The Art of Measuring. **Knick** ❯

Stratos Pro A2.. MSCOND

Conductivity Measurement
With Memosens Sensors

Stratos® *Pro*

A   MEMO SENS

☺ **150.0** mS

14:23   25.0 °C

meas

meas   menu   info

Latest Product Information: www.knick.de
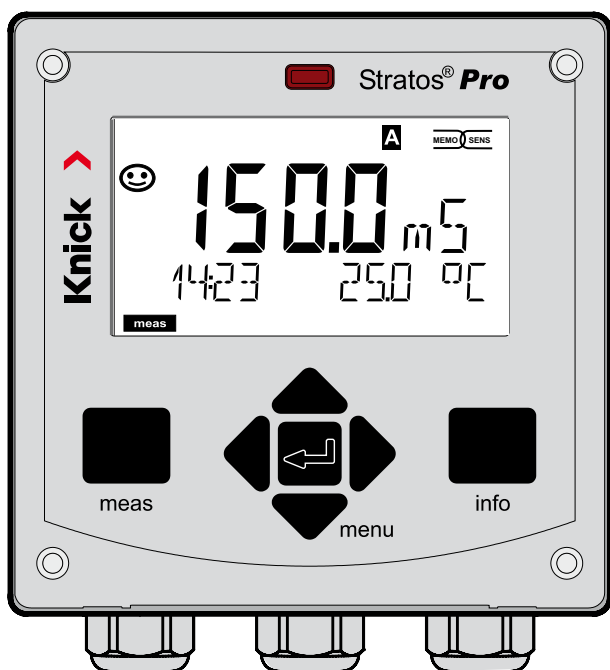
About This Manual.

Return of products
Please contact our Service Team before returning a defective device.
Ship the cleaned device to the address you have been given.
If the device has been in contact with process fluids, it must be de-
contaminated/disinfected before shipment. In that case, please attach
a corresponding certificate, for the health and safety of our service
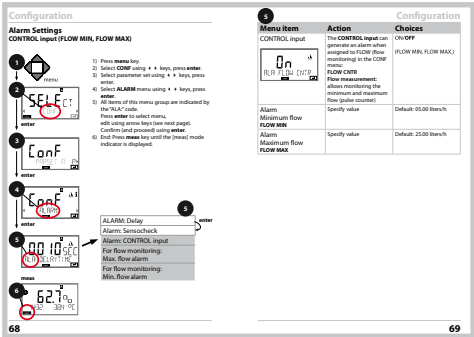personnel.

Disposal
Please observe the applicable local or national regulations concerning
the disposal of "waste electrical and electronic equipment".

About this manual:
This manual is intended as a reference guide to your device –
You don't have to read the book from front to back.
Take a look at the *Table of Contents* or the *Index* to find the function
you are interested in. Each topic is explained on a double-page spread
with step-by-step instructions on how to configure the desired func-
tion. Clearly legible page numbers and headlines help you to quickly
find the information:

Left page:
How do I get to
the function

Right page:
Which settings
are provided for
this function

Specific Test Report

CD-ROM

Complete documentation:
- User manuals
- Safety instructions
- Certificates
- Quickstart guides
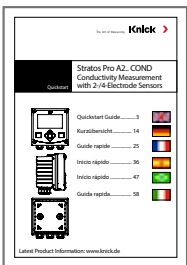

Safety Instructions

In official EU languages and others.
- EC Declarations of Conformity

Safety Instructions

- Installation and Use
  in Hazardous Locations
  (shipped with hazardous-area devices only)

Quickstart Guide

First steps after installation:
- Operation
- Menu structure
- Calibration
- Error messages and recommended actions

In German, English, French, Spanish, Portuguese, and Italian.

More languages on CD-ROM and on our website: www.knick.de

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Introduction

Intended Use
Stratos Pro A2... MSCOND is a 2-wire device for measurement of electrical conductivity and temperature in liquids using Memosens sensors. Fields of application are: biotechnology, chemical industry, environment, food processing, water/wastewater treatment.

Enclosure and mounting possibilities
- The sturdy molded enclosure is rated IP 67/NEMA 4X for outdoor use. It is made of glass-reinforced PBT / PC and measures 148 mm x 148 mm x 117 mm (H x W x D).
  It is provided with knockouts to allow:
- wall mounting (with sealing plugs to seal the enclosure), see page 13
- post/pipe mounting (Ø 40 … 60 mm, ☐ 30 … 45 mm) see page 14
- panel mounting (138 mm x 138 mm cutout to DIN 43700), see page 15

Weather protector (accessory)
The weather protector, which is available as accessory, provides additional protection against direct weather exposure and mechanical damage, see page 14.

Connection of sensors, cable glands
For connecting the cables, the enclosure provides
- 3 knockouts for cable glands M20x1.5
- 2 knockouts for NPT 1/2" or rigid metallic conduit

For quasi-stationary installations with Memosens sensors, we recommend using the M12 device socket (accessory ZU 0822) instead of a cable gland – it allows simple replacement of the sensor cable without opening the device.

Sensors
The device has been designed for Memosens 2-electrode sensors.

Introduction

Display
Plain-text messages in a large, backlit LC display allow intuitive operation. You can specify which process variables are to be displayed in standard measuring mode ("Main Display", see page 24).

Color-coded user interface
The colored display backlighting signals different operating states (e.g. alarm: red, HOLD mode: orange, see page 25).

Diagnostics functions
"Sensocheck" automatically monitors sensor and cables; and the "Sensoface" function clearly indicates the sensor condition, see page 117.

Data logger
The internal logbook (TAN SW-A002) can handle up to 100 entries – up to 200 with AuditTrail (TAN SW-A003), see page 90.

2 parameter sets A, B
The device provides two parameter sets which can be switched manually or via a control input for different process adaptations or different process conditions.
For overview of parameter sets (table for copy), see page 40.

Password protection
Password protection (passcodes) for granting access rights during operation can be configured, see page 94.

TC process medium: Selecting the compensation method
The following temperature compensation methods are provided: linear (by entering a temperature coefficient), natural waters (nLF), NaCl, HCl, NH_3, NaOH, see page 62.

Control inputs

Input +	**5**	Current	
Input –	**6**	input	
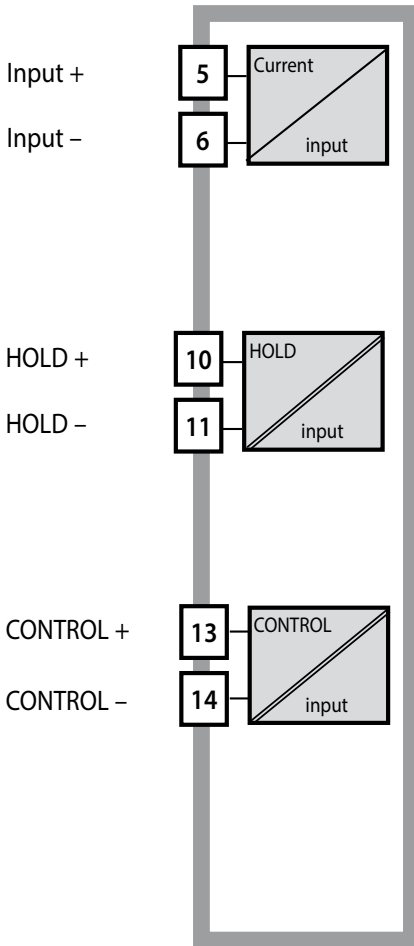
I input
The analog (0) 4 ... 20 mA current input can be used for external temperature compensation (TAN required).
See page 64.

HOLD +	**10**	HOLD	
HOLD –	**11**	input	

HOLD
(floating digital control input)
The HOLD input can be used for external activation of the HOLD mode, see page 29.

CONTROL +	**13**	CONTROL	
CONTROL –	**14**	input	

CONTROL
(floating digital control input)
The CONTROL input can be used either for parameter set selection (A/B) or for flow monitoring, see page 66.

Signal outputs
The device provides two current outputs (for transmission of measured value and temperature, for example). The output curve is adjustable (linear, bilinear or logarithmic), see page 50 et seq.

Options
Additional functions can be activated by entering a TAN (page 94).

Safety Information

Be sure to read and observe the following safety instructions!
The device has been manufactured using state of the art technology and it complies with applicable safety regulations.
When operating the device, certain conditions may nevertheless lead to danger for the operator or damage to the device.

See also the following documents (page 3):
- "Safety Instructions"
- "Safety Instructions / Installation and Use in Hazardous Locations"

⚠ **CAUTION!**

Commissioning must only be performed by trained personnel authorized by the operating company! Whenever it is likely that protection has been impaired, the device shall be made inoperative and secured against unintended operation.
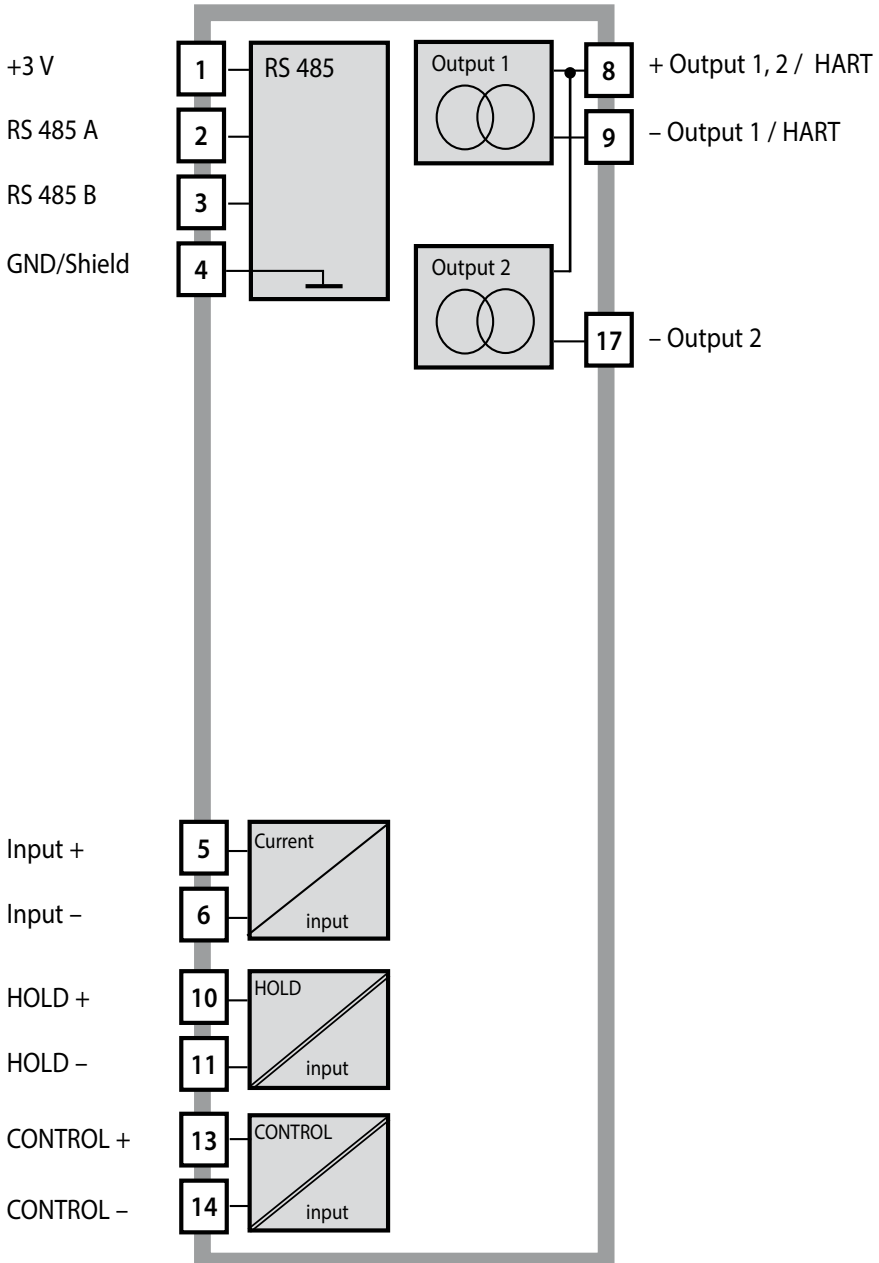The protection is likely to be impaired if, for example:
- the device shows visible damage
- the device fails to perform the intended measurements
- after prolonged storage at temperatures below −30 °C / −22 °F or above +70 °C / +158 °F
- after severe transport stresses

Before recommissioning the device, a professional routine test must be performed. This test must be carried out at the manufacturer's factory.

Note:
Before commissioning you must prove that the device may be connected with other equipment.

Overview of Stratos Pro A2... MSCOND

+3 V	**1** RS 485
RS 485 A	**2**
RS 485 B	**3**
GND/Shield	**4**

Output 1 **8** + Output 1, 2 / HART

9 − Output 1 / HART

Output 2 **17** − Output 2

Input +	**5** Current
Input −	**6** input
HOLD +	**10** HOLD
HOLD −	**11** input
CONTROL +	**13** CONTROL
CONTROL −	**14** input

Assembly

Package Contents

Check the shipment for transport damage and completeness!

The package should contain:

- Front unit, rear unit, bag containing small parts
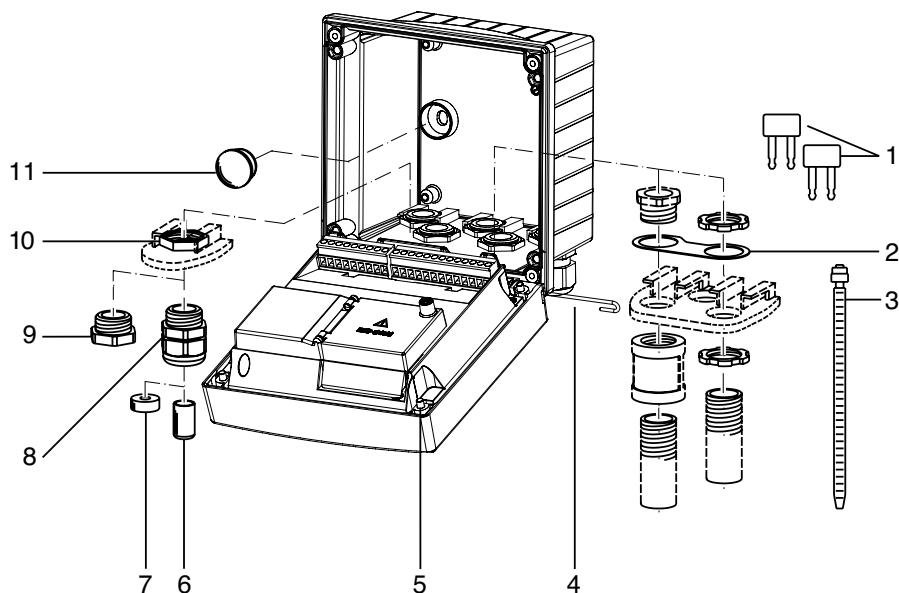- Specific test report
- Documentation (cf p. 3)
- CD-ROM

Fig.: Assembling the enclosure

1) Jumper (3 x)
2) Washer (1 x), for conduit mounting: Place washer between enclosure and nut
3) Cable tie (3 x)
4) Hinge pin (1 x), insertable from either side
5) Enclosure screw (4 x)
6) Sealing insert (1 x)
7) Rubber reducer (1 x)
8) Cable gland (3 x)
9) Filler plug (3 x)
10) Hexagon nut (5 x)
11) Sealing plug (2 x), for sealing in case of wall mounting

Mounting Plan, Dimensions

1) Cable gland (3 x)
2) Knockouts for cable gland or ½" conduit,
   21.5 mm dia. (2 knockouts)
   Conduit couplings not included!
3) Knockout for pipe mounting (4 x)
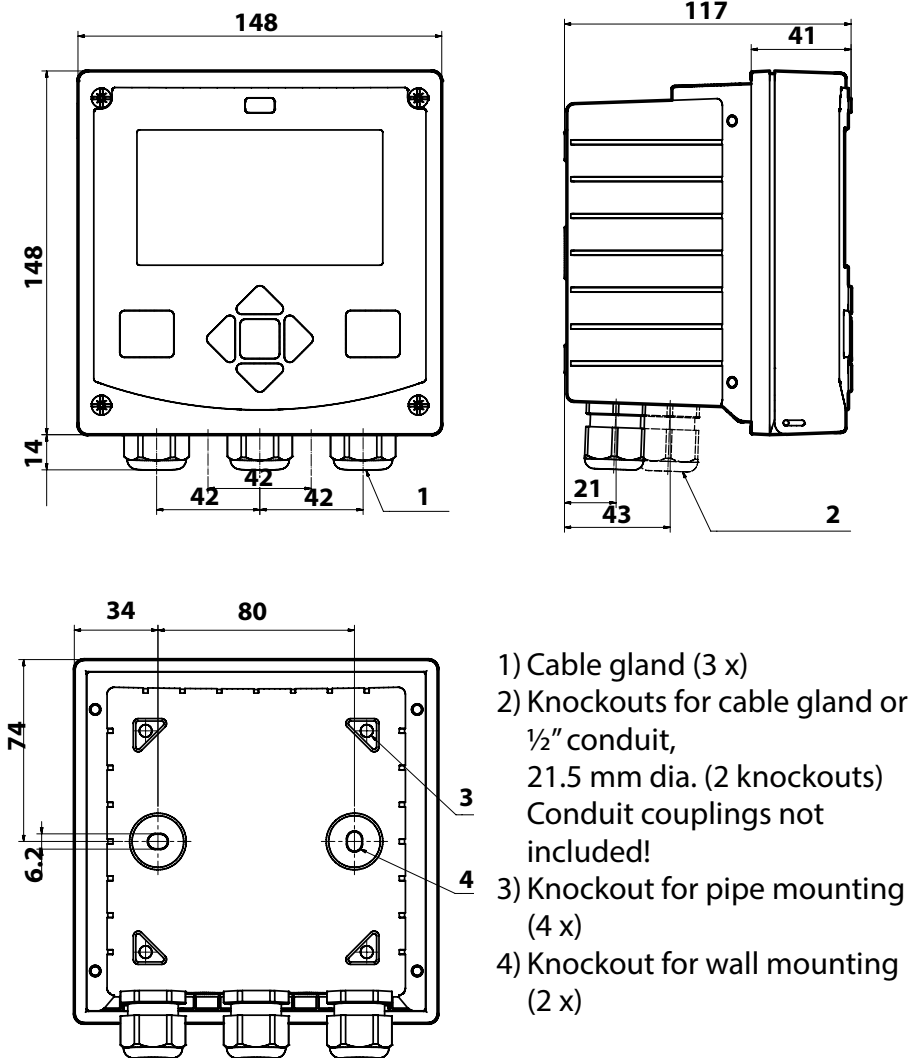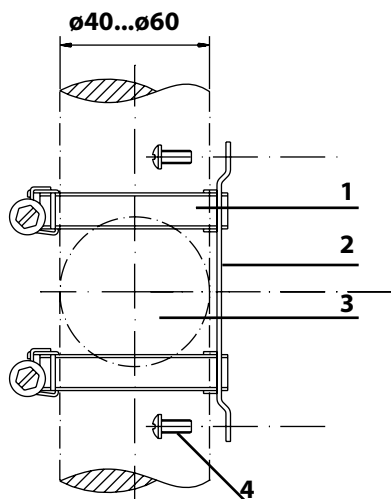4) Knockout for wall mounting (2 x)

Fig.: Mounting plan (All dimensions in mm!)

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Pipe Mounting, Protective Hood

ø40...ø60

1) Hose clamp with worm gear drive to DIN 3017 (2 x)
2) Pipe-mount plate (1 x)
3) For vertical or horizontal posts or pipes
4) Self-tapping screw (4 x)

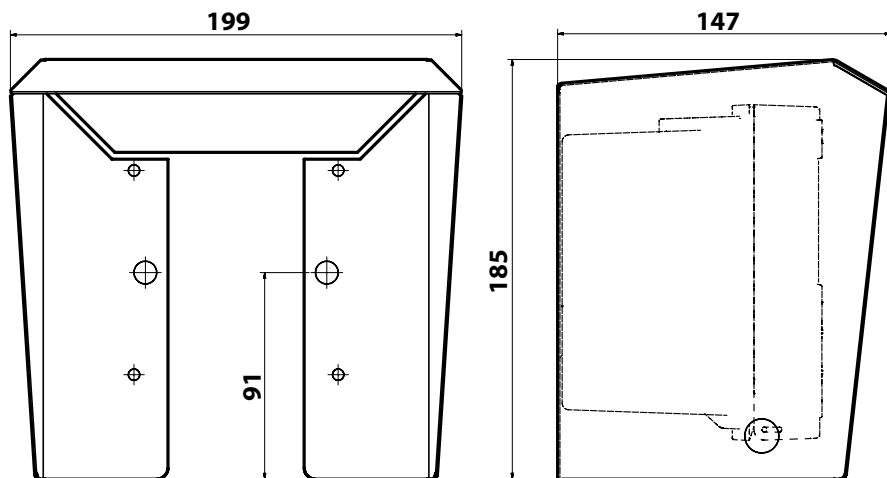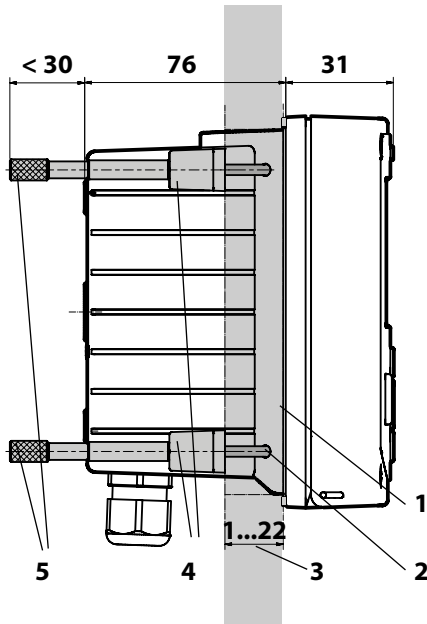Fig.: Pipe-mount kit, accessory ZU 0274 (All dimensions in mm!)

199

147

185

91

Fig.: Protective hood for wall and pipe mounting, accessory ZU 0737 (All dimensions in mm!)

14

Panel Mounting

< 30   **76**   **31**

1) Circumferential sealing (1 x)
2) Screws (4 x)
3) Position of control panel
4) Span piece (4 x)
5) Threaded sleeve (4 x)

Cutout
138 x 138 mm (DIN 43700)

1
1...22
5   **4**   **3**   **2**

Fig.: Panel-mount kit, accessory ZU 0738 (All dimensions in mm!)

Installation

Installation Instructions

- Installation of the device must be carried out by trained experts in accordance with this user manual and as per applicable local and national codes.
- Be sure to observe the technical specifications and input ratings during installation!
- Be sure not to notch the conductor when stripping the insulation!
- The supplied current must be galvanically isolated. If not, connect an isolator module.
- All parameters must be set by a system administrator prior to commissioning!

Terminals:

suitable for single wires / flexible leads up to 2.5 mm^2 (AWG 14)

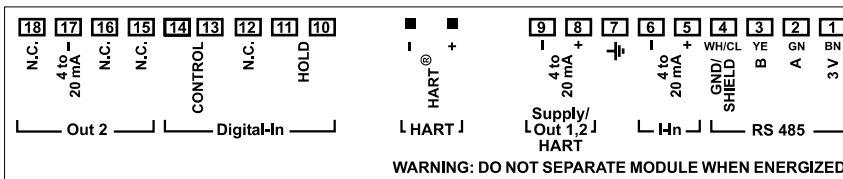## Rating Plates / Terminal Assignments
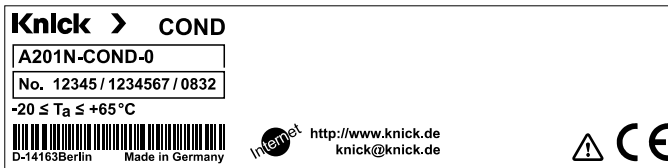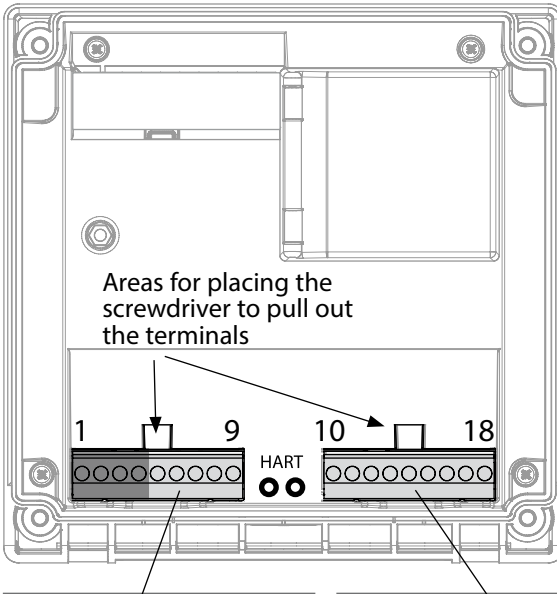

Fig.: Terminal assignments of Stratos Pro A2...

Fig.: Stratos Pro A2...N rating plate at outside bottom of front

Wiring of Stratos Pro A2... MSCOND

Areas for placing the screwdriver to pull out the terminals

Terminal row 1		
1 (BN)	+3 V	⚠
2 (GN)	RS 485 A	⚠
3 (YE)	RS 485 B	⚠
4 (WH)	GND/shield	⚠
5	+ input	
6	– input	
7	PA	
8	+out 1,2/HART	
9	– out 1/HART	

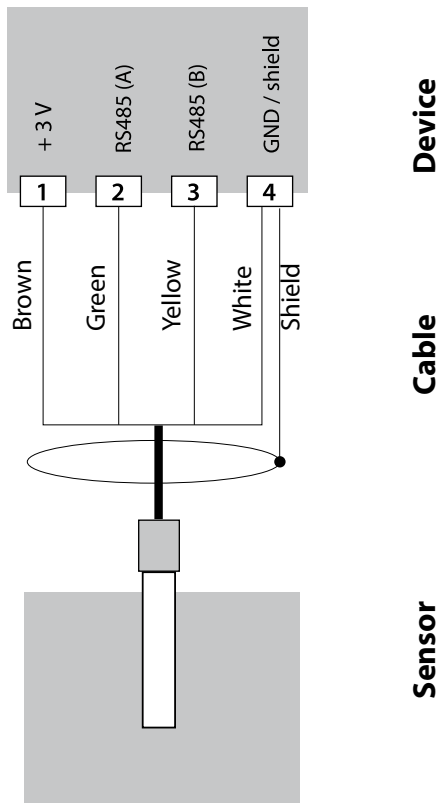| Terminal row 2	
10	hold
11	hold
12	n.c.
13	contr
14	contr
15	n.c.
16	n.c.
17	– out 2
18	n.c.

In addition:
2 HART pins (between terminal row 1 and 2)
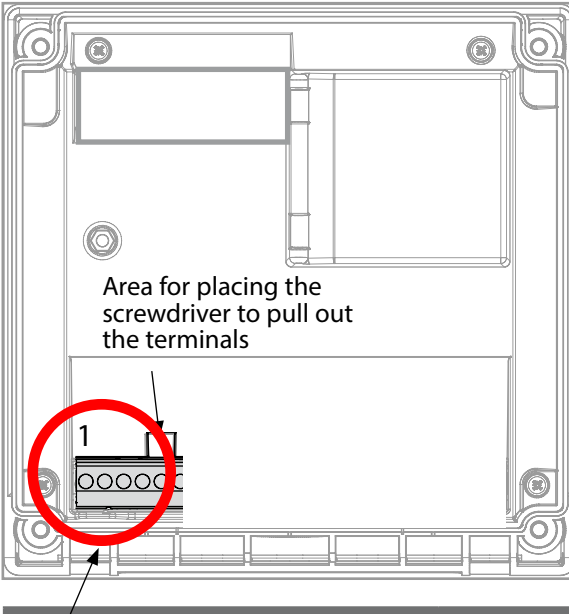
⚠   Sensor connection RS-485

Fig.: Terminals, device opened, back of front unit

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Wiring Example

Measuring task: Conductivity, temperature
Sensor: Memosens

Connecting a Memosens Sensor

Area for placing the screwdriver to pull out the terminals

1

Memosens connection:		Wire color
1	+3 V	Brown
2	RS 485 A	Green
3	RS 485 B	Yellow
4	GND/shield	White, transparent shield

Connect the Memosens sensor to the RS-485 interface of the device using the Memosens cable CA/MS.... . When the sensor is selected in the Configuration menu, the default values are taken as calibration data. They can then be modified by calibration.
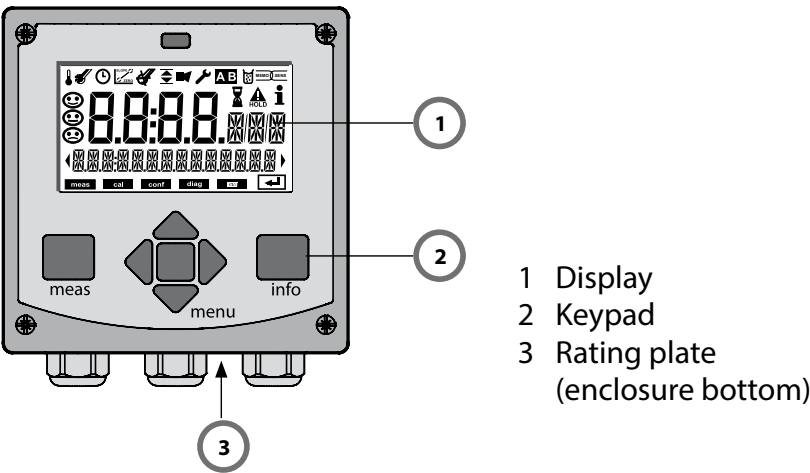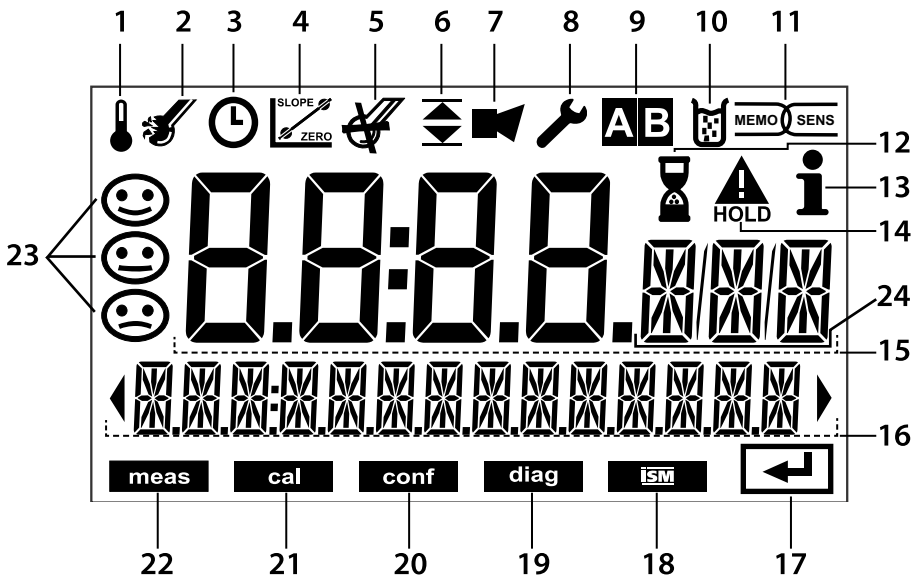
NOTICE!
The measuring module slot must be empty!
Stratos Pro A2... MSCOND is intended for connecting a Memosens sensor via RS-485 interface.
It does not provide a measuring module.

User Interface, Keypad

1 Display
2 Keypad
3 Rating plate
(enclosure bottom)

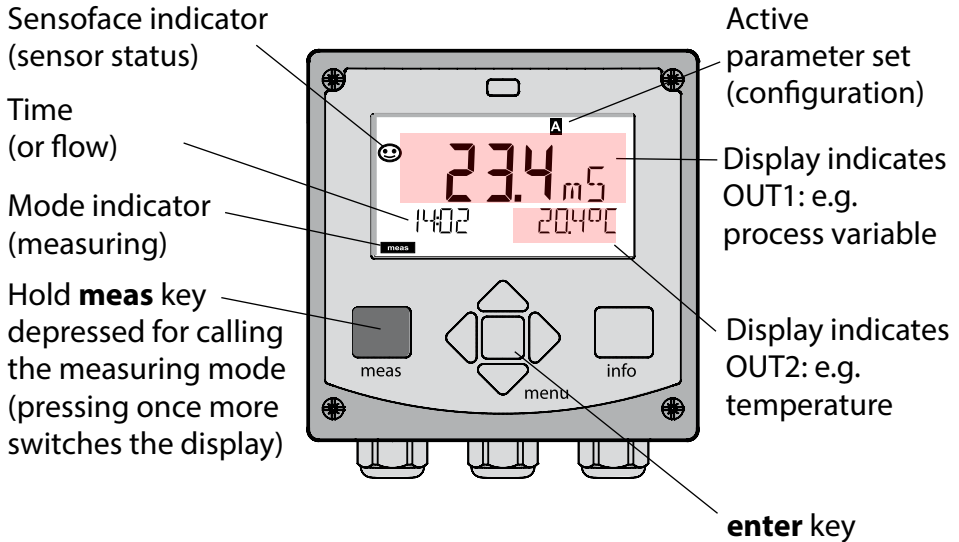| Key	Function
meas	• Return to last menu level • Directly to measuring mode (press > 2 s) • Measuring mode: other display
info	• Retrieve information • Show error messages
enter	• Configuration: Confirm entries, next configuration step • Calibration: Continue program flow
menu	• Measuring mode: Call menu
Arrow keys up / down	• Menu: Increase/decrease a numeral • Menu: Selection
Arrow keys left / right	• Previous/next menu group • Number entry: Move between digits

Display

1 Temperature
2 Sensocheck
3 Interval/response time
4 Sensor data
5 Not used
6 Limit message:
   Limit 1 ▼ or Limit 2 ▲
7 Alarm
8 Service
9 Parameter set
10 Calibration
11 Memosens
12 Waiting time running

13 Info available
14 Hold mode active
15 Main display
16 Secondary display
17 Proceed using enter
18 Not used
19 Diagnostics
20 Configuration mode
21 Calibration mode
22 Measuring mode
23 Sensoface
24 Unit symbols

Signal Colors (Display Backlighting)

Red	Alarm (in case of fault: display values blink)
Red blinking	Input error: illegal value or wrong passcode
Orange	HOLD mode (Calibration, Configuration, Service)
Turquoise	Diagnostics
Green	Info
Magenta	Sensoface message

Measuring Mode

After the operating voltage has been connected, the analyzer auto-
matically goes to "Measuring" mode. To call the measuring mode from
another operating mode (e.g. Diagnostics, Service): Hold **meas** key
depressed (> 2 s).

Sensoface indicator
(sensor status)

Time
(or flow)

Mode indicator
(measuring)

Hold **meas** key
depressed for calling
the measuring mode
(pressing once more
switches the display)

Active
parameter set
(configuration)

Display indicates
OUT1: e.g.
process variable

Display indicates
OUT2: e.g.
temperature

enter key

Depending on the configuration, one of the following displays can be
set as standard display for the measuring mode (see page 24):
• Measured value, time and temperature (default setting)
• Measured value and selection of parameter set A/B or flow
  Measured value and tag number ("TAG")
• Time and date

Note: By pressing the **meas** key in measuring mode you can view the
displays for approx. 60 sec.

⚠ You must configure the device for the respective measurement
task!

Selecting the Mode / Entering Values

To select the operating mode:
1) Hold **meas** key depressed (> 2 s) (directly to measuring mode)
2) Press **menu** key: the selection menu appears
3) Select operating mode using left / right arrow key
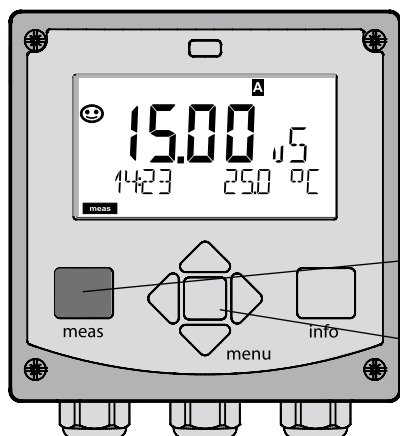4) Press **enter** to confirm the selected mode

Selection menu

Selected mode (blinks)
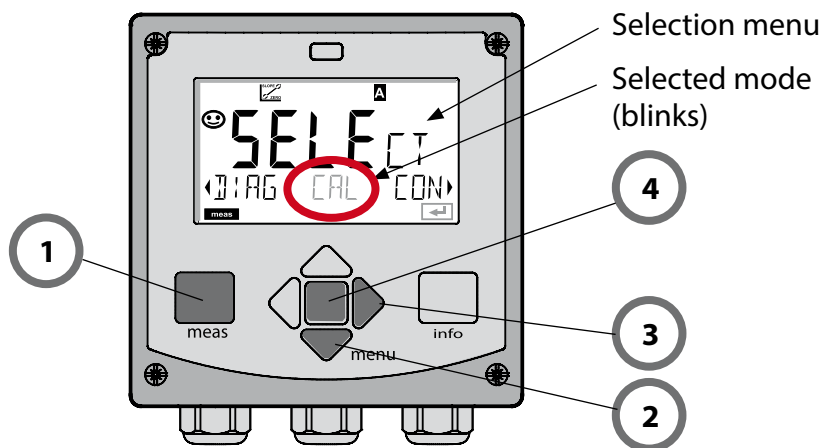
To enter a value:
5) Select numeral: left / right arrow key
6) Change numeral: up / down arrow key
7) Confirm entry by pressing **enter**
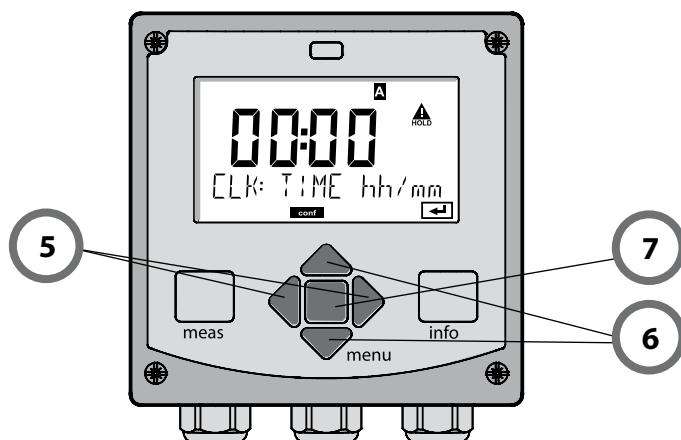
Display in Measuring Mode

The MAIN DISPLAY is the display which is shown in measuring mode. To call the measuring mode from any other mode, hold the **meas** key depressed for at least 2 sec.
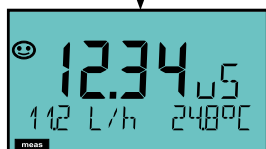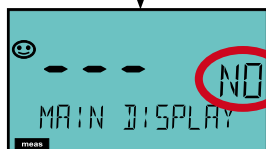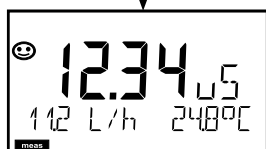
meas key

enter key

meas

By pressing **meas** briefly you can step through further displays such as tag number (TAG) or flow (L/h).
These displays are turquoise.
After 60 sec they switch back to the main display.

meas

enter

Press **enter** to
select a display as
MAIN DISPLAY –
the secondary display shows
"MAIN DISPLAY – NO".
Use the **UP** / **DOWN** arrow keys to
select "MAIN DISPLAY – YES"
and confirm by pressing **enter**.
The display color changes to white.
This display is now shown in
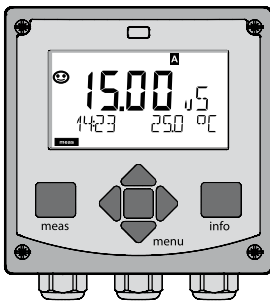measuring mode.

approx. 2 s

Color-Coded User Interface

The color-coded user interface guarantees increased operating safety. Operating modes are clearly signaled.
The normal measuring mode is white. Information text appears on a green screen and the diagnostic menu appears on turquoise.
The orange HOLD mode (e.g. during calibration) is quickly visible as is the magenta screen which indicates asset management messages for predictive diagnostics – such as maintenance request, pre-alarm and sensor wear.
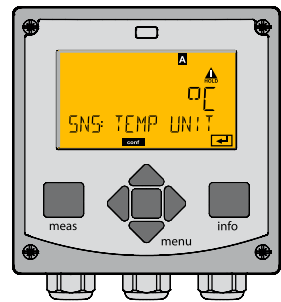The alarm status has a particularly noticeable red display color and is also signaled by flashing display values. Invalid inputs or false passcodes cause the entire display to blink red so that operating errors are noticeably reduced.
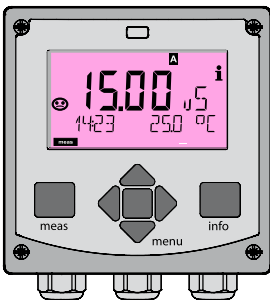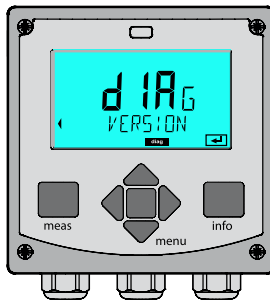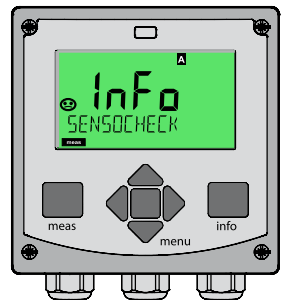
White:
Measuring mode
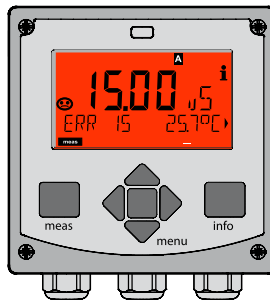
Red blinking:
Alarm, errors

Orange:
HOLD mode

Magenta:
Maintenance request

Turquoise:
Diagnostics

Green:
Information texts

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Operating Modes

Diagnostics
Display of calibration data, display of sensor data, performing a device self-test, viewing the logbook entries, display of hardware/software versions of the individual components. The logbook can store 100 events (00...99). They can be displayed directly on the device. The logbook can be extended to 200 entries using a TAN (Option).

HOLD
Manual activation of HOLD mode, e.g. for servicing. The signal outputs adopt a defined state.

Calibration
Every sensor has typical characteristic values. Calibration is required to supply a correct measured value. The device checks which value the sensor delivers when measuring in a known solution. When there is a deviation, the device can be "adjusted". In that case, the device displays the "actual" value and internally corrects the measurement error of the sensor. During calibration the device is in HOLD mode.
During calibration the device remains in the HOLD mode until it is stopped by the operator.

Configuration
The analyzer must be configured for the respective measurement task. In the "Configuration" mode you select the connected sensor, the measuring range to be transmitted, and the conditions for warning and alarm messages. During configuration the device is in HOLD mode.
Configuration mode is automatically exited 20 minutes after the last keystroke. The device returns to measuring mode.

Service
Maintenance functions (current source), passcode assignment, reset to factory settings, enabling of options (TAN).

Menu Structure of Modes and Functions

Meas. mode (main display selectable)	meas →	TAG display	meas ·····▸	CLK display	meas
		after 60 s		after 60 s	

Pressing the **menu** key (down arrow) opens the selection menu.
Select the menu group using the left/right arrow keys.
Pressing **enter** opens a menu item. Press **meas** to return.

DIAG

CALDATA	Display of calibration data
SENSOR	Display of sensor data
SELFTEST	Self test: RAM, ROM, EEPROM, module
LOGBOOK	Logbook: 100 events with date and time
MONITOR	Display of direct, uncorrected sensor signals
VERSION	Display of software version, model designation, serial number

HOLD

Manual activation of HOLD mode, e.g. for sensor replacement.
The signal outputs behave as configured (e.g. last measured value, 21 mA)

CAL

CAL_SOL	Calibration with calibration solution
CAL_CELL	Calibration by entry of cell constant
P_CAL	Product calibration
CAL_RTD	Adjustment of temperature probe

CONF

PARSET A	Configuring parameter set A
PARSET B	Configuring parameter set B

SERVICE

(Access via code, factory setting: 5555)

MONITOR	Display of measured values for validation (simulators)
OUT1	Current source, output 1
OUT2	Current source, output 2
CODES	Specifying access codes for operating modes
DEFAULT	Reset to factory setting
OPTION	Enabling an option via TAN

HOLD Mode

The HOLD mode is a safety state during configuration and calibration. Output current is frozen (LAST) or set to a fixed value (FIX). Alarm and limit contacts are disabled.
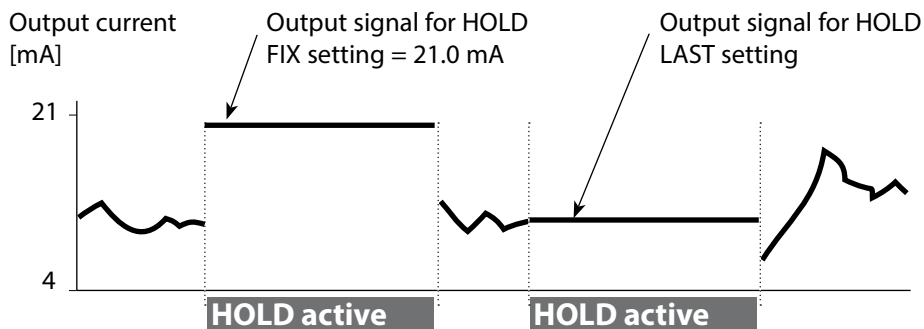The HOLD mode is indicated by orange display backlighting.

HOLD mode, display icon:

!
HOLD

Output signal response
- **LAST:** The output current is frozen at its last value. Recommended for short configuration procedures. The process should not change decisively during configuration. Changes are not noticed with this setting!
- **FIX:** The output current is set to a value that is noticeably different from the process value to signal the control system that the device is being worked at.

Output signal during HOLD:

Output current [mA]

Output signal for HOLD FIX setting = 21.0 mA

Output signal for HOLD LAST setting

21

4

HOLD active **HOLD active**

Terminating the HOLD mode
The HOLD mode is ended by switching to measuring mode (hold **meas** key depressed). The display reads "Good Bye", after that, the HOLD mode is exited.
When the calibration mode is exited, a confirmation prompt ensures that the installation is ready for operation (e.g.: sensor reinstalled, located in process).

External activation of HOLD (SW-A005)
The HOLD mode can be activated from outside by sending a signal to the HOLD input (e.g. from the process control system).

HOLD inactive	0...2 V AC/DC
HOLD active	10...30 V AC/DC

Manual activation of HOLD
The HOLD mode can be activated manually from the HOLD menu. This allows checking or replacing a sensor, for example, without provoking unintended reactions of outputs.
Press **meas** key to return to selection menu.

Alarm
When an error has occurred, **Err xx** is displayed immediately.
Only after expiry of a user-defined delay time will the alarm be registered and entered in the logbook.
During an alarm the display blinks, the display backlighting turns **red**.

Error messages can also be signaled by a 22 mA output current (see Configuration).
2 sec after the failure event is corrected, the alarm status will be deleted.

Alarm and HOLD Messages

Message	Released by	Cause
Alarm (22 mA)	Sensocheck	Polarization
	Error Messages	Flow (CONTROL input)
		ERR 10: Conductance > 3500 mS
HOLD (Last/Fix)	HOLD	HOLD via menu or input
	CONF	Configuration
	CAL	Calibration
	SERVICE	Service

**Generating a message via the CONTROL input
(min. flow / max. flow)**
The CONTROL input can be used for parameter set selection or for
flow measurement (pulse principle), depending on its assignment in
the "Configuration" menu.
When preset to flow measurement
CONF/CNTR_IN/CONTROL = FLOW
an alarm can be generated when the measured flow exceeds a
specified range:
CONF/ALA/FLOW CNTR = ON
CONF/ALA/FLOW min (specify value, default: 5 liters/h)
CONF/ALA/FLOW max (specify value, default: 25 liters/h)
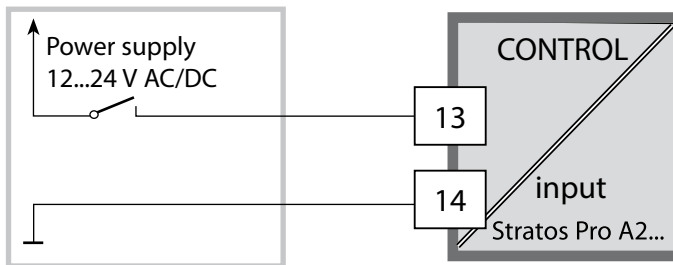
Configuration

Menu Structure of Configuration

The device provides 2 parameter sets "A" and "B". By switching between the parameter sets you can adapt the device to different measurement situations, for example. Parameter set "B" only permits setting of process-related parameters.

The configuration steps are assigned to different menu groups.

With the left/right arrow keys you can jump between the individual menu groups. Each menu group contains menu items for setting the parameters.

Pressing **enter** opens a menu item. Use the arrow keys to edit a value.

Press **enter** to confirm/save the settings.

Return to measurement: Hold **meas** key depressed (> 2 s).

| Select menu group	Menu group	Code	Display	Select menu item
	Sensor selection	SNS:	$ConF$ SENSOR	**enter**
	Menu item 1			**enter**
	⋮			**enter**
	Menu item ...			**enter**
▶	Current output 1	OT1:	$ConF$ OUT 1	
▶	Current output 2	OT2:	$ConF$ OUT2	
▶	Compensation	COR:	$ConF$ CORRECTION	
▶	Control input (parameter set or flow measurement)	IN:	00.00 %ᴏₖ COR TC LIQUID	
▶	Alarm mode	ALA:	$ConF$ ALARM	◀
▶	Setting the clock	CLK:	$ConF$ CLOCK	◀
▶	Measuring point	TAG:	$ConF$ TAG	

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Parameter set A/B: configurable menu groups

The device provides 2 parameter sets "A" and "B". By switching between the parameter sets you can adapt the device to different measurement situations, for example. Parameter set "B" only permits setting of process-related parameters.

Menu group	Parameter set A	Parameter set B
SENSOR	Sensor selection	---
OUT1	Current output 1	Current output 1
OUT2	Current output 2	Current output 2
CORRECTION	Compensation	Compensation
CNTR_IN	Control input	---
ALARM	Alarm mode	Alarm mode
PARSET	Parameter set selection	---
CLOCK	Setting the clock	---
TAG	TAG of measuring point	---
GROUP	GROUP of measuring points	---

External switchover of parameter sets A/B

You can switch between parameter sets A and B by applying a signal to the CONTROL input (parameter setting: CNTR-IN – PARSET).
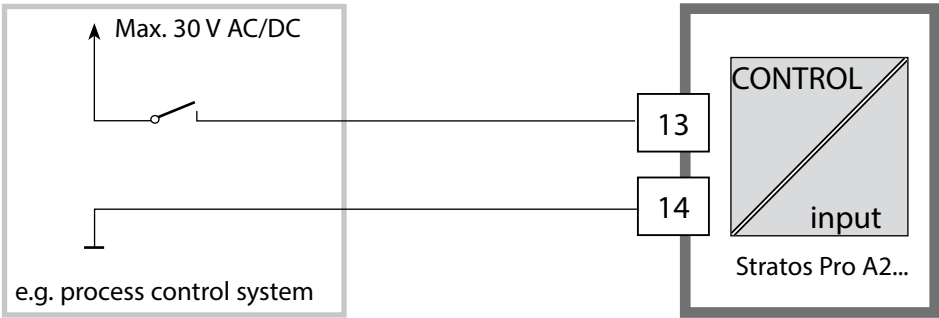
Parameter set A active	0...2 V AC/DC
Parameter set B active	10...30 V AC/DC

Manual Switchover of Parameter Sets A/B

Display	Action	Remark
	To switch between parameter sets: Press **meas**	Manual selection of parameter sets must have been preset in CONFIG mode. Default setting is a fixed parameter set A. Wrong settings change the measurement properties!
	PARSET blinks in the lower line. Select parameter set using ◀ and ▶ keys.	
	Select PARSET A / PARSET B Confirm by pressing **enter** Cancel by pressing **meas**	

Configuration		Choices	Default
SENSOR			
SNS:		MEMOSENS	MEMOSENS
	MEAS MODE	Cond Conc % Sal ‰ USP µS/cm	COND

Configuration			Choices	Default
SENSOR				
SNS:	Cond	MEAS RANGE [1]	x.xxx µS/cm xx.xx µS/cm xxx.x µS/cm xxxx µS/cm x.xxx mS/cm xx.xx mS/cm xxx.x mS/cm x.xxx S/m xx.xx S/m xx.xx MΩ	xxx.x mS/cm
	Conc	Solution	-01- (NaCl) -02- (HCl) -03- (NaOH) -04- (H2SO4) -05- (HNO3) -06- (H2SO4) -07- (HCl) -08- (HNO3) -09- (H2SO4) -10- (NaOH)	-01- (NaCl)
	TEMP UNIT		°C / °F	°C
	TEMPERATURE (EXT. only with I-input enabled via TAN)		AUTO MAN EXT (only if enabled via TAN)	AUTO
	MAN	TEMPERATURE	–50 ... 250 °C (–58 ... 482 °F)	025.0 °C (077.0 °F)
	CIP COUNT		ON/**OFF**	0 ... 9999 CYCLES
	SIP COUNT		ON/**OFF**	0 ... 9999 CYCLES
	CHECK TAG		ON/OFF	OFF
	CHECK GROUP		ON/OFF	OFF

1) The range selection allows selecting the maximum resolution. If the upper limit of this range is exceeded, the device automatically switches to the next higher range.

Configuration

Configuration		Choices	Default
Output 1 (OUT1)			
OT1:	CHANNEL	Cond/TMP	Cond
	OUTPUT (with Cond only)	LIN / BiLIN / LOG	LIN
LIN	BEGIN (0) 4mA	xxxx	000.0 mS/cm
	END 20 mA	xxxx	100.0 mS/cm
BiLIN	BEGIN (0) 4 mA		
	END 20 mA		
	CORNER X	Input range: selected CHANNEL Vertex X: BEGIN ≤ CORNER X ≤ END (rising) BEGIN ≥ CORNER X ≥ END (falling)	
	CORNER Y	Input range: selected CHANNEL Default: 12 mA Vertex Y: (0) 4 mA ≤ CORNER Y ≤ 20 mA	
LOG	BEGIN (0) 4mA	Decades	
	END 20 mA	Decades	
TMP °C	BEGIN (0) 4mA	−50...250 °C	
	END 20 mA	−50...250 °C	
TMP °F	BEGIN (0) 4mA	−58...482 °F	
	END 20 mA	−58...482 °F	
FILTERTIME		0...120 SEC	0000 SEC
22mA FAIL		ON/OFF	OFF
22mA FACE		ON/OFF	OFF
HOLD MODE		LAST/FIX	LAST
FIX	HOLD-FIX	(0) 4...22 mA	021.0 mA

Configuration			Choices	Default
Output 2 (OUT2)				
OT2:	CHANNEL		Cond/TMP	TMP
	... other steps like output 1			
Temperature compensation (CORRECTION)				
COR:	TC SELECT		OFF LIN, NLF, NaCl HCl, NH3, NaOH	OFF
	LIN	TC LIQUID	00.00 ...19.99%/K	00.00%/K
		REF TEMP	000.0 ... 199.9 °C	025.0 °C
	I-INPUT (only with TEMP EXT selected – The I-input option must be enabled via TAN)			
		I-INPUT	0–20 mA / 4–20 mA	4...20 mA
		°C BEGIN 4 mA	–50...250 °C	000.0 °C
		END 20 mA	–50...250 °C	100.0 °C
		°F BEGIN 4 mA	–58...482 °F	
		END 20 mA	–58...482 °F	
Control input (CNTR_IN)				
IN:	CONTROL		Parameter-set switch-over (PARSET) or flow measurement (FLOW)	PARSET
	FLOW	FLOW ADJUST	12000 pulses/liter	0 ... 20000 pulses/liter

Monitoring the sensor lines for breakage
The sensor lines are monitored for breakage when the temperature is used for calculating the conductivity or concentration. If the sensor or line is broken, an alarm will be generated (output current FIX or 22 mA, depending on the configuration).

If you want to output a conductivity value that is independent of the measured temperature (uncompensated), you can monitor the sensor lines for breakage by setting "TEMP CHECK" to "ON" in the Alarm menu.
(See following page, ALARM menu)

Configuration

Configuration			Choices	Default
Alarm (ALARM)				
ALA:	DELAYTIME		0...600 SEC	0010 SEC
	SENSOCHECK		ON/OFF	OFF
	TEMP CHECK		ON/OFF	OFF
	FLOW CNTR *)		ON/OFF	OFF
	ON	FLOW MIN **)	005.0 L/h	0 ... 99.9 L/h
		FLOW MAX **)	025.0 L/h	0 ... 99.9 L/h
Parameter set (PARSET)				
PAR:	Select fixed parameter set (A) or switch between A/B via control input or manually in measuring mode		PARSET FIX / CNTR INPUT / MANUAL	PARSET FIX (fixed parameter set A)
Real-time clock (CLOCK)				
CLK:	FORMAT		24 h / 12 h	
	24 h	TIME hh/mm	00..23:00...59	
	12 h	TIME hh/mm	00 ... 12:59 AM / 01 ... 11:59 PM	
	DAY/MONTH		01...31/01...12	
	YEAR		2000...2099	
Measuring points (TAG / GROUP)				
TAG:	(Input in text line)		A...Z, 0...9, – + < > ? / @	
GROUP:	(Input in text line)		0000...9999	0000

* These menu items appear only if selected.
** Hysteresis fixed at 5% of threshold value

Sensor Verification (TAG, GROUP)
When Memosens sensors are calibrated in the lab, it is often useful and sometimes even mandatory that these sensors will be operated again at the same measuring points or at a defined group of measuring points. To ensure this, you can save the respective measuring point (TAG) or group of measuring points (GROUP) in the sensor. TAG and GROUP can be specified by the calibration tool or automatically entered by the transmitter. When connecting an MS sensor to the transmitter, it can be checked if the sensor contains the correct TAG or belongs to the correct GROUP. If not, a message will be generated, Sensoface gets "sad", and the display backlighting turns purple. The "sad" Sensoface icon can also be signaled by a 22 mA error current. Sensor verification can be switched on in the Configuration in two steps as TAG and GROUP if required.
When no measuring point or group of measuring points is saved in the sensor, e.g., when using a new sensor, Stratos enters its own TAG and GROUP. When sensor verification is switched off, Stratos always enters its own measuring point and group.
A possibly existing TAG/GROUP will be overwritten.

Configuration (Original for Copy)

Two complete parameter sets are stored in the EEPROM.
As delivered, the two sets are identical but can be edited.
Note:
Fill in your configuration data on the following pages or use them as original for copy.

Configuration (Template for Copy)

Parameter	Parameter set A	Parameter set B
SNS: Sensor type		--- *)
SNS: Measuring mode		---
SNS: Measuring range		---
SNS: Concentration determination		---
SNS: Temperature unit		---
SNS: Temp detection		---
SNS: Manual temp		---
SNS: CIP counter		---
SNS: SIP counter		---
SNS: CHECK TAG		---
SNS: CHECK GROUP		---
OT1: Process variable		
OT1: Lin/bilin/log output		
OT1: Current start		
OT1: Current end		
OT1: Vertex X (bilinear curve only)		
OT1: Vertex Y (bilinear curve only)		
OT1: Filter time		
OT1: FAIL 22 mA (error messages)		
OT1: FACE 22 mA (Sensoface messages)		
OT1: HOLD mode		
OT1: HOLD FIX current		

*) These parameters cannot be adjusted in parameter set B,
   the values are the same as in parameter set A.

Parameter	Set A	Set B
OT2: Process variable		
OT2: Lin/bilin/log output		
OT2: Current start		
OT2: Current end		
OT2: Vertex X (bilinear curve only)		
OT2: Vertex Y (bilinear curve only)		
OT2: Filter time		
OT2: FAIL 22 mA (error messages)		
OT2: FACE 22 mA (Sensoface messages)		
OT2: HOLD mode		
OT2: HOLD FIX current		
COR: TC SELECT		
COR: Temp coefficient		
COR: Reference temperature		
COR: Ext. temp input (I input)		
COR: Current range (I input)		
COR: Current start (I input)		
COR: Current end (I input)		
IN: Parameter set A/B or flow		
IN: (Flow meter) Adjusting pulses/liter		
ALA: Delay		
ALA: Sensocheck on/off		
ALA: Tempcheck on/off		
ALA: Flow control FLOW CNTR on/off		
ALA: Minimum flow (hysteresis fixed at 5 %)		
ALA: Maximum flow (hysteresis fixed at 5 %)		
CLK: Time & Date		___*)
TAG: Measuring point (tag number)		
GROUP: Group of measuring points		
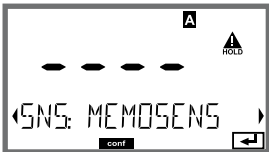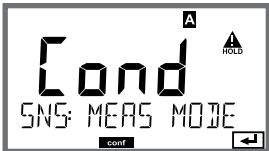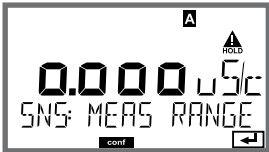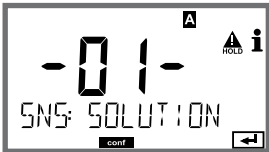
*) These parameters cannot be adjusted in parameter set B,
   the values are the same as in parameter set A.

Configuration

Sensor
Selecting the parameters
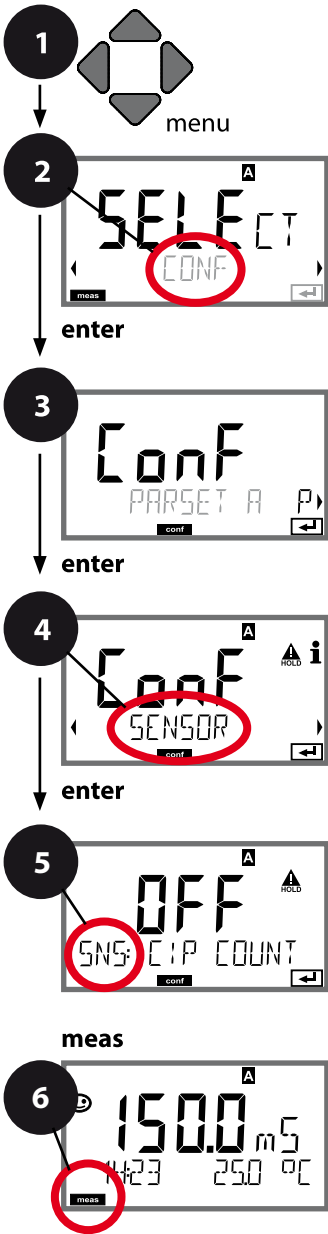

1) Press **menu** key.
2) Select **CONF** using ◀ ▶,
   press **enter**.
3) Select parameter set using ◀ ▶ keys,
   press **enter**.
4) Select **SENSOR** menu using ◀ ▶ keys,
   press **enter**.
5) All items of this menu group are indicated by
   the "SNS:" code.
   Press **enter** to select menu,
   edit using arrow keys (see next page).
   Confirm (and proceed) by pressing **enter**.
6) Exit: Press **meas** key until the [meas] mode
   indicator is displayed.

5	
Select sensor type	**enter**
Select measuring mode	
Select measuring range	
Concentration determination	
Temperature unit	
Temperature detection	
Cleaning cycles	
Sterilization cycles	
CHECK TAG	
CHECK GROUP	

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Menu item	Action	Choices
Select sensor type `‹SNS: MEMOSENS ›` conf	Select sensor type using ▲ ▼ keys. Press **enter** to confirm.	**MEMOSENS** 2-ELECTRODE 4-ELECTRODE

Select measuring mode
 	
 `Cond`
 `SNS: MEAS MODE`
 conf
	Select desired mode using ▲ ▼ keys.
	
	 Press **enter** to confirm.
		Cond
		 Conc %
		 Sal ‰
		 USP µS/cm

Select measuring range
 	
 `0.000 uSc`
 `SNS: MEAS RANGE`
 conf
	For cond measurement only
	
	 Select desired measuring range using ▲ ▼ keys.
	
	 Press **enter** to confirm.
		x.xxx µS/cm, xx.xx µS/cm
		 xxx.x µS/cm, xxxx µS/cm
		 x.xxx mS/cm, xx.xx mS/cm
		 xxx.x mS/cm, x.xxx S/m
		 xx.xx S/m, xx.xx MΩ

Concentration determination
 	
 `-01-`
 `SNS: SOLUTION`
 conf
	For conc measurement only
	
	 Select desired concentration solution using ▲ ▼ keys.
	
	 Press **enter** to confirm.
		-01- (NaCl)
		 -02- (HCl)
		 -03- (NaOH)
		 -04- (H_2SO_4)
		 -05- (HNO_3)
		 -06- (H_2SO_4)
		 -07- (HCl)
		 -08- (HNO_3)
		 -09- (H_2SO_4)
		 -10- (NaOH)

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Configuration
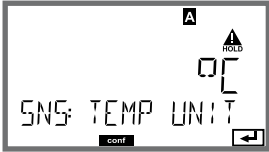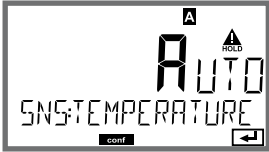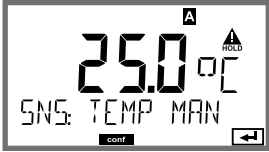
Sensor
Select: Temperature unit, temperature detection

1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶, press **enter**.
4) Select **SENSOR** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "SNS:" code.
   Press **enter** to select menu,
   edit using arrow keys (see next page).
   Confirm (and proceed) using **enter**.
6) End: Press **meas** key until the [meas] mode indicator is displayed.

Select sensor type	enter
Select measuring mode	
Select range	
Concentration determination	
Temperature unit	
Temperature detection	
Cleaning cycles	
Sterilization cycles	
CHECK TAG	
CHECK GROUP	

Menu item	Action	Choices
Temperature unit ⚠ HOLD °C SNS: TEMP UNIT conf ↵	Select °C or °F using ▲ ▼ keys. Press **enter** to confirm.	**°C** / °F
Temperature detection ⚠ HOLD Auto SNS:TEMPERATURE conf ↵	Select mode using ▲ ▼ keys: AUTO: Measured by sensor MAN: Direct input of temperature, no measurement (see next step) EXT: Temperature specified via current input (only if TAN E enabled) Press **enter** to confirm.	**AUTO** MAN EXT
(Manual temperature) ⚠ HOLD 25.0 °C SNS: TEMP MAN conf ↵	Modify digit using ▲ ▼ keys, select next digit using ◀ ▶ keys. Press **enter** to confirm.	–50...250 °C (–58...482 °F)

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Configuration
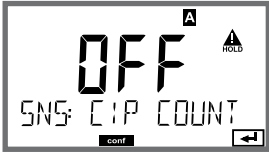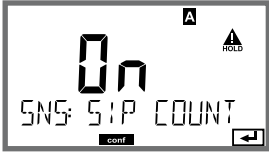
Sensor
Adjust: Cleaning cycles, sterilization cycles

1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶, press **enter**.
4) Select **SENSOR** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "SNS:" code.
   Press **enter** to select menu,
   edit using arrow keys (see next page).
   Confirm (and proceed) using **enter**.
6) End: Press **meas** key until the [meas] mode indicator is displayed.

| Select sensor type |
| Select measuring mode |
| Select range |
| Concentration determination |
| Temperature unit |
| Temperature detection |
| Cleaning cycles |
| Sterilization cycles |
| CHECK TAG |
| CHECK GROUP |

Menu item	Action	Choices
CIP / SIP		
Cleaning cycles on/off OFF ⓐ ⚠ HOLD SNS: CIP COUNT conf ↵	Select ON or OFF using ▲ ▼ keys. Activates/deactivates logging in extended logbook Press **enter** to confirm.	ON/**OFF**
Sterilization cycles on/off On ⓐ ⚠ HOLD SNS: SIP COUNT conf ↵	Select ON or OFF using ▲ ▼ keys. Activates/deactivates logging in extended logbook Press **enter** to confirm.	ON/**OFF**

The cleaning and sterilization cycles are logged to measure the load on the sensor.

Note:
A CIP or SIP cycle is only entered into the logbook 2 hours after the start to ensure that the cycle is complete.
With Memosens sensors, an entry is also made in the sensor.

Configuration

Memosens Sensor
Sensor Verification (TAG, GROUP)

1

menu

2

SELECT
CONF

enter

3

ConF
PARSET A P▸

enter

4

ConF
SENSOR

enter

5

- - - -
SNS: MEMOSENS

meas

6

150.0 mS
4:23 25.0 °C
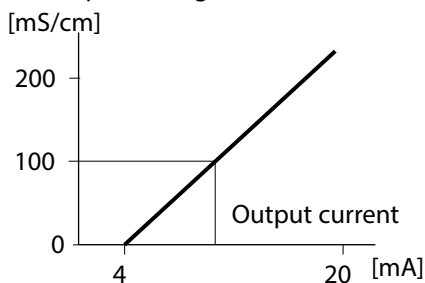
1) Press **menu** key.
2) Select **CONF** using ◄ ▶, press **enter**.
3) Select parameter set using ◄ ▶ keys, press **enter**.
4) Select **SENSOR** menu using ◄ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "SNS:" code.
   Press **enter** to select menu,
   edit using arrow keys (see next page).
   Confirm (and proceed) by pressing **enter**.
6) Exit: Press **meas** key until the [meas] mode indicator is displayed.

5

Select sensor type	**enter**
Select measuring mode	
Select range	
Concentration determination	
Temperature unit	
Temperature detection	
Cleaning cycles	
Sterilization cycles	
CHECK TAG	
CHECK GROUP	

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Menu item	Action	Choices
TAG **On** SNSCHECK TAG conf	Select ON or OFF using ▲ ▼ keys. Press **enter** to confirm. When switched on, the entry for "TAG" in the Memosens sensor is compared to the entry in the analyzer. If the entries differ, a message will be generated.	ON/**OFF**
GROUP **On** SNSCHECK GROUP conf	Select ON or OFF using ▲ ▼ keys. Press **enter** to confirm. Function as described above	ON/**OFF**

Sensor Verification (TAG, GROUP)

When Memosens sensors are calibrated in the lab, it is often useful and sometimes even mandatory that these sensors will be operated again at the same measuring points or at a defined group of measuring points. To ensure this, you can save the respective measuring point (TAG) or group of measuring points (GROUP) in the sensor. TAG and GROUP can be specified by the calibration tool or automatically entered by the transmitter. When connecting an MS sensor to the transmitter, it can be checked if the sensor contains the correct TAG or belongs to the correct GROUP. If not, a message will be generated, Sensoface gets "sad", and the display backlighting turns purple. The "sad" Sensoface icon can also be signaled by a 22 mA error current. Sensor verification can be switched on in the Configuration in two steps as TAG and GROUP if required.

When no measuring point or group of measuring points is saved in the sensor, e.g., when using a new sensor, Stratos enters its own TAG and GROUP. When sensor verification is switched off, Stratos always enters its own measuring point and group. A possibly existing TAG/GROUP will be overwritten.

Configuration

Current Output 1
Output current range. Process variable.

1

menu

2

SELECT
CONF

enter

3

ConF
PARSET A   P

enter

4

ConF
OUT 1

enter

5

Cond
OT 1 CHANNEL

meas

6

150.0 mS
N123   25.0 °C

1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶ , press **enter**.
4) Select **OUT1** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "OT1:" code.
   Press **enter** to select menu, edit using arrow keys (see next page). Confirm (and proceed) using **enter**.
6) End: Press **meas** key until the [meas] mode indicator is displayed.

5

Process variable	**enter**
LIN/biLIN/LOG output	
Current start	
Current end	
Time averaging filter	
Output current during error message	
Output current during Sensoface messages	
Output current during HOLD	
Output current for HOLD FIX	

Menu item	Action	Choices
Process variable **Cond** OT ↑ CHANNEL conf ↵	Select using ▲ ▼ keys: Cond: Conductivity TMP: Temperature Press **enter** to confirm. Then select characteristic (LIN/biLIN/LOG).	**Cond**/TMP TMP OT ↑ CHANNEL conf ↵
Current start **000.0** mS OT ↑ BEGIN 4mA conf ↵	Modify digit using ▲ ▼ keys, select next digit using ◀ ▶ keys. Press **enter** to confirm.	Entered value applies to selected process variable/ range If the adjusted range is exceeded, the device automatically switches to the next higher range (Autorange)
Current end **100.0** mS/c OT ↑ END 20mA conf ↵	Enter value using ▲ ▼ ◀ ▶ keys. Press **enter** to confirm.	Entered value applies to selected process variable/ range If the adjusted range is exceeded, the device automatically switches to the next higher range (Autorange)

Assignment of measured values: Current start and current end

Example 1: Range 0...200 mS/cm

[mS/cm]

200

100

0

4   20 [mA]

Output current

Example 2: Range 100...200 mS/cm
Advantage: Higher resolution in range of interest

[mS/cm]

200

100

4   20 [mA]

Output current

Configuration
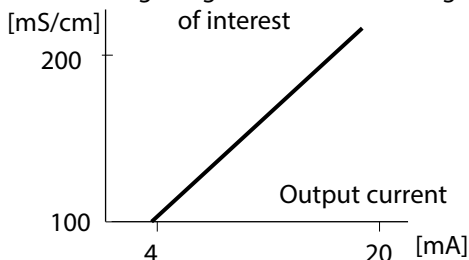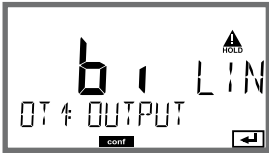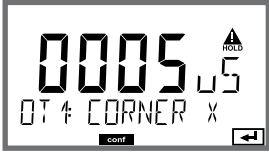
Current Output 1
Output current curve, bilinear

1

menu

2

SELECT
CONF
meas

enter

3

ConF
PARSET A P▸
conf

enter

4

ConF
OUT 1
conf

enter

5

bi LIN
OT 1 OUTPUT
conf

meas

6

150.0 mS
1423 25.0 °C
meas

1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶, press **enter**.
4) Select **OUT1** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "OT1:" code.
   Press **enter** to select menu, edit using arrow keys (see next page).
   Confirm (and proceed) using **enter**.
6) End: Press **meas** key until the [meas] mode indicator is displayed.

5

	enter
Process variable	
LIN/biLIN/LOG output	
Current start	
Current end	
Bilinear: Vertex X	
Bilinear: Vertex Y	
Time averaging filter	
Output current during error message	
Output current during Sensoface messages	
Output current during HOLD	
Output current for HOLD FIX	

Menu item	Action	Choices

Output current curve
 	
 `b ı  LIN`
 `OT 4 OUTPUT`
 HOLD / conf
	Select using ▲ ▼ keys. Press **enter** to confirm.	**LIN** Linear characteristic biLIN Bilinear curve LOG Logarithmic curve

Current start and current end
 	
 `000.0 mS`
 `OT 4 BEGIN 4mA`
 A / HOLD / conf
	Enter value using ▲ ▼ ◄ ► keys.
	
	 Press **enter** to confirm.
		Entered value applies to selected process variable/range If the adjusted range is exceeded, the device automatically switches to the next higher range (Autorange)

Bilinear curve: Vertex X/Y
 	
 `0005 µS`
 `OT 4 CORNER X`
 HOLD / conf
	Enter value using ▲ ▼ ◄ ► keys.
	
	 Press **enter** to confirm.
		Entered value applies to selected vertex of bilinear curve "Corner X" (process variable) and "Corner Y (output current) – see figure below.

Vertex of bilinear curve

Output current [mA]
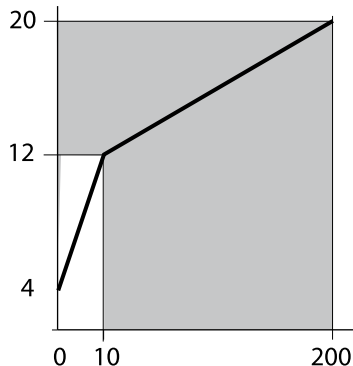
Example:
Current range 4 ... 20 mA,
Current start: 0 µS/cm
Current end: 200 µS/cm
Vertex:
"CORNER X": 10 µS/cm (process variable)
"CORNER Y": 12 mA (output current)
Result: The output current change in the range 0 ... 10 µS/cm is much greater than in the range 10 ... 200 µS/cm.

Process variable [µS/cm]

Logarithmic Curve

Nonlinear output current characteristic: allows measurements over several decades, e.g. measuring very low values with a high resolution and high values with a low resolution.
Parameters required: Start and end value

Possible start and end values
The start value must be at least one decade lower than the end value.
Start value and end value must be specified in the same units
(either in µS/cm or in S/m, see listing):

1.0 µS/cm	
10.0 µS/cm	0.001 S/m
100.0 µS/cm	0.01 S/m
1.0 mS/cm	0.1 S/m
10.0 mS/cm	1.0 S/m
100.0 mS/cm	10.0 S/m
1000 mS/cm	100 S/m

The start value
is the next decade value below the lowest measured value.

The end value
is the next decade value above the highest measured value.
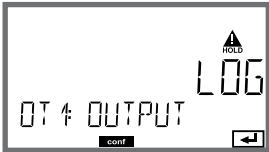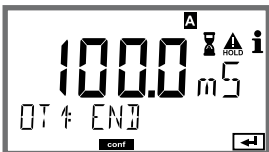
The number of decades results from:
Number of decades = log (end value) – log (start value)

The output current value is defined as follows:

$$\text{Output current} = 16\,\text{mA} * \frac{\log(\text{measured value}) - \log(\text{start value})}{\text{Number of decades}} + 4\,\text{mA}$$
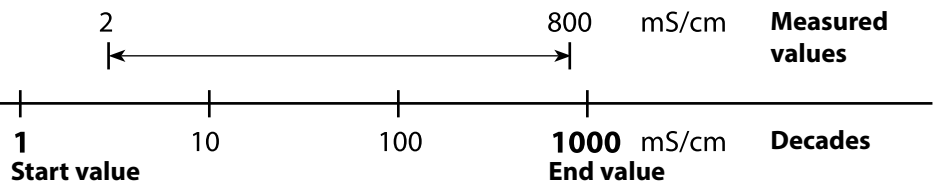
Menu item	Action	Choices
Logarithmic curve of output current _OT 1 OUTPUT_ _LOG_	Select using ▲ ▼ keys. Press **enter** to confirm.	**LOG** Logarithmic curve biLIN Bilinear curve LIN Linear characteristic
Start value _OT 1 BEGIN_ _1.0 mS_	Enter value using ▲ ▼ ◀ ▶ keys. Press **enter** to confirm.	Start value of logarithmic output curve
End value _OT 1 END_ _100.0 mS_	Enter value using ▲ ▼ ◀ ▶ keys. Press **enter** to confirm.	End value of logarithmic output curve

Possible start and end values for the logarithmic curve

S/cm:
1.0 μS/cm, 10.0 μS/cm, 100.0 μS/cm,
1.0 mS/cm, 10.0 mS/cm, 100.0 mS/cm, 1000 mS/cm

S/m:
0.001 S/m, 0.01 S/m, 0.1 S/m, 1.0 S/m, 10.0 S/m, 100 S/m
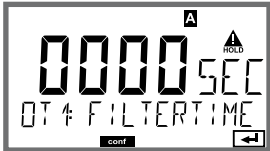
Current Output 1
Adjusting the time interval of the output filter
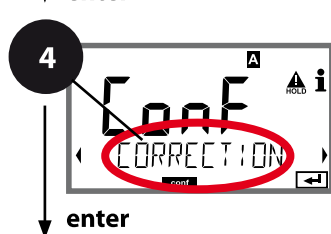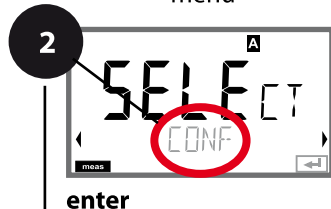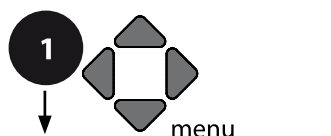
1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶ , press **enter**.
4) Select **OUT1** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "OT1:" code.
   Press **enter** to select menu, edit using arrow keys (see next page).
   Confirm (and proceed) using **enter**.
6) End: Press **meas** key until the [meas] mode indicator is displayed.

	enter
Process variable	
LIN/biLIN/LOG output	
Current start	
Current end	
Time averaging filter	
Output current during error message	
Output current during Sensoface messages	
Output current during HOLD	
Output current for HOLD FIX	

Menu item	Action	Choices

Time averaging filter
 	
 `0000 SEC`
 `OT 4 FILTERTIME`
 conf
	Enter value using ▲ ▼
	 ◄ ► keys.
		0...120 SEC
		 (**0000 SEC**)

	Press **enter** to confirm.	

Time averaging filter

To smoothen the current output, a low-pass filter with adjustable filter time constant can be switched on. When there is a jump at the input (100 %), the output level is at 63 % after the time interval has been reached. The time interval can be set from 0 to 120 sec. If the time interval is set to 0 sec, the current output directly follows the input.

Note:

The filter only acts on the current output, not on the display or the limit value!

During HOLD the filter is not applied. This prevents a jump at the output.
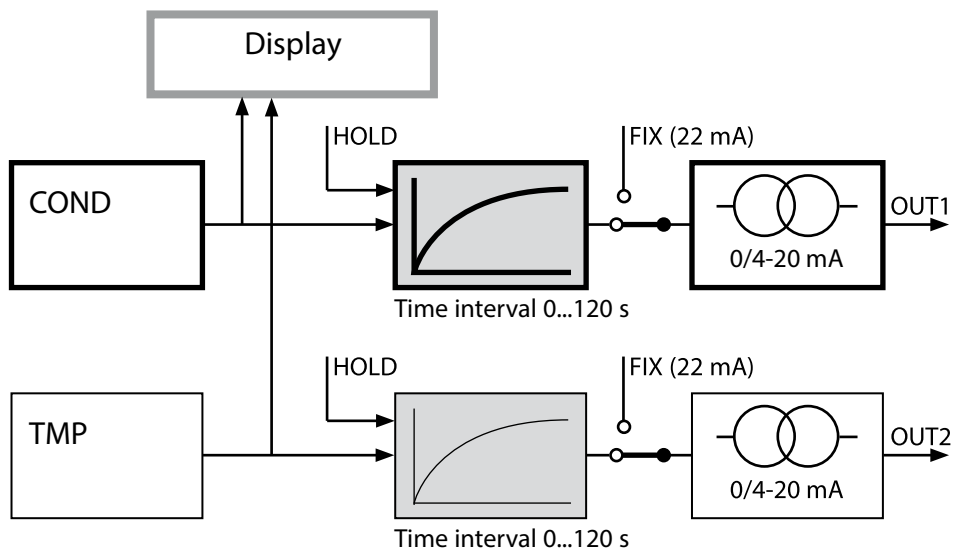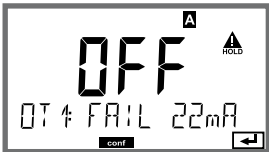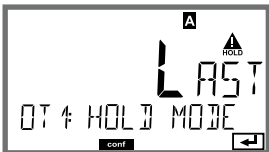
Current Output 1
Output current during Error and HOLD

1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶ , press **enter**.
4) Select **OUT1** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "OT1:" code.
Press **enter** to select menu,
edit using arrow keys (see next page).
Confirm (and proceed) using **enter**.
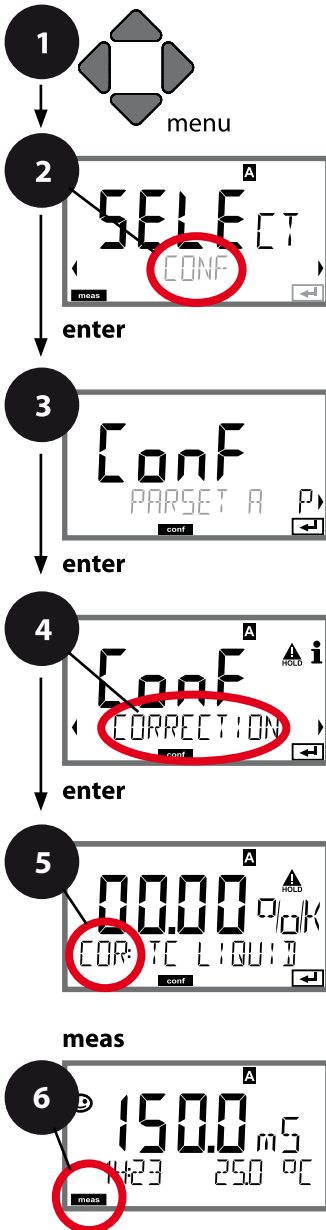6) End: Press **meas** key until the [meas] mode indicator is displayed.

Process variable	
LIN/biLIN/LOG output	
Current start	
Current end	
Time averaging filter	
Output current during error message	
Output current during Sensoface messages	
Output current during HOLD	
Output current for HOLD FIX	

Menu item	Action	Choices
Output current during error message `OFF` A HOLD `OT1 FAIL 22mA` conf ↵	Select ON or OFF using ▲ ▼ keys. Press **enter** to confirm.	ON/**OFF**
Output current during Sensoface messages **OT1: FACE 22 mA**	Select ON or OFF using ▲ ▼ keys. Confirm by pressing **enter**	ON/**OFF**
Output current during HOLD `LAST` A HOLD `OT1 HOLD MODE` conf ↵	LAST: During HOLD the last measured value is maintained at the output. FIX: During HOLD a value (to be entered) is maintained at the output. Select using ▲ ▼ Press **enter** to confirm.	**LAST**/FIX
Output current for HOLD FIX `12.00`mA A HOLD `OT1 HOLD FIX` conf ↵	Only with FIX selected: Enter current which is to flow at the output during HOLD Enter value using ▲ ▼ ◀ ▶ keys Press **enter** to confirm.	04.00...22.00 mA (**21.00 mA**)

Output signal during HOLD:

Output current [mA]

Output signal for HOLD FIX setting = 21.0 mA

Output signal for HOLD LAST setting

21

4

HOLD active   HOLD active
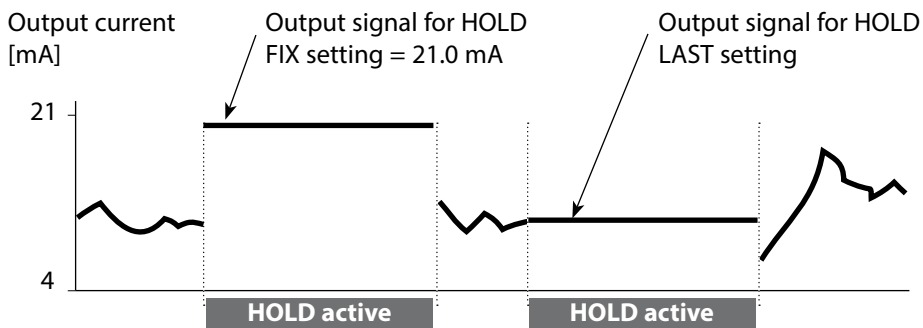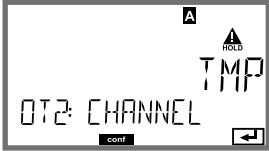
Current Output 2
Output current range. Process variable ...
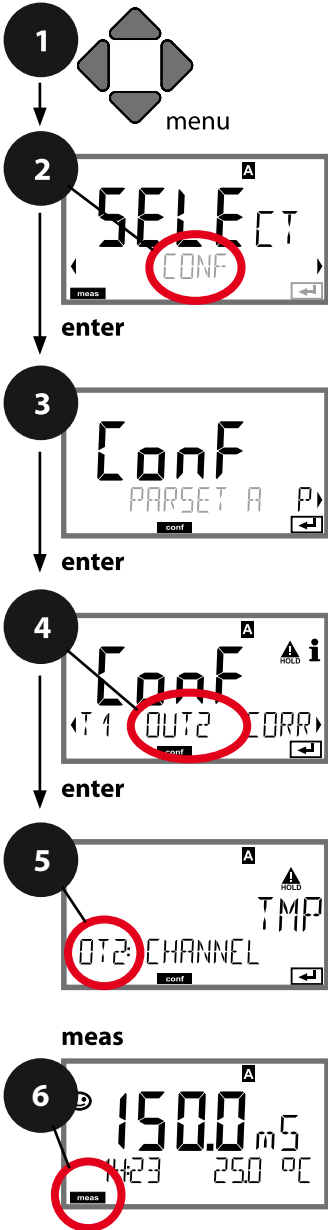
1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶ , press **enter**.
4) Select **OUT2** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "OT2:" code.
   Press **enter** to select menu,
   edit using arrow keys (see next page).
   Confirm (and proceed) using **enter**.
6) End: Press **meas** key until the [meas] mode indicator is displayed.

Process variable	enter
LIN/biLIN/LOG output	
Current start	
Current end	
Bilinear: Vertex X	
Bilinear: Vertex Y	
Time averaging filter	
Output current during error message	
Output current during Sensoface messages	
Output current during HOLD	
Output current for HOLD FIX	

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Menu item	Action	Choices
Process variable	Select using ▲ ▼ keys: Cond: Conductivity TMP: Temperature Press **enter** to confirm.	Cond/**TMP** Begin: 0 °C End: 100°C
. . .		

**All the following adjustments are made as for current output 1 (see there)!**
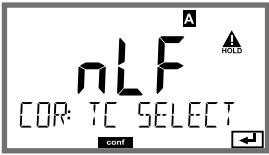
Temperature Compensation
Selecting the compensation method

1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶ , press **enter**.
4) Select **CORRECTION** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "COR:" code.
   Press **enter** to select menu,
   edit using arrow keys (see next page).
   Confirm (and proceed) using **enter**.
6) End: Press **meas** key until the [meas] mode indicator is displayed.

Temperature compensation	**enter**
Temperature compensation, process medium	
Enter reference temperature	
Current input, external temp measurement	
Current start	
Current end	

Menu item	Action	Choices
Temperature compensation	Select desired compensation using ▲ ▼ keys:	
	OFF: Temperature compensation switched off	OFF COR TC SELECT
	LIN: Linear temperature compensation with entry of temperature coefficient	L IN COR TC SELECT
	nLF: Temperature compensation for natural waters to EN 27888	nLF COR TC SELECT
	NaCl: Temperature compensation for ultrapure water with NaCl traces	nACL COR TC SELECT
	HCl: Temperature compensation for ultrapure water with HCl traces	HCL COR TC SELECT
	NH3: Temperature compensation for ultrapure water with NH_3 traces Press **enter** to confirm. **NaOH** (without figure)	nH3 COR TC SELECT
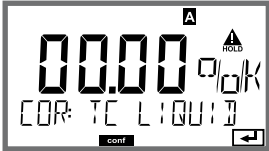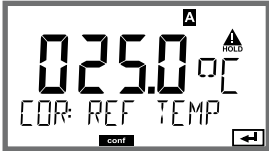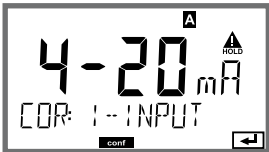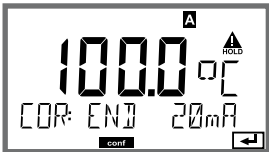
Temperature Compensation
TC process medium. Current input for temp measurement.

1 menu

2 SELECT
CONF
enter

3 ConF
PARSET A
enter

4 ConF
CORRECTION
enter

5 00.00 %/K
COR: TC LIQUID

meas

6 150.0 mS
4:23 25.0 °C

1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶ , press **enter**.
4) Select **CORRECTION** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "COR:" code.
   Press **enter** to select menu,
   edit using arrow keys (see next page).
   Confirm (and proceed) using **enter**.
6) End: Press **meas** key until the [meas] mode indicator is displayed.

5 **enter**

| Temperature compensation |
| Temperature compensation, process medium |
| Enter reference temperature |
| Current input, external temp measurement (if enabled via TAN) |
| Current start |
| Current end |

Menu item	Action	Choices
Temperature compensation, process medium 00.00 %/K COR: TC LIQUID	With linear compensation only: Step 1: Enter temperature compensation of the process medium. Step 2: Enter reference temperature Enter value using ▲ ▼ ◀ ▶ keys. Press **enter** to confirm.	00.00...19.99 %/K
Enter reference temperature 025.0 °C COR: REF TEMP		

With external temp measurement (current input enabled / TAN):

Menu item	Action	Choices
Current range 4-20 mA COR: I-INPUT	Select desired range using ▲ ▼ keys. Press **enter** to confirm.	**4-20 mA** / 0-20 mA
Current start 000.0 °C COR: BEGIN 4mA	Modify digit using ▲ ▼ keys, select next digit using ◀ ▶ keys. Press **enter** to confirm.	Input range: –50...250 °C / –58...482 °F
Current end 100.0 °C COR: END 20mA	Enter value using ▲ ▼ ◀ ▶ keys. Press **enter** to confirm.	Input range: –50...250 °C / –58...482 °F

Configuration

CONTROL Input
Parameter set selection via external signal or
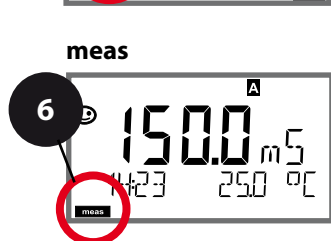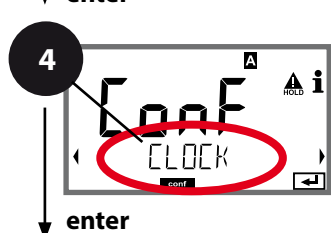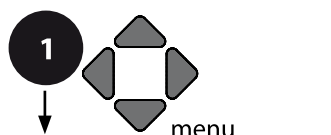### **flow measurement**
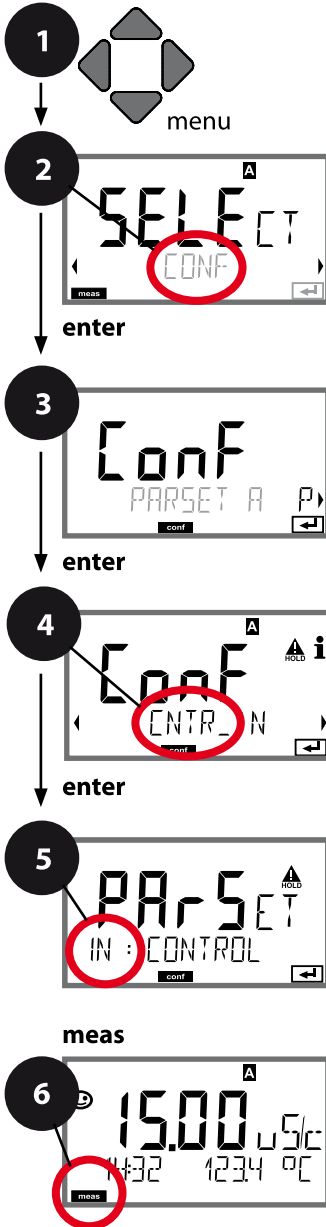
1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶, press **enter**.
4) Select **CNTR_IN** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "IN:" code.
   Press **enter** to select menu,
   edit using arrow keys (see next page).
   Confirm (and proceed) using **enter**.
6) End: Press **meas** key until the [meas] mode indicator is displayed.

CONTROL input (function)

PARSET / FLOW

FLOW: ADJUST

Menu item	Action	Choices

Select function of CONTROL input
 	
`PArSEt`
`IN : CONTROL`
conf
	Select using ▲ ▼ keys. Press **enter** to confirm.	**PARSET** (selecting parameter set A/B via signal at CONTROL input)

`FLOW`
`IN : CONTROL`
conf
		Flow (for connecting a pulse-output flow meter)

Adjust to flow meter:
 	
`1200 o/L`
`IN ADJUST FLOW`
conf
	With "Flow" selected, you must adjust the device to the flow meter used.
	Enter value using arrow keys. Press **enter** to confirm.
		12000 pulses/liter

In the alarm menu you can configure flow monitoring. When you have set CONTROL to FLOW, you can specify 2 additional limit values for maximum and minimum flow.
If the measured value lies outside this range, an alarm message and a 22-mA error signal (if configured) will be generated.

Display
Flow measurement in measuring mode

`12.34 uS`
`7.3 L/h   1327 uS`
meas

Display
Flow measurement (sensor monitor)

`7.3 L/h`
`FLOW`
diag

67
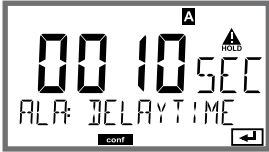
Alarm Settings
Delay. Sensocheck. Tempcheck.

1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶, press **enter**.
4) Select **ALARM** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "ALA:" code.
   Press **enter** to select menu,
   edit using arrow keys (see next page).
   Confirm (and proceed) using **enter**.
6) End: Press **meas** key until the [meas] mode indicator is displayed.

ALARM: Delay
Alarm: Sensocheck
Alarm: Tempcheck
Alarm: CONTROL input
For flow monitoring: Max. flow alarm
For flow monitoring: Min. flow alarm

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Menu item	Action	Choices
Delay	Enter value using ▲ ▼ ◀ ▶ keys. Press **enter** to confirm.	0...600 SEC (**010 SEC**)
Sensocheck	Select Sensocheck (continuous monitoring of sensor). Select ON or OFF using ▲ ▼ keys. Press **enter** to confirm (At the same time, Sensoface is activated. With OFF, Sensoface is also switched off.)	ON/**OFF**
Tempcheck (see page 37)	To monitor the temperature probe with TC OFF selected: Select Tempcheck ON using ▲ ▼ keys. Press **enter** to confirm. Now, the temperature probe will be monitored.	ON/**OFF**

Error messages can be signaled by a 22 mA output current
(see Error Messages and Configuration of Output 1/Output 2).
The alarm delay time delays the color change of the display back-
lighting to red and the 22 mA signal (if configured).
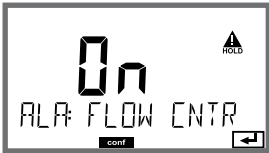
Alarm Settings
CONTROL input (FLOW MIN, FLOW MAX)

1) Press **menu** key.
2) Select **CONF** using ◀ ▶ keys, press **enter**.
3) Select parameter set using ◀ ▶, press **enter**.
4) Select **ALARM** menu using ◀ ▶ keys, press **enter**.
5) All items of this menu group are indicated by the "ALA:" code.
   Press **enter** to select menu,
   edit using arrow keys (see next page).
   Confirm (and proceed) using **enter**.
6) End: Press **meas** key until the [meas] mode indicator is displayed.

ALARM: Delay
Alarm: Sensocheck
Alarm: Tempcheck
Alarm: CONTROL input
For flow monitoring: Max. flow alarm
For flow monitoring: Min. flow alarm

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Menu item	Action	Choices
CONTROL input	The **CONTROL input** can generate an alarm when assigned to FLOW (flow monitoring) in the CONF menu: **FLOW CNTR** **Flow measurement:** allows monitoring the minimum and maximum flow (pulse counter)	ON/**OFF** (FLOW MIN, FLOW MAX.)
Alarm Minimum flow **FLOW MIN**	Specify value	Default: 05.00 liters/h
Alarm Maximum flow **FLOW MIN**	Specify value	Default: 25.00 liters/h

Time and Date
Measuring Points (TAG/GROUP)

1) Press **menu** key.
2) Select **CONF** using ◀ ▶,
   press **enter**.
3) Select parameter set A using ◀ ▶ keys,
   press **enter**.
4) Select **CLOCK** or **TAG** using ◀ ▶ keys,
   press **enter**.
5) All items of this menu group are indicated by
   the "CLK:" or "TAG" code.
   Press **enter** to select menu,
   edit using arrow keys (see next page).
   Confirm (and proceed) by pressing **enter**.
6) Exit: Press **meas** key until the [meas] mode
   indicator is displayed.

1

menu

2

SELECT
CONF

enter

3

ConF
PARSET A

enter

4

ConF
CLOCK

enter

5

00:00
CLK: TIME hh/mm

meas

6

150.0 mS
4:23   25.0 °C

5

| Time format |
| Time |
| Day and month |
| Year |
| |
| TAG of measuring point |
| GROUP of measuring points |

enter

Time and Date

Control of the calibration and cleaning cycles is based on the time and date of the integrated real-time clock.

In measuring mode the time is shown in the lower display. When using digital sensors, the calibration data is written in the sensor head. In addition, the logbook entries (cf Diagnostics) are provided with a time stamp.
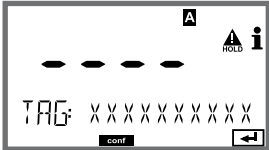
Note:

There is no automatic switchover from winter to summer time!
Be sure to manually adjust the time!

Sensor Verification (TAG, GROUP)

When Memosens sensors are calibrated in the lab, it is often useful and sometimes even mandatory that these sensors will be operated again at the same measuring points or at a defined group of measuring points. To ensure this, you can save the respective measuring point (TAG) or group of measuring points (GROUP) in the sensor. TAG and GROUP can be specified by the calibration tool or automatically entered by the transmitter. When connecting an MS sensor to the transmitter, it can be checked if the sensor contains the correct TAG or belongs to the correct GROUP. If not, a message will be generated, Sensoface gets "sad", and the display backlighting turns purple. The "sad" Sensoface icon can also be signaled by a 22 mA error current. Sensor verification can be switched on in the Configuration in two steps as TAG and GROUP if required.

When no measuring point or group of measuring points is saved in the sensor, e.g., when using a new sensor, Stratos enters its own TAG and GROUP. When sensor verification is switched off, Stratos always enters its own measuring point and group. A possibly existing TAG/GROUP will be overwritten.

Menu item	Action	Choices
Measuring point (TAG) [display graphic: A, HOLD, ⚠ i, — — — —, TAG: XXXXXXXXXX, conf, ↵]	In the lower display line you can enter a designation for the measuring point (TAG) and for a group of measuring points (GROUP) if applicable. Up to 32 digits are possible. By pressing **meas** (repeatedly) in the measuring mode you can view the tag number. Select character using ▲ ▼ keys, select next digit using ◀ ▶ keys. Press **enter** to confirm.	A...Z, 0...9, – + < > ? / @ The first 10 characters are seen in the display without scrolling.

Digital Sensors

Operation

Stratos Pro can be operated with digital Memosens sensors.

The sensor type is selected during **Configuration**.
The device only switches to measuring mode when the connected
sensor corresponds to the type configured (Sensoface is friendly).
The Memosens logo appears on the screen.
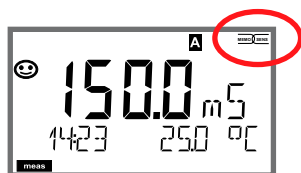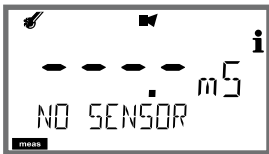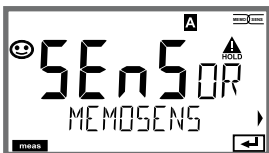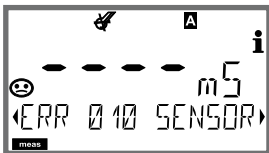
Otherwise, an error message is released. The **info** icon is displayed.
You can display the error text in the bottom line using the ◀ ▶ keys.
Sensoface is sad (see table of error messages and Sensoface in the
Appendix):
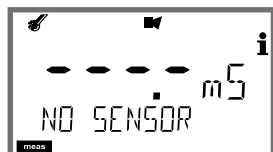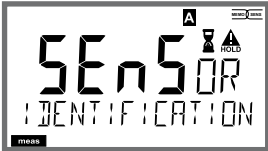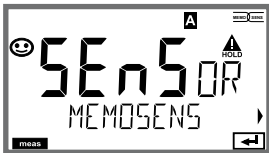
Connecting a Digital Sensor

Step	Action/Display	Remark
Connect sensor	NO SENSOR	Before a digital sensor is connected, the error message "No sensor" is displayed.
Wait until the sensor data are displayed.	SEnSOR IDENTIFICATION	The hourglass in the display blinks.
Check sensor data	SEnSOR MEMOSENS View sensor information using ◀ ▶ keys, press **enter** to confirm.	Display color changes to **green**. Sensoface is friendly when the sensor data are okay.
Go to measuring mode	Press **meas**, **info** or **enter**	After 60 sec the device automatically returns to measuring mode (time-out).
Possible error messages		
Sensor defective. Replace sensor	ERR 010 SENSOR	When this error message appears, the sensor cannot be used. Sensoface is sad.

Replacing a Sensor

A digital sensor should only be replaced during HOLD mode to prevent unintended reactions of the outputs or contacts. When you first want to calibrate the new sensor, it can also be replaced in calibration mode.

Step	Action/Display	Remark
Select HOLD mode	Press **menu** key to call the selection menu, select HOLD using the ◀ ▶ keys, press **enter** to confirm.	Now the device is in HOLD mode. The HOLD mode can also be activated externally via the HOLD input. During HOLD the output current is frozen at its last value or set to a fixed value.
Disconnect and remove old sensor		
Install and connect new sensor.		Temporary messages which are activated during the replacement are indicated but not output to the alarm contact and not entered in the logbook.
Wait until the sensor data are displayed.	SEnSOR IDENTIFICATION	

Step	Action/Display	Remark
Check sensor data	 **°SEnSoR** MEMOSENS View sensor infor-mation using ◄ ► keys, press **enter** to confirm.	You can view the sensor type, serial number, and last calibration date.
Check measured values		
Exit HOLD	Hit **meas** key: Return to selection menu. Hold **meas** key depressed: Device switches to measur-ing mode	The sensor replacement is entered in the extended logbook.

Calibration

Note:
- All calibration procedures must be performed by trained personnel. Incorrectly set parameters may go unnoticed, but change the measuring properties.

Calibration can be performed by:
- determining the cell constant with a known calibration solution
- input of cell constant (e.g., for ultrapure-water sensors)
- sampling (product calibration)
- temperature probe adjustment

The calibration data of a Memosens sensor is stored in the sensor. Therefore, it can be pre-calibrated externally
(e.g., using the Portavo 907/908 portable analyzer
or the "MemoSuite" software).

Selecting a Calibration Mode

Calibration adapts the device to the individual sensor characteristics. Access to calibration can be protected with a passcode (SERVICE menu).
First, you open the calibration menu and select the calibration mode:

CAL_SOL	Calibration with calibration solution
CAL_CELL	Calibration by entry of cell constant
P_CAL	Product calibration (calibration with sampling)
CAL_RTD	Temperature probe adjustment

Calibration with Calibration Solution

Input of temperature-corrected value of calibration solution with simultaneous display of cell constant

Display	Action	Remark
	Select Calibration. Press **enter** to proceed. Select CAL_SOL calibration method. Press **enter** to proceed.	
	Ready for calibration. Hourglass blinks.	Display (3 sec) Now the device is in HOLD mode.
	Immerse sensor in calibration solution. Enter the temperature-corrected value of the calibration solution using the arrow keys (see table). Press **enter** to confirm.	Lower line: Display of cell constant and temperature
	The determined cell constant is displayed. The "hourglass" icon is blinking. Press **enter** to proceed.	

Display	Action	Remark
☺ **12.65** mS MEAS REPE▸	Display of selected process variable (here: mS/cm). Now the device is in HOLD mode: Reinstall the sensor and check whether the measurement is OK. MEAS ends calibration, REPEAT permits repetition.	
☺ **12.65** mS --- GOOD BYE ---	With MEAS selected: End calibration by pressing **enter**.	Display of conductivity and temperature, Sensoface is active. After end of calibration, the outputs remain in HOLD mode for a short time. After display of GOOD BYE, the device automatically returns to measuring mode.

Note:

• Be sure to use known calibration solutions and the respective temperature-corrected conductivity values (see table on calibration solution).
• During the calibration procedure the temperature must be kept constant.

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Calibration by Entry of Cell Constant

You can directly enter the value for the cell constant of a sensor. This value must be known, e.g. determined beforehand in the laboratory. The selected process variable and the temperature are displayed.

Display	Action	Remark
	Select Calibration. Press **enter** to proceed. Select CAL_CELL calibration method. Press **enter** to proceed.	
	Ready for calibration. Hourglass blinks.	Display (3 sec) Now the device is in HOLD mode.
	Enter cell constant. Press **enter** to proceed.	The selected process variable and the temperature are displayed.
	The device shows the calculated cell constant (at 25 °C). Sensoface is active.	
	Use the arrow keys to select: • MEAS (end) • REPEAT Press **enter** to proceed.	End: HOLD is deactivated after a short time.

Calibration by sampling – for product calibration, the uncompensated conductivity (µS/cm, mS/cm, S/m) is used.
During product calibration the sensor remains in the process.
The measurement process is only interrupted briefly.

Procedure:

1) The sample is measured in the lab or directly on the site using a portable meter. To ensure an exact calibration, the sample temperature should correspond to the measured process temperature.
During sampling the device saves the currently measured value and then returns to measuring mode. Then, the "calibration" mode indicator blinks.

2) In the second step you enter the measured sample value in the device. From the difference between the stored measured value and entered sample value, the device calculates the new cell constant.

If the sample is invalid, you can take over the value stored during sampling. In that case the old calibration values are stored.
Afterwards, you can start a new product calibration.

Display	Action	Remark
☺ SELEᴄᴛ ◀DIAG CAL CON▶	Select Calibration. Press **enter** to proceed. Select P_CAL calibration method. Press **enter** to proceed.	
CAL PRODUCT STEP 1	Ready for calibration. Hourglass blinks.	Display (3 sec) Now the device is in HOLD mode.
12.88 mS STORE VALUE	Take sample and save value. Press **enter** to proceed.	Now the sample can be measured in the lab.

Product Calibration
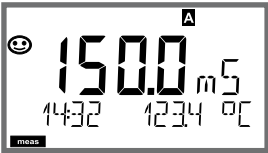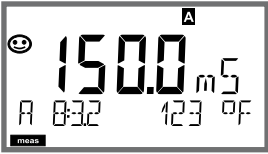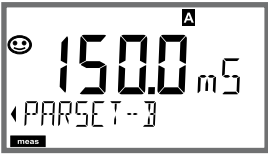
Display	Action	Remark
☺ **12.82** mS 1227 26.3°C meas cal	The device returns to measuring mode.	From the blinking CAL mode indicator you see that product calibration has not been terminated.
CAL HOLD PRODUCT STEP 2 cal	**Product calibration step 2:** When the sample value has been determined, open the product calibration once more	Display (3 sec) Now the device is in HOLD mode.
12.15 mS HOLD 2 LAB VALUE cal	The stored value is displayed (blinking) and can be overwritten with the lab value. Press **enter** to proceed.	
☺ **CELL** HOLD c 012345 1/cm cal	Display of new cell constant (based on 25°C). Sensoface is active. To end calibration: Select MEAS, then **enter**	To repeat calibration: Select REPEAT, then **enter**
☺ **12.65** mS/c HOLD --- GOOD BYE --- meas	After calibration is ended, the device will switch to measuring mode.	After end of calibration, the outputs remain in HOLD mode for a short time.

Temp Probe Adjustment

Display	Action	Remark
SELECT ◄DIAG CAL CON►	Select Calibration. Press **enter** to proceed. Select CAL_RTD calibration method. Press **enter** to proceed.	Wrong settings change the measurement properties!
CAL TEMP ADJUST	Measure the tempera- ture of the process medium using an external thermometer.	Display (3 sec) Now the device is in HOLD mode.
25.0 °C ADJUST 23.5°C►	Enter the measured temperature value. Maximum difference: 10 K. Press **enter** to proceed.	Display of actual temperature (un- compensated) in the lower display.
25.0 °C **i** MEAS	The corrected tempera- ture value is displayed. Sensoface is active. To end calibration: Select MEAS, then **enter** To repeat calibration: Select REPEAT, then **enter**	After end of calibra- tion, the outputs re- main in HOLD mode for a short time.
12.65 mS --- GOOD BYE ---	After calibration is ended, the device will switch to measuring mode.	

Measurement

Display	Remark
  ☺ **150.0** mS 14:32 1234 °C **meas** or AM/PM and °F: ☺ **150.0** mS A 8:32 123 °F **meas**	From the configuration or calibration menus, you can switch the device to measuring mode by pressing the **meas** key. In the measuring mode the upper display line shows the configured process variable (Cond or temperature), the lower display line shows the time and the second configured process variable (Cond or temperature). The [meas] mode indicator lights and the active parameter set (A/B) is indicated. A/B is not displayed with parameter set Fix A.
By pressing the **meas** key you can step through the following displays. When no key has been pressed for 60 sec, the device returns to the standard display.	
 ☺ **150.0** mS ‹PARSET-B **meas** ☺ **150.0** mS TAG: GQ123PH-C2 **meas**	1) Selecting the parameter set (if set to "manual" in the configuration). Select the desired parameter set using the ‹ › arrow keys (PARSET A or PARSET B blinks in the lower display line). Press **enter** to confirm. Further displays (each by pressing **meas**). 2) Display of measuring point ("TAG") 3) Display of time and date 4) Display of output current(s)
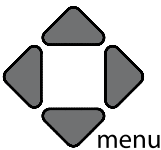
In the Diagnostics mode you can access the following menus without interrupting the measurement:

CALDATA   viewing the calibration data
SENSOR   viewing the sensor data
SELFTEST   starting a device self-test
LOGBOOK   viewing the logbook entries (if activated)
MONITOR   displaying currently measured values
VERSION   displaying device type, software version, serial number
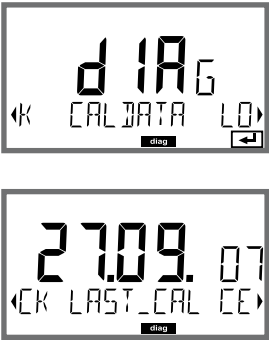
Access to diagnostics can be protected with a passcode
(SERVICE menu).

Please note:
HOLD is not active during Diagnostics mode!

Action	Key	Remark
Activate Diagnostics	menu	Press **menu** key to call the selection menu. (Display color changes to turquoise.) Select DIAG using ◀ ▶ keys, press **enter** to confirm.
Select diagnostics option		Use ◀ ▶ keys to select from: CALDATA SENSOR SELFTEST LOGBOOK MONITOR VERSION See next pages for further proceeding.
Exit	**meas**	Exit by pressing **meas**.

Diagnostics

Display	Menu item
	Displaying the calibration data Select CALDATA using ◀ ▶ , press **enter** to confirm. Use the ◀ ▶ keys to select the desired parameter from the bottom line of the display (LAST_CAL CELLFACTOR ZERO). The selected parameter is shown in the main display.
	Press **meas** to return to measurement.
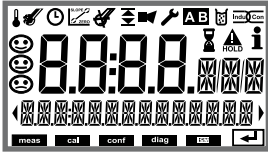
Display	Menu item
	Device self-test (To abort, you can press **meas**.) 1) **Display test**: Display of all segments with changing background colors white/green/red. Press **enter** to proceed.
	2) **RAM test:** Hourglass blinks, then display of --PASS-- or --FAIL-- Press **enter** to proceed.
	3) **EEPROM test:** Hourglass blinks, then display of --PASS-- or --FAIL-- Press **enter** to proceed.
	4) **FLASH test:** Hourglass blinks, then display of --PASS-- or --FAIL-- Press **enter** to proceed.

Diagnostics

Display	Menu item
d IAG ‹TA LOGBOOK diag ⏎	**Displaying the logbook entries** (if the option has been enabled) Select LOGBOOK using ‹ ›, press **enter** to confirm. With the ▲ ▼ keys, you can scroll backwards and forwards through the logbook (entries -00-...-99-), -00- being the last entry. If the display is set to date/time, you can search for a particular date using the ▲ ▼ keys. Press ‹ › to view the corresponding message text.
-00- LOG 14:09 30.09.2005› diag ⏎	
-00- LOG ‹ERR 01 RANGE C› diag ⏎	If the display is set to the message text, you can search for a particular message using the ▲ ▼ keys. Press ‹ › to display the date and time. Press **meas** to return to measurement.
☺**009** Ⓐ **CFR** 9:23 23.11.2007› diag	**Extended logbook / Audit Trail (via TAN)** With the ▲ ▼ keys, you can scroll backwards and forwards through the extended logbook (entries -000-...-99-), -000- being the last entry. **Display: CFR** Audit Trail also records function activations (CAL CONFIG SERVICE), some Sensoface messages, and opening of the enclosure.
d IAG ‹ MONITOR › diag ⏎ Display example: **25.03** ▲HOLD ‹ R_COND › ⏎	**Displaying the currently measured values** (**sensor monitor):** Select MONITOR using ‹ ›, press **enter** to confirm. Use the ‹ › keys to select the desired parameter from the bottom line of the display(R_COND G_COND RTD TEMP I-INPUT (Option) OPERATION TIME CIP SIP). The selected parameter is shown in the upper display line. Press **meas** to return to measurement.

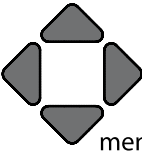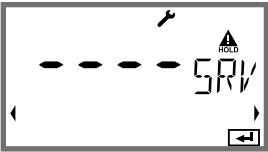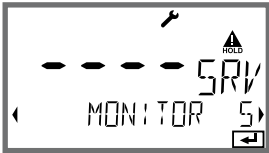| Display	Menu item
1.0.2 SW ‹SERIAL-No 0073› diag	**Version** Here, you find the data you require for requesting a device-specific option. Display of **device type, software/hardware version**, and **serial number** for all device components, and **bootloader version** (e.g., 1.0.6 BTL). Use the ▲ ▼ keys to switch between software and hardware version. Press **enter** to proceed to next device component.

Service

In the Service mode you can access the following menus:

MONITOR	Displaying currently measured values
OUT1	Testing current output 1
OUT2	Testing current output 2
	(only when equipped with 2nd current output)
CODES	Assigning and editing passcodes
DEFAULT	Resetting the device to factory settings
OPTION	Enabling options via TAN

Note:
HOLD is active during Service mode!

Action	Key/Display	Remark
Activate Service	menu	Press **menu** key to call the selection menu. Select SERVICE using ◀ ▶ keys, press **enter** to confirm.
Passcode	5555 PASSCODE SERV▶	Enter passcode "5555" for service mode using the ▲ ▼ ◀ ▶ keys. Press **enter** to confirm.
Display	– – – – SRV	In service mode the following icons are displayed: • [diag] mode indicator • HOLD triangle • Service (wrench)
Exit	**meas**	Exit by pressing **meas**.

Display	Menu item
![MONITOR SRV display]	**Displaying currently measured values (sensor monitor) with HOLD mode activated:** Select MONITOR using ◄ ►, press **enter** to confirm. Select variable in the bottom text line using ◄ ►. The selected parameter is shown in the upper display line. As the device is in HOLD mode, you can perform validations using simulators without influencing the signal outputs. Return to Service menu: Hold **meas** depressed for longer than 2 sec. Press **meas** once more to return to measurement.
![OUT 1 12.2 mA display]	**Specifying the current for outputs 1 and 2:** Select OUT1 or OUT2 using the ◄ ► keys, press **enter** to confirm. Enter a valid current value for the respective output using ▲ ▼ ◄ ► keys. Confirm by pressing **enter**. For checking purposes, the actual output current is shown in the bottom right corner of the display. Exit by pressing **enter** or **meas**. **OUT2:** Only when equipped with 2nd current output

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Service

Display	Menu item
⌀⌀⌀⌀ PWD DIAG HOL▸	**Assigning passcodes:** In the "SERVICE - CODES" menu you can assign pass-codes to DIAG, HOLD, CAL, CONF, and SERVICE modes (Service preset to 5555). **When you have lost the Service passcode**, you have to request an "Ambulance TAN" from the manufac-turer specifying the serial number of your device. To enter the "Ambulance TAN", call the Service func-tion and enter passcode 7321. After correct input of the ambulance TAN the device signals "PASS" for 4 sec and resets the Service passcode to 5555.
- - - NO FACTORY SETTIN▸	**Reset to factory settings:** In the "SERVICE - DEFAULT" menu you can reset the device to factory settings. **NOTICE!** After a reset to factory setting the device must be reconfigured completely, including the sensor parameters!
⌀⌀⌀⌀ TAN OPT: LOGBOOK	**Option request:** Communicate the serial number and hardware/ software version of your device to the manufacturer. These data can be viewed in the Diagnostics/Version menu. The "transaction number" (TAN) you will then receive is only valid for the device with the corresponding serial number. **Release of options:** Options come with a "transaction number" (TAN). This TAN must be entered and confirmed using **enter** to release the option.

According to the "USP" directive (U.S.Pharmacopeia), Section 645 "Water Conductivity" the conductivity of pharmaceutical waters can be monitored online. To do so, the conductivity is measured without temperature compensation and is compared with limit values (see table on next page).
The water is usable when the conductivity is below the USP limit. If the conductivity values are higher, further test steps must be performed according to the directive.

Configuring:
- **SNS** menu group:
  When "USP function" has been selected, the measuring range is fixed to 00.00.....99.99 µS/cm. Temperature compensation is switched off. Temperature is monitored.
  If the USP limit is exceeded, a 22 mA signal is output.

Temperature/Conductivity Table as per USP

Temp (°C)	Cond (µS/cm)	Temp (°C)	Cond (µS/cm)
0	0.6	55	2.1
5	0.8	60	2.2
10	0.9	65	2.4
15	1.0	70	2.5
20	1.1	75	2.7
25	1.3	80	2.7
30	1.4	85	2.7
35	1.5	90	2.7
40	1.7	95	2.9
45	1.8	100	3.1
50	1.9		

Operating States

Operating status	OUT 1	OUT 2	Time out
Measuring	active	active	-
DIAG	active	active	60 s
CAL_SOL Calibration solution	as configured	as configured	No
CAL_CELL Cell constant	as configured	as configured	No
P_CAL Product cal S1	active	active	No
P_CAL Product cal S2	as configured	as configured	No
CAL_RTD Temp adjustment	as configured	as configured	No
CONF ParSet A	as configured	as configured	20 min
CONF ParSet B	as configured	as configured	20 min
SERVICE MONITOR	as configured	as configured	20 min
SERVICE OUT 1	manual	as configured	20 min
SERVICE OUT 2	as configured	manual	20 min
SERVICE CODES	as configured	as configured	20 min
SERVICE DEFAULT	as configured	as configured	20 min
SERVICE OPTION	as configured	as configured	20 min
HOLD input	as configured	as configured	No

Explanation: ▮ as configured (Last/Fix or Last/Off)

▮ active ▨ manual

A2...X: Supply Units and Connection

Recommended Power Supply Units:	Order No.:
Repeater power supply, Ex, 90...253 V AC, output 4...20 mA	WG 21 A7
Repeater power supply, Ex, 90...253 V AC, HART, output 4...20 mA	WG 21 A7 Opt. 470
Repeater power supply, Ex, 24 V AC/DC, output 4...20 mA	WG 21 A7 Opt. 336
Repeater power supply, Ex, 24 V AC/DC, HART, output 4...20 mA	WG 21 A7 Opt. 336, 470
Repeater power supply, non-Ex, 24 V DC, output 4...20 mA	IsoAmp PWR B 10116
Repeater power supply, non-Ex, 24 V DC, HART, output 0/4...20 mA / 0...10 V	IsoAmp PWR A 20100

Connection to Supply Units

+ out 8

- out 1 9

- out 2 17

Stratos Pro
A 2...X

Hazardous-area requirements for cable:
Between the wires:
Solid insulation ≥ 0.5 mm
Test voltage ≥ 500 V

+ Supply unit 1
-

+ Supply unit 2
-
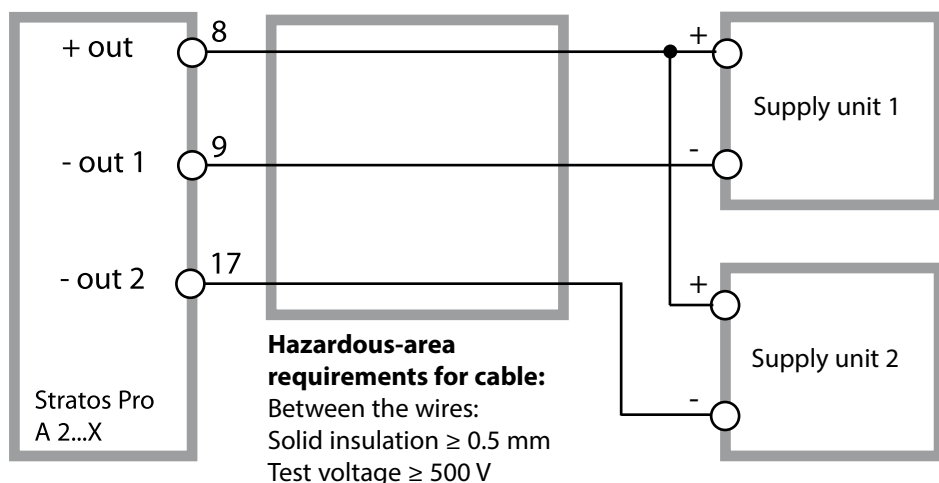
Product Line and Accessories

Order Code Stratos Pro A 2...

								TAN
Example	A 2	0	1	X	- MSCONDI	-	1	
2-wire / 4-20 mA	A 2							B,C,E

Communication

Without (HART retrofittable via TAN)	0		A

Version number

Version	1

Approvals

General Safety	N
ATEX / IECEx Zone 2	B
ATEX / IECEx / FM / CSA Zone 1 / Cl 1 Div 1	X

Measuring channel

			TAN
Memosens pH / Redox	digital	MSPH	G
Memosens Cond	digital	MSCOND	
Memosens CondI	digital	MSCONDI	
Memosens Oxy	digital	MSOXY	
Dual COND (2x2-electrode sensors, analog) N		CC	
pH / ORP value (ISM digital per TAN)	Measuring module	PH	F, G
Cond, 2-/4-electrode	Measuring module	COND	
Conductivity, electrodeless	Measuring module	CONDI	
Oxygen (ISM digital and traces per TAN)	Measuring module	OXY	D, F

Options

Without 2nd current output	0
With 2nd current output	1

TAN options

HART	SW-A001	(A)
Logbook	SW-A002	(B)
Extended logbook (Audit Trail)	SW-A003	(C)
Trace oxygen measurement	SW-A004	(D)
Current input + 2 digital inputs	SW-A005	(E)
ISM digital	SW-A006	(F)
Pfaudler	SW-A007	(G)

Mounting accessories

Pipe-mount kit	ZU 0274
Protective hood	ZU 0737
Panel-mount kit	ZU 0738

COND input	Input for Memosens sensors	
	0.2 µS · c … 1000 mS · c	
	(Conductance limited to 3500 mS)	

Measuring ranges	Conductivity	0.000 ... 9.999 µS/cm
		00.00 ... 99.99 µS/cm
		000.0 ... 999.9 µS/cm
		0000 ... 9999 µS/cm
		0.000 ... 9.999 mS/cm
		00.00 ... 99.99 mS/cm
		000.0 ... 999.9 mS/cm
		0.000 ... 9.999 S/cm
		00.00 ... 99.99 S/cm
	Resistivity	00.00 … 99.99 MΩ · cm
	Concentration	0.00 ... 9.99 %
	Temperature	−20.0 … +150.0 °C (−4.0 ... +302.0 °F)
	Salinity	0.0 ... 45.0 ‰ (0 ... 35 °C / +32 ... +95 °F)
	Response time (T90)	Approx. 1 s
Measurement error[1,2,3]	Depending on Memosens	

Temp compensation *	(OFF)	Without
	(LIN)	Linear characteristic 00.00 ... 19.99%/K (reference temp user-defined)
	(NLF)	Natural waters to EN 27888 (reference temp +25 °C / +77 °F)
	(NACL)	Ultrapure water with NaCl traces (0 ... +120 °C / +32 ... +248 °F), reference temp +25 °C / +77 °F
	(HCL)	Ultrapure water with HCl traces (0 ... +120 °C / +32 ... +248 °F), reference temp +25 °C / +77 °F
	(NH3)	Ultrapure water with NH3 traces (0 ... +120 °C / +32 ... +248 °F), reference temp +25 °C / +77 °F
	(NaOH)	Ultrapure water with NaOH traces (0 ... +120 °C / +32 ... +248 °F), reference temp +25 °C / +77 °F

Concentration determination	-01- NaCl	0 – 26 wt% (0 °C / +32 °F)	... 0 – 28 wt% (+100 °C / +212 °F)
	-02- HCl	0 – 18 wt% (−20 °C / -4 °F)	... 0 – 18 wt% (+50 °C / +122 °F)
	-03- NaOH	0 – 13 wt% (0 °C / +32 °F)	... 0 – 24 wt% (+100 °C / +212 °F)
	-04- H_2SO_4	0 – 26 wt% (-17 °C / +1.4 °F)	... 0 – 37 wt% (+110 °C / +230 °F)
	-05- HNO_3	0 – 30 wt% (-20 °C / -4 °F)	... 0 – 30 wt% (+50 °C / +122 °F)

Specifications

Concentration determination (continued)	-06- H_2SO_4	94 – 99 wt% (-17 °C / +1.4 °F)	... 89 – 99 wt% (+115 °C / +239 °F)
	-07- HCl	22 – 39 wt% (-20 °C / -4°F)	... 22 – 39 wt% (+50 °C / +122 °F)
	-08- HNO_3	35 – 96 wt% (-20 °C / -4 °F)	... 35 – 96 wt% (+50 °C / +122 °F)
	-09- H_2SO_4	28 – 88 wt% (-17 °C / +1.4 °F)	... 39 – 88 wt% (+115 °C / +239 °F)
	-10- NaOH	15 – 50 wt% (0 °C / +32 °F)	... 35 – 50 wt% (+100 °C / +212 °F)

Sensor standardization Input of cell constant with simultaneous display of selected process variable and temperature

Input of conductivity of calibration solution with simultaneous display of cell constant and temperature

Product calibration for conductivity

Temperature probe adjustment

Permitted cell constant 00.0050 ... 19.9999 cm^{-1}

Sensocheck Polarization detection

Delay Approx. 30 s

Sensoface Provides information on the sensor condition

Sensor monitor Direct display of measured values from sensor for validation (resistance/temperature)

USP function Water monitoring in the pharmaceutical industry (USP) with additional limit value (%)

Output via relay contact or HART

I input (TAN)	Current input 0/4 ... 20 mA / 50 Ω for external temperature signal
Start/end of scale	Configurable –50 ... +250 °C / –58 ... +482 °F
Characteristic	Linear
Measurement error [1,3]	< 1% current value + 0.1 mA
HOLD input	Galvanically separated (optocoupler)
Function	Switches device to HOLD mode
Switching voltage	0 ... 2 V AC/DC HOLD inactive
	10 ... 30 V AC/DC HOLD active
CONTROL input	Galvanically separated (optocoupler)
Function	Selecting parameter set A/B or flow measurement
Parameter set A/B	Control input 0 ... 2 V AC/DC Parameter set A
	10 ... 30 V AC/DC Parameter set B
FLOW	Pulse input for flow measurement 0 ... 100 pulses/s
Message	via 22 mA
Display	00.0 … 99.9 l/h
Output 1	Current loop, 4 ... 20 mA, floating, protected against inverse polarity HART communication (see further below for specifications)
Supply voltage	14 ... 30 V
Process variable *	Conductivity, resistivity, concentration, salinity, or temperature
Characteristic *	Linear, bilinear, or logarithmic
Overrange *	22 mA in the case of error messages
Output filter *	PT_1 filter, time constant 0 ... 120 s
Measurement error [1]	< 0.25 % current value + 0.025 mA
Start/end of scale *	Configurable within selected range
Bilinear: Vertex X/Y *	Configurable within selected range

Specifications

Output 2	Current loop, 4 ... 20 mA, floating, protected against inverse polarity
Supply voltage	14 ... 30 V
Process variable *	Conductivity, resistivity, concentration, salinity or temperature
Characteristic *	Linear, bilinear, or logarithmic
Overrange *	22 mA in the case of error messages
Output filter *	PT_1 filter, time constant 0 ... 120 s
Measurement error [1]	< 0.25 % of current value + 0.05 mA
Start/end of scale *	Configurable within selected range
Bilinear: Vertex X/Y *	Configurable within selected range
Real-time clock	Different time and date formats selectable
Power reserve	> 5 days
Display	LC display, 7-segment with icons
Main display	Character height approx. 22 mm, unit symbols approx. 14 mm
Secondary display	Character height approx. 10 mm
Text line	14 characters, 14 segments
Sensoface	3 status indicators (friendly, neutral, sad face)
Mode indicators	meas, cal, conf, diag
	Further icons for configuration and messages
Alarm indication	Display blinks, red backlighting
Keypad	Keys: meas, menu, info, 4 cursor keys, enter
HART communication	HART version 6 Digital communication by FSK modulation of output current 1
	Device identification, measured values, status and messages, parameter setting, calibration, records
FDA 21 CFR Part 11	Access control by editable passcodes
	Logbook entry and flag via HART in the case of configuration changes
	Message and logbook entry when enclosure is opened

Diagnostics functions

Calibration data	Calibration date, cell constant
Device self-test	Display test, automatic memory test (RAM, FLASH, EEPROM)
Logbook	100 events with date and time
Extended logbook (TAN)	Audit Trail: 200 events with date and time

Service functions

Sensor monitor	Display of direct sensor signals
Current source	Current specifiable for output 1 and 2 (04.00 ... 22.00 mA)
Passcodes	Assigning passcodes for menu access
Factory setting	Resetting all parameters to factory setting
TAN	Enabling optionally available additional functions

Data retention Parameters, calibration data, logbook > 10 years (EEPROM)

EMC EN 61326-1 (General Requirements)

Emitted interference	Class B (residential area)
Immunity to interference	Industry EN 61326-2-3

Nominal operating conditions

Ambient temperature	−20 ... +65 °C / -4 ... +149 °F
Transport/Storage temperature	−30 ... +70 °C / -22 ... +158 °F
Relative humidity	10 ... 95% not condensing
Supply voltage	14 ... 30 V

Specifications

Enclosure	Molded enclosure made of glass-reinforced PBT, PC
Mounting	Wall, pipe/post or panel mounting
Color	Gray, RAL 7001
Ingress protection	IP 67, NEMA 4X
Flammability	UL 94 V-0
Dimensions	148 mm x 148 mm
Control panel cutout	138 mm x 138 mm to DIN 43 700
Weight	Approx. 1200 g (1600 g incl. accessories and packaging)
Cable glands	3 knockouts for M20 x 1.5 cable glands
	2 knockouts for NPT ½" or rigid metallic conduit
Connections	Terminals, conductor cross-section max. 2.5 mm^2

*) User-defined   1) Acc. to EN 60746, at nominal operating conditions

2) ± 1 count   3) Plus sensor error

Calibration Solutions

Potassium Chloride Solutions
(Conductivity in mS/cm)

Temperature	Concentration [1]		
[°C]	0.01 mol/l	0.1 mol/l	1 mol/l
0	0.776	7.15	65.41
5	0.896	8.22	74.14
10	1.020	9.33	83.19
15	1.147	10.48	92.52
16	1.173	10.72	94.41
17	1.199	10.95	96.31
18	1.225	11.19	98.22
19	1.251	11.43	100.14
20	1.278	11.67	102.07
21	1.305	11.91	104.00
22	1.332	12.15	105.94
23	1.359	12.39	107.89
24	1.386	12.64	109.84
25	1.413	12.88	111.80
26	1.441	13.13	113.77
27	1.468	13.37	115.74
28	1.496	13.62	
29	1.524	13.87	
30	1.552	14.12	
31	1.581	14.37	
32	1.609	14.62	
33	1.638	14.88	
34	1.667	15.13	
35	1.696	15.39	
36		15.64	

1) Data source: K. H. Hellwege (Editor), H. Landolt, R. Börnstein: Zahlenwerte und Funktionen ..., volume 2, part. volume 6
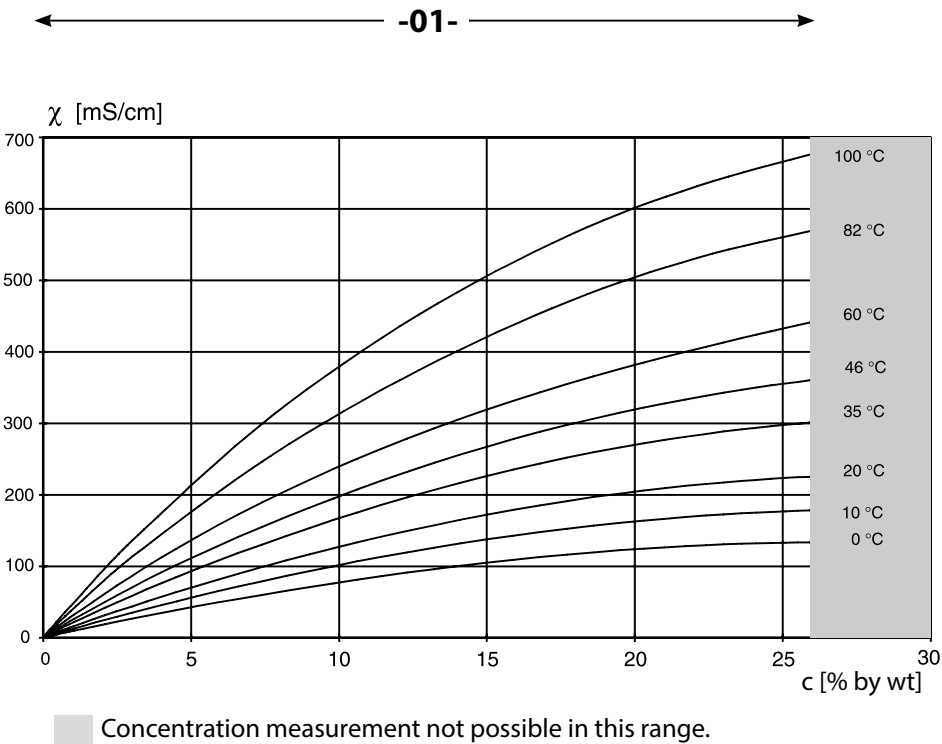
Calibration Solutions

Sodium Chloride Solutions
(Conductivity in mS/cm)

Temperature	Concentration		
[°C]	0.01 mol/l [1]	0,1 mol/l [1]	Saturated [2]
0	0.631	5.786	134.5
1	0.651	5.965	138.6
2	0.671	6.145	142.7
3	0.692	6.327	146.9
4	0.712	6.510	151.2
5	0.733	6.695	155.5
6	0.754	6.881	159.9
7	0.775	7.068	164.3
8	0.796	7.257	168.8
9	0.818	7.447	173.4
10	0.839	7.638	177.9
11	0.861	7.831	182.6
12	0.883	8.025	187.2
13	0.905	8.221	191.9
14	0.927	8.418	196.7
15	0.950	8.617	201.5
16	0.972	8.816	206.3
17	0.995	9.018	211.2
18	1.018	9.221	216.1
19	1.041	9.425	221.0
20	1.064	9.631	226.0
21	1.087	9.838	231.0
22	1.111	10.047	236.1
23	1.135	10.258	241.1
24	1.159	10.469	246.2
25	1.183	10.683	251.3
26	1.207	10.898	256.5
27	1.232	11.114	261.6
28	1.256	11.332	266.9
29	1.281	11.552	272.1
30	1.306	11.773	277.4
31	1.331	11.995	282.7
32	1.357	12.220	288.0
33	1.382	12.445	293.3
34	1.408	12.673	298.7
35	1.434	12.902	304.1
36	1.460	13.132	309.5

1) Data source: Test solutions calculated according to DIN IEC 746-3
2) Data source: K. H. Hellwege (Editor), H. Landolt, R. Börnstein: Zahlenwerte und Funktionen ..., volume 2, part. volume 6

Ranges

Substance	Concentration ranges		
NaCl	0-26 wt% (0 °C / +32 °F)		
	0-26 wt% (+100 °C / +212 °F)		
Configuration	**-01-**		
HCl	0-18 wt% (−20 °C / −4 °F)	22-39 wt% (−20 °C / −4 °F)	
	0-18 wt% (+50 °C / +122 °F)	22-39 wt% (+50 °C / +122 °F)	
Configuration	**-02-**	**-07-**	
NaOH	0-13 wt% (0 °C / +32 °F)	15-50 wt% (0 °C / +32 °F)	
	0-24 wt% (+100 °C / +212 °F)	35-50 wt% (+100 °C / +212 °F)	
Configuration	**-03-**	**-10-**	
H_2SO_4	0-26 wt% (-17 °C/-1.4 °F)	28-77 wt% (-17 °C/-1.4 °F)	94-99 wt% (-17 °C/-1.4 °F)
	0-37 wt% (+110 °C/+230 °F)	39-88 wt% (+115 °C/+239 °F)	89-99 wt% (+115 °C/+239 °F)
Configuration	**-04-**	**-09-**	**-06-**
HNO_3	0-30 wt% (−20 °C / −4 °F)	35-96 wt% (−20 °C / −4 °F)	
	0-30 wt% (+50 °C / +122 °F)	35-96 wt% (+50 °C / +122 °F)	
Configuration	**-05-**	**-08-**	

For the solutions listed above, the device can determine the substance concentration from the measured conductivity and temperature values in % by wt. The measurement error is made up of the sum of measurements errors during conductivity and temperature measurement and the accuracy of the concentration curves stored in the device. We recommend to calibrate the device together with the sensor, e.g. directly to concentration using the CAL_CELL method. For exact temperature measurement, you should perform a temperature probe adjustment. For measuring processes with rapid temperature changes, a separate temperature probe with fast response should be used.

When measuring processes such as dilution or intensification of CIP solutions (Clean-In-Place), it is helpful to switch between the parameter sets for measuring the process medium and for measuring the CIP solution.

Concentration Curves

-01- Sodium chloride solution NaCl

-01-

χ [mS/cm]

Conductivity curve chart showing conductivity (χ in mS/cm, 0 to 700) versus concentration (c in % by wt, 0 to 30), with curves labeled by temperature: 100 °C, 82 °C, 60 °C, 46 °C, 35 °C, 20 °C, 10 °C, 0 °C.

Concentration measurement not possible in this range.

Conductivity versus substance concentration and process temperature for sodium chloride solution (NaCl)

-02- Hydrochloric acid HCl
-07-

Concentration measurement not possible in this range.
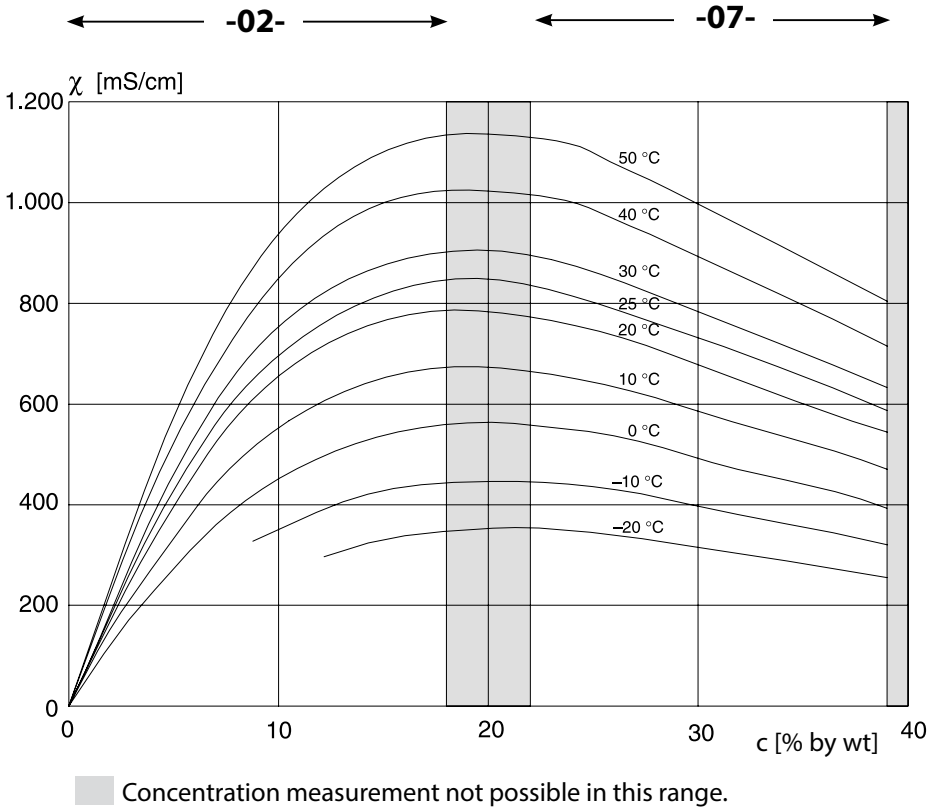
Conductivity versus substance concentration and process
temperature for hydrochloric acid (HCl)
Source: Haase/Sauermann/Dücker; Z. phys. Chem. New Edition, Vol. 47 (1965)

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Concentration Curves

-03- Sodium hydroxide solution NaOH
-10-

Concentration measurement not possible in this range.
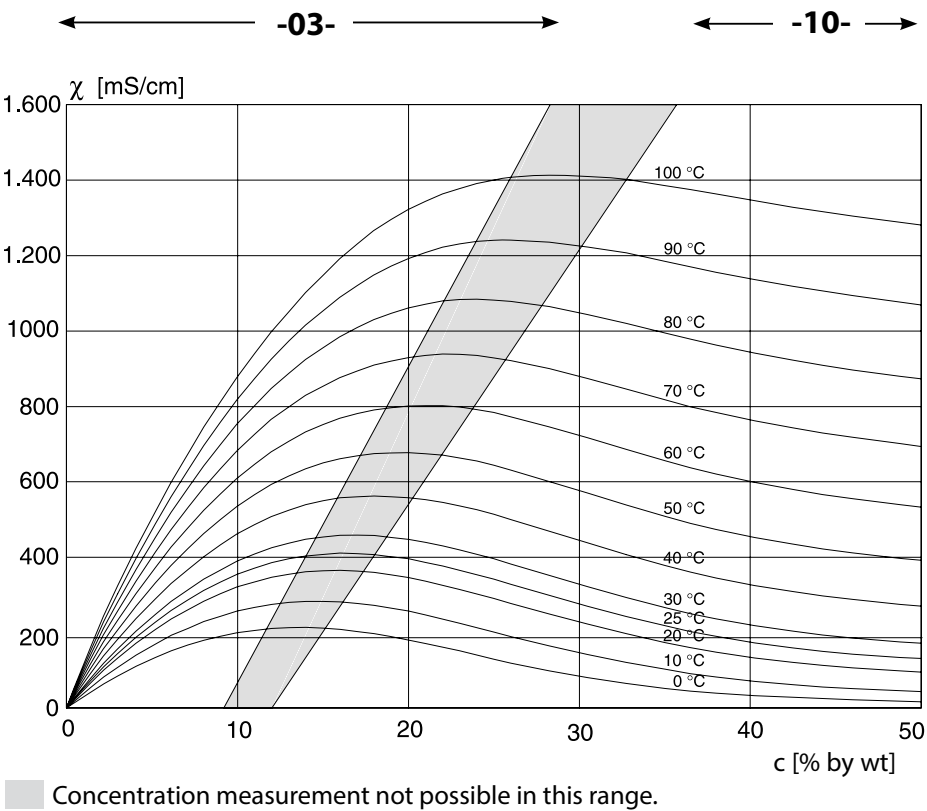
Conductivity versus substance concentration and process
temperature for sodium hydroxide solution (NaOH)

-04- Sulfuric acid H$_2$SO$_4$
-06-
-09-
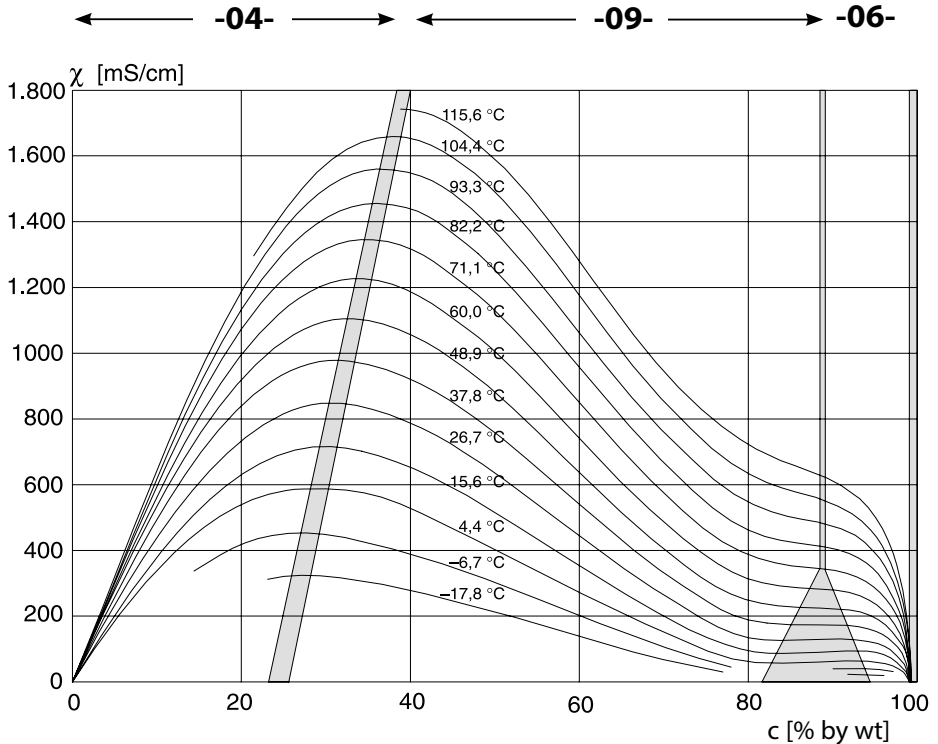
-04- →   ← -09- →   -06-

Concentration measurement not possible in this range.

Conductivity versus substance concentration and process
temperature for sulfuric acid (H$_2$SO$_4$)
Source: Darling; Journal of Chemical and Engineering Data; Vol.9 No.3, July 1964

-05- Nitric acid HNO$_3$
-08-

Concentration measurement not possible in this range.
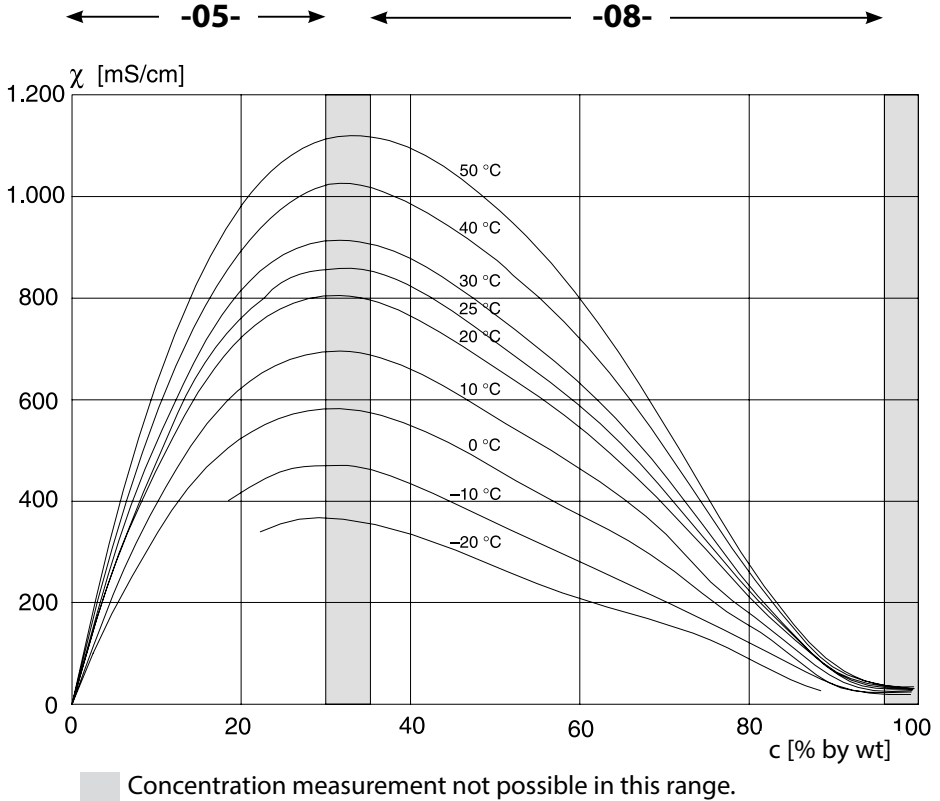
Conductivity versus substance concentration and process temperature for nitric acid (HN0$_3$)
Source: Haase/Sauermann/Dücker; Z. phys. Chem. New Edition, Vol. 47 (1965)

Error Handling

Alarm condition:
- The display backlighting turns **red**
- The alarm icon ◀ is displayed
- The complete measured-value display blinks
- "**ERR xxx**" is displayed in the lower menu line

Press the [**info**] key to view a short error text:
- The error text appears in the lower menu line
- The main display reads "**InFo**".

Parameter errors:
Configuration data such as current range, limit values, etc are checked during the input.
If they are out of range,
- "**ERR xxx**" is displayed for 3 sec,
- the display backlighting flashes red,
- the respective maximum or minimum value is shown,
- input must be repeated.

If a faulty parameter arrives through the interface (HART),
- an error message will be displayed: "**ERR 100...199**"
- the faulty parameter can be localized by pressing the [**info**] key

Calibration errors:
If errors occur during calibration,
- an error message will be displayed

Sensoface:
If the Sensoface becomes sad,
- the display backlighting will turn purple
- the cause can be seen by pressing the **info** key
- the calibration data can be seen in the Diagnostics menu

Error Messages

Error	Info text (is displayed in case of fault when the Info key is pressed)	Problem Possible causes
ERR 99	DEVICE FAILURE	**Error in factory settings** EEPROM or RAM defective This error message only occurs in the case of a total defect. The device must be repaired and recalibrated at the factory.
ERR 98	CONFIGURATION ERROR	**Error in configuration or calibration data** Memory error in device program Configuration or calibration data defective; completely reconfigure and recalibrate the device.
ERR 97	NO MODULE INSTALLED	"MEMOSENS" not selected as sensor type
ERR 96	WRONG MODULE	"MEMOSENS" not selected as sensor type
ERR 95	SYSTEM ERROR	**System error** Restart required. If error still persists, send in the device for repair.

Error Messages

Error	Info text (is displayed in case of fault when the Info key is pressed)	Problem Possible causes
ERR 10	CONDUCTANCE TOO HIGH	**Measuring range of conductance exceeded** > 3500 mS
ERR 11		**Display range violation**
	CONDUCTIVITY RANGE	Cond > 999.9 mS/cm > 99.99 S/m < 1 ohm $*$ cm
	CONCENTRATION RANGE	Conc > 99.9 %
	SALINITY RANGE	SAL > 45.0 ‰
ERR 13	TEMPERATURE RANGE	**Temperature range violation**
ERR 15	SENSOCHECK	**Sensocheck**
ERR 60	OUTPUT LOAD	**Load error**
ERR 61	OUTPUT 1 TOO LOW	**Output current 1** < 3.8 mA
ERR 62	OUTPUT 1 TOO HIGH	**Output current 1** > 20.5 mA
ERR 63	OUTPUT 2 TOO LOW	**Output current 2** < 3.8 mA
ERR 64	OUTPUT 2 TOO HIGH	**Output current 2** > 20.5 mA
ERR 72	FLOW TOO LOW	Flow too low
ERR 73	FLOW TOO HIGH	Flow too high
ERR 108	OUT1 INVALID CORNER X/Y	Bilinear characteristic: Invalid vertex point
ERR 109	OUT2 INVALID CORNER X/Y	

(Sensocheck must have been activated during configuration.)

The smiley in the display (Sensoface) alerts to sensor problems (defective sensor, sensor wear, defective cable, maintenance request). The permitted calibration ranges and the conditions for a friendly, neutral or sad Sensoface are summarized in the following table. Additional icons refer to the error cause.

Sensocheck

Continuously monitors the sensor polarization and the sensor cable capacitance. Critical values make the Sensoface "sad" and the corresponding icon blinks:

The Sensocheck message is also output as error message Err 15. The display backlighting turns red, output current 1 is set to 22 mA (when configured correspondingly).
Sensocheck can be switched off during configuration (then Sensoface is also disabled).
Exception:
After a calibration a smiley is always displayed for confirmation.

Note:
The worsening of a Sensoface criterion leads to the devaluation of the Sensoface indicator (Smiley becomes "sad"). An improvement of the Sensoface indicator can only take place after calibration or removal of the sensor defect.

Sensoface

Display	Problem	Status	
🖋	Sensor defect	☹	Wrong or defective sensor, significant polarization of sensor, or excessive cable capacitance (see also error message Err 15).
🌡	Temperature	☹	Temperature outside range for TC, conc, sal

Conformity with FDA 21 CFR Part 11

In their directive "Title 21 Code of Federal Regulations, 21 CFR Part 11, Electronic Records; Electronic Signatures" the American health agency FDA (Food and Drug Administration) regulates the production and processing of electronic documents for pharmaceutical development and production. This results in requirements for measuring devices used for corresponding applications. The following features ensure that the measuring devices of this Series meet the demands of FDA 21 CFR Part 11:

Electronic Signature – Passcodes

Access to the device functions is regulated and limited by individually adjustable codes – "Passcodes" (see SERVICE). This prevents unauthorized modification of device settings or manipulation of the measurement results. Appropriate use of these passcodes makes them suitable as electronic signature.

Audit Trail

Every (manual) change of device settings can be automatically documented. Each change is tagged with a "Configuration Change Flag", which can be interrogated and documented using HART communication. Altered device settings or parameters can also be retrieved and documented using HART communication.

Extended logbook

Audit Trail also records function activations (CAL, CONFIG, SERVICE), some Sensoface messages (cal timer, wear) and opening of the enclosure.

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Trademarks

The following names are registered trademarks. For practical reasons they are shown without trademark symbol in this manual.

Stratos®
Sensocheck®
Sensoface®
Memosens® is a registered trademark of Endress+Hauser Conducta GmbH and Knick Elektronische Messgeräte GmbH & Co. KG.
HART® is a registered trademark of the HART Communication Foundation.

Passcodes

In the SERVICE – CODES menu you can assign passcodes to protect the access to certain functions.

Mode of operation	Passcode
Service (SERVICE)	**5555**
Diagnostics (DIAG)	
HOLD mode	
Calibration (CAL)	
Configuration (CONF)	

Stratos Pro A2.. MSCOND: Memosens Cond Measurement

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