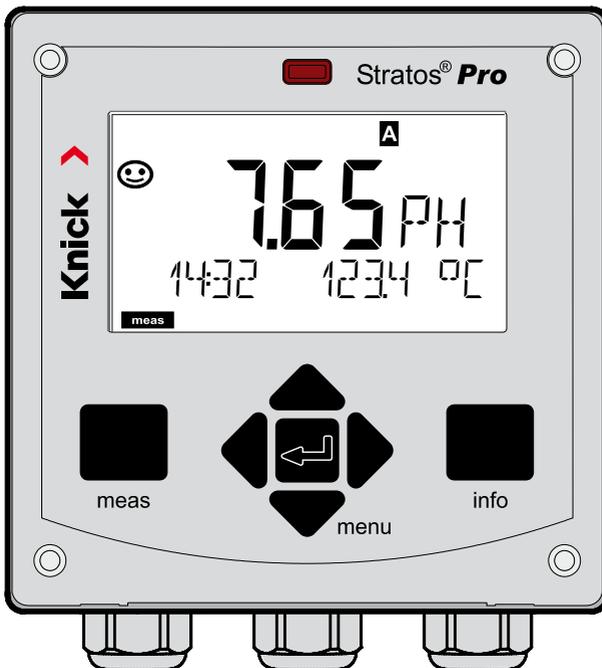


Software Versions
English

Stratos Pro A2.. PH pH Measurement



Software Version

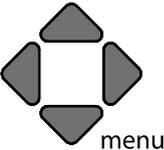
The software version of your device is shown in the Diagnostics mode under "VERSION":

CALDATA	Viewing the calibration data
SENSOR	Viewing the sensor data
SELFTEST	Starting a device self-test
LOGBOOK	Viewing the logbook entries
MONITOR	Displaying currently measured values
VERSION	Displaying device type, software version , serial number

Access to diagnostics can be protected with a passcode (SERVICE menu).

Note:

HOLD is not active during Diagnostics mode!

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



Version

Display of **device type**, **software/hardware version** and **serial number** for all device components.
Use the ▲ ▼ keys to switch between software and hardware version. Press enter to proceed to next device component.

Changes/supplements compared to 3.2.2

Optimization of Memosens monitoring:

Device limits are monitored and an error message is generated when a limit is exceeded. Measurement is still possible when the parameters saved in the Memosens are exceeded, e.g., during CIP/SIP.

Implementation of a new standard buffer set according to NIST DIN 19266:

-05- NIST standard 1.679/4.006/6.865/9.180 for a reference temperature of 25 °C / 77 °F

Reading out the bootloader version via HART; see HART CmdSpecs

All active error messages are output via HART command 48:

Command 48 - "Read Additional Device Status"

Limits for minimum current span were removed.

The selected current spans can be arbitrarily small.

IrDA port is disabled.

Adjustment, testing, and software update take place via the RS-485 Memosens interface.

Implementation of sensor verification using TAG and GROUP

The measuring point (TAG) and/or group of measuring points (GROUP) can be saved in the sensor. When a Memosens sensor is connected and TAG and/or GROUP have been activated (ON), it is checked if the sensor contains the correct TAG and/or GROUP. If the entries differ, a message will be generated. When Sensocheck has been activated in addition, Sensoface gets "sad", and the display backlighting turns purple.

When no TAG and/or GROUP is saved in the sensor, e.g., when using a new sensor, the TAG/GROUP specifications of the Stratos are used. When sensor verification is switched off, Stratos always enters its own measuring point and group.

A possibly existing TAG/GROUP will be overwritten.

Changes/supplements compared to 3.1.1

Filter for flow measurement revised

Filter for flow measurement operates on the basis of the raw value (pulses/s), filter parameters were adapted.

Setting the clock

Under certain circumstances the clock could not be set.

Hamilton recognized as manufacturer of Memosens sensors

Hamilton is recognized as manufacturer.

Version indication extended

Version of bootloader for platform and module is indicated.

Sensoface evaluation for Memosens

Sensoface for sensor wear will now be evaluated for Memosens.

Sensocheck for reference electrode will not be run for Memosens any more.

Changing the waiting time after wash function

The waiting time was increased from 20 to 30 seconds.

Flow monitoring

The unsteady measurement display in the case of low flow rates was stabilized by a filter.

Changes/supplements compared to 2.2.0

Model designation changed

The A211 model designation is replaced by A201 + TAN for HART.

Buffer set DIN 19267

DIN 19267 buffer set implemented under -10-:

-10- DIN 19267 1.09 / 4.65 / 6.79 / 9.23 / 12.75

No CIP/SIP entry when switched off

With CIP/SIP COUNT OFF, no CIP/SIP entry is made in the sensor.

New temperature detectors supported

NTC 8.55 k Ω (Mitsubishi) -10 ... +130 °C

Balco 3 k Ω -20 ... +130 °C

User-defined TC table 0 ... 95 °C

For optimum TC adaptation to his/her specific process medium, the user can enter a TC table between 0 ... 95 °C in steps of 5 K.

This allows applying any reference temperature within this range. The entries are made in CONF. The analyzer specifies the temperature in 5 K steps, the user then enters a percentage deviation from the measured value. Intermediate values are linearly interpolated. TC compensation can be defined separately for parameter sets A and B.

Change in the wear evaluation for Memosens glass sensors

Additional displays in the sensor monitor

For MEMOSENS glass sensors, the following two displays are added to the sensor monitor:

SENSOR WEAR [%] and LIFETIME [day] (representation as for InduCon)

Wear icon suppressed

When Sensocheck is switched off, the Sensoface icon for wear will be suppressed.

Memosens ORP sensors

Memosens ORP sensors are recognized and can be operated.

Flow measurement

For checking and evaluating the flow volume, a pulse-type flow meter can be connected to the CONTROL input. The “Conf CNTR_IN” menu is provided for switchover between PARSET and FLOW. With PARSET, the control input switches between parameter set A and B as usual, with FLOW, the pulses of the flow meter are counted to determine the flow in [l/h]. An adjustment is provided to adapt the analyzer to different flow meters [pulses/l].

The currently measured flow can be assigned to the secondary display.

Furthermore, it is available for the sensor monitor. Flow monitoring can be activated in the ALARM menu and the user can specify limit values for minimum and maximum flow. If the measured value lies outside this range, an alarm message and, if configured, an error signal [22 mA] will be generated:

ERR72 FLOW TOO LOW or ERR73 FLOW TOO HIGH, resp.

pH display during calibration

After start of calibration (Calimatic or manual buffer entry) the pH value is displayed in the left secondary display instead of the time. The pH value is calculated using the last zero point and the last slope. The user can see the deviation to the buffer value and whether the correct buffer is used.

Menu access with lower cursor key only

From the measuring mode, the menu can only be accessed using the cursor key labeled “menu”. Before, any cursor key could be used. This allows the other three cursor keys to be used in measuring mode, for example to indicate the complete TAG (see below).

INFO text

The INFO text in measuring mode is changed to: NO INFO

More display possibilities in measuring mode

With additional process variables in the analyzer (e.g., flow), additional measured values are to be indicated in the display, e.g., flow instead of time. To allow two measured values to be displayed in the lower secondary display, they are standardized to 7 digits each. As before, the [meas] key can be used in measuring mode to switch between different displays. As a new feature, any desired display can be defined as main display, which will automatically be shown after exiting a function (e.g., after calibration) and after a timeout (60 s) in measuring mode.

Procedure:

As before, [meas] can be used to select a display.

One display, the so-called “main display” is fixed, with white backlighting. All other displays are temporary, with turquoise backlighting. After 60 s the display switches back to “main display” (timeout).

A temporary display can be assigned as new main display by pressing the [enter] key and selecting “YES” to confirm. The backlighting will then switch from turquoise to white.

Displaying the two output currents

Up to now, the two output currents could be displayed briefly (approx. 3 s) by pressing [enter] in measuring mode. This direct access is omitted. Now, the output currents have been added to the regular display options. Their display is accessed using [meas]. This means that the output currents can also be selected as main display (see above).

Retrieving the complete tag number [TAG]

There were complaints that the measurement display could only show the first 10 digits of the up to 32-digit tag number.

Up to now, all 32 digits could be retrieved via HART only.

When the tag number is retrieved by pressing [meas], still only the first 10 digits will be displayed. When the TAG is longer than 10 digits, it is marked with an arrow on the margin and can be moved on the display using the [right/left] cursor keys.

Evaluation method for ISM sensors

Operating time, weighted operating time and remaining lifetime (DLI, Dynamic Lifetime Indicator) are retrieved directly from the sensor.

The sensors also provide a separate procedure for the adaptive calibration timer (ACT). Furthermore, an adaptive maintenance interval (TTM, Time To Maintenance) can be specified.

ACT (Adaptive Calibration Timer) (for ISM only)

In the CONFIG/SENSOR menu the adaptive calibration timer (ACT) can be switched off, an automatic interval can be loaded from the sensor TEDS, or an interval can be specified manually. When the calibration interval has expired, Sensoface gets “sad” and the following message can be displayed by pressing the [info] key: “OUT OF CAL TIME CALIBRATE SENSOR”.

Calibration resets the ACT to its initial value.

TTM (Time To Maintenance) (for ISM only)

In the CONFIG/SENSOR menu the adaptive maintenance timer (TTM) can be switched off, an automatic interval can be loaded from the sensor TEDS, or an interval can be specified manually. After expiration of the maintenance interval, Sensoface is getting "sad". The following message can be displayed by pressing the [info] key: "OUT OF MAINTENANCE CLEAN SENSOR".

In the Service menu under SENSOR/TTM the maintenance timer can be reset (interval to initial value). This menu is only displayed with the TTM activated. Default setting is "NO". To reset the TTM, "YES" must be selected and confirmed by pressing [enter].

Info text: RESET TTM IF CLEANING SENSOR

Autoclaving counter (for ISM only)

Up to now, the autoclaving counter could be displayed in the monitor but the analyzer did not provide an input option and monitoring was not possible.

In the CONFIG/SENSOR menu the autoclaving counter can be switched on/off and a limit value can be specified. When the counter has exceeded the adjusted limit, Sensoface will become sad. The following message can be displayed by pressing the [info] key: "AUTOCLAVE CYCLES OVERRUN".

When the autoclaving counter is switched on, it can be incremented in the Service menu under SENSOR after each autoclaving process.

Default setting is "NO". When "YES" is selected and confirmed by pressing [enter], the autoclaving counter will be increased. This is shown briefly in the display.

Info text: INCREMENT AUTOCLAVE CYCLE

Diagnostics

The following parameters are added to the "MONITOR" display in the Service menu: ACT (adaptive calibration timer), TTM (adaptive maintenance timer), DLI (Dynamic Life Time Indicator)

If the time exceeds 168 h (one week), the display automatically switches to days.

SIP counter also for Memosens

Now the SIP counter can also be activated and monitored for Memosens. When the counter threshold is exceeded, Sensoface will become sad.

Info text: SIP CYCLES OVERRUN

The counter status can be displayed in the sensor monitor (DIAG/MONITOR).

Current outputs OUT1/OUT2 triggered by Sensoface alerts

Now, both current outputs OUT1 and OUT2 can also be set to 22 mA by a Sensoface alert (sad Sensoface). This can be separately switched on/off in CONFIG for each current output. This allows, for example, that current output 1 is at 22 mA in the case of an error message and current output 2 in the case of a Sensoface alert.

This also allows signaling wear information such as DLI, ACT and TTM in the running process via the current outputs.

pH compensation for ultrapure water

For power plant applications, a pH compensation for ultrapure water has been implemented. In the CORRECTION/TC SELECT menu of the configuration the user can now also select "Pure Water".

Pfudler standard pH sensors supported (TAN)

For standard (analog) pH sensors with a zero point other than pH 7 or a slope deviating from the theoretical value (e.g., Pfudler sensors with conventional reference electrode or Pfudler differential probes), a nominal zero point and a nominal slope can be specified. Furthermore, an isothermal intersection point pH_{iso} can be entered. This function is activated via TAN, it is not automatically enabled.

Pfudler Memosens pH sensors supported (TAN)

To discriminate between Memosens glass sensors and Memosens Pfudler sensors, the sensor designation is used.

When a Memosens Pfudler sensor has been recognized, the nominal zero point is automatically set to pH 8.65 and the nominal slope to 59.2 mV/pH and the corresponding pH_{iso} value is retrieved from the sensor to allow proper operation of Sensoface. The NOM ZERO/NOM SLOPE/PH_ISO menus are omitted.

SENSOR WEAR is converted for Pfudler sensors.

Sensoface with PFAUDLER option

Info text: "SENSOR ZERO/SLOPE CALIBRATE OR CHANGE SENSOR"

For the PFAUDLER option, the zero and slope values are evaluated separately but generate only one message (compatibility to the other analyzers).

pH_{iso} and Viso taken into account for Memosens sensors

When a pH_{iso} value and/or a Viso value are saved in the Memosens sensor, they are taken into account for pH calculation and calibration.

Correction concerning the ORP delta value

$$mVORP = mV_{meas} - \Delta mV$$

Buffer set -02- renamed

The Knick “-00- KNI” buffer set has been removed.

The Merck/Riedel “-02- M/R” buffer set has been renamed to “-02- KNC” Knick CaliMat. (The new “Knick CaliMat” buffer set has practically the same nominal values as the Merck Titrisols in the “-02- M/R” buffer set.)

Some of the temperature values in the “-02- KNC” Knick CaliMat buffer set have been adapted.

Default setting is “-02- KNC”.

Changes/supplements compared to 2.1.2**New pH/pNa ISM sensor**

A new Mettler Toledo sensor (ISM-pH) with a sodium-sensitive glass electrode as reference electrode is supported. For calibrating this sensor, you must use buffer solutions with increased sodium content. The temperature dependence of these solutions differs slightly from that of standard solutions. The device automatically recognizes this sensor and correspondingly adjusts the device behavior.

- Sensocheck of reference electrode is disabled.
- Sensocheck of glass electrode is switched off for temperatures $< 10\text{ }^{\circ}\text{C}$ or $> 80\text{ }^{\circ}\text{C}$.
- The limits for the Sensoface zero point have been extended:
 $\pm 80\text{ mV}$ (neutral) $\pm 120\text{ mV}$ (sad).
- ORP calibration is disabled.
- Buffer sets -00- (Knick) and -01- (Mettler Toledo) are automatically selected (buffer values: pH 2.00/4.01/7.00/9.21)

Changes/supplements compared to 2.0.0**Memosens ISFET sensors**

The pHiso value is included in the calculation of the ISFET pH value.

Memosens: Sensocheck for glass electrodes

Memosens provides the "GLASS-SCS Failure" signal together with the impedance. Now only this signal will be evaluated for Sensocheck.

Memosens manufacturer and sensor designation

"KNICK" is displayed as manufacturer when the order code begins with "SE". If the order code begins with "CPS", "COS" or "CLS", "E+H" is entered and displayed as manufacturer. For all other order codes, "---" is entered as manufacturer.

CIP/SIP entry in the logbook

CIP/SIP cycles are entered in the logbook together with time, date and max. temperature.

Changes/supplements compared to 1.1.1**-U1- Specifiable Buffer Set**

With "Buffer set -U1-" selected in the configuration, the user is provided with a buffer set containing two buffer solutions whose pH/temperature values can be freely entered from 0 to 95 °C.

The values can be:

- a) entered in the configuration or
- b) loaded via HART

In the configuration the values are entered after "Buffer set -U1-" has been selected.

Prior to value entry, the user is prompted to confirm that the values are to be edited. This is to prevent that the user accesses this time-consuming entry menu by mistake.

As delivered, the 2 buffer solutions are preset with the values of the pH 4.01 / 7.00 Mettler-Toledo technical buffer solutions and can be edited.

Some criteria must be observed during the input. They are monitored by the Stratos Pro and cause the "FAILURE BUFFERSET -U1-" error message in the case of non-compliance.

Criteria:

- a) The values of buffer solution 1 must be lower than those of buffer solution 2.
- b) The difference between values for identical temperatures must be greater than 1.5 pH units.
- c) All values must lie in the range pH 0 ... 14 (plausibility check).
- d) The difference between the pH values for two adjacent temperature values ($\Delta 5$ K) of the same buffer solution must not exceed 0.25 pH unit (plausibility check).

The "FAILURE BUFFERSET -U1-" message is only generated when "Buffer set -U1-" has been selected. The verification is done in the measuring mode.

This allows checking for errors in the HART or IrDA inputs as well.

The error message has a low priority (parameter error).

Some conditions are determined by the Stratos Pro:

- a) The 25 °C value is always used for buffer display during calibration.
- b) Lower limit of first buffer solution =
Lowest buffer value – 1.5 pH units
- c) Upper limit of second buffer solution =
Highest buffer value + 1.5 pH units

Pressing the [meas] key returns to the OUT1 menu of the configuration level.

Holding the [meas] key depressed for 2 sec returns to measuring mode.

Display when time/date have not been set

If the clock has stopped after prolonged power outage (> 5 days) or has been set to an invalid value, this is signaled as follows:

- a) All occurrences of the time display are replaced by dashes.
- b) The time in the analyzer remains invalid until the user has set the clock.

Memosens function implemented

Select: Sensor type digital (INDUCON / ISM / MEMOSENS)

Default: Memosens

Memosens does not provide information on sensor wear or SIP/CIP counter. The corresponding evaluation is omitted.

Sensocheck reference electrode

When the value falls below the Sensocheck limits (short circuit), the monitor now displays 0 Ω . When the value exceeds the limits (open circuit), dashes are displayed.

Calibration

Now, the calibration values are only saved after the calibration has been finished (menu item: END, MEAS). The calibration timer is only reset after a successful calibration.

Models renamed

The A201 INDPH models are renamed to A201 MSPH.

Error message

In the case of invalid setting of the current input span (I-INPUT) now the "ERR 105: INVALID SPAN I-INPUT" error message will be generated.

Info icon for sad Sensoface

When Sensoface is "sad", now the **i** icon appears in the measurement display to indicate that an information text can be retrieved.

Hourglass when data is saved to the digital sensor

When data is saved to the (InduCon/ISM) sensor after a calibration, "STORING DATA" is displayed and, in addition, the hourglass blinks.

"WRONG SENSOR" display omitted

When a wrong sensor has been connected (e.g., oxygen sensor to pH analyzer) now "NO SENSOR" is displayed instead of "WRONG SENSOR".

Changes/supplements compared to 1.0.0**Changes for ISM sensors**

New evaluation method for remaining lifetime.

The remaining lifetime (DLI, dynamic lifetime indicator) is directly retrieved from the sensor in hours and displayed in the MONITOR [DAY]. Wear indication "SENSOR WEAR" is omitted. Sensoface monitors the DLI. With remaining lifetime (DLI) ≤ 0 DAY, Sensoface will become "sad", the "Sensor worn out" icon will be displayed and the "SENSOR WEAR CHANGE SENSOR" message be generated. The "neutral" Sensoface is omitted.

With ISM sensors, the adaptive calibration timer is called "ACT". It is directly managed in the sensor.

CONFIG display

In the "SENSOR" configuration menu only "DS" is displayed to identify a digital sensor (INDUCON, ISM, MEMOSENS).

Signaling that calibration data are written into the sensor

After calibration of a digital sensor the calibration and statistics data are written into the sensor. During this time (approx. 5-10 s) the sensor must not be disconnected.

With InduCon and ISM sensors, the lower display line shows "STORING DATA" during this time. At the same time the hourglass blinks. With InduCon, the red LED on the sensor blinks in addition.

**No "A" icon when only one parameter set is used
(PARSET FIX A)**

When PARSET FIX A has been selected in the configuration, i.e., only one parameter set is used, the "A" icon will not be displayed any more. Some users have misinterpreted the icon as alarm.

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Stratos Pro A2.. PH: pH Measurement

Overview of Software Versions as of 20161001