QUICK GUIDE

Motor-driven metering pumps
Sigma/ 1, 2 and 3 Control type

The pump has a removable operating unit (HMI - Human Machine Interface) with large LCD screen and operating keys.

Key functions

Press briefly: scroll through main display.
Press and hold; move to the secondary display, scroll through additional operating information using ⁄▸.

Press briefly: Back one level.
Press and hold; Exit without saving.

Stop/Start pump.

Status LEDs
(red, yellow, green)

HMI bracket, which can also be used as a wall bracket.

LCD display
(refer to page 3 for further details)

Selection within a menu
Raises figures
Lowers figures

Press briefly: Confirms a selection, moves to the next menu item or confirms errors.
Press and hold; Open main menu. Pump settings can be entered here.

Pump HMI*
Removable from the pump including wall bracket. Extension cable (optional) HMI can be removed from the pump; at a cable distance of more than 2 metres, clearly assign and label the HMI to the pump.

Visual diaphragm rupture control**

Stroke length adjustment wheel

Status LEDs
Red, yellow, green
Additional LEDs (green/red) for the HMI communication status.

Relay output (optional)

Protective cap for HMI socket

ProfiBus interface (optional)

◀ **Sigma 1 - S1Cb design liquid end on left**

Diaphragm rupture control input**

Power supply
1-phase 100-230 V, ±10%,
240 V ±6%, 50/60 Hz

Universal control cable input

Metering monitor input

Level switch input

- * Provide a mains power supply isolation switch if the pump is used without HMI or with extension cables longer than 2 metres.
- ** Diaphragm rupture control via an electrical signal (optional) with pump stop function or warning message. The setting is entered via the "Diaphragm rupture" menu. Only rely on the diaphragm rupture sensor with back pressures of greater than 2 bar.
- Open red drive bleed connector during operation and close during transport (not with Sigma 1).
- The operating instructions are also needed and should be observed for operation of the pump.

Technical changes reserved. BA_SI_071_11/16_EN
Part number: 983277

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Description of the functions

"Manual" operating mode

"Manual" operating mode, maximum speed and 100% stroke length are pre-set on delivery of the pump.

- Use STOP START to start or stop the pump.
- Use ▲ or ▼ to change the pump stroke rate.
- Use ↵ to scroll through the operating information each time the main screen is pressed if additional information is available.
- Press ↵ for a second to move to the secondary display. Briefly press ↵ to scroll through the additional operating information.

"Analogue" operating mode

This operating mode enables the pump stroke rate to be adjusted by an mA signal via the universal control wire.

"Analogue" operating mode setting (Input apparent ohmic resistance 120 Ohm):

- Press and hold down P/OK until the main display appears. The cursor should appear beside the operating mode.
- Press P/OK to open the Operating mode menu.
- Use ▼ to select "Analogue".
- Press P/OK to confirm "Analogue"operating mode. The pump is now operating in "Analogue" mode.
- Press ESC to return to the main screen.

Operating setting at 4 - 20 mA (or 0 - 20 mA):

If the red LED lights up and i<4mA appears on the display, then the pump is receiving no analogue signal or the signal is lower than 3.7 mA (operation at 4 - 20 mA).

- Press and hold down P/OK until the main display appears.
- Use ▼ to select the "Settings" menu.
- Use P/OK to open "Analogue" settings.
- In the "Standard" Analogue menu, set 0...20 mA or 4...20 mA.
- Use P/OK to confirm and ▼ and End to exit the menu.

"Contact" / "Batch" operating mode

This operating mode enables the pump's pulse mode via the universal control wire.
Sigma pumps have a multiplier/divisor function as standard.

Setting "Contact" operating mode:

- Press and hold down P/OK , use P/OK to select the "operating mode", use ▲ to select "Contact", use P/OK to select.
- Press ESC to return to the main screen.

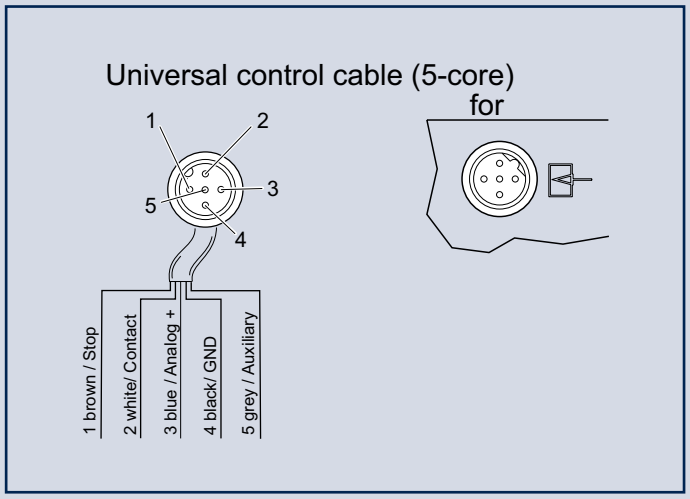
Defining the value for the multiplier/divisor:

Settable within a range of
000.01 to 100.00 (Contact); 99999 (Batch)
(Factor 000.01, 100 incoming pulses = 1 pump stroke)
(Factor 100.00, 1 incoming pulse = 100 pump strokes)

- Press and hold down P/OK , use ▲ to select "Setting", use P/OK to open. In Settings, use P/OK to open "Contact" or "Batch".
- "Contact" / "Batch" menu settings, use P/OK to open "Memory" and ▲ to select "On" or "Off", and confirm with P/OK. ***
- "Settings" ➧ "Contacts" / "Batch" ➧ "Open factor". Use ↵ and ▲ to set the value and P/OK to confirm.
- "End" exits the menu and jumps to the main display.

*** Memory "On" stores the pump strokes if the pulse input and/or multiplier increases the stroke rate more quickly than the stroke rate set.
The pump continues running until these saved strokes have been performed.

External control



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Pump display and information

Information areas:

The pump display is sub-divided into different sections, each of which contains specific information/symbols for operation.

10	1	2	3	4	5
9	6				
	7				
	8				

1	Pump stop display
2	Reason for the pump stopping.
3	Auxiliary mode / diaphragm rupture sensor disabled
4	Module option identification
5	Operating mode
6	Main display
7	Secondary display
8	Display and/or selection of secondary displays
9	Indicators, error display
10	Display identifier ("i" = "Information")

i Please refer to the "Troubleshooting" section in the operating instructions for further information and additional error and warning messages displayed on the main screen.

Meaning of the different symbols/identifiers

Area	Symbol	Description	Meaning
1	Stop	Stop	The pump is stopped. Cause see field 2.
1		Priming	The pump is currently priming (both *[arrow keys]* are pressed).
2		Manual	The pump was stopped manually.
2		External signal	The pump was externally stopped by the Pause contact.
2	**CAN open**	CAN open	The pump was stopped by the external CAN bus.
2	**Profi bus**	PROFIBUS®	The pump was externally stopped by the PROFIBUS®.
3	Aux	Auxiliary	The pump is currently pumping with the auxiliary frequency as the stroke rate. During this time, the pump is in "*Manual*" operating mode.
3	dia	Diaphragm rupture	A diaphragm rupture sensor is connected, but disabled.
4	**CAN open**	CANopen	The "CANopen" option is active.
4	**Profi bus**	PROFIBUS®	The "PROFIBUS®" option is active.
5	MANUAL	"*Manual*"	"Manual" *operating mode*
5	CONTACT	"*Contact*"	"Contact" *operating mode*
5	BATCH	"*Batch*"	"Batch" *operating mode*
5	ANALOGUE	"*Analogue*"	"Analogue" *operating mode*
9		Fault	A fault has occurred.
9		Flow control	A flow control is connected.
9	**m**	Memory	The pump is in "Contact" or "Batch" operating mode: the auxiliary function "Memory" has been set.
9	**0..20**	0...20 mA	*The pump is in* Analogue *operating mode.* "*0...20*" processing is set.
9	**4..20**	4...20 mA	*The pump is in* Analogue *operating mode.* "*4...20*" processing is set.
9		Linear	*The pump is in* Analogue *operating mode.* "Linear" "Curve" *processing* is set.
9		Upper side band	The pump is in Analogue operating mode. "*Upper side band*" "*Curve*" processing is set.
9		Lower side band	The pump is in Analogue operating mode. "*Lower side band*" "*Curve*" processing is set.
10	**i**	Continuous display	A continuous display appears on the LCD screen.
10		Key	Security lock (if a code was set).

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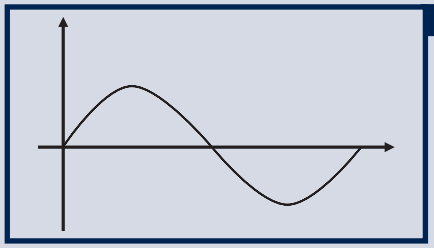
Dosing profiles

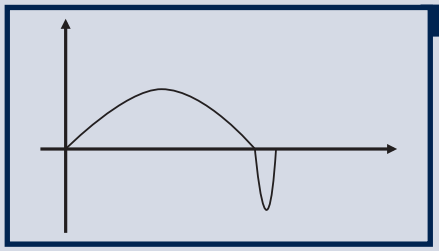


Standard mode

The length of the discharge stroke and suction stroke is identical in standard mode.

You can select an optimised discharge or an optimised suction mode in the menu. See below for details.

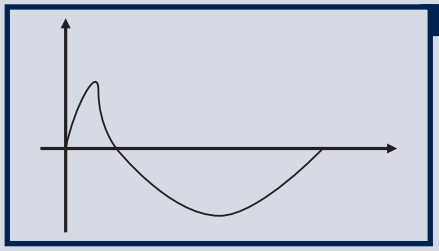
- Use P/OK to switch to the main menu, via "Setting" ➧ "Metering" ➧ "Dosing profiles".
- Use ▲ ▼ to select dosing profiles and P/OK to confirm.
- Use ESC / "End" to exit the menu.



Discharge opti.

The discharge stroke is elongated and the suction stroke is performed as quickly as possible.

- This setting supports applications that require optimum mixing ratios and maximum possible continuous chemical mixing.



Suction opti.

The suction stroke is elongated and the discharge stroke is performed as quickly as possible.

- This setting supports the pumping of viscous or gaseous chemicals and helps to minimise the NPSH value.

Priming

- Press ▲ and ▼ simultaneously.
- appears on the display, the pump runs at maximum stroke rate while ▲ and ▼ are pressed.

Accessories

Universal control wire

Pump control via potential-free contacts, analogue standard signals (mA) and for potential-free Pause function.

	Cable length	Order no.
Universal cable	2.0 metres	1001300
Universal cable	5.0 metres	1001301
Universal cable	10.0 metres	1001302

Accessories for the HMI operating unit

	Order no.
Protective cowling for operating unit (S1Cb, S2Cb, S3Cb) made of transparent silicone rubber	1036724
Wall bracket for operating unit (S1Cb, S2Cb, S3Cb)	1036683

Extension cable for operating unit (HMI)

	Cable length	Order no.
CAN M12 5-pin	1.0 metres	1022139
CAN M12 5-pin	2.0 metres	1022140
CAN M12 5-pin	5.0 metres	1022141
CAN M12 5-pin	10.0 metres	1046383

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