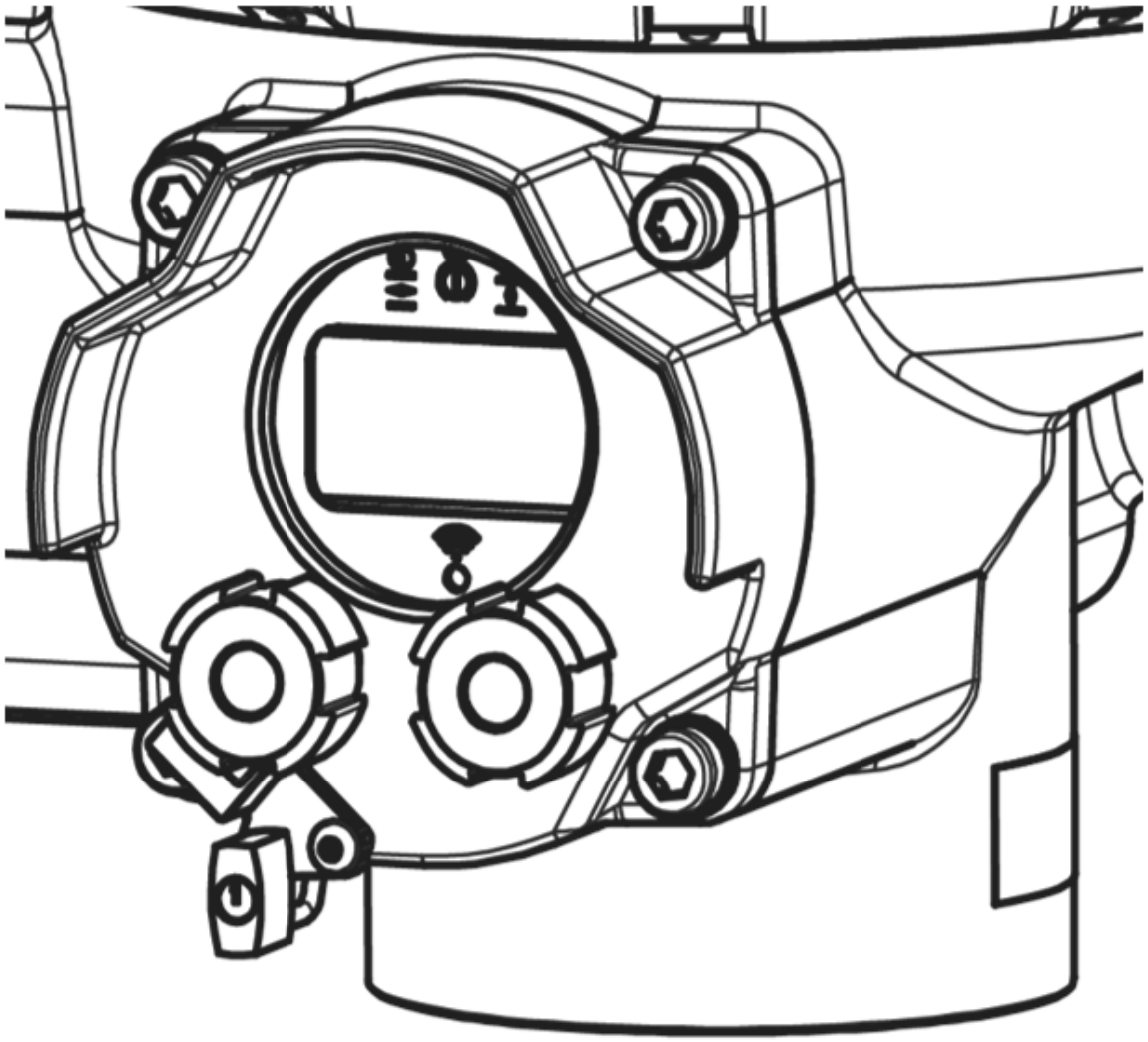
Operating Instructions

PSC.3 Local control for PS-AMS PSQ-S-EX



Subject to changes!

Version 2025/07/02 Art. No.: 8035994

Contents

1. Symbols and safety

General dangers of non-compliance with safety regulations

The PS-AMS PSQ-S-EX actuators are built to the latest state of the art and are safe to operate. Despite of this, the actuators may be hazardous if operated by personnel that has not been sufficiently trained or at least instructed, and if the actuators are handled improperly, or not used as per specification.

This may cause

- danger to life and limb of the user or a third party,
- damage the actuator and other property belonging to the owner,
- reduce safety and function of the actuator.

To prevent such problems, please ensure that these operating instructions and this chapter in particular have been read and understood by all personnel involved in the installation, commissioning, operation, maintenance and repair of the actuators.

Basic safety Notes

- The actuators may only be operated by skilled and authorized operating personnel.
- Make sure to follow all security advices mentioned in this manual, any national rules for accident prevention, as well as the owner´s instructions for work, operation and safety.
- The isolating procedures specified in these operating instructions must be followed for all work pertaining to the installation, commissioning, operation, change of operating conditions and modes, maintenance, inspection, repair and installation of accessories.
- Areas that can be under voltage have to be isolated before working on them.
- Ensure that the actuators are always operated in faultless condition. Any damage or faults, and changes in the operational characteristics that may affect safety, must be reported at once.

Danger Signs

The following danger signs are used in this operating manual:

Caution! There is a general risk of damage related to health and/or properties.

Danger! Electrical voltages are present that may lead to death. Life threatening risks may occur due to electrical voltages!

Danger! This sign warns of hazards posing a risk to health Ignoring these instructions can lead to injuries.

Caution! Observe precautions for handling. Electrostatic sensitive devices.

Other Notes

- The motor surface temperature may rise when maintaining, inspecting and repairing the actuator immediately after the operation. There is a danger of burning the skin!
- These operating instructions are part of the product PS-AMS PSQ-S-EX!

2. PSC.3 local control panel

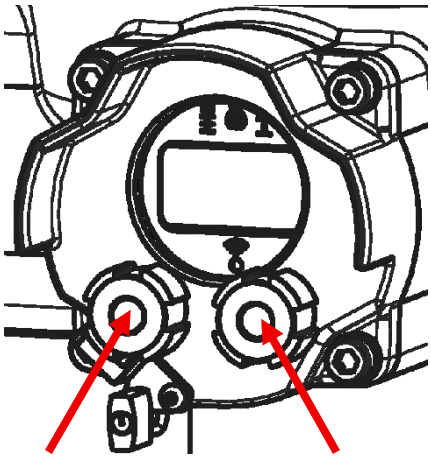
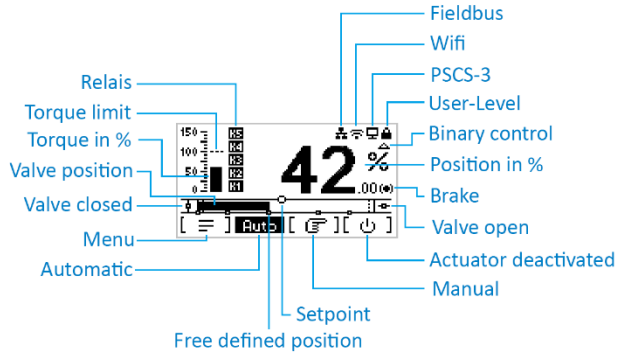


Figure 1: Local Control Panel PSC.3

2.1 Graphic display



2.2 LED message display

	Yellow	Valve closed	
	Green	Valve open	
	Red flashing	Collective Error	
	Blue	ON	Wi-Fi connected
		flashing	Ready to receive, there is no connection
		Off	Wi-Fi switched off

2.3 Lockable selector switch

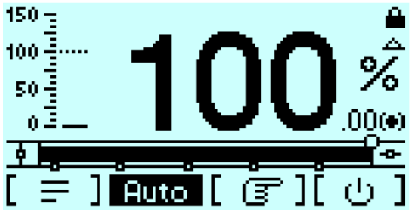
The selector switch is used to select one of four operating modes.

Its position is absolutely encoded so that it keeps the mode when the actuator is switched off.

The selector switch can be locked with a padlock.

2.3.1 Automatic mode

Operating mode with control by process control signals.



Display of a warning message in automatic mode

Display of a fault in automatic mode

2.3.2 Manual (local) mode

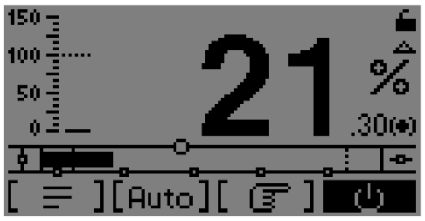
Local control of the actuator. The actuator can be driven between the stored valve end positions with the entry rotary switch on the right side.

If the rotary switch is pressed and turned, the fine adjustment is activated.

2.3.3 OFF-Mode

The actuator is in off mode and does not react to signals from the process control.

In this mode, the backlighting of the LCD is switched off after 10 seconds.

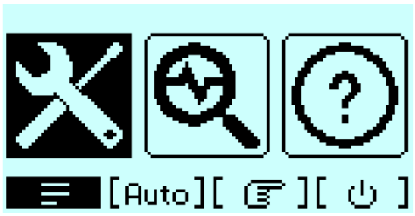


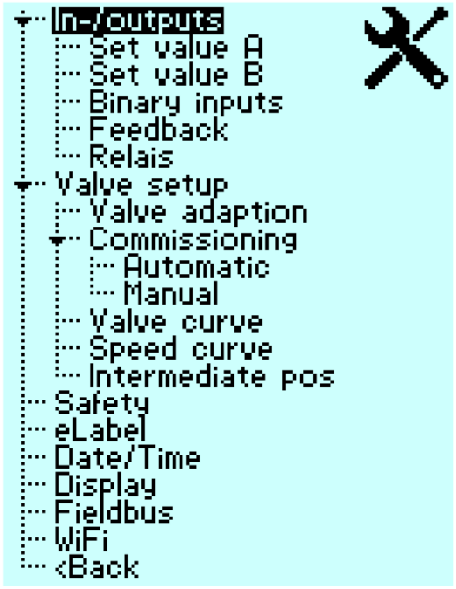
2.4 Rotary switch with push function

The rotary switch is used to navigate in the menu or to adjust the actuator position during manual on-local control or commissioning. The rotary switch must be pressed to confirm an entry (push function).

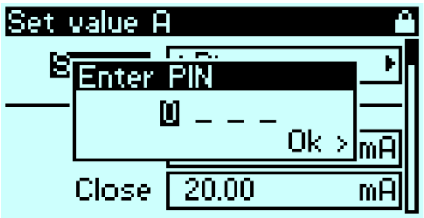
2.5 Parameters menu

You can scroll through the menu using the rotary switch. To change to a submenu within the menu structure, press the rotary switch (push). To switch from a submenu to the main level, scroll to the end of the menu and then press “Back”.





Input lock:



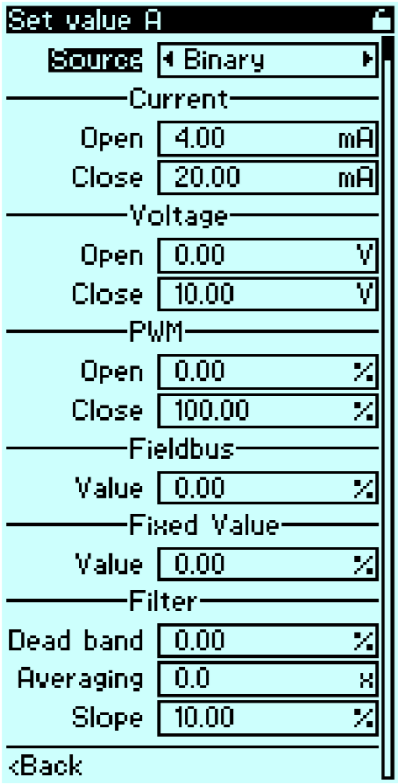
A four-digit pin is required to change a value in the parameters. This can be changed or deactivated in the PSCS3.

Once the pin has been entered, the actuator is unlocked and values can be changed using the rotary switch. The actuator is automatically locked again after 2 minutes of inactivity.

2.5.1 In/Outputs

2.5.1.1 Set value A

Setting menu for setpoint A:



Source: Selection of the setpoint specification for position control by an process control system.
The following sources are available: Binary, current, voltage, PWM, fieldbus, fixed value.

Binary: Setting actuator operation using binary inputs BA-BC. Depending on the parameterization of the binary inputs, the actuator moves in the respective OPEN/STOP/CLOSE direction when a rising signal edge is detected. The actuator stops when the STOP signal is applied or the end position is reached. If OPEN/CLOSE is selected, the actuator moves as long as a binary signal is applied or the end position is reached. The actuator stops automatically when the signal is no longer present. The STOP signal must not be selected for OPEN/CLOSE.

Note: the analog inputs can be overridden with the binary inputs.

Current: Setting for the analog current setpoint Open and Close in the range 0mA to 20mA.

Voltage: Setting for the analog voltage setpoint Open and Close in the range 0V to 10V.

PWM: Setting for a PWM signal as a move command in %; the binary input BC must be parameterized to PWM for this.

Fieldbus: Default setting for the digital setpoint value range 0% to 100%. During operation, the digital setpoint is overwritten by the fieldbus.

Fixed value: Setting for the digital setpoint as a fixed value range 0% to 100%.

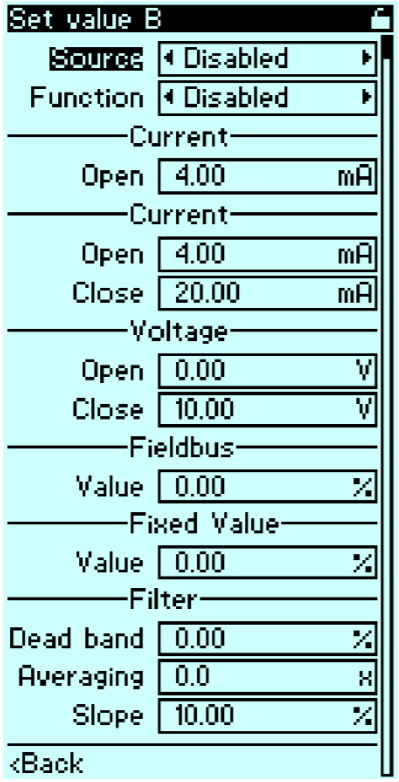
Filter: Deadband: Setting the response threshold from 0% to 5% of the maximum end value of the setpoint range.

Filter: Averaging: Averaging over the target value in the range of 1 - 64 times.

Filter: Slope: Setting the maximum slopeof the setpoint 0% to 100%.

2.5.1.2 Set value B

Setting menu for setpoint B:



Source: Selection of the setpoint specification for optional functions by an process control system or process sensor. The following sources are available: Disabled, current, voltage, field bus, fixed value.

Function: Function of setpoint B, Disabled, process controller, speed controller.

Current: Setting for the analog current setpoint min and max in the range 0mA to 20mA.

Voltage: Setting for the analog voltage setpoint min and max in the range 0V to 10V.

Fieldbus: Default setting for the digital setpoint value range 0% to 100%. During operation, the digital setpoint is overwritten by the fieldbus.

Fixed value: Setting for the digital setpoint as a fixed value range 0% to 100%.

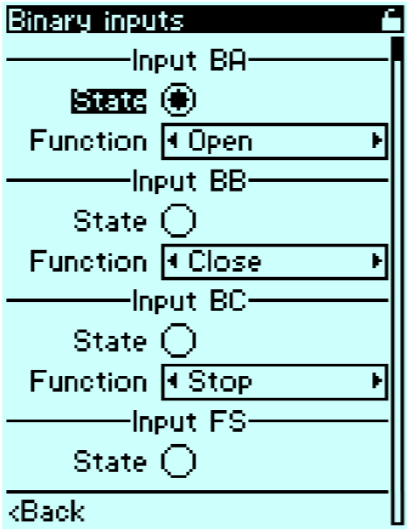
Filter: Deadband: Setting the response threshold from 0% to 5% of the maximum end value of the setpoint range.

Filter: Averaging: Averaging over the target value in the range of 1 - 64 times.

Filter: Slope: Setting the maximum slope of the setpoint 0% to 100%.

2.5.2 Binary inputs

The actuator has galvanically isolated binary inputs, BA/BB have a common neutral conductor connection COM. BC is galvanically isolated from BA/BB.
If a voltage is present at a binary input port, the actuator drives to the parameterized position regardless of the analogue or digital set value applied.
Prioritization takes place from BC (highest priority) to BA (lowest priority). Exception with parameterization BC PWM.



The following functions can be assigned to the binary inputs BA to BC:

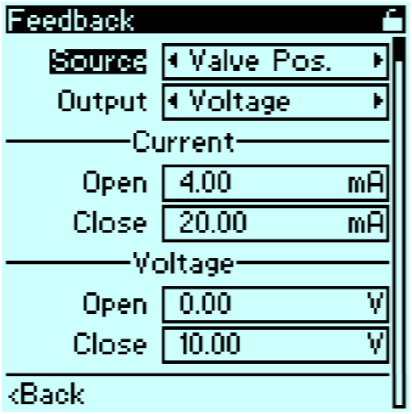
- No function
- OPEN
- CLOSE
- Stop
- Position 1
- Position 2
- Position 3
- Position 4
- Position 5

In addition, BC can be assigned the PWM function (optional module required).

Input FS shows the current status of the failsafe input in conjunction with the optional PSCP.
State shows the current status of the binary input.

2.5.3 Feedback

Active continuous feedback:



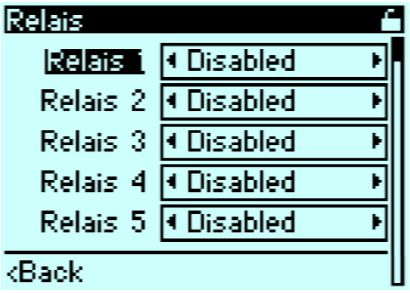
Source: Selection of the actual value: Actuator position (standard) or actual value of the process sensor (with PSIC option), corresponds to input signal for setpoint B.

Current: Setting for the analogue current actual value min and max in the range 0mA to 20mA.

Voltage: Setting for the analogue voltage actual value min and max in the range 0V to 10V.

2.5.4 Signal relais

5 optional potential-free signalling relays with NO contacts are available for signalling events.



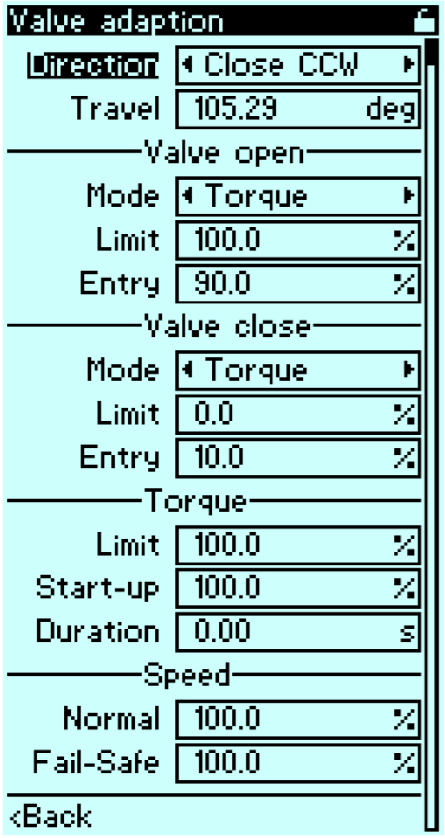
The following events can be assigned to the signalling relays:

- Deactivated
- Setpoint error A
- Setpoint error B
- Torque error OPEN
- Torque error ClOSE
- Over-temperature
- Undervoltage
- Main power failure
- Actuator Local (Manually integrated / WI-FI / PSCS local control)
- Actuator Remote
- Actuator OFF
- System error
- Collective error
- End position not reached
- End Pos. overrun
- Position 1
- Position 2
- Position 3
- Position 4
- Position 5

2.5.5 Valve settings

2.5.5.1 Valve adaption

The valve adaptation enables the actuator to be optimally adapted to the valve.



Closing direction: Selection of the closing direction of the actuator, counterclockwise, clockwise.

Angle: Number of angular degrees between the valve end positions.
Info: In automatic commissioning with two torque end positions, the value is calculated by the actuator.

Valve open: Mode: Type of switch-off when reaching the valve end position, torque or travel.

Valve open: Limit: End position limit 80-100%, which is not exceeded after setup.

Valve open: Entry: Catchment range 80-100%, which is used to move to the end position when switching off by torque.

Valve close: Mode: Type of switch-off when reaching the valve end position, torque or travel.

Valve close: Limit: End position limit 0-20%, which is not exceeded after setup.

Valve close: Entry: 0-20% pull-in range, which is used to move to the end position when switching off by torque.

Torque: Limit: The actuator torque in normal operation can be set between 30-100% of the nominal torque.

Torque: Startup: The starting torque can be set between 30-150% of the nominal torque.

Torque Duration: The duration for which the starting torque is effective. Range 0-2sec.

Speed: Normal: Global speed limitation, the speed characteristic curve limits the speed depending on the parameterization.

Speed: Fail-Safe: Speed that is used for emergency operation regardless of the speed characteristic or speed controller.

2.5.6 Commissioning

The actuator can automatically determine the valve end positions depending on the shut-off set or they can be set manually.

2.5.6.1 Automatic commissioning

If at least one valve end position is set to torque, the valve commissioning can be automatically carried out.

To start automatic commissioning, select “Start” and confirm. Commissioning will then start.

Once automatic commissioning has been successfully completed, this is confirmed with the message.

If automatic commissioning is not completed successfully or is canceled with “Cancel”, this is indicated by the message.

The reason for the abort is also displayed in the message.

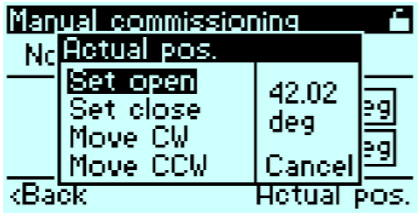
2.5.6.2 Manual commissioning

If both valve end positions are set to the position, the valve set-up must be carried out manually. Manual adjustment can also be carried out after automatic commissioning.

Open: Selection of the position, the value can be changed by turning. The value is accepted by pressing the rotary switch.

Close: Select the position, the value can be changed by turning. The value is accepted by pressing the rotary switch.

Actual pos:

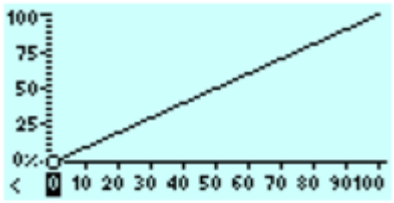


The position can be approached by selecting Move CW or Move CCW. The position can also be moved to using the handwheel.

The moved position can then be accepted by selecting “Set open” or “Set close”.
The function can be canceled with “Cancel”.

2.5.6.3 Valve curve

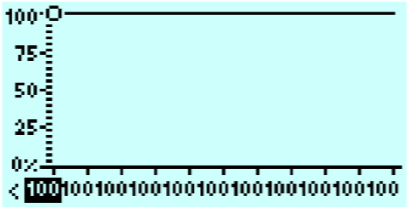
The dependence of the command variable to the valve position/characteristic can be adapted by means of characteristic curves. There are 11 grid points available for this. A linear relationship is set as standard when shipped.



The grid points can be selected by means of the rotary switch. The value can be changed by pressing the rotary switch and then turning it. Pressing again saves the setting permanently.

2.5.6.4 Speed curve

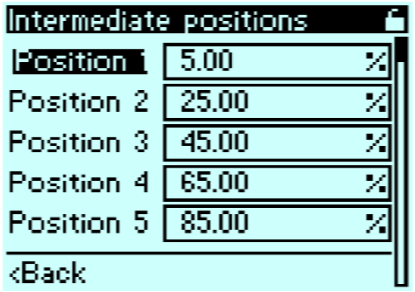
The speed of the actuator can be parameterized using a characteristic curve with 11 interpolation points between minimum speed - global speed limitation, allowing individual settings to be made for gentle valve actuation. The standard setting is a straight line depending on the global speed limitation.



The grid points can be selected by means of the rotary switch. The value can be changed by pressing the rotary switch and then turning it. Pressing again saves the setting permanently.

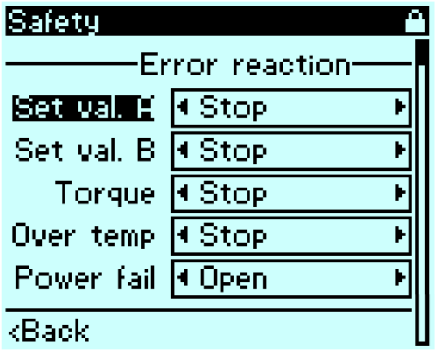
2.5.6.5 Intermediate positions

The set intermediate positions can be selected in the safety functions or binary inputs and approached by the actuator.
Setting the position in the range 0-100%:



2.6 Safety function

With the safety functions, the actuator can be driven to a previously parametrised position in the event of a fault message.



Setpoint error A & B: If the analog setpoint is 50% below the value of the minimum setpoint, one of the following safety functions can be executed:

- OPEN
- CLOSE
- Stop
- Position 1
- Position 2
- Position 3
- Position 4
- Position 5
- Torque error: If the maximum torque is reached for a certain time in the direction of an end position outside the retraction, the following safety function can be selected:
  - Stop
  - Retry
  - endless Retry

Overtemperature: If the temperature monitoring reaches the 70°C warning threshold, the following safety function can be selected:

- OPEN
- CLOSE
- Stop
- Position 1

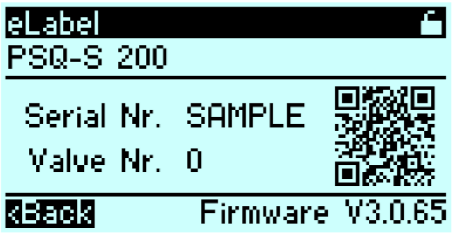
- Position 2
- Position 3
- Position 4
- Position 5
- Rotational-speed reduction

Main failure: If the supply voltage fails, one of the following safety functions can be selected:

- OPEN
- CLOSE
- Stop
- Position 1
- Position 2
- Position 3
- Position 4
- Position 5

2.6.1 eLabel

The electronic type plate shows specific actuator data:



Valve no.: The valve number can be selected and set. Only numerical values are possible.
The QR code contains the information of the eLabel.

2.6.2 Date / Time

The setting menu for the clock/date. The clock is used to make accurate timestamps when recording messages during logging.

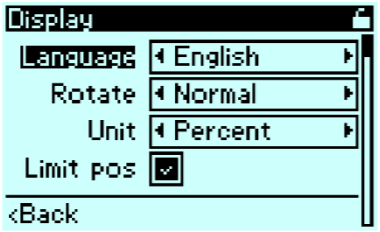
Time: Setting the time.

Date: Setting the date.

The clock has a battery backup and continues to run in the event of a main power failure.

2.6.4 Display

Setting menu for the PSC.3:



Language: Setting the display language.

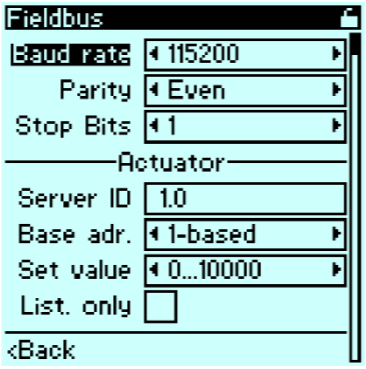
Rotate: Alignment of the display

Unit: Display of the actuator position in % / mm /deg /rev

Limit pos: Limiting the display of the actuator position to 100%

2.6.5 Fieldbus

Parameter menu for fieldbus-specific addresses and settings. See the instructions for the respective fieldbus.



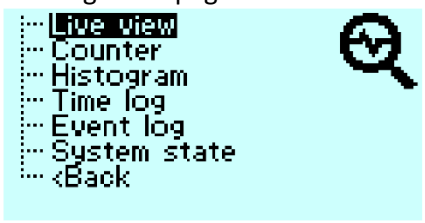
2.6.7 WiFi

Not yet available.

3 Diagnose

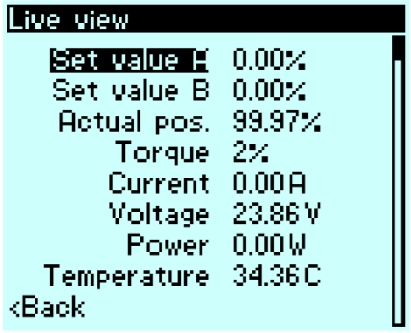
3.1 Diagnosis with local control PSC.3

If the setting switch is pressed when the selector switch is in the ‘Automatic’ or ‘Off’ position, you can scroll through the diagnostic pages:

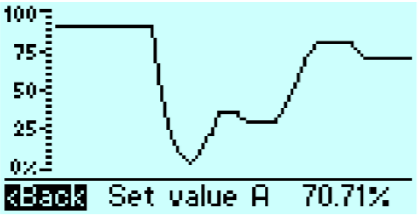


Alternatively, diagnostics can be called up via the main selection in the parameter menu:

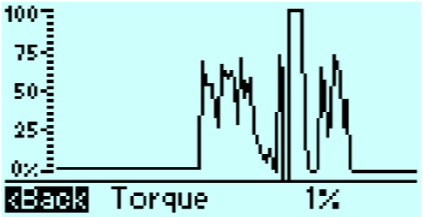
Live view: Display of the current measured values:

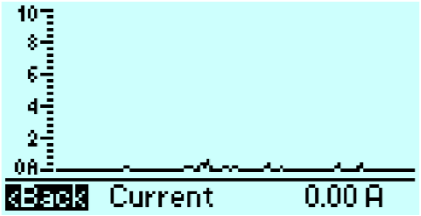


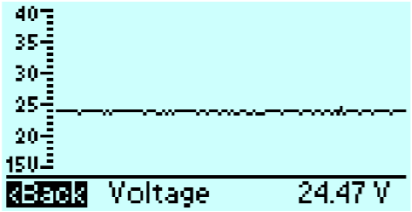
If the setting switch is pressed during selection, a graphic display appears:

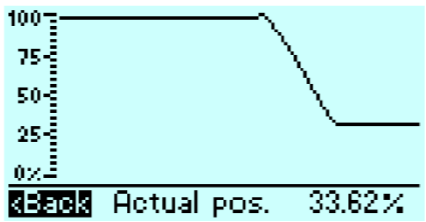


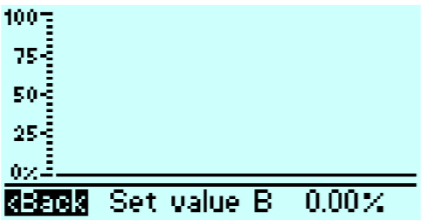
You can scroll between the measured values within the graphical display:

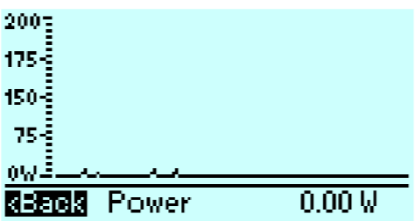


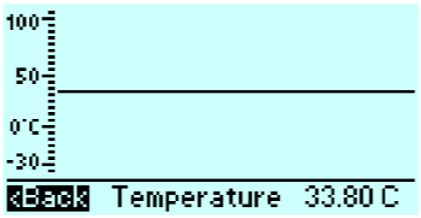




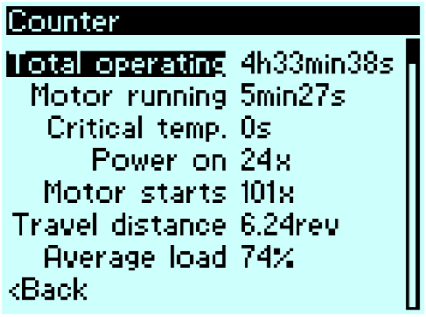




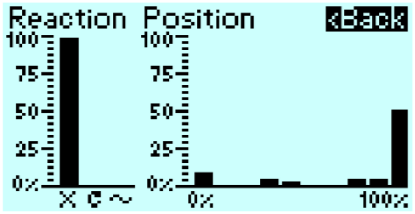




Counter: Display of the current counter values:



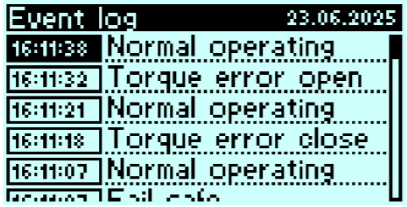
Histogram: Display of the histograms:



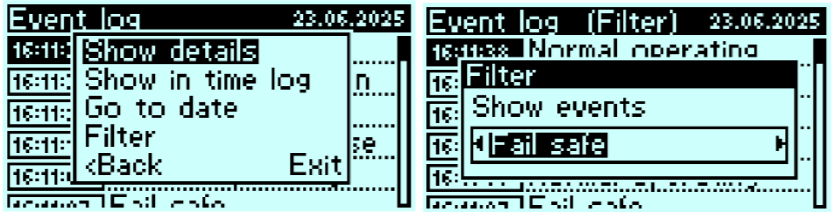
Reaction shows the percentage of the motor movement compared to the total operating time.

Position displays the distribution of the positions in which the actuator stopped its movements as percentage over the valve stroke.

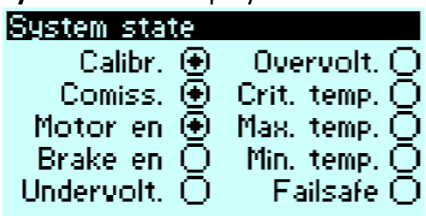
Event log: Display of operating or fault statuses:



If the settings button is pressed during selection, a selection appears to call up further details or filter events:



System state: Display of the actuator status:



3.2 Diagnosis with PSCS.WIFI

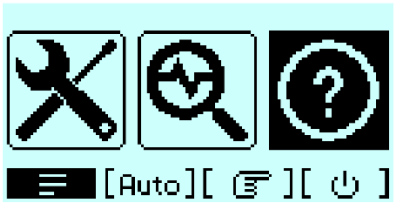
Using the actuator's Wi-Fi option, the Event logging and the Daily logging can be displayed on a mobile device.

3.3 Diagnosis with PSCS.3

Using the PSCS.3 PC software and the AMS.2 USB cable, parameters and diagnostic log data can be loaded from the actuator and saved locally for further analysis.

4 Help

Help can be selected via the main selection in the parameter menu:



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