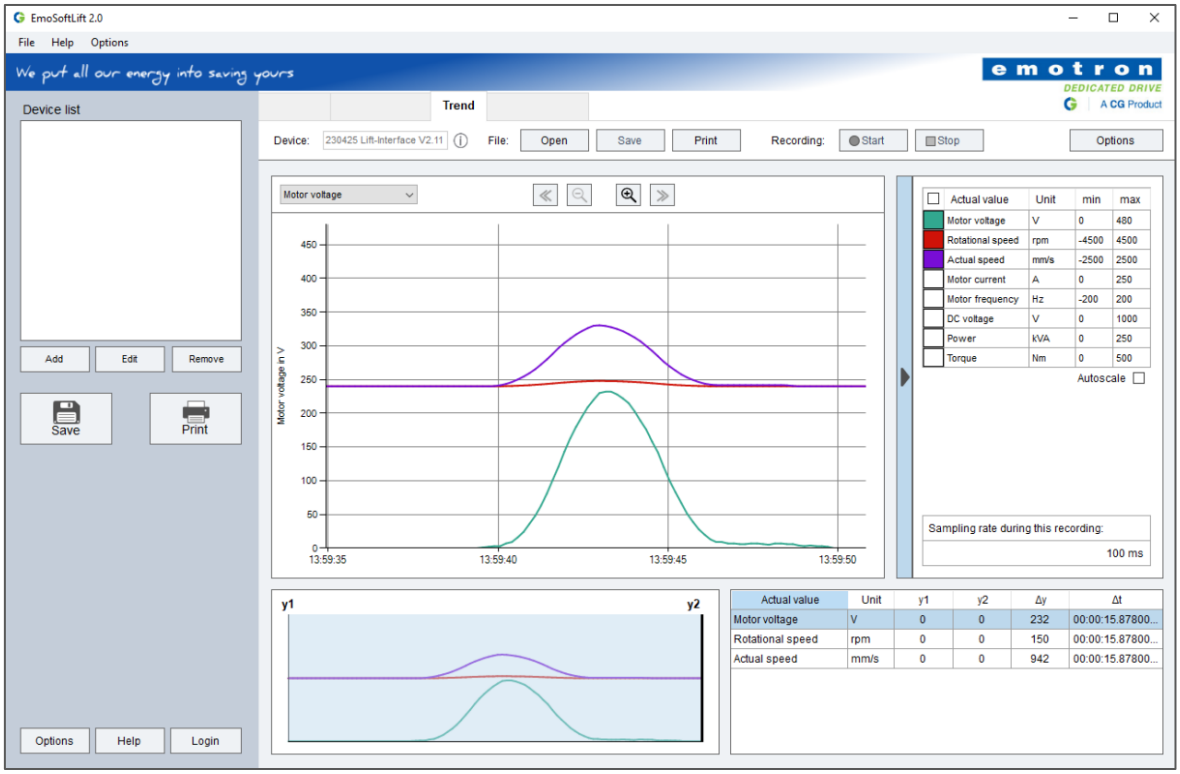


Figure 31: Visualising a trend recording from a previously saved file

8.3 Navigation and Interaction with Trend Recordings

In addition to adjusting the Y-axes, two methods can be used to navigate through the data within a completed trend recording.

On the one hand, the navigation buttons above the graph can be used to zoom in the trend dataset and move along the time axis.

On the other hand, the mouse can be used to click and drag in the mini graph at the bottom of the screen to select any section of the recording for further inspection.

The graph is automatically adjusted accordingly (Figure 32).

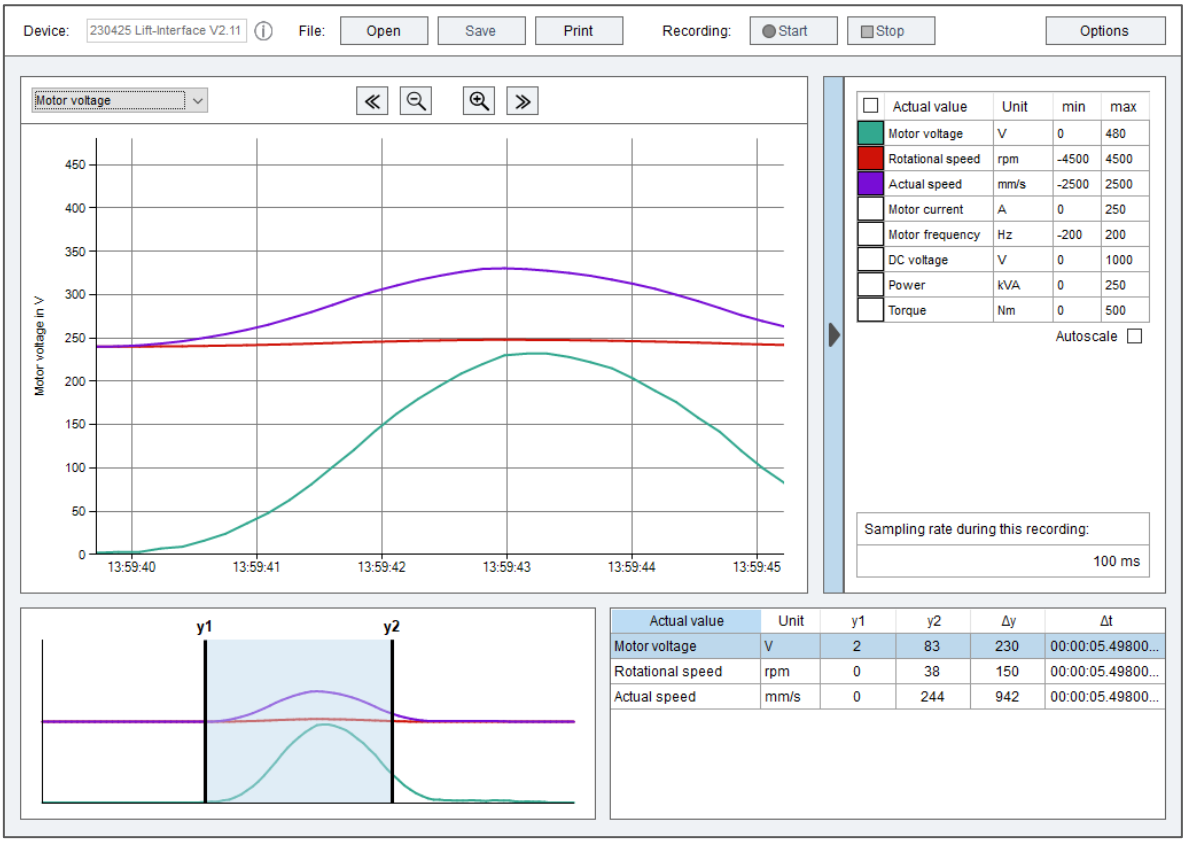


Figure 32: Navigation within a completed trend recording

8.4 Trend Settings

The trend-specific settings can be called up via the "**Options**" button at the right of the trend tab header. These are divided into the two groups of view and recording settings.

After any changes, the "**Apply**" button must be pressed to save the changed settings.

8.4.1 View Settings

In the view settings, you can set the graph background colour in greyscale, as well as the line width of the actual values. Furthermore, the colour and line type can be selected for each actual value available for the currently visualised unit.

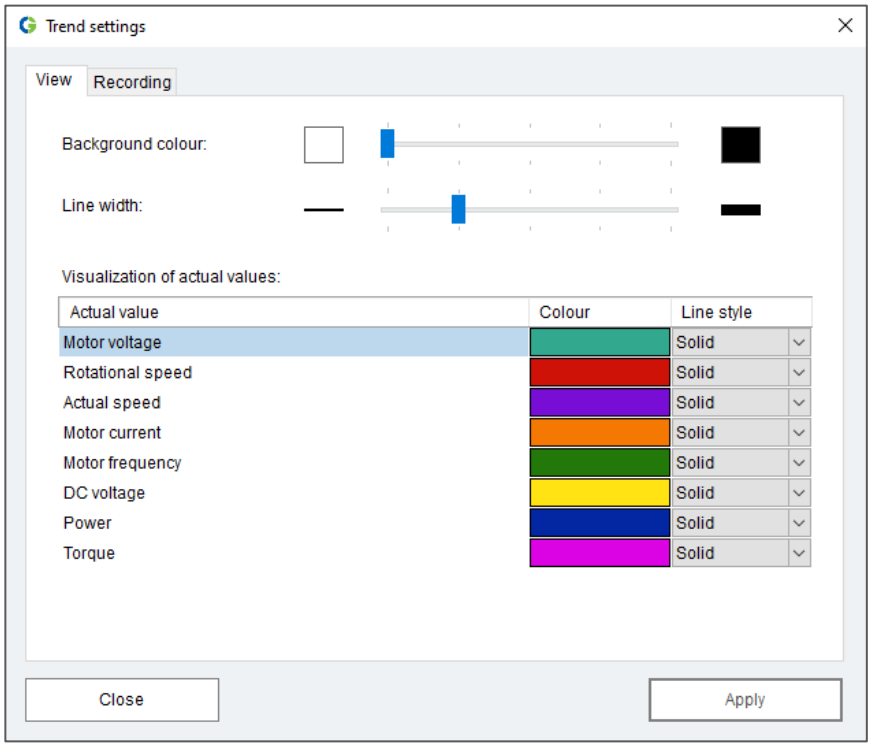


Figure 33: Trend view settings

The colour can be selected by clicking on the currently set colour via the standard Windows colour dialogue, whereby you can also choose a freely selected colour along the colour wheel.

The following line styles are available:

- Solid
- Dashed
- Dotted
- Dash-Dot
- Bold

All view settings are saved per Windows user to be used again in the next session.

8.4.2 Recording Settings

Recording settings refer to the behaviour of the application during ongoing trend recordings.

Under "Record and save data", you can set whether only the actual values selected by the user are recorded during trend recording, or also those not selected.

If, according to the setting, only the selected actual values are recorded and the user selects another actual value during the current recording, all values for previously recorded time stamps are set to zero for this actual value.

Furthermore, it is also possible to select that logs of errors that occurred during the recording are saved at the same time, but in a separate file.

These settings must be set **before the start of the trend recording**; it is not possible to change them during an ongoing recording.

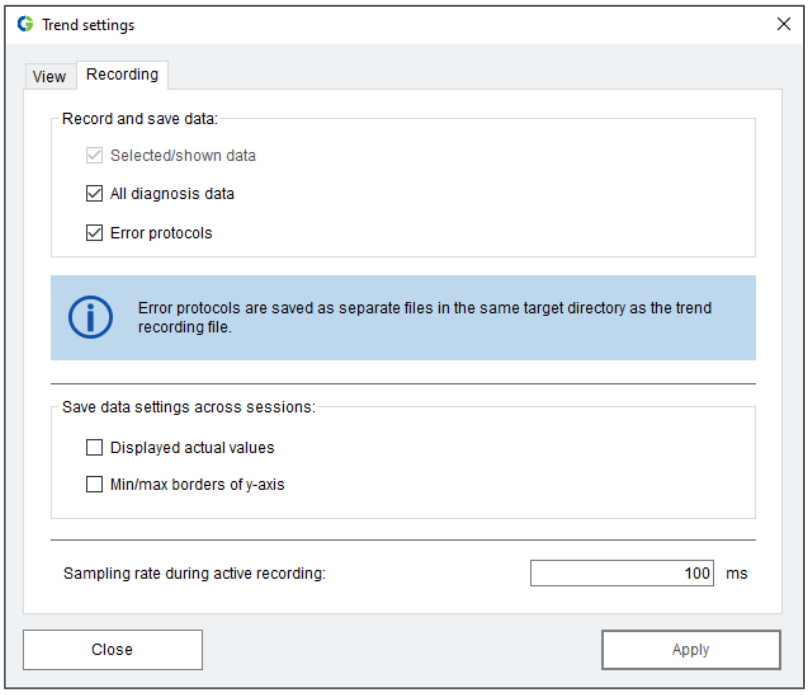


Figure 34: Trend recordings settings

In addition, users can select for their selections of actual values and their minimum and maximum limits on the Y-axis should be saved across connected devices and sessions.

If this is not the case, the limit range is adjusted to the absolute minimum and maximum values of the respective actual value with each newly connected device.

It is possible to set the sampling rate for active trend recordings. This is set to **100ms by default**, but **cannot fall below 50ms**.

Please consider the PC's workload when changing the sampling rates.
Changes to the sampling rates are not saved beyond the current session.

9 Error Protocols

The error protocol view shows up to 15 errors recorded in the DSV unit's error memory within the main table **(C)** in the respective tabs **(B)**. These errors are automatically read during the initial connection with a device.

The respective buttons **(A1)** in the tab header allow saving the information as a plain text or PDF as well as printing it directly.

In addition, errors that occur during the connection with *EmoSoftLift 2.0* are logged with the status and actual value information. This log information can be viewed by folding out the error group via the respective ⊞ button.

Using the **checkboxes (C1)** at the top right of the "Connection" tab, you can filter for errors occurring from the lift interface/DSV adapter or the frequency converter.

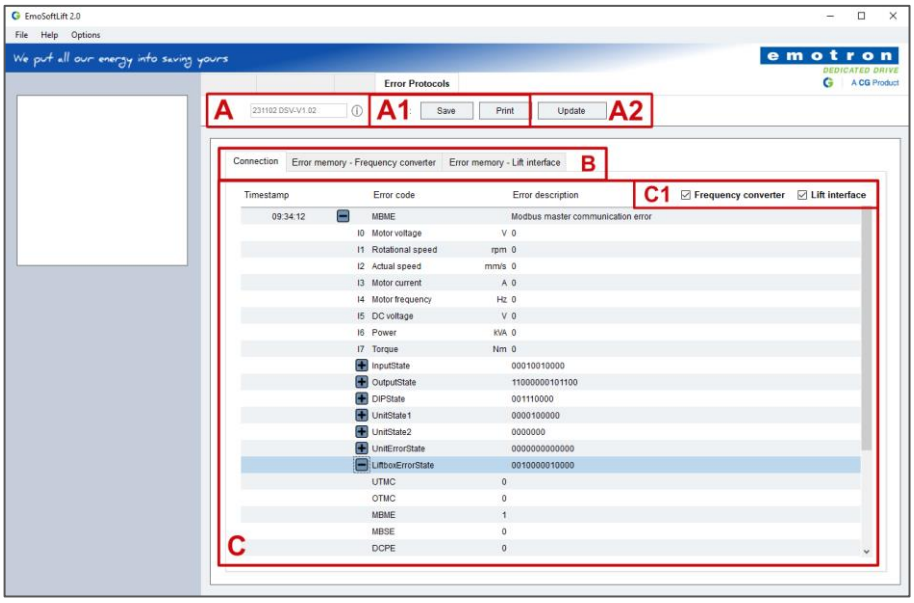


Figure 35: Error protocol overview including live errors and DSV unit error memory

Clicking on **"Update" (A2)** in the tab header causes the software to read the unit's error memory again and update the tables as well as the timestamp for the last download **(C2)** accordingly.

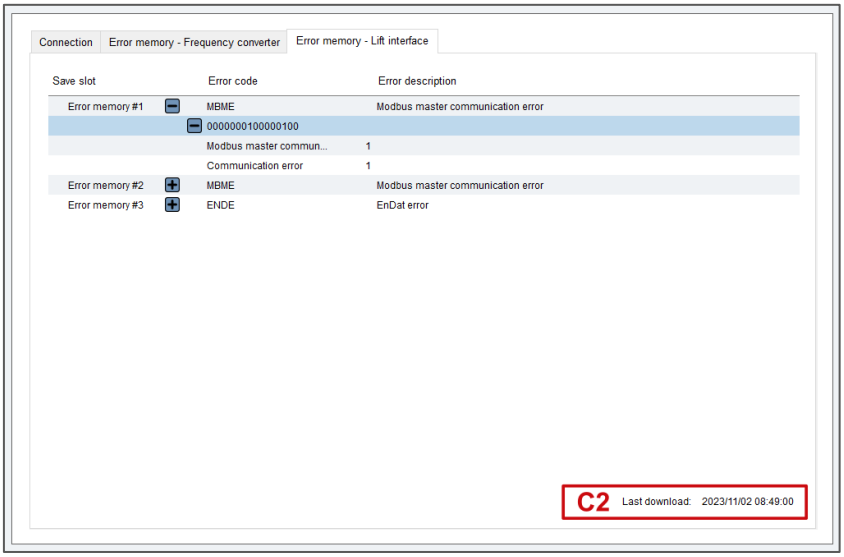
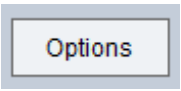


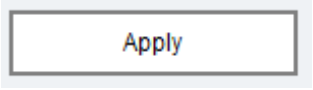
Figure 36: Error protocol view with details for live protocolled errors

10 Program Settings



Clicking the "**Options**" button at the lower left of the global menu opens the dialog window for program settings.

This dialog contains information about the current connection and application language setting. Additionally, you can choose a new device configuration file to update the application's Meta data by adding a new version to its known firmware versions.



Generally, it is necessary to confirm all changes by pressing "**Apply**" after the changes are completed.

10.1 Connection Settings

If *EmoSoftLift 2.0* is connected to a device via USB, the tab "**Connection**" shows information for that device as seen in Figure 36, including the internally used device name, firmware version and the operational mode based on the recognized DIP switch positions. The device name can be adjusted by clicking "**Apply**" after changing the text box to show the new device name.

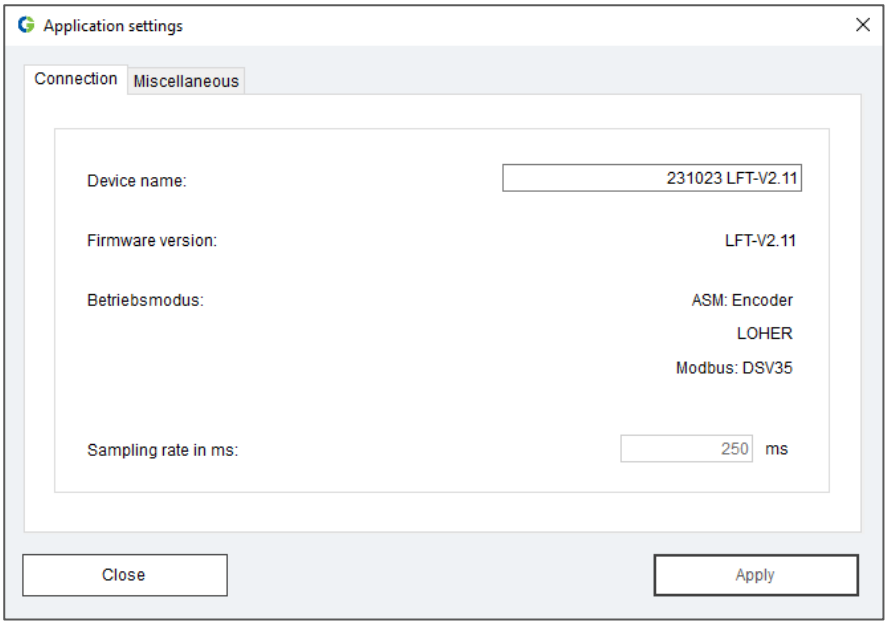


Figure 37: Connection specific program settings

Additionally, you can see the current **sampling rate** for the periodic diagnosis of device status and actual values outside of ongoing trend recordings. By default, this is set to 250ms. Users can adjust this value, but it **cannot go below 100ms**.

Please consider the PC's workload when changing the sampling rates.
Changes to the sampling rates are not saved beyond the current session.

10.2 Change Language

You can adjust the application's language with the help of the dropdown list in the section "Language". Click "**Apply**" after choosing your preferred language to confirm the changes. This automatically reloads the application in the chosen language.

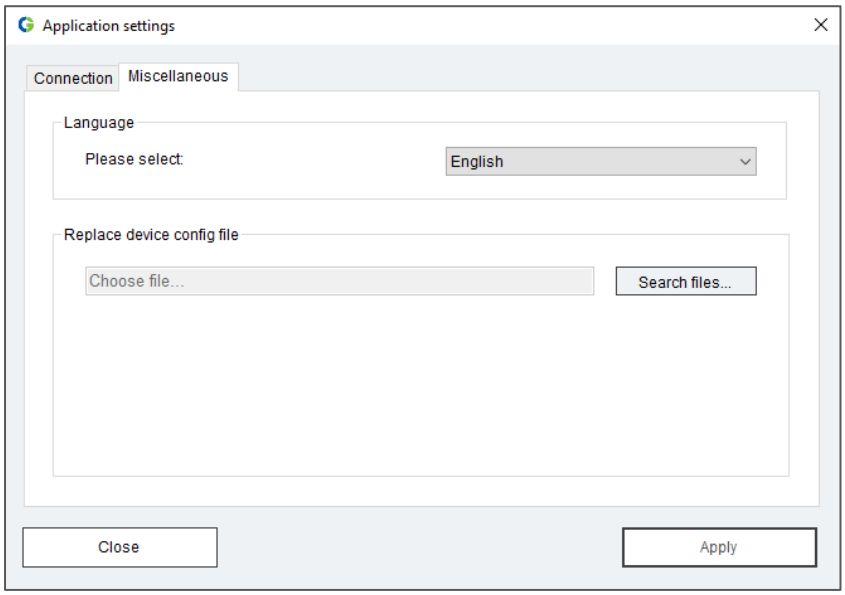
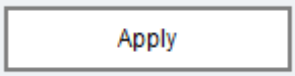


Figure 38: Miscellaneous program settings – Language and device configuration file

10.3 Replace Device Configuration File

Open the file dialog by clicking "**Search Files**" and select the new device configuration file. After confirming, *EmoSoftLift 2.0* will automatically check the file's compatibility.



If the file is compatible, confirm the changes by pressing "**Apply**". Afterwards, the application needs to be closed and **restarted** to read the new Meta data.

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