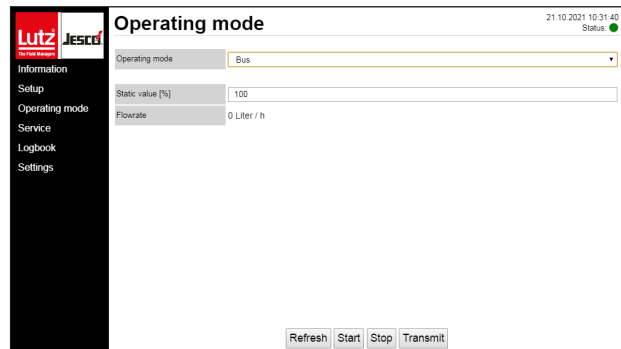
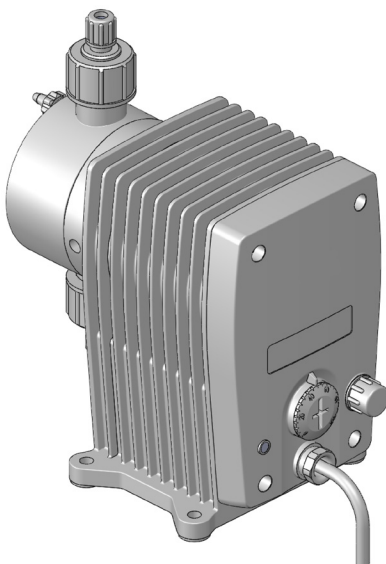


Operating software for MEMDOS SMART LN

Operating instructions



Read the operating instructions!

The user is liable for improper installation and operation.

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1 General

If the MEMDOS SMART LN dosing pump is operated via the BUS connection, it can be operated and configured with a PLC or Lutz-Jesco operating software as required. In its as-delivered state, the factory set-up of the freely-programmable input is set to release input (open) and the pump is operated manually. The input can be occupied in any form via the operating software. The following section provides an explanation of the operation of the software. Further information about the MEMDOS SMART L is provided in the operating instructions of the dosing pump.

2 Preparation

Perform the following working steps:

1. Connect the MEMDOS SMART L dosing pump to a power source.
2. Connect the pump and computer with the Lutz-Jesco USB programming cable.
 - ▶ The computer will recognize the cable automatically. The red LED lights up permanently.
3. Start the operating software.
 - ▶ The connection is established automatically.

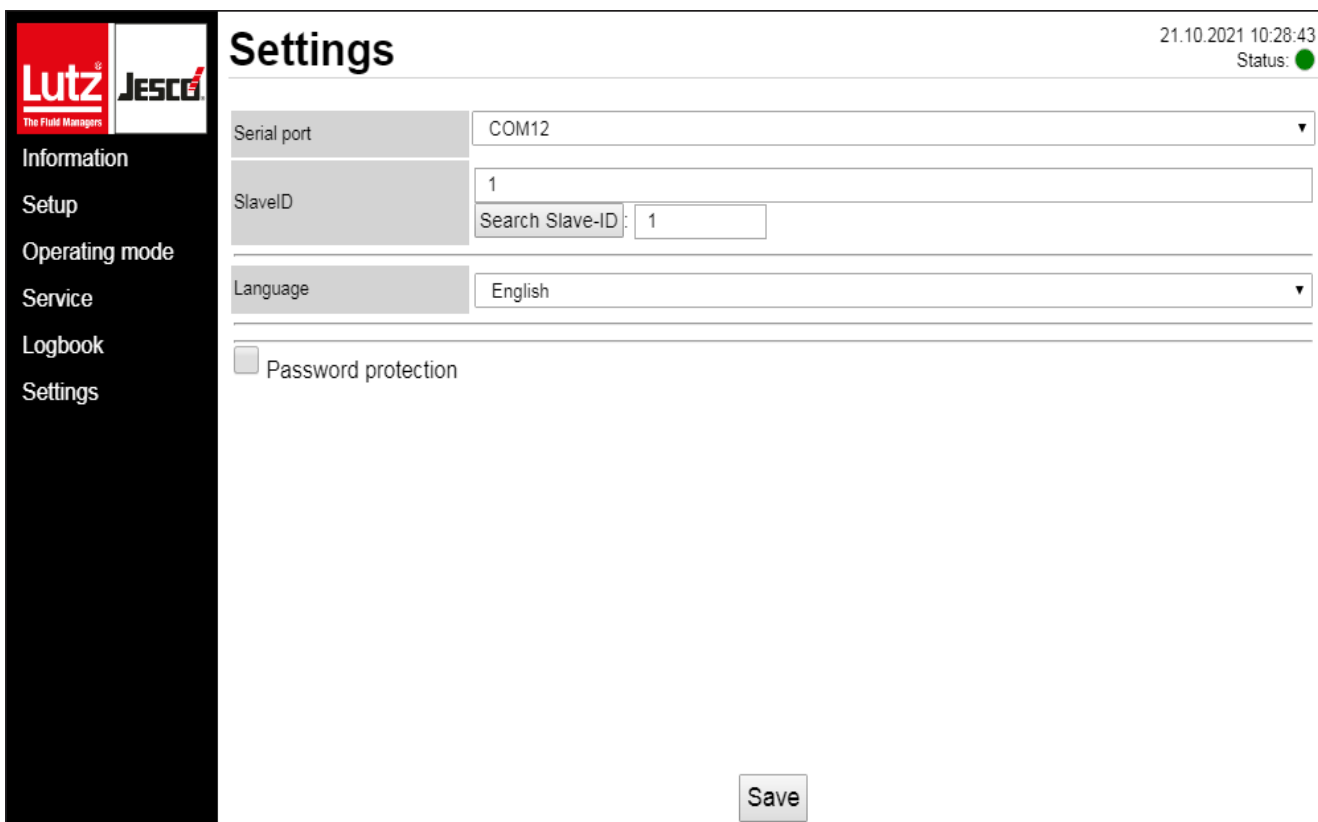


When starting the program for the first time, working in the settings under *Serial port*, select the COM interface for the USB connection and press **Save** to save it for future connections.

4. If a COM interface is not displayed in the software, check whether the USB programming cable is defective or has been connected incorrectly.

✓ **Preparations performed.**

3 Settings



21.10.2021 10:28:43
Status: ●

Settings

Serial port: COM12

SlaveID: 1
Search Slave-ID: 1

Language: English

☐ Password protection

Save

Fig. 1: Settings menu

The COM interface with which the pump is connected on the computer must be selected in the *Settings* menu under *Serial port*. Upon initial program start, the COM interface must be selected in the settings and saved for future connections.

The slave ID of the dosing pump is issued in this menu. To this end, any whole number up to 255 will be entered in the field. If necessary, the software can display the slave ID of the pump issued using the **Search slave ID from** button. A number is entered here from which a slave ID is to be searched. The settings can be given password protection against unauthorised access. The password protection becomes active only upon renewed program start. Settings can only be changed after alteration of the password. If all values have been set, they are saved with the **Save** function.

4 Information

Information 21.10.2021 10:18:30
Status: ●

Pump name	Memdos Smart LN
Pump type	Memdos Smart LN (1)
Serial number	test
Software version	V1.05
Runtime	1383:43 h
Stroke count absolute	7286324 strokes
Stroke count resettable	7286324 strokes Reset
Displacement default	0,27 ml/stroke
Displacement calib.	0,273 ml/stroke
Stroke frequency max	150 strokes / min
Flowrate max	2,457 l/h
Date & Time	21.10.2021 10:18:30 Set current time
Slave-ID	1

Fig. 2: Information menu

The pump name and type (product number), the serial number of the pump, the slave ID and the current software version will be displayed in the *Information* menu. In addition to setting the date and time, the runtime of the pump with the appendant stroke and delivered volume will be displayed. The stroke meter can be reset. Delivered in its factory state, the current date and Central European Time has been set. If required, the **Set current time** button can be used to adjust the date and time zone.

Use the **Update** function to read and display the parameters last saved in the pump.

5 Setup

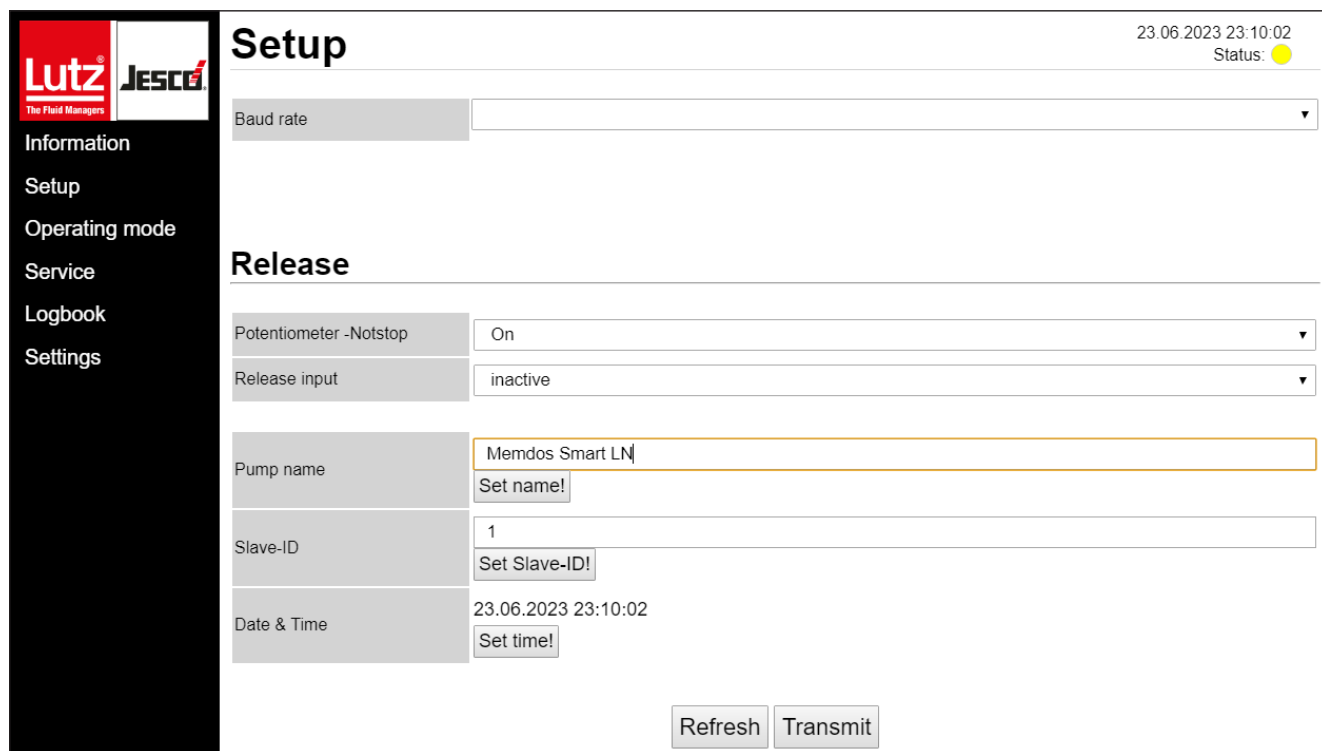


Fig. 3: Setup menu

In the *Setup* menu, you can configure the *Release input* and set the baud rate with which the transfer speed for data transfer can be changed.

Using the release input, it is possible to start or stop the dosing pump externally. The release input can be started or stopped as required via an open or closed switching contact. The potentiometer emergency-stop function can also be linked to it. This can be used to withdraw the release (pump switches off) independently from an external control signal and/or an internal programming as soon as the potentiometer has been turned to zero.

Working in this menu, the pump name and pump slave ID can be set and the date and time configured. **Set time!** is used to transfer the system time of your computer to the program and pump.

Once all the data has been entered, the parameters will be transferred to the pump via the **Transfer** button. The current settings are read out of the pump and displayed in the operating software using the **Update** button.

6 Service

Information

Setup

Operating mode

Service

Logbook

Settings

Start calibration

Displacement default	0,27 ml/stroke
Displacement calibrated	0,273 ml/stroke
Volume calculated [ml]	04,32
Volume measured [ml]	0
Difference [%]	-

Send calibration

21.10.2021 10:30:05

Status: ●

Fig. 4: Service menu

The dosing pump is calibrated in the *Service* menu. In dependence on the dosing medium you are using and the existing delivery pressure, you must match the theoretical delivery capacity with that which is actually measured. The *Volume calculated* field states the theoretical delivered volume in millilitres.

The dosing pump begins to convey as soon as **Start calibration** has been pressed. The volume which the pump has pumped is determined using a measuring vessel. Then, press **Stop calibration** and enter the measured value in the operating software. The **Send calibration** function calibrates the dosing pump to the dosing medium and the system pressure. If the calibration does not start, check the operating mode and release (potentiometer / static / pulse etc.).

7 Operating modes

The pump provides the following operating modes:

- BUS mode
- Manual operation
- Pulse mode
- Batch mode

The following section explains the individual operating modes.

7.1 BUS mode

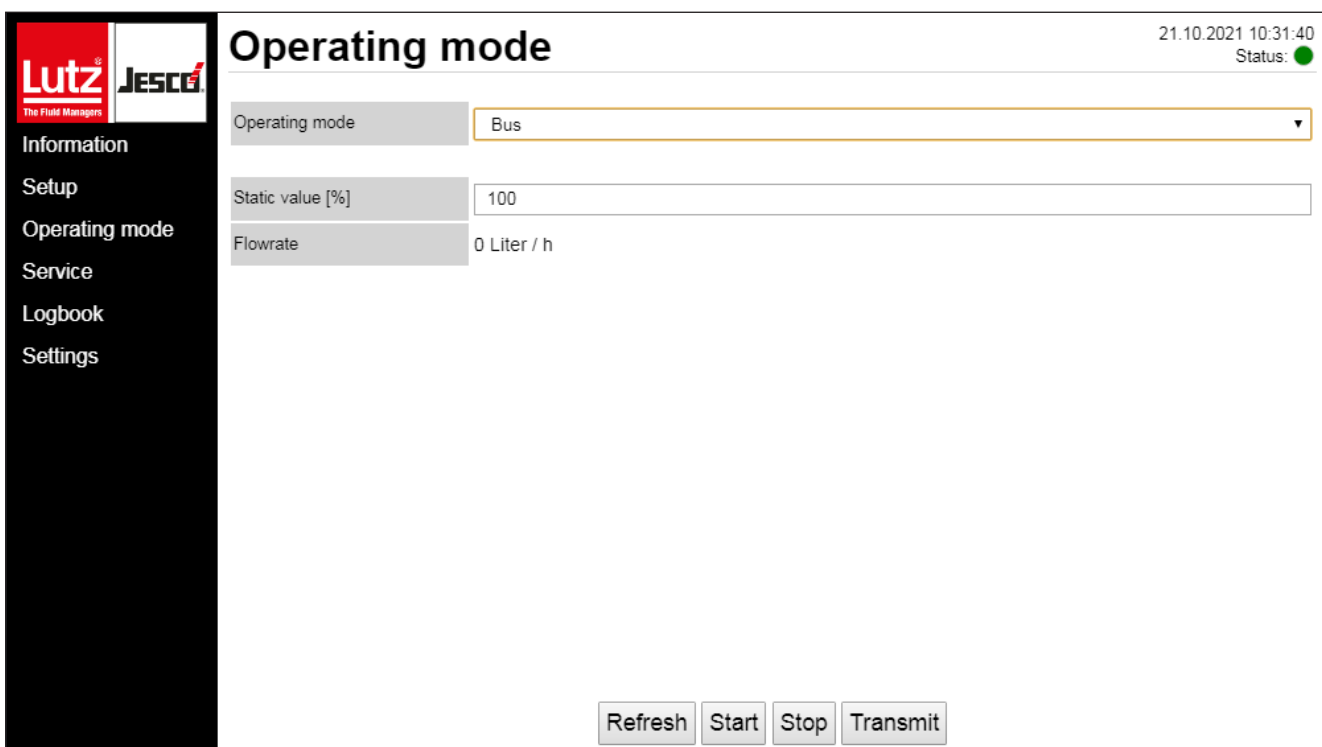


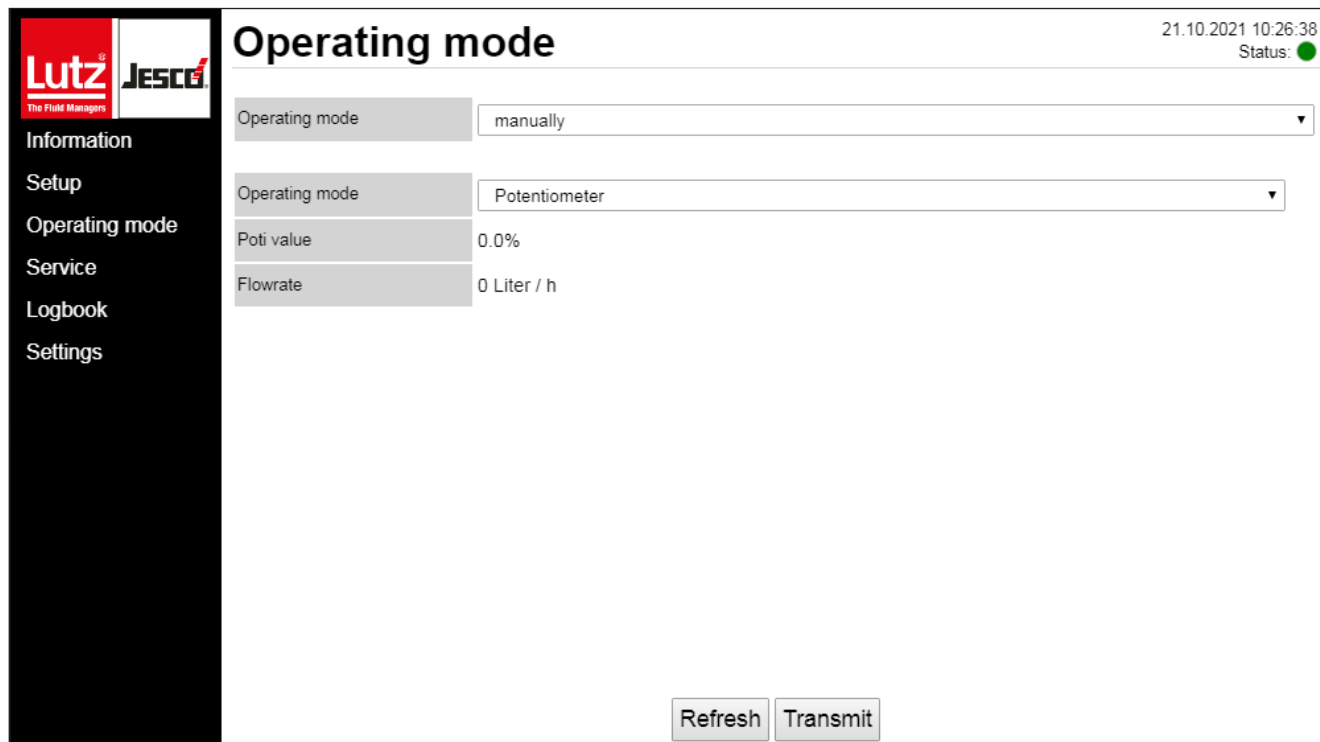
Fig. 5: BUS mode

In BUS mode, the dosing pump provides an external start or stop of the pump. In this menu, the dosing pump can be operated via the **Start** and **Stop** buttons.

The delivery rate is set via entry of a percentage value of the maximum delivery capacity (static value), i.e. entry of the number 100 means that the pump is set to 100 % delivery rate.

Once all the requisite data has been entered, the parameters will be transferred to the pump via the "Transfer" button. The **Update** button shows the current setting state of the pump.

7.2 Manual mode



Operating mode 21.10.2021 10:26:38
Status: ●

Operating mode manually ▼

Operating mode Potentiometer ▼

Poti value 0.0%

Flowrate 0 Liter / h

Refresh Transmit

Fig. 6: Manual mode

In *Potentiometer* mode, the delivery capacity is set manually. The rotary control for the stroke frequency setting can be used to set the desired delivery capacity of the dosing pump.

The *Statistical value* entry is used to set the delivery capacity. The static value is entered as a percentage of the maximum delivery rate. The delivery capacity can no longer be altered via the rotary control of the stroke frequency setting. After entering the requisite data, it must be sent to the pump using the **Transfer** button.

7.3 Pulse mode

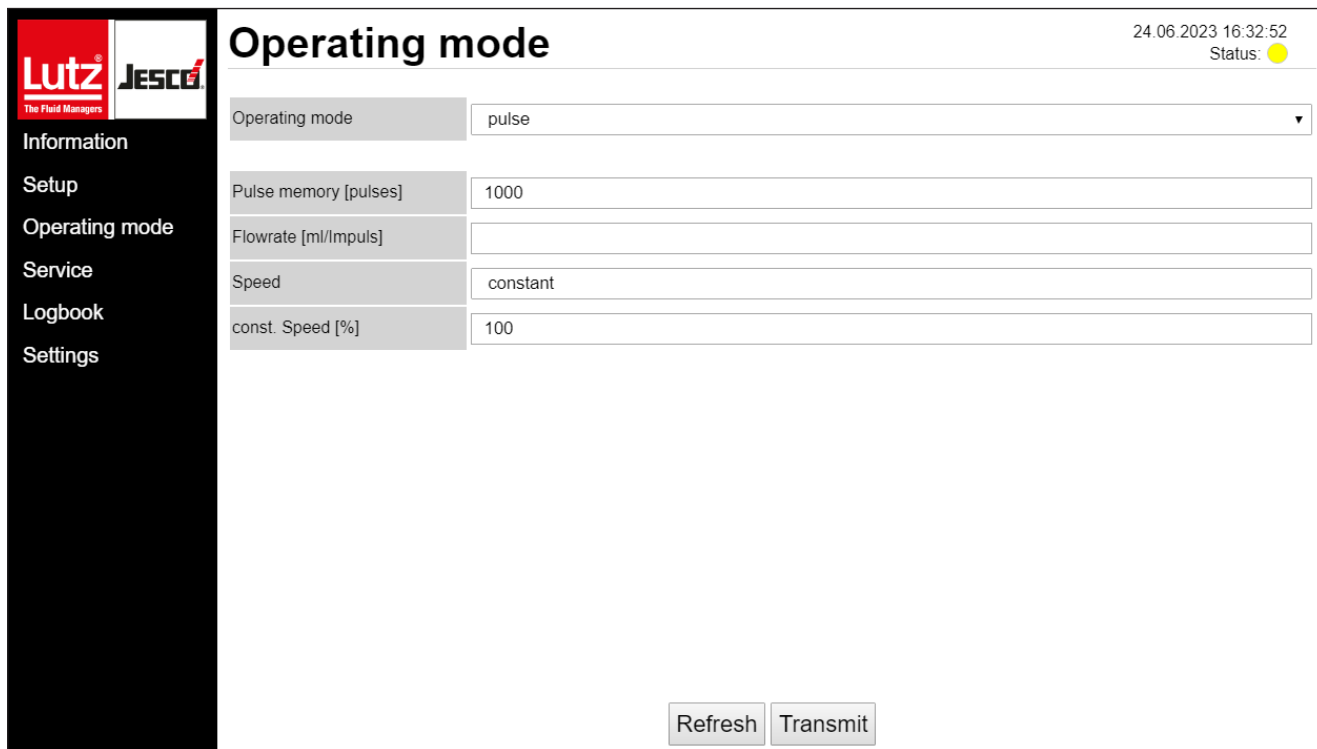


Fig. 7: Pulse mode

Pulse mode enables control of the delivery capacity using pulses. The delivery capacity is controlled via the number of strokes of the dosing pump in dependence on the number of pulses.

The speed setting *Constant* permits the setting of the dosing pump delivery capacity via a determined value.

The pulse memory saves the number of the last pulses stated, which the pulse mode was not yet able to process. The pulse memory restriction can be used as a safety function.

After entering the requisite data, they must be returned to the pump via **Transfer**.

7.4 Batch

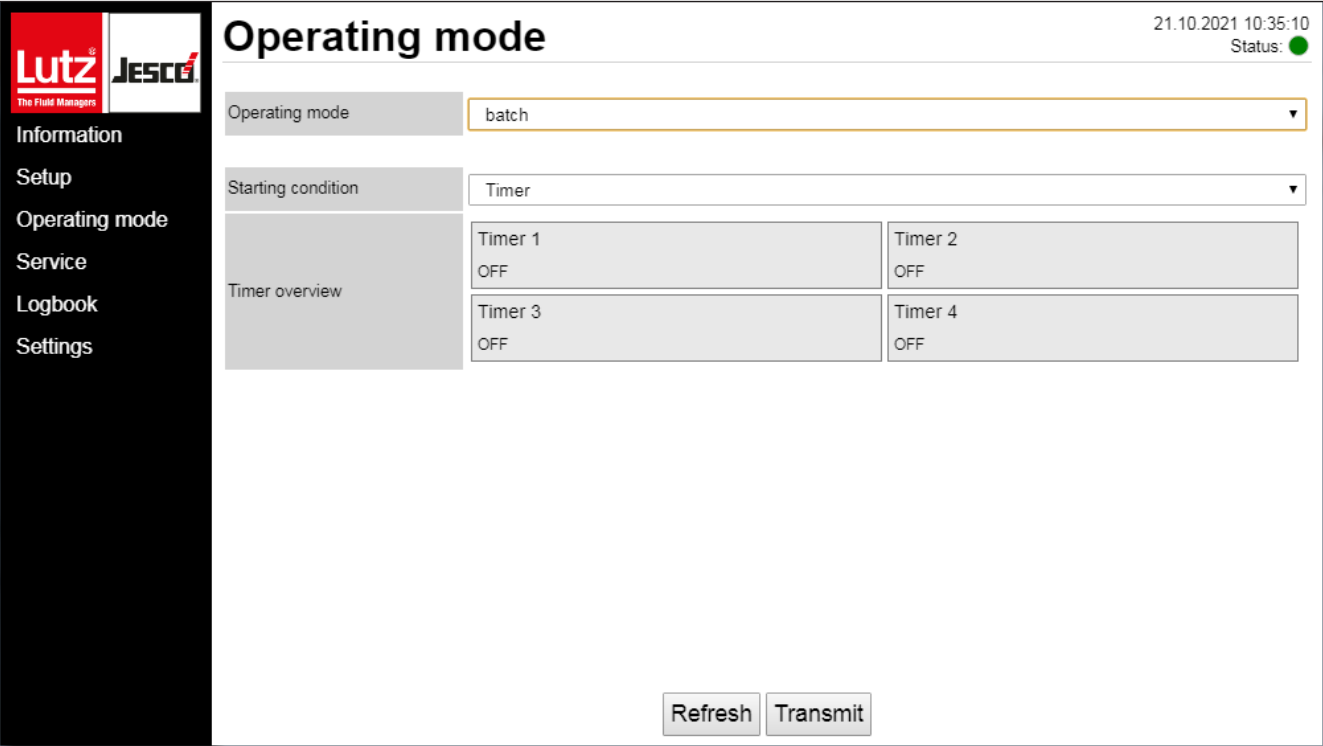


Fig. 8: Batch mode

In *Batch mode*, the system regulates the dosing pump's stroke frequency and the number of strokes in dependence on the delivered output. You can set the output on an individual basis for the dosing pump's run time, number of strokes and delivery capacity (stroke frequency), Batch mode permits dosing in intervals or at established points within the course of a week.

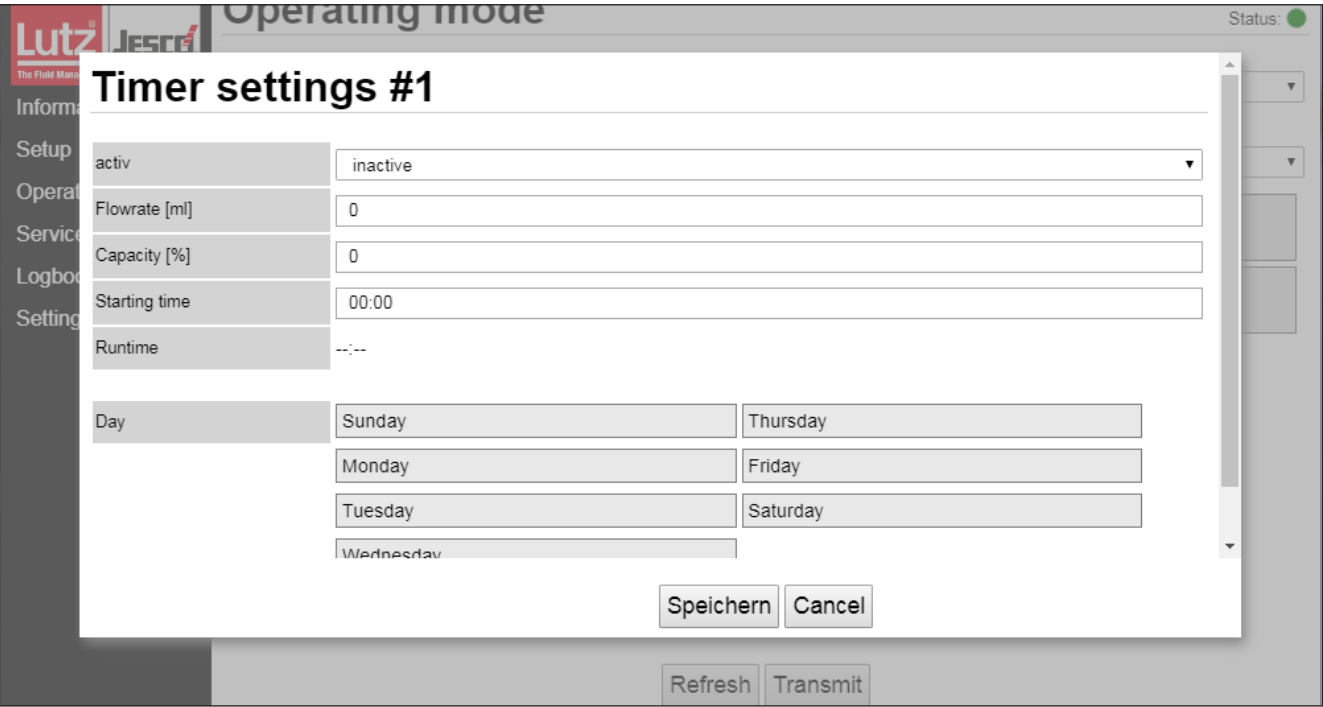


Fig. 9: Batch mode – timer

A possible start condition for the batch is via a timer. You can choose between four different timers, which can be set in any way in start and runtime, the day of the week and the requisite delivery rate or capacity. After entering the data, it must be transferred to the dosing pump using the **Transfer** button.

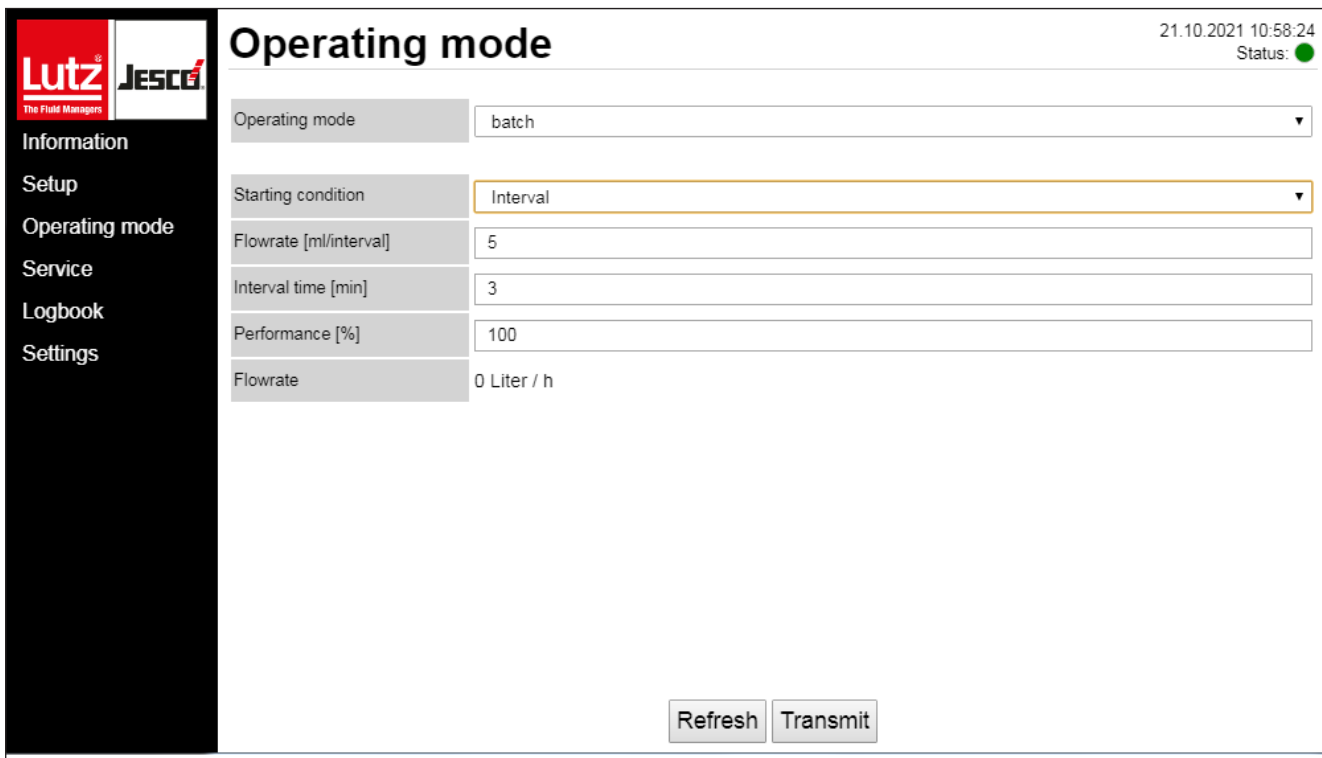


Fig. 10: Batch mode – interval

Another start condition for the batch is an interval. The requisite delivery rate is reached via a self-set interval time. The settable capacity can be used to vary the stroke frequency of the pump. After entering the data, it must be transferred to the dosing pump using the **Transfer** button.

8 Appendix I - Addresses Modbus RTU (RS485)

Address	Length [in byte]	r/w	Field	Description
0001	2 byte	r/w	Slave ID	Slave ID, writable only via software tool
0002...0007	12 byte	r	Serial number	Serial number of the pump
0008	2 byte	r	Software version	Example 200 = "V2.00"
0009...0018	20 byte	r/w	Pump name (Ascii)	Example: "Memdos Smart LN"
0019	2 byte	r/w	Operating mode	1 Manual, 2 Analogue, 3 Pulse, 4 Batch, 5 Bus
0020	2 byte	r/w	Modbus Speed	Speed for Modbus operating mode
0022...0023	4 byte	r/w	Stroke volume calibrated	22223 ^ = 22.223ml/stroke
0024	2 byte	r/w	Stroke counter for calibration	
0025...0026	4 byte	r/w	Stroke counter resettable	
0027	2 byte	r/w	Start/Stop	0=Off 1=On
0028	2 byte	r/w	Stroke counter reset	1=Reset
0029	2 byte	r/w	Device number	Jesco pump type number
0030	2 byte	r	Flow rate factory	
0031	2 byte	r	Maximum stroke frequency	
0032...0033	4 byte	r	Delivery rate	
0034	2 byte	r	Potentiometer value	
0035...0036	4 byte	r	Run time meter	
0037	2 byte	r	Operating time meter (min)	
0038...0039	4 byte	r	Absolute stroke counter	
0040...0041	4 byte	r	Stroke volume factory settings	22223 ^ = 22.223ml/stroke
0042	2 byte	r/w	System time hours	
0043	2 byte	r/w	System time minutes	
0044	2 byte	r/w	System time seconds	
0045	2 byte	r/w	System time year	
0046	2 byte	r/w	System time month	
0047	2 byte	r/w	System time day	
0048...0053	2 byte		Spare	
0054	2 byte	r/w	Release setting	
0055	2 byte	r/w	Low level alert setting	
0056	2 byte	r/w	Main alarm setting	
0057	2 byte	r/w	Leakage setting	
0058	2 byte	r/w	Flow cone setting	
0059	2 byte		Spare	
Pulse operation				
0069	2 byte	r/w	Pulse config	Configuration of the pulse input
0070	2 byte	r/w	Pulse/stroke ratio	Examples: 1 ^ = 0.001 strokes/pulse
0071	2 byte	r/w	Pulse memory	Pulses that are saved for processing
0072			Reserved	
0073	2 byte	r	Pulse counter	Pulses that are still to be processed
0074	2 byte	r/w	Pulse speed	Pulse speed for constant speed mode
0075...0079			Reserved for pulse	

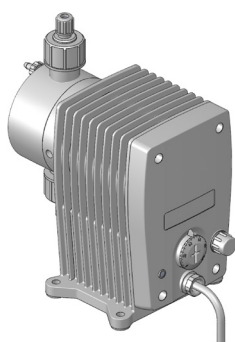
Tab. 1: Modbus RTU addresses (RS485)

Address	Length [in byte]	r/w	Field	Description
Batch operation				
0080	2 byte	r/w	Batch config	Configuration of batch operation
0081...0082	4 byte	r	Batch ticks	Ticks to be executed
0083	2 byte	r/w	Batch manual speed	Delivery capacity[%] for batch manual
0084...0085	4 byte	r/w	Batch manual ticks	Ticks for batch manual (1 ticks $\wedge$ = 1/8 stroke)
0086	2 byte	r/w	Batch external speed	Delivery capacity[%] for batch external
0087...0088	4 byte	r/w	Batch external ticks	Ticks for batch external (1 ticks $\wedge$ = 1/8 stroke)
0089			Reserved	
0090	2 byte	r/w	Batch interval speed	Delivery capacity[%] for batch interval
0091...0092	4 byte	r/w	Batch interval ticks	Ticks for batch interval (1 ticks $\wedge$ = 1/8 stroke)
0092...0093	4 byte	r/w	Batch interval time	Time for batch interval [sec]
0094	2 byte	r/w	Batch interval delay time	Time until first start
0095...0099			Reserved	
0100	2 byte	r/w	Batch timer1 config	Configuration of timer1
0101	2 byte	r/w	Batch timer1 speed	Delivery capacity[%] for batch timer1
0102...0103	4 byte	r/w	Batch timer1 ticks	Ticks for batch timer1
0104	2 byte	r/w	Batch timer1 clock	Time for batch timer1
0105...0109			Reserved	
0110	2 byte	r/w	Batch timer2 config	Configuration of timer2
0111	2 byte	r/w	Batch timer2 speed	Delivery capacity[%] for batch timer2
0112...0113	4 byte	r/w	Batch timer2 ticks	Ticks for batch timer2
0114	2 byte	r/w	Batch timer2 clock	Time for batch timer2
0115...0119			Reserved	
0120	2 byte	r/w	Batch timer3 config	Configuration of timer3
0121	2 byte	r/w	Batch timer3 speed	Delivery capacity[%] for batch timer3
0122...0123	4 byte	r/w	Batch timer3 ticks	Ticks for batch timer3
0124	2 byte	r/w	Batch timer3 clock	Time for batch timer3
0125...0129			Reserved	
0130	2 byte	r/w	Batch timer4 config	Configuration of timer4
0131	2 byte	r/w	Batch timer4 speed	Delivery capacity[%] for batch timer4
0132...0133	4 byte	r/w	Batch timer4 ticks	Ticks for batch timer4
0134	2 byte	r/w	Batch timer4 clock	Time for batch timer4
0135...0199			Reserved for batch	
0200...0499			Reserved	

Tab. 1: Modbus RTU addresses (RS485)

Address	Length [in byte]	r/w	Field	Description
Ranges for stroke counter				
0502	2 byte	r	Stroke buffer date day 0	Date stroke counter day 0 [= day + 32*month + (year-2000)*512
0503	4 byte	r	Stroke buffer day 0	
0505	2 byte	r	Stroke buffer date day 1	Date stroke counter day 1 [= day + 32*month + (year-2000)*512
0506	4 byte	r	Stroke buffer day 1	
[...]			100 days	
1000	2 byte	r	Stroke buffer date month 0	Date stroke counter month 0 [= day + 32*month + (year-2000)*512
1001	4 byte	r	Stroke buffer month 0	
[...]			20 months	
1100	2 byte	r	Stroke buffer date year 0	Date stroke counter year 0 [= day + 32*month + (year-2000)*512
1101	4 byte	r	Stroke buffer year 0	
[...]			10 years	

Tab. 1: Modbus RTU addresses (RS485)



Lutz-Jesco GmbH

Am Bostelberge 19
D-30900 Wedemark

Phone: +49 5130 5802-0
info@lutz-jesco.com
www.lutz-jesco.com

Operating instructions
MEMDOS SMART LN operating software