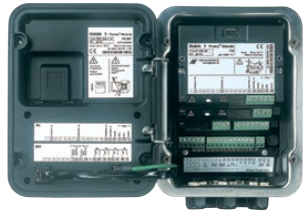
PROTOS 3400(X)
Software Versions



Latest Product Information:

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Version 1.0 June 28, 2002

=== Release of first edition ===

SZ34Z10000/0 Build 4817
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z10000/0
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	COND	3400-041	SW version:	1.0
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder
	SW 3400-101	Activation of SmartMedia card slot
	SW 3400-102	5 loadable parameter sets
	SW 3400-103	Measurement recorder
	SW 3400-104	Extended logbook
	SW 3400-106	Software update (fee required)
		(Bugfix included)

Known errors:
OXY: Faulty temperature probe adjustment (maint menu)
OXY: Reset possible after zero cal

Version 1.1 July 17, 2002

SZ34Z10000/1 Build 4879
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z10000/1
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	COND	3400-041	SW version:	1.0
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder
	SW 3400-101	Activation of SmartMedia card slot
	SW 3400-102	5 loadable parameter sets
	SW 3400-103	Measurement recorder
	SW 3400-104	Extended logbook
	SW 3400-106	Software update (fee required)
		(Bugfix included)

Changes compared to 1.0

1) Delta function had wrong (non-dependent) PARA_Type
2) Current source inputs limited to 0...22mA
3) Manual controller limited to -100...+100%
4) Every minute synchronization of clock -> tStamp
5) ORP cal now with cal temperature
6) USP contact inactive during function check
7) Pixel calculation for Reco and Kireo was faulty for high values
8) Zero/Slp message generated by :-|, now generated by :-(only
9) Several smiley criteria corrected
10) Tolerance band recorder: Graphics corrected
11) OXY: Temp probe adjustment
12) OXY: Reset possible after zero cal

Version 1.2 July 26, 2002

SZ34Z10000/2 Build 4934
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z10000/2
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	COND	3400-041	SW version:	1.0
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder
	SW 3400-101	Activation of SmartMedia card slot
	SW 3400-102	5 loadable parameter sets
	SW 3400-103	Measurement recorder
	SW 3400-104	Extended logbook
	SW 3400-106	Software update (fee required)
		(Bugfix included)

Changes compared to 1.1

1) Current characteristic: Function: Error in calculation and error monitoring for function and table
2) Rinse contact: N/O N/C setting was without effect

Version 1.3 Sept. 9, 2002

SZ34Z10000/3 Build 5397
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z10000/3
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	COND	3400-041	SW version:	1.0
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder
	SW 3400-101	Activation of SmartMedia card slot
	SW 3400-102	5 loadable parameter sets
	SW 3400-103	Measurement recorder
	SW 3400-104	Extended logbook
	SW 3400-106	Software update (fee required)
		(Bugfix with SW-Repair-Card included)

Changes compared to 1.2

1) OXY: mg/l and ppm spans corrected (Bug Fix)
   -> min. span 20µg/l or 20 ppb or 10 % full scale
2) PH, COND, CONDI: Man. temp in secondary displays
3) Initialization of limit values from 7.00 -> 0.00 (applies to BASE, OUT, PID)
4) PH: Signal processing for rH: Delta is calculated differently
5) PH: mV without delta function, (pH) mV only in secondary displays and sensor monitor
6) PH: Sample value of product calibration entered in CAL record

7) Spans corrected (see also point 1)

rH	10.00 -> 1.00
SAL	10.00 -> 1.00
nA	20.0 -> 1.000
mg/l	20.0 -> 0020 µg/l
ppm	20.0 -> 0020 ppb

8) COND: Initialization after sensor replacement
Cell constant <= nom. cell constant
9) CONDI: NTC 100 – limits were not monitored
10) CONDI: Cond display during product calibration now with/without TC
11) CONDI: Zero error message were incorrect
12) New logbook entries:

231	"Module configuration changed"
227	"Power supply Off" (not for software update)
226	"Power supply On" (Off > 20s)
228	"Device reset" (Off <= 20s)

13) CONDI: Temperature limits for manual calibration were incorrect
14) CONDI: There was no happy smiley :-)
15) Device description: More space for text (text length extended)
16) CONDI: Cal data entry range extended
17) New icon for BASE module in device description
18) SW Repair Card: User cannot overwrite manufacturer releases any more. When firmware is saved, only empty slots and slots with user-stored releases can be overwritten.

Version 2 Oct. 16, 2002

SZ34Z20000/0 Build 6383
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z20000/0
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	COND	3400-041	SW version:	1.0
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder

Changes compared to 1.3

1) SmartMedia options 101...104, 106, all available
2) Writing/reading SmartMedia card according to SSFDC spec
3) Device description with indication of options
4) Clear distinction between SW Repair Card and Update Card
5) Level indication of SmartMedia card in FRONT module diagnostics
6) Expanded representation of SmartMedia activities:
   Write process indicated by a blinking dot in the icon.
   Card gray with black X when Write inactive (closed)
7) COND: TC input without sign
8) COND: Factory setting/initialization corrected
   (SE 604 was set with wrong cell constant and wrong nom. cell constant
   Remedy was: Select sensor once more)
9) COND: TC was partially included in calculations for calibration
10) maint: New menu: Open/close memory card
11) Status problems with clock in main display eliminated
    (only occurred with "1 main display" selected)

Version 2.1 Oct. 22, 2002

SZ34Z20000/1 Build
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z20000/1
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	COND	3400-041	SW version:	1.0
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder

Changes compared to 2.0

1) COND: TC ultrapure water (SW 3400-108) calculation corrected

Version 2.2

SZ34Z20000/2 Build 6706
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z20000/2
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	COND	3400-041	SW version:	1.0
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder

Changes compared to 2.1

1) COND: Friendly Smiley :-) now also appears with Sensocheck switched on
2) COND: Conductivity during product calibration is now displayed correctly for “with TC correction” mode.
3) Conf: Initialization of Cal record corrected for manual calibration.
4) COND: Problems with “User-defined conc table“ and negative slope in the cond values eliminated. The conductivity comparisons lead the pointer in the wrong direction so that the “Conc range” message appears and the measured value is wrong. -> remedied.
5) Introduction of natural limits for Sensocheck glass electrode:
   10 Mohms ... 1000 Mohms With Sensocheck switched on, these limits are checked first and an error message is released in the case of violation.
6) If the glass impedance is out of range during a calibration, the respective limit value is entered as default in the cal record. This value is then used for Sensocheck calculation.

7) COND: Manual calibration menu: The conductivity value prepared for editing is already selected.
8) Text of Sensocheck 'Polarization' message extended: 'Polarization/Cable'

Version 3 Jan. 27, 2003

SZ34Z30000/0 Build 7138
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z30000/0
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	PH	3400-032	SW version:	1.3
	COND	3400-041	SW version:	1.0
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OXY	3400-062	SW version:	1.0
	OXY	3400-063	SW version:	1.0
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder

Changes compared to 2.2

1) Without module, it could occur that the main display and the menu lines "derail".
2) New PH 3400-032 module
3) New OXY modules: 3400-062/3400-063
4) New additional function SW 3400-010
   "pH sensor monitoring adjustable"
5) Sensoface neutral: Mouth straight
6) Weekday available (preparation for Unical).
   Display only in "System control | Time/date"
7) OXY: Partial pressure messages could not be switched off.

List of new variables:

- Various new storage positions for pH sensor monitoring

Initialization steps required for SW update to 3.0 when a pH module has already been used:

1) Configure pH modules
2) In the 'Sensor data' menu set 'Sensor type' to 'Other' and then back to 'Standard' to initialize all module limit settings.
3) With option SW3400-010: 'Monitoring' = 'Default'
4) Set message in all submenus
5) Perform calibration to create nominal values for reference and glass impedances

Version 3.1 Feb. 17, 2003

SZ34Z30000/1 Build 7403
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z30000/1
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	PH	3400-032	SW version:	1.3
	COND	3400-041	SW version:	1.0
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OXY	3400-062	SW version:	1.0
	OXY	3400-063	SW version:	1.0
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder

Changes compared to 3.0

1) NTC 8.55 kohm supported by PH 3400-032 module, selectable in the menu

Version 3.2 March 14, 2003

SZ34Z30000/2 Build 7730
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z30000/2
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	PH	3400-032	SW version:	1.3
	COND	3400-041	SW version:	1.0
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OXY	3400-062	SW version:	1.0
	OXY	3400-063	SW version:	1.0
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder

Changes compared to 3.1

1) Module PH 3400-032: ISFET zero adjustment implemented
2) Calcheck: Default setting to 3.2 pH (previously 2.0)
3) Sensocheck ref el: Upper limit > 100 kohms
4) Sensocheck ref el: Unsteadiness at 0 ohm (jumper) eliminated
5) Temperature range NTC 8.55 kohm: -10 ... +130 °C
6) Parameters of sensor monitoring are not included in parameter set switching
7) OXY: Polarization voltage entered without sign
8) Save/load parameter set harmonized (both procedure now depend on the setting in the “Parameter sets“ menu line)

Version 3.3 April 28, 2003

SZ34Z30000/3 Build
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z30000/3
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	PH	3400-032	SW version:	1.3
	COND	3400-041	SW version:	1.1
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OXY	3400-062	SW version:	1.0
	OXY	3400-063	SW version:	1.0
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder

Changes compared to 3.2

1) OXY 3400-061, 3400-62 modules: Sensoface criteria for zero point of OXY standard sensor increased (now correspond to criteria of trace sensor)
2) PID 3400-121 module: D-action always calculated with new measured value (calculation interval for D-action increased to approx. 4 sec). D-action in neutral zone = zero, equation corrected
3) PID 3400-121 module: Delay for K10 did not function (bugfix)

Version 3.4 May 8, 2003

SZ34Z30000/4 Build 8855
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z30000/4
	BASE	3400-021	SW version:	0.6
	PH	3400-031	SW version:	1.2
	PH	3400-032	SW version:	1.3
	COND	3400-041	SW version:	1.1
	CONDI	3400-051	SW version:	1.5
	OXY	3400-061	SW version:	1.4
	OXY	3400-062	SW version:	1.0
	OXY	3400-063	SW version:	1.0
	OUT	3400-071	SW version:	0.9
	PID	3400-121	SW version:	0.9

Constraints: (Functions not available)

	SW 3400-001	KI recorder

Changes compared to 3.3

1) Suppression of current peaks of BASE, PID and OUT modules

Version 4 Dec. 12, 2003

SZ34Z40000/0 Build 10401
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z40000/0
	FRONT	3400-015	SW version:	SZ34Z40000/0
	BASE	3400-021	SW version:	1.1
	BASE	3400-025	SW version:	1.1
	BASE	3400-026	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400-032	SW version:	2.0
	PH	3400-033	SW version:	2.0
	COND	3400-041	SW version:	2.0
	CONDI	3400-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (stopped)
	OXY	3400-062	SW version:	2.1
	OXY	3400-063	SW version:	2.1
	OUT	3400-071	SW version:	1.1
	PID	3400-121	SW version:	1.1
	COMPA	3400-081	SW version:	1.0

Constraints: (Functions not available)

	SW 3400-001	KI recorder (limited function)

Changes compared to 3.4

1) Expansion for Ex components
2) Additional function SW 3400-107 “Audit Trail”
3) PH 3400-033 module implemented
4) KI recorder
5) COND: Ni100
6) COND: “Gew %“ symbol corrected to “%“
7) CONDI: Sensor coding for SE654 changed from 70120 to 60120
8) OXY: Fixed ranges for ppm, ppb, mg/l, µg/l
9) OXY: Measurement in gases

10) OXY: Warning and failure limits changed to 9.9 mg/l
11) PH: Lin. TC equation as described in specifications and manual
12) pH value calculation by means of dual cond measurement
13) Differential evaluation without sign (additional)
14) ServiceScope writes on SmartMedia card
15) OK inputs invertible
16) Temperature in °F
17) COMPA 3400(X)-081 module implemented
18) Current output 22mA message redefined
19) SMC slot always enabled
20) Sensor monitor: Additional indication of RTD

Version 4.1 July 29, 2004

SZ34Z40000/1 Build 11999
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z40000/1
	FRONT	3400-015	SW version:	SZ34Z40000/1
	BASE	3400-021	SW version:	1.1
	BASE	3400-025	SW version:	1.1
	BASE	3400-026	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400-032	SW version:	2.0
	PH	3400-033	SW version:	2.0
	COND	3400-041	SW version:	2.0
	CONDI	3400-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (stopped)
	OXY	3400-062	SW version:	2.1
	OXY	3400-063	SW version:	2.1
	OUT	3400-071	SW version:	1.1
	PID	3400-121	SW version:	1.1
	COMPA	3400-081	SW version:	1.0

Constraints: (Functions not available)

	SW 3400-001	KI recorder (limited function)

Version 5.0 Nov. 5, 2004

SZ34Z50000/0 Build 11915
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z50000/0
	FRONT	3400X-015	SW version:	SZ34Z50000/0
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (stopped)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.2
	PHU	3400(X)-110	SW version:	1.0
	UNICAL	9000	SW version:	1.0

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-003	Adaptive cal timer (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-010	pH sensor monitoring adjustable	3.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes/supplements compared to 4.x

1) SW 3400-101: KI recorder for batch process, messages must be acknowledged
2) UNICAL: Control of PHU 3400(X)-110
3) UNICAL functionality implemented
4) UNICAL commissioning program (automatically fill pumps)
5) UNICAL: ORP check
6) UNICAL: Inversion (setting) of DCS inputs/outputs
7) UNICAL/COMPA 3400(X)-081 data exchange: Status/control byte
8) OXY: Additional function SW 3400-011 “DO measurement in beer“
9) OXY: TC input for OXYGOLD (add. new module software)
10) PH: Extended pH calibration record (in conjunction with SW 3400-107, FDA)
11) PH: Suppression of Sensocheck for glass in the case of large temperature changes (0.5 K/s)
12) PH (all modules): Temperature range for Pt100/1000 extended to -50°C
13) PH: Output of mV (pH) to current, contacts, ...
14) Current messages generate "maintenance request" instead of "failure"
15) Special functions can be disabled without TAN
16) “NIST Standard” buffer table changed (DIN 19266: 2000-01)
17) °F possible for all outputs

SZ34Z50000/1 Build 11975
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z50000/1
	FRONT	3400X-015	SW version:	SZ34Z50000/1
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (stopped)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.2
	PHU	3400(X)-110	SW version:	1.0
	UNICAL	9000	SW version:	1.0

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-003	Adaptive cal timer (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-010	pH sensor monitoring adjustable	3.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes compared to 5.0

1) Unical: "Program running" bit does not automatically set function check: Function check only if a SERVICE bit 1...5 is set or when the probe is not in MEASURE position
2) Unical manual control: Message list via softkey 2
3) "Fail Concentration range" message can now be disabled: Messages = Off
4) When a Unical program is started, all media monitoring messages are erased. Up to now, an active message would have prevented a new calibration with media monitoring.
5) New nominal slope for ISFET: 54 mV/pH, min/max limits: 0.9 ... 1.1 * nomslope

Version 5.2 July 22, 2004 AE--2464

SZ34Z50000/2 Build 11987
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z50000/2
	FRONT	3400X-015	SW version:	SZ34Z50000/2
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (stopped)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.4
	PHU	3400(X)-110	SW version:	1.0
	UNICAL	9000	SW version:	1.1

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-003	Adaptive cal timer (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-010	pH sensor monitoring adjustable	3.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Version 5.3 Nov. 15, 2004

SZ34Z50000/3 Build
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z50000/3
	FRONT	3400X-015	SW version:	SZ34Z50000/3
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (stopped)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.4
	PHU	3400(X)-110	SW version:	1.1
	UNICAL	9000	SW version:	2.0

	Additional function	Required SW version:
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-003	Adaptive cal timer (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-010	pH sensor monitoring adjustable	3.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes compared to 5.2

1) FRONT: corrected: When parameter set B selected, “save to B“ is locked.
2) UNICAL: When calibration was activated by UNICAL, it could occur that temperature was not switched over yet (different time slice).
   Short delay time was introduced.
3) PH: ISFET slope range nom slope: 59.2 mV/pH
   Min: 0.7 * nom slope, max 1.03 * nom slope (41.4 ... 60.9 mV/pH).
4) PH: Nom. zero/slope removed from switchable parameter set.
5) PH: corrected: PH 3400-033 modules - Now the limit values suitable for the nominal zero are loaded during initialization.
6) UNICAL: corrected: When a new “Media monitoring“ program step is inserted, this step is now initialized to“Off“.

7) UNICAL: Dismount guard activated.
8) UNICAL: corrected: First Calibration did not function.
9) UNICAL error texts changed:

“Warn UNICAL Probe sluggish“	->	"Warn UNICAL Probe control"
"Fail UNICAL Probe jammed"	->	"Fail UNICAL Probe Limit position"
"Fail UNICAL No compressed air"	->	"Fail UNICAL Compressed air"
"Fail UNICAL No water"	->	"Fail UNICAL Water"
"Warn UNICAL Buffer empty"	->	"Warn UNICAL Buffer almost empty"
"Warn UNICAL Cleaner empty"	->	"Warn UNICAL Cleaner almost empty"
“Warn UNICAL Probe cylinder untight“	->	"Warn UNICAL Air pressure drop"

10) UNICAL: “GOTO“ program step text corrected.
11) UNICAL: Calibration mode selectable for UNICAL:
    Calimatic or buffer entry.
    Buffer entry: Buffer selected from specified buffer set during respective UNICAL calibration step.
12) UNICAL: Behavior of status LEDs (yellow/red) at SERVICE switch changed: Red LED also in the case of undefined safety status.
13) UNICAL: When the SERVICE switch is switched off, now the yellow and red LEDs go out immediately, the probe reaction is still retarded (approx. 2 sec).
14) UNICAL: Now, continuous cavity rinsing is interrupted at program start (water off).
15) UNICAL: Changed switch-on behavior.
16) UNICAL: “Maint request No water valve“ message when pilot valve for water is not detected.
17) UNICAL: “Maint request No aux. valve“ message when pilot valve is not detected.
18) UNICAL: Manual control: Cursor not cyclic any more.
19) UNICAL: The valves are not closed automatically after program start / end for pressurization during measurement. A service request first closes all valves until they are activated correspondingly by the SERVICE program.
20) UNICAL: Function check is active as soon as the probe moves out of the process until the probe re-enters the process. To take account of the sensor response, a waiting time can be entered in the “Probe in MEASURE“ step. Function check is ended after expiry of this delay time.

21) UNICAL: USER 3 program is preset to start-up program.
22) PHU: corrected: “Factory setting“ triggered a reset, but the settings were not made.
23) PHU: Error in time control corrected.

Version 5.41 Oct. 1, 2005

SZ34Z50000/4.1 Build 15014
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z50000/4
	FRONT	3400X-015	SW version:	SZ34Z50000/4
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (stopped)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.4
	PHU	3400(X)-110	SW version:	1.1
	UNICAL	9000	SW version:	2.0

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-003	Adaptive cal timer (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-010	pH sensor monitoring adjustable	3.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Version 6.0 Aug. 15, 2005

Not delivered

SZ34Z60000/0 Build 14895
Bootloader 0.6

Modules supported (Knick + MT):

	FRONT	3400-011	SW version:	SZ34Z60000/0
	FRONT	3400X-015	SW version:	SZ34Z60000/0
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (stopped)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.7
	PHU	3400(X)-110	SW version:	1.2
	PH	3400(X)-035	SW version:	1.0
	OXY	3400(X)-065	SW version:	1.0
	OXY	3400(X)-066	SW version:	1.0
	CO_2	3400(X)-130	SW version:	1.0
	UNICAL	9000(X)	SW version:	2.1

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes/supplements compared to 5.41

1) Control of new module: PH 3400(X)-035
2) Control of new modules: OXY 3400(X)-065/066
3) Control of new module: CO_2 3400(X)-130
4) UNICAL: Wait position during program when started via DCS inputs
   Bin 1 ... 3
   Probe feedback signals broken down
   DCS output definable: Measuring/Alarm
5) Unical 9000: Adaptions
6) PH: Implementation of Hamilton buffer set: pH 2.00/4.01/7.00/10.01/12.00
7) Point of meas description directly through Favorites menu
8) Display of off-limit conditions
9) COMPA: OXY: Transmission of sensor current (AI)
   transmission and synchronization of tag number (point of measurement)
10) Tolerance band adjustment: When calibration data within tolerance then no adjust/calibrate prompt -> autom. calibration
11) COND/COND: Input of factor for alkalizing agent ammonia, for example
12) Adaptive calibration timer as standard, SW 3400-003 omitted
    Sensor wear taken into account for ISM

Point 5: Unical 9000:

New "Parking" program (previously User 1, started via Bin 3):

Probe in SERVICE	
Cleaning agent	0020 s
Water on	0060 s
Water off	0002 s
Purge air on	0010 s
Purge air off	0002 s
Buffer 7.00	0002 s
Wait position	
Water on	0010 s
Water off	0002 s
Probe in MEASURE	0005 s
Program end	

The "Waiting time" in the program shall be generally omitted (makes no sense any more). General presetting in all programs: 20 sec for cleaning agent, water 60 sec after retraction or after cleaning, and 10 sec before insertion.

Sensor dismount guard via temperature probe:

This is to prevent that a program is started from the DCS when the sensor has been removed and media can escape from the calibration chamber. When the temperature probe is interrupted (sensor removed), program start is not possible. This monitoring can be activated in the Installation menu:

Sensor detection On Off

Point 10: Display of off-limit conditions

Display: Two more "Limit exceeded" arrows on the display position for failure + maintenance request.

Collective representation for all active limit values

Priority: A: Failure B: Maintenance request C: Limit values

Point 4: UNICAL programs with wait position

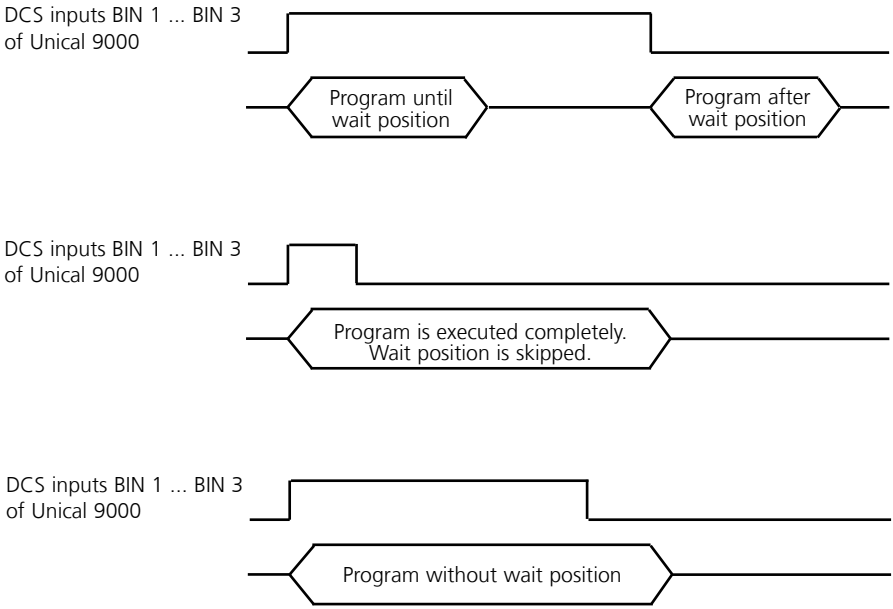
In many cases UNICAL is used for batch applications.

The sensor should be stored in liquid between the batches (KCl or buffer solution). Before start of a new batch, a calibration/adjustment is typically performed, then the sensor is inserted for measurement. After termination of the batch it is retracted, rinsed and stored in liquid.

At the moment we have to “misuse“ the Service program for this typical application because only this program has a wait position. However, the Service program is intended for servicing work on the sensor or probe, and it often has a different program sequence. Another disadvantage is that only one fixed program sequence is possible.

Possible solution:
All programs can be equipped with a wait position.
If now a program is started via Bin 1 ... 3 and the signal is “permanently“ applied, the first program part is executed until the wait position.
The program remains in this position until the Bin 1 ... 3 signal is inactive, then UNICAL executes the remaining program steps and ends the program.
If the program is started with a short Bin 1 ... 3 signal (signal < program run time until wait position), the wait position is skipped and the program is executed as before.
If the program are started from the PROTOS Calibration or Maintenance menus, the wait position will also be skipped.

UNICAL program flow with batch operation: Programs with wait position



Point 4: Probe feedback signals broken down

The UNICAL probe feedback messages are further broken down to allow better error detection:

The "FAIL UNICAL Limit position error" message (previously "Probe jammed") is broken down into:

FAIL Probe Limit position switch
FAIL Probe limit position SERVICE
FAIL Probe limit position MEASURE

The "WARN UNICAL Probe move time" error message (previously "Probe sluggish") is broken down into:

WARN Probe move time SERVICE
WARN Probe move time MEASURE

Point 4: DCS output definable: Measuring/Alarm

If errors occur during a UNICAL program, e.g. calibration errors or faulty probe movement, these can now be signaled to the process control system via the original "Measuring" DCS output (terminal 34).

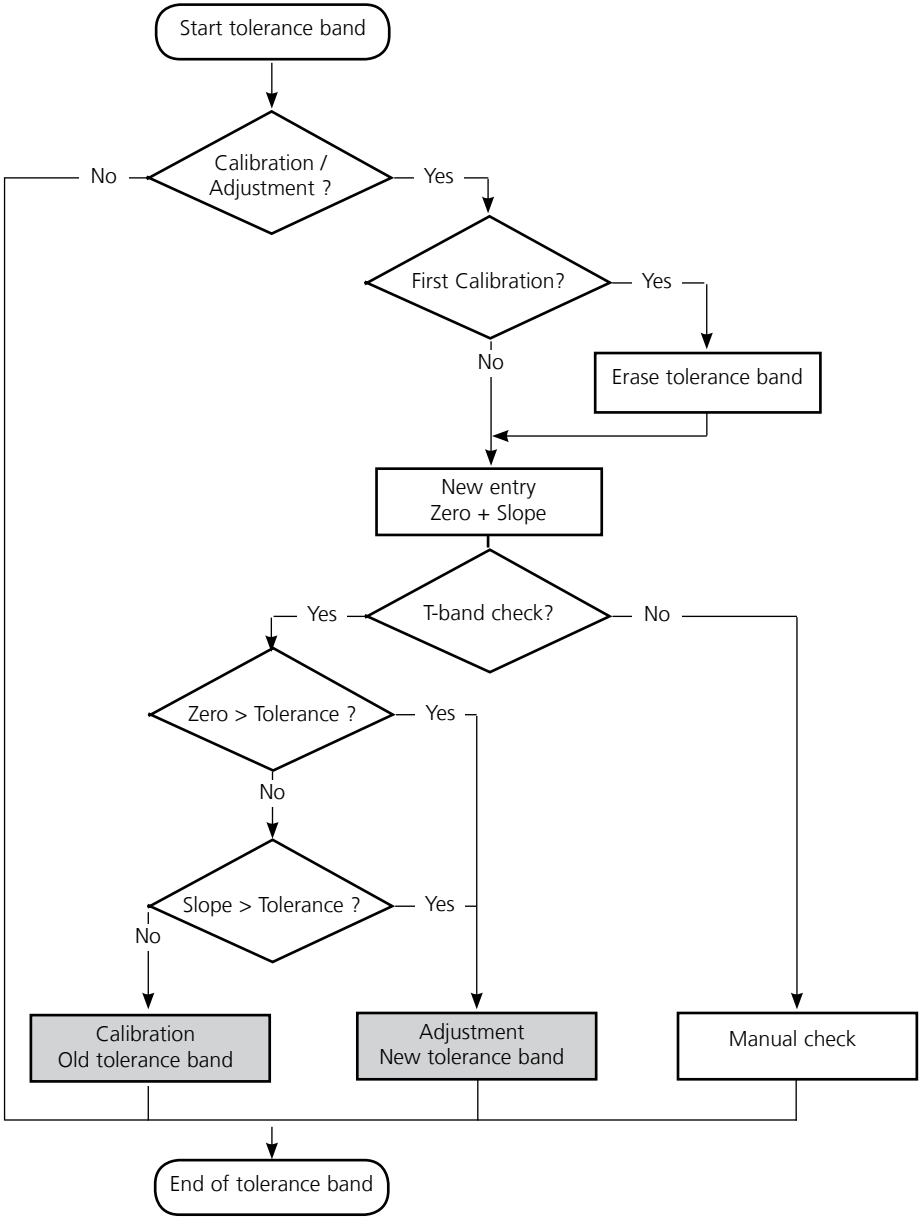
For that purpose, the output is made switchable (definable) and can be used for probe position feedback as usual or for alarm signaling.

Default setting remains probe position feedback.

New line in the "External control (DCS)" menu:

DCS output (34) Measuring Alarm

Point 12: Tolerance band adjustment



The tolerance band checks calibration/adjustment for manual calibration and for UNICAL.

Advantage:
Calibration is considerably simplified. The tolerance band recorder decides on its own. The user does not have to choose between calibration/adjustment after each calibration. Sequence of manual calibration and UNICAL is identical. Tolerance band adjustment is graded up.

Point 13: COND: Input of factor for alkalizing agent ammonia, for example

Equation:

$$C = \frac{\text{Cond1 - Cond2/Factor A}}{\text{Factor B}}$$

C	Concentration alkalizing agent [mmol/l]
Cond 1	Conductivity value before ion exchanger [µS/cm]
Cond 2	Conductivity value after ion exchanger [µS/cm]
Factor A	Factor by which the acids formed after the ion exchanger are more conductive than the salts constituting contamination before the ion exchanger
Factor B	Conductivity per mmol/l alkalizing agent [µS/cm / mmol/l]

Default setting (factors for alkalizing agent NaOH according to VGB-R 450 L):

Factor A	3.000	(Adjustment range 0.000 to 9.999)
Factor B	243.0 µS/cm	(Adjustment range 000.0 to 999.9)

For technical reasons, the adjustment ranges are chosen so that they allow adjusting real values with sufficient accuracy. The real values for different alkalizing agents, however, lie within rather close limits and never make full use of the large adjustment ranges.

Version 6.1 Sept. 1, 2005

Not delivered

SZ34Z60000/1 **Build 14898**
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z60000/1
	FRONT	3400X-015	SW version:	SZ34Z60000/1
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.7
	PHU	3400(X)-110	SW version:	1.2
	PH	3400(X)-035	SW version:	1.0
	OXY	3400(X)-065	SW version:	1.0
	OXY	3400(X)-066	SW version:	1.0
	CO_2	3400(X)-130	SW version:	1.0
	UNICAL	9000(X)	SW version:	2.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Version 6.2 Oct. 1, 2005

SZ34Z60000/2 **Build 15013**
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z60000/2
	FRONT	3400X-015	SW version:	SZ34Z60000/2
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.7
	PHU	3400(X)-110	SW version:	1.2
	PH	3400(X)-035	SW version:	1.0
	OXY	3400(X)-065	SW version:	1.0
	OXY	3400(X)-066	SW version:	1.0
	CO_2	3400(X)-130	SW version:	1.0
	UNICAL	9000(X)	SW version:	2.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Version 6.3 Jan. 17, 2006

SZ34Z60000/3 **Build 15128**
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z60000/3
	FRONT	3400X-015	SW version:	SZ34Z60000/3
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.7
	PHU	3400(X)-110	SW version:	1.2
	PH	3400(X)-035	SW version:	1.0
	OXY	3400(X)-065	SW version:	1.0
	OXY	3400(X)-066	SW version:	1.0
	CO_2	3400(X)-130	SW version:	1.0
	UNICAL	9000(X)	SW version:	2.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Supplements/Changes:
PH: ISFET zero voltage extended from -1800 mV to -2500 mV

Version 6.4 May 2, 2006

SZ34Z60000/4 **Build 15891**
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z60000/4
	FRONT	3400X-015	SW version:	SZ34Z60000/4
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.7
	PHU	3400(X)-110	SW version:	1.3
	PH	3400(X)-035	SW version:	1.1
	OXY	3400(X)-065	SW version:	2.0
	OXY	3400(X)-066	SW version:	2.0
	CO_2	3400(X)-130	SW version:	1.0
	UNICAL	9000(X)	SW version:	2.4

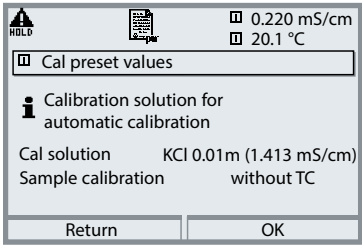
	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Supplements/Changes

1) Controller to concentration
   Enabling concentration also for internal controller,
   Y_P 100% = 10 % by wt
2) COND: Calibration solutions rollup now with nominal values

COND: Calibration solutions rollup now with nominal values

Parameter setting, “Sensor data“ menu



NaCl 0.01 m (1.183 mS/cm)
NaCl 0.1m (10.683 mS/cm)
NaCl sat. (251.3 mS/cm)
KCl 0.01m (1.413 mS/cm)
KCl 0.1 m (12.88 mS/cm)
KCl 1 m (111.80 mS/cm)

Version 6.5 Sept. 22, 2006

SZ34Z60000/5 Build 16237
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z60000/5
	FRONT	3400X-015	SW version:	SZ34Z60000/5
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.7
	PHU	3400(X)-110	SW version:	1.3
	PH	3400(X)-035	SW version:	1.1
	OXY	3400(X)-065	SW version:	2.0
	OXY	3400(X)-066	SW version:	2.0
	CO_2	3400(X)-130	SW version:	1.0
	UNICAL	9000(X)	SW version:	2.4

	Additional function	Required SW version:
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Supplements/Changes

So far, the current output was immediately set to the new measured value after termination of function check avoiding the output filter. Larger jumps of the value could cause oscillations in the connected controller.
Now the input and output of the output filter are frozen during function check (Hold). After termination the output follows with the adjusted filter time constant.

Version 6.6 March 16, 2007

SZ34Z60000/6 **Build 16656**
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z60000/6
	FRONT	3400X-015	SW version:	SZ34Z60000/6
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	1.7
	PHU	3400(X)-110	SW version:	1.3
	PH	3400(X)-035	SW version:	1.1
	OXY	3400(X)-065	SW version:	2.0
	OXY	3400(X)-066	SW version:	2.0
	CO_2	3400(X)-130	SW version:	1.0
	UNICAL	9000(X)	SW version:	2.4

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Version 6.9 Sept. 6, 2006

This version is no official delivery version! It was intended for quick attendance to FF customers as well as for testing the new OXY trace sensor and for validating the changed OXY functions.
SW version 6.9 is neither validated nor verified!
Configuration/Documentation with ProgaLog is not possible!

SZ34Z60000/9 Build 16233
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z60000/9
	FRONT	3400X-015	SW version:	SZ34Z60000/9
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	1.1
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2
	OXY	3400(X)-063	SW version:	2.2
	OXY	3400(X)-065	SW version:	2.0
	OXY	3400(X)-066	SW version:	2.0
	OXY	3400(X)-067	SW version:	0.5
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.0
	PHU	3400(X)-110	SW version:	1.3
	CO_2	3400(X)-130	SW version:	1.1
	COMFF	3400(X)-085	SW version:	1.0
	UNICAL	9000(X)	SW version:	2.4

	Additional function	Required SW version:
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes/Supplements Compared to SW Version 6.4:

1) Control of new module: COMFF 3400(X)-085
2) Control of new module: OXY 3400(X)-067
3) OXY: Autorange of measured variables for display and parameter setting
4) COMPA: Functions extended as for COMFF
5) COMPA/COMFF: Signaling via DI when service switch is actuated
6) PHU: Switching between Unical/UniClean, control of UniClean
7) Text changed: Function check -> HOLD
8) Error messages signaled together with error codes
9) Cal: With two measuring modules only the selected channel is frozen (HOLD)
10) USP [%] is available as measured variable (output current, limit values, ...)
11) UNICAL: Correction of error texts for level monitoring

12) COND/CONDI: New sensors in selection list (Jumo)
13) Temperature default setting to "Auto"
14) OXY/CO_2: ISM: Maximum limits adjustable for inner body and membrane body changes
15) PH/OXY/CO_2: ISM: Max. meas. temp./max. sensor temp. taken over from sensor
16) COND: Possibility of cal takeover when nom. cell constant is configured
17) UNICAL: Cleaner valve not provided, removed from SW.
18) UNICAL: SensoGate added to selection menu.
19) CONDI: Limit for zero calibration extended to 100 µS/cm for "Other" and SE 660

Point 3: OXY: Autorange of measured variables for display and parameter setting

Due to the broad measuring range of the new OXY trace sensor, auto-ranging must be implemented for the display. A broad-range editor is used for the entries (output current ...), comparable to conductivity.
This change applies to all OXY modules.
For the OXY 3400(X)-065/066 ISM modules, limit monitoring functions for membrane and inner body changes can also be activated, and the temperature limits from the TEDS can be automatically taken for monitoring.

Point 4: COMPA: Functions extended as for COMFF

The functions of the COMPA 3400-081 Profibus module have been considerably extended. It now has the same internal structures as the new COMFF 3400-085 Fieldbus module.
Essential extensions:
Two additional AI blocks and fixed distribution to two modules so that product calibration over Fieldbus is possible.
Additional AO block for cross-calculations, e.g. pressure compensation for OXY.
1 DO and 2 DI blocks added for additional signals.
Additional interactive release mechanism between PROTOS and process control system.

Point 5: COMPA/COMFF: Signaling via DI when service switch is actuated

DI 1: UNICAL status

Bit								Meaning
7	6	5	4	3	2	1	0	
							1	Probe in MEASURE position
						1		Probe in SERVICE position
					1			Service switch actuated
				1				UNICAL Alarm
			1					UNICAL program active
0	0	0						No program
0	0	1						Program: Cleaning
0	1	0						Program: Cal 2point
0	1	1						Program: Cal 1point
1	0	0						Program: Parking
1	0	1						Program: USER 1
1	1	0						Program: USER 2
1	1	1						Program: Service

Point 8: Error messages signaled together with error codes

For clear assignment of error messages also in the different languages, all error messages are provided with individual numbers. The error number comes before date/time. The complete display content can be shifted sideways using a softkey. The error numbers then appear at the left margin.

Point 9: Cal: With two measuring modules only the selected channel is frozen (HOLD)

Separate HOLD of the channels only applies to calibration! During maintenance and parameter setting HOLD still applies to all channels!

Point 10: USP [%] is available as measured variable (output current, limit values, ...)

USP % is introduced as measured variable for COND.
It specifies the relationship to the USP limit value (100% = USP limit value).
This variable can be used to control all outputs as usual (display, current, limit values, measurement recorder, ...)

Point 12: COND/CONDI: New sensors in selection list (Jumo)

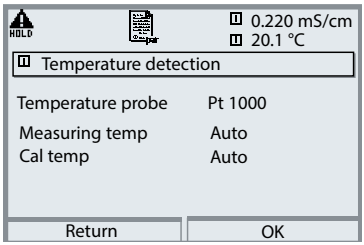
COND 3400(X)-041:

ZU 0071 sensor renamed to:	SE 630 sensor	
New sensors	SE 610 sensor	Nom. cell constant = 0.1 /cm
	SE 620 sensor	Nom. cell constant = 0.01 /cm

CONDI 3400(X)-051:

New sensor	SE 660 sensor	
	Sensor coding	70031
	Nom. cell factor	6.36
	Transfer ratio	25
	Temperature detection	Pt1000

Point 13: Temperature default setting to "Auto"



Point 14: ISM: Max. meas. temp./max. sensor temp. taken over from sensor

In the OXY 3400(X)-065/066 ISM modules now a number can be specified for membrane body and inner body changes for monitoring.
When the specified number is exceeded, the system signals:

Failure/Warning No. of membrane body changes or
Failure/Warning No. of inner body changes

Sensor monitoring details

Slope	(Auto/Individual)
Zero	(Auto/Individual)
Sensocheck	(Off/Auto/Individual)
Response time	(Auto/Individual)
Temperature	(Auto/Individual)
Sensor wear	(Off/Auto/Individual) *)
CIP counter	(Off/Individual) *)
SIP counter	(Off/Individual) *)
Autoclaving counter	(Off/Individual) *)
Sensor operating time	(Off/Individual) *)
Membrane body changes	(Off/Individual) *)
Inner body changes	(Off/Individual) *)

* Omitted for sensors without ISM.

Membrane body changes

	Monitoring	**Off**/Individual
Individual:	Max. changes	xxx
	Message	Off/**Maint. request**/Failure

Inner body changes

	Monitoring	**Off**/Individual
Individual:	Max. changes	xxx
	Message	Off/**Maint. request**/Failure

Point 15: ISM: Max. meas. temp./max. sensor temp. taken over from sensor

Modules: PH 3400(X)-035, OXY 3400(X)-065, OXY 3400(X)-066

The previous temperature monitoring was problematic, particularly for ISM sensors.

The max. temperature range is stored in the sensor itself. So far this range was not evaluated, but in a special “Messages” menu the settings were manually specified, however for the application and not specifically for the sensor.

The settings for temperature monitoring are now made in the “Sensor monitoring” menu (Auto/Individual). Then, for “Auto” and operation with ISM sensors, the data are taken over from the TEDS. The settings in the “Messages” menu are omitted.

Sensor monitoring details

Slope	(Auto/Individual)
Zero	(Auto/Individual)
Sensocheck	(Off/Auto/Individual)
Response time	(Auto/Individual)
Temperature	(Auto/Individual)
Sensor wear	(Off/Auto/Individual) *)
CIP counter	(Off/Individual) *)
SIP counter	(Off/Individual) *)
Autoclaving counter	(Off/Individual) *)
Sensor operating time	(Off/Individual) *)
Membrane body changes	(Off/Individual) *)
Inner body changes	(Off/Individual) *)

* Omitted for sensors without ISM.

Temperature

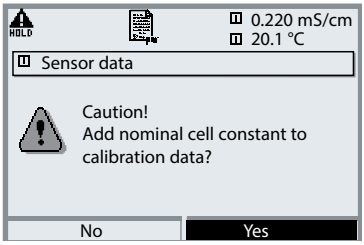
	Monitoring	**Auto**/Individual	
Auto:	Min	-020.0 °C	(with ISM from TEDS: Min. measuring temp)
	Max	+150.0 °C	(with ISM from TEDS: Max. measuring temp)
	Message	Off/**Maint. request**/Failure	
Individual:	Min	xxx.x °C	
	Max	xxx.x °C	
	Message	Off/**Maint. request**/Failure	

Point 16: COND: Possibility of cal takeover when nom. cell constant is configured

In the "Sensor data" menu of parameter setting a nom. cell constant can be specified which only serves for monitoring. The correct cell constant must be entered in the calibration menu or be determined. This is a frequent source of error!

The users enter the cell constant of their sensor as nom. cell constant and assume that the device operates with this cell constant.

If now the nom. cell constant is changed in the parameter setting menu (taken over with **enter**), there is a prompt (pop-up menu) as to whether the nom. cell constant shall also be taken over for calibration.



Version 7.0 April 2, 2007

SZ34Z70000/0 Build 16680
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z70000/0
	FRONT	3400X-015	SW version:	SZ34Z70000/0
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	1.1
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	2.1
	OXY	3400(X)-066	SW version:	2.1 (is to be stopped)
	OXY	3400(X)-067	SW version:	1.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	2.0
	CO_2	3400(X)-130	SW version:	1.1
	COMFF	3400(X)-085	SW version:	1.0
	FIU	3400(X)-140	SW version:	1.0
	UNICAL	9000(X)	SW version:	3.0
	UNICLEAN	900(X)	SW version:	1.0

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-013	Reserved: Memosens functionality	
SW 3400-014	2nd channel for FIU 3400-140 module	7.0
SW 3400-015	Reserved: Oxy standard measurement for FIU 3400-140 module	
SW 3400-016	Reserved: Oxy trace measurement for FIU 3400-140 module	
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes/Supplements Compared to SW Version 6.6:

1) Control of new module: OXY 3400(X)-067
2) OXY: Autorange of measured variables for display and parameter setting
3) COMFF 3400(X)-085: Control of new module with additional transmission of wear [%] and remaining time of cal timer [h]
4) COMPA 3400(X)-081: Functions extended as for COMFF
5) COMPA/COMFF: Signaling when service switch is actuated
6) Control of new module: FIU 3400(X)-140: Operation with InduCon
7) PHU 3400(X)-110: UniClean control -> Switching Unical/UniClean
8) Text changed: "Function check" -> "HOLD"
9) Error messages signaled together with error codes
10) COMPA: Bus monitor enabled
11) Cal: With two measuring modules only the selected channel is frozen (HOLD), the other channel keeps running
12) Sensoface messages separately on one contact
13) USP [%] is available as measured variable (current, limit values, ...)
14) COND/CONDI: New sensors in selection list (Jumo)
15) COND: Setting of nom. cell constant
16) Factory setting: Default temp. to "Auto"
17) OXY/CO_2: ISM: Maximum limits for inner body and membrane body changes definable, comparable to CIP, SIP, and autoclaving cycles
18) PH/OXY/CO_2: ISM: Take over max. meas. temp./max. sensor temp. from sensor
19) PH 3400(X)-035 digitaler sensor: Operation via “One Wire“ interface (ISM)
20) UNICAL: Insert 5 sec delay for water monitoring
21) UNICAL: Cleaner valve not provided, removed from SW.
22) UNICAL: SensoGate
23) UNICAL error texts changed:
    Warn Buffer almost empty / Fail Buffer empty;
    Warn Cleaner almost empty / Fail Cleaner empty
24) UNICAL: Probe stroke counter introduced (> 4,000,000,000)
25) UNICAL: Output of UNICAL alarm messages via Protos relay contact
26) Unical manual control: All links removed, except for pumps and immediate optical feedback of keystrokes
27) Evaluation software for diagnosis card: Recognition of new modules

28) PH: pH value output compensated or uncompensated: pH‘
29) COND: Conductivity output compensated or uncompensated: k‘
30) CONDI: Zero calibration of "Other" and SE 660 electrodeless sensors: Limit set to 100 µS/cm
31) PID: Possibility to switch off load monitoring
32) Tag number in secondary display
33) UNICAL: Change of error assignments for NAMUR contacts on the Protos

Point 2: OXY: Autorange of measured variables for display and parameter setting

Due to the broad measuring range of the new OXY sensor, autoranging must be implemented for the display. A broad-range editor is used for the entries (output current ...), comparable to conductivity. This change applies to all OXY modules.
For the OXY 3400(X)-065/066/067 ISM modules, limit monitoring functions for membrane and inner body changes can also be activated, and the temperature limits from the TEDS can be automatically taken for monitoring.

Point 4: COMPA: Functions extended as for COMFF

The functions of the COMPA 3400-081 Profibus module have been considerably extended. It now has the same internal structures as the new COMFF 3400-085 Fieldbus module.
Essential extensions:
Two additional AI blocks and fixed distribution to two modules so that product calibration over Fieldbus is possible.
Additional AO block for cross-calculations, e.g. pressure compensation for OXY.
1 DO block and 2 DI blocks added for additional signals.
Additional interactive release mechanism between PROTOS and process control system.

Point 5: COMPA/COMFF: Signaling when service switch is actuated

Provides status information for the COMPA or COMFF module.

DI 1: UNICAL status

Bit								Meaning
7	6	5	4	3	2	1	0	
							1	Probe in MEASURE position
						1		Probe in SERVICE position
					1			Service switch actuated
				1				UNICAL Alarm
			1					UNICAL program active
0	0	0						No program
0	0	1						Program: Cleaning
0	1	0						Program: Cal 2point
0	1	1						Program: Cal 1point
1	0	0						Program: Parking
1	0	1						Program: USER 1
1	1	0						Program: USER 2
1	1	1						Program: Service

Point 8: Text changed: Function check -> HOLD

“Function check“ display text is generally changed to “HOLD“.

Point 9: Error messages signaled together with error codes

For clear assignment of error messages also in the different languages, all error messages are provided with individual numbers. The error number comes before date/time. The complete display content can be shifted sideways using a softkey. The error numbers then appear at the left margin.

Point 11: Cal: With two measuring modules only the selected channel is frozen (HOLD), the other channel keeps running

Separate HOLD of the channels only applies to calibration! During maintenance and parameter setting the complete device is in HOLD!

Point 12: Sensoface messages separately on one contact
For "BASE/Contact/Usage", "Sensoface" has been added to the roll-up. The contact is activated by a sad smiley.

Point 13: USP [%] is available as measured variable (current, limit values, ...)
USP % is introduced as measured variable for COND. It specifies the relationship to the USP limit value (100% = USP limit value). T
his variable can be used to control all outputs as usual (display, current, limit values, measurement recorder, ...)

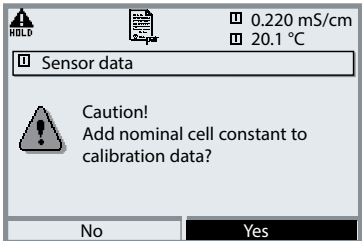
Point 14: COND/CONDI: New sensors in selection list (Jumo)
COND 3400(X)-041:

ZU 0071 sensor renamed to:	SE 630 sensor	
New sensors	SE 610 sensor	Nom. cell constant = 0.1 /cm
	SE 620 sensor	Nom. cell constant = 0.01 /cm

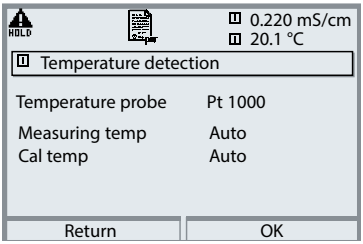
CONDI 3400(X)-051:

New sensor	SE 660 sensor	
	Sensor coding	70031
	Nom. cell factor	6.36
	Transfer ratio	25
	Temperature detection	Pt1000

Point 15: COND: Setting of nom. cell constant
In the "Sensor data" menu of parameter setting a nom. cell constant can be specified which only serves for monitoring. The correct cell constant must be entered in the calibration menu or be determined. This is a frequent source of error!
The users enter the cell constant of their sensor as nom. cell constant and assume that the device operates with this cell constant.
If now the nom. cell constant is changed in the parameter setting menu (taken over with **enter**), there is a prompt (pop-up menu) as to whether the nom. cell constant shall also be taken over for calibration.



Point 16: Temperature default setting to "Auto"



Point 17: OXY/CO_2: ISM: Maximum limits for inner body and membrane body changes definable, comparable to CIP, SIP and autoclaving cycles

In the OXY 3400(X)-065/066 ISM modules now a number can be specified for membrane body and inner body changes for monitoring.
When the specified number is exceeded, the system signals:

Failure/Warning No. of membrane body changes or
Failure/Warning No. of inner body changes

Sensor monitoring details

Slope	(Auto/Individual)
Zero	(Auto/Individual)
Sensocheck	(Off/Auto/Individual)
Response time	(Auto/Individual)
Temperature	(Auto/Individual)
Sensor wear	(Off/Auto/Individual) *)
CIP counter	(Off/Individual) *)
SIP counter	(Off/Individual) *)
Autoclaving counter	(Off/Individual) *)
Sensor operating time	(Off/Individual) *)
Membrane body changes	(Off/Individual) *)
Inner body changes	(Off/Individual) *)

* Omitted for sensors without ISM.

Membrane body changes

	Monitoring	**Off**/Individual
Individual:	Max. changes	xxx
	Message	Off/**Maint. request**/Failure

Inner body changes

	Monitoring	**Off**/Individual
Individual:	Max. changes	xxx
	Message	Off/**Maint. request**/Failure

Point 18: PH/OXY/CO_2 ISM: Take over max. meas. temp./ max. sensor temp. from sensor

Modules: PH 3400(X)-035, OXY 3400(X)-065, OXY 3400(X)-066

The previous temperature monitoring was problematic, particularly for ISM sensors.

The max. temperature range is stored in the sensor itself. So far this range was not evaluated, but in a special "Messages" menu the settings were manually specified, however for the application and not specifically for the sensor.

The settings for temperature monitoring are now made in the "Sensor monitoring" menu (Auto/Individual). Then, for "Auto" and operation with ISM sensors, the data are taken over from the TEDS. The settings in the "Messages" menu are omitted.

Sensor monitoring details

Slope	(Auto/Individual)
Zero	(Auto/Individual)
Sensocheck	(Off/Auto/Individual)
Response time	(Auto/Individual)
Temperature	(Auto/Individual)
Sensor wear	(Off/Auto/Individual) *)
CIP counter	(Off/Individual) *)
SIP counter	(Off/Individual) *)
Autoclaving counter	(Off/Individual) *)
Sensor operating time	(Off/Individual) *)
Membrane body changes	(Off/Individual) *)
Inner body changes	(Off/Individual) *)

* Omitted for sensors without ISM.

Temperature

	Monitoring	**Auto**/Individual	
Auto:	Min	-020.0 °C	(with ISM from TEDS: Min. measuring temp)
	Max	+150.0 °C	(with ISM from TEDS: Max. measuring temp)
	Message	Off/**Maint. request**/Failure	
Individual:	Min	xxx.x °C	
	Max	xxx.x °C	
	Message	Off/**Maint. request**/Failure	

Point 24: UNICAL: Probe stroke counter introduced (> 4,000,000,000 strokes)

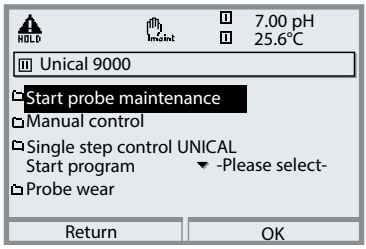
The original wear counter is too small for the number of probe strokes in the Ceramat.

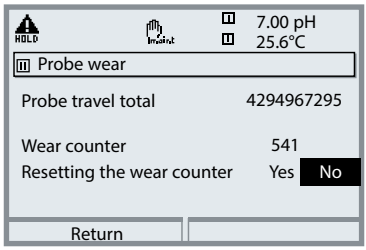
Two counters are installed:

a) One probe stroke counter which counts up to 4,294,967,295 strokes over the whole probe lifetime and which can only be reset by a service engineer.

b) One probe stroke counter as previously (up to 9999 strokes) for which a limit value can be specified. When this limit value is reached, a message will be generated. This counter can be reset by the user.

For that purpose, the "Unical 9000" or "Uniclean 900" maintenance menu has a new submenu: "Probe wear".





Point 25: UNICAL output of UNICAL alarm messages via Protos relay contact

Additional output of UNICAL alarm message via relay contacts on the PROTOS.

For that purpose, the “Usage“ menu for the K1-K3 relay contacts was extended.

Point 32: PID: Possibility to switch off load monitoring

New menu line for controller type "Straightway valves":

Load monitoring Output IV1 / Output IV2 / **Output IV1/IV2**

This allows deactivating the load message in the case of a unilateral controller when only one current output is required.

Point 35: UNICAL: Change of error assignments for NAMUR contacts

NAMUR class	Protos contacts			DCS34	Message (PROTOS)
	Fct.chk	Failure	Maint req.	Alarm	
MAINT REQ.			Active		Probe move time SERVICE (U234)
MAINT REQ.			Active		Probe move time MEASURE (U231)
FAIL		Active		Active	Probe limit position SERVICE (U227)
FAIL		Active		Active	Probe limit position MEASURE (U230)
FAIL		Active		Active	Compressed air switch (U220)
FAIL		Active		Active	UNICAL Probe valve defective (U225)
FAIL		Active		Active	UNICAL flooded (U224)

	Cause	System reaction	Reset	Remark
	- Low air pressure - Probe sluggish - Filter choked - Move time too long	None, message only	By next smooth probe movement	Limit position not reached at the first trial.
	- Low air pressure - Probe sluggish - Filter choked - Move time too long	None, message only	By next smooth probe movement	Limit position not reached at the first trial.
	– Probe defective – Probe sticky - SERVICE limit switch defective - Probe valve defective * - Pilot valve defective *	None, message only	By next smooth probe movement	SERVICE limit position was not reached even after several trials
	- Probe defective - Probe sticky - MEASURE limit switch defective - Probe valve defective * - Pilot valve defective *	None, message only	By next smooth probe movement	MEASURE limit position was not reached even after several trials
	- Media adapter untight - Failure in compressed-air supply - Pressure too low - P/E converter defective - Safety valve defective (shut)	None, message only	Automatic as soon as pressure is provided	
	- Pilot valve or probe valve defective *	None, message only	By next smooth probe movement	Distinction cannot be made between pilot valve and probe valve. Redundancy of pilot valves not provided any more. Can only be noticed with "SERVICE switch" function
	– Tubings untight – Hose/tube torn off – Water valve leaking – Water stop defective	None, message only	- SERVICE request	Water has been stopped

NAMUR class	Protos contacts			DCS34	Message (PROTOS)	
	Fct.chk	Failure	Maint req.	Alarm		
FAIL	Active				Sensor dismounted (U221)	
FAIL		Active		Active	Undefined security status (U222)	
MAINT REQ.			Active		Safety valve defective (U235)	
MAINT REQ.			Active		Sensor dismount guard defec- tive (U229)	
MAINT REQ.			Active		Buffer almost empty Err text from medium descrip- tion (U190/U191)	
FAIL		Active		Active	Buffer empty Err text from medium descrip- tion (U194/U195)	
MAINT REQ.			Active		Cleaner almost empty Err text from medium descrip- tion (U192)	
FAIL		Active		Active	Cleaner empty Err text from medium descrip- tion (U196)	

	Cause	System reaction	Reset	Remark
	- Sensor dismounted - Probe cylinder untight - Probe lines untight - Dismount guard defective	Probe does not move into MEAS position, message	- When sensor has been remounted	Message can only appear in SERVICE position Sensor can only be removed in SERVICE position
	– Voltage interruption while SERVICE switch is activated	Red LED at service switch is lit	- Switch SERVICE switch on/off Caution! Probe moves into the process	The system could not unequivocally determine whether a safe status has been achieved
	- SI valve does not close *	None, message only		Redundancy of pilot valves not provided any more. Can only be noticed with "SERVICE switch" function
	- Flow sensor defective - Air leak in probe cylinder - Probe lines untight	None, message only	- Replace flow sensor or eliminate other cause of defect	
	- Filling level below minimum - Float switch stuck - Check-back error (line interrupted or short-circuited) - Bottle untight	None, message only	Automatic when buffer solution is topped up above min. level	Start immediately when intervals have expired
	- Residual bottle contents used up - Float switch stuck - Check-back error (line interrupted or short-circuited)	All programs requiring buffer solution are blocked	Automatic when buffer solution is topped up above min. level	Start immediately when intervals have expired
	- Filling level below minimum - Float switch stuck - Check-back error (line interrupted or short-circuited) - Bottle untight	None, message only	Automatic when cleaning solution is topped up above min. level	Start immediately when intervals have expired
	- Residual bottle contents used up - Float switch stuck - Check-back error (line interrupted or short-circuited)	All programs requiring cleaning solution are blocked	Automatic when cleaning solution is topped up	Start immediately when intervals have expired

NAMUR class	Protos contacts			DCS34	Message (PROTOS)	
	Fct.chk	Failure	Maint req.	Alarm		
MAINT REQ.			Active		UNICAL Switch Water pressure (U220)	
MAINT REQ.			Active		Probe cylinder untight (U228)	
MAINT REQ.			Active		Proble wear counter (U232)	
MAINT REQ.			Active		Media monitoring Err texts from medium description (U241 ... U246)	
MAINT REQ.			Active	Active	UNICAL Calibration error (U251)	

* Can only be detected with “SERVICE switch“ function.

	Cause	System reaction	Reset	Remark
	- No water - Water pressure too low	All programs requiring water are blocked	Automatic as soon as water pressure OK	Start immediately when intervals have expired
	- Probe cylinder untight - Probe lines untight	None, message only	Automatic as soon as cause of trouble removed	Probe cylinder or probe lines untight Maintenance required
	– Wear counter expired	None, message only	Manual reset in mainte-nance menu	
	- Wrong medium - Wrong medium temperature - Media mixed - System untight - Probe untight	None, message only	Automatic as soon as medium OK	
	- Buf interchanged - Identical buffers - Buffer unknown - Cal temp - Sensor unstable - Zero too low/high - Slope too low/high	Calibration aborted	Automatically after next fault-free calibration	

Version 7.01 April 16, 2007

SZ34Z70000/0 Build 16685
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z70000/0
	FRONT	3400X-015	SW version:	SZ34Z70000/0
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	1.1
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	2.1
	OXY	3400(X)-066	SW version:	2.1 (is to be stopped)
	OXY	3400(X)-067	SW version:	1.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	2.0
	CO_2	3400(X)-130	SW version:	1.1
	COMFF	3400(X)-085	SW version:	1.0
	FIU	3400(X)-140	SW version:	1.0
	UNICAL	9000(X)	SW version:	3.0
	UNICLEAN	900(X)	SW version:	1.0

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-013	Reserved: Memosens functionality	
SW 3400-014	2nd channel for FIU 3400-140 module	7.0
SW 3400-015	Reserved: Oxy standard measurement for FIU 3400-140 module	
SW 3400-016	Reserved: Oxy trace measurement for FIU 3400-140 module	
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Version 7.1 May 23, 2007

SZ34Z70000/1 Build 16711
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z70000/1
	FRONT	3400X-015	SW version:	SZ34Z70000/1
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	1.1
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	2.1
	OXY	3400(X)-066	SW version:	2.1 (is to be stopped)
	OXY	3400(X)-067	SW version:	1.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	2.1
	CO_2	3400(X)-130	SW version:	1.1
	COMFF	3400(X)-085	SW version:	1.0
	FIU	3400(X)-140	SW version:	1.0
	UNICAL	9000(X)	SW version:	3.0
	UNICLEAN	900(X)	SW version:	1.0

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-013	Reserved: Memosens functionality	
SW 3400-014	2nd channel for FIU 3400-140 module	7.0
SW 3400-015	Reserved: Oxy standard measurement for FIU 3400-140 module	
SW 3400-016	Reserved: Oxy trace measurement for FIU 3400-140 module	
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes/Supplements Compared to SW Version 7.01:
An additional status bit is transferred to the Unical/Uniclean. This prevents automatic starts of the process control system in the operating modes: Maintenance/Parameter setting/Calibration.

Version 7.2 July 31, 2007

SZ34Z70000/2 Build 16735
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z70000/2
	FRONT	3400X-015	SW version:	SZ34Z70000/2
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	1.1
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	2.1
	OXY	3400(X)-066	SW version:	2.1 (is to be stopped)
	OXY	3400(X)-067	SW version:	1.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	2.1
	CO_2	3400(X)-130	SW version:	1.1
	COMFF	3400(X)-085	SW version:	1.0
	FIU	3400(X)-140	SW version:	1.0
	UNICAL	9000(X)	SW version:	3.0
	UNICLEAN	900(X)	SW version:	1.0

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-013	Reserved: Memosens functionality	
SW 3400-014	2nd channel for FIU 3400-140 module	7.0
SW 3400-015	Reserved: Oxy standard measurement for FIU 3400-140 module	
SW 3400-016	Reserved: Oxy trace measurement for FIU 3400-140 module	
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes/Supplements Compared to SW Version 7.1:

1) InduCon implemented with FIU 3400(X)-140 module
2) Three additional standard buffer sets with the following nominal buffer values:
   Kraft: 2.00 / 4.00 / 7.00 / 9.00 / 11.00 (20 °C)
   Hamilton A: 2.00 / 4.01 / 7.00 / 9.00 / 11.00 (25 °C)
   Hamilton B: 2.00 / 4.01 / 6.00 / 9.00 / 11.00 (25 °C)

Version 7.3 Nov. 1, 2007

SZ34Z70000/3 Build 16825
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z70000/3
	FRONT	3400X-015	SW version:	SZ34Z70000/3
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	1.1
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	2.1
	OXY	3400(X)-066	SW version:	2.1 (is to be stopped)
	OXY	3400(X)-067	SW version:	1.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	2.1
	CO_2	3400(X)-130	SW version:	1.1
	COMFF	3400(X)-085	SW version:	1.0
	FIU	3400(X)-140	SW version:	1.0
	UNICAL	9000(X)	SW version:	3.0
	UNICLEAN	900(X)	SW version:	1.0

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-013	Reserved: Memosens functionality	
SW 3400-014	2nd channel for FIU 3400-140 module	7.0
SW 3400-015	Reserved: Oxy standard measurement for FIU 3400-140 module	
SW 3400-016	Reserved: Oxy trace measurement for FIU 3400-140 module	
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Version 7.4 March 12, 2008

SZ34Z70000/4 Build 17083
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z70000/4
	FRONT	3400X-015	SW version:	SZ34Z70000/4
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	1.1
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	3.0
	OXY	3400(X)-066	SW version:	3.1 (is to be stopped)
	OXY	3400(X)-067	SW version:	2.1
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	2.1
	CO_2	3400(X)-130	SW version:	1.1
	COMFF	3400(X)-085	SW version:	1.0
	FIU	3400(X)-140	SW version:	1.0
	UNICAL	9000(X)	SW version:	3.0
	UNICLEAN	900(X)	SW version:	1.0

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-013	Reserved: Memosens functionality	
SW 3400-014	2nd channel for FIU 3400-140 module	7.0
SW 3400-015	Reserved: Oxy standard measurement for FIU 3400-140 module	
SW 3400-016	Reserved: Oxy trace measurement for FIU 3400-140 module	
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Version 7.5 April 2, 2008

SZ34Z70000/5 Build 17115
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z70000/5
	FRONT	3400X-015	SW version:	SZ34Z70000/5
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	2.1
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	3.0
	OXY	3400(X)-066	SW version:	3.1 (is to be stopped)
	OXY	3400(X)-067	SW version:	2.1
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	2.1
	CO_2	3400(X)-130	SW version:	1.2
	COMFF	3400(X)-085	SW version:	1.0
	FIU	3400(X)-140	SW version:	1.0
	UNICAL	9000(X)	SW version:	3.0
	UNICLEAN	900(X)	SW version:	1.1

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-013	Reserved: Memosens functionality	
SW 3400-014	2nd channel for FIU 3400-140 module	7.0
SW 3400-015	Reserved: Oxy standard measurement for FIU 3400-140 module	
SW 3400-016	Reserved: Oxy trace measurement for FIU 3400-140 module	
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Version 8.0 Sept. 1, 2008

SZ34Z80000/0 Build 17442
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z80000/0
	FRONT	3400X-015	SW version:	SZ34Z80000/0
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	3.2
	OXY	3400(X)-066	SW version:	3.2 (is to be stopped)
	OXY	3400(X)-067	SW version:	2.2
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	2.1
	CO_2	3400(X)-130	SW version:	1.3
	COMFF	3400(X)-085	SW version:	1.1
	FIU	3400X-140	SW version:	2.0
	FIU	3400-141	SW version:	2.0
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-013	Reserved: Memosens functionality	
SW 3400-014	2nd channel for FIU 3400-140 module	7.0
SW 3400-015	Reserved: Oxy standard measurement for FIU 3400-140 module	
SW 3400-016	Reserved: Oxy trace measurement for FIU 3400-140 module	
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes/Supplements Compared to SW Version 7.5:

1) FIU participant list:
   Version indication of ComFu, InduCon sensors and cables
2) CONDI: Permissible offset error increased to 500 µS/cm
3) PH: HACH buffer values implemented
4) FIU 3400-141: Memosens implemented
5) FIU 3400-141: ComFu implemented
6) Separate signaling for two-channel devices (Sensoface)
7) Cal timer default "Off".
   Cal timer runs to zero in the secondary display (pH, OXY, CO2)
8) CO2: Cal presetting with buffer 7.00 and 9.21 only
   Product cal with hPa or mmHg, partial pressure in hPa or mmHg
9) OXY: Partial pressure in mbar or mmHg, product calibration in mbar or mmHg
10) PID: PI controller with vertex points
11) Unical: Start calibration when cal timer expired
12) FIU: Implementation of Unical/Uniclean
13) Unical/Uniclean: Sensor dismount guard
14) OXY: Sensor data / Sensor monitoring details menu supplemented:
    Sensocheck Off/Auto/Individual (new: "Off")
15) CONDI: MT sensor selection supplemented: InPro 7250 ST/HT/PFA
16) PH: Adaptive calibration timer: Equation standardized.

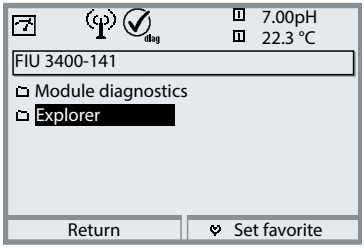
16a) Immersion lock for Unical and Uniclean in case of glass breakage, user-defined.

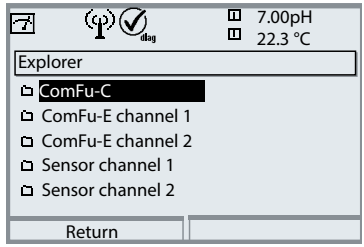
16b) For Inducon sensors, the sensor wear monitor can indicate the remaining lifetime.

Modification 1, FIU participant list:

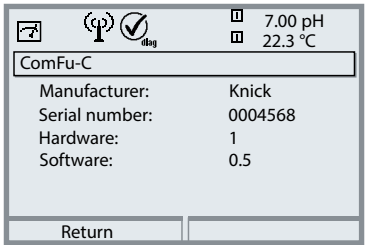
Version indication of ComFu, InduCon sensors, cables. Diagnostic display of participants and sensors connected to FIU (FIU Explorer). Display of: Manufacturer, serial number, HW version, SW version

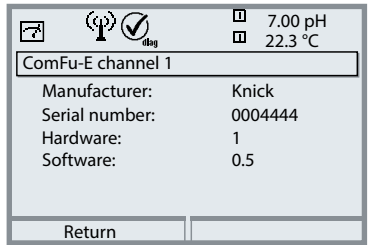
During Diagnostics of FIU 3400-141 module via Explorer:
Display of module connections with data of radio participants and connected sensors:



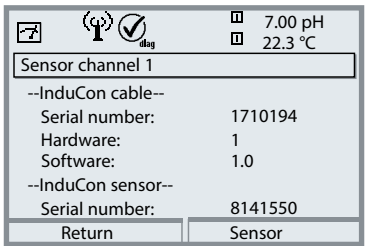


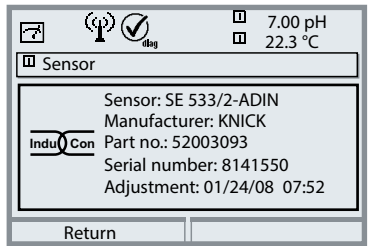
Diagnostic data of ComFu-C and ComFu-E:





Sensor data of sensor connected to ComFu-E:



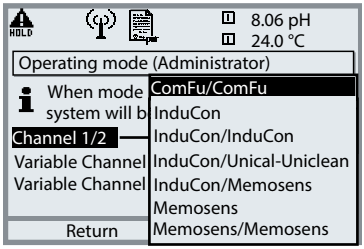


Modification 2:
The permissible offset error has been standardized to 500 µS/cm for all toroidal sensors.

Modification 3:
PH: HACH buffer values implemented

Modification 4:
FIU 3400-141: Memosens implemented
Digital pH sensors from Endress + Hauser (Memosens) are implemented in the FIU module via the Parameter Setting menu.
Ex connection is not permitted!
Note:
Older FIU 3400-140 modules (serial numbers < 8319274) require an additional 22-kohm resistor for Memosens operation. It is inserted between terminals 11 and 13 for channel I and between terminals 6 and 8 for channel II.

In Version 8.0 the "Channel 1/2 = …" display makes the channel assignments clearer (Parameter setting/"Radio" mode):



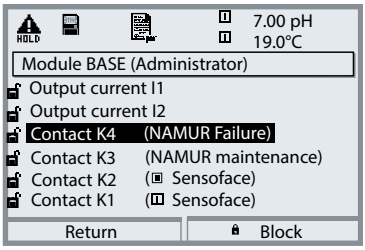
For Memosens, the Channel 1/2 menu allows selecting:

- One Memosens sensor on channel 1
- One Memosens sensor on channel 1, one on channel 2
- One InduCon on channel 1, one Memosens sensor on channel 2

After channel assignment, the system must be restarted.

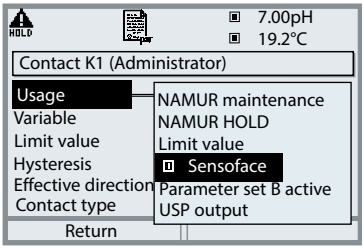
Modification 5:
FIU 3400-141: ComFu implemented
ComFu can only be operated with the FIU 3400-141 module (non-Ex)
A ComFu-C wireless system can be connected to the FIU 3400-141 module. It exchanges data with two ComFu-E radio participants (end device) over a Zigbee wireless connection.
The ComFu system is implemented in the Parameter setting menu of the FIU 3400-141 module.

Modification 6:
Separate signaling for two-channel devices (Sensoface)
When two measuring modules are used, the Sensoface messages of the modules can be assigned to different contacts – selected in the Parameter Setting menu: BASE / Contact response.



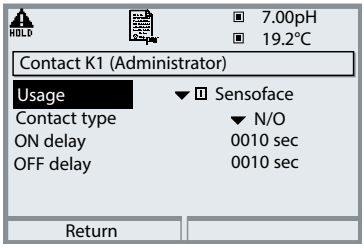
Assign Sensoface messages to relay contacts

When more than one measuring module is used, the Sensoface messages of the modules can be assigned to different contacts.



Relay contacts, usage

- Open parameter setting
- Enter passcode:
- Select “Module BASE”
- Select contact e.g. K1)
- Assign Sensoface message of desired measuring module to selected relay contact



Set contact parameters

- (e.g. "N/O")
- Set ON / OFF delay.

Modification 8:
CO2: Only buffers 7.00 and 9.21 implemented in the
Cal preset values menu of the CO2 3400-130 module.
Only one buffer set with the Ingold technical buffers 7.00 and 9.21
is available for pH calibration of the CO_2 sensor.

CO2: [mmHg] as additional unit for partial pressure
For CO_2 measurement, the partial pressure is now provided in [hPa] or [mmHg]. Furthermore, product calibration can be performed for:
- Saturation
- Concentration
- Partial pressure in [hPa] or [mmHg]

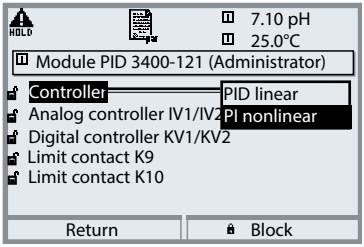
CO2: Product calibration also in [mmHg]
Product calibration selected in the "Cal preset values" menu
Product calibration for CO_2 measurement
Depending on the setting in the Parameter Setting menu, the partial pressure is displayed in hPa or mmHg.

Modification 9:
OXY: [mmHg] as additional unit for partial pressure
For OXY measurements, the partial pressure can also be displayed in mmHg (in addition to mbar).
The mmHg value is available for the main display, secondary display, current output and limit values. Furthermore, product calibration can be performed using this unit.
1 mbar = 0.75006 mmHg (1 mmHg = 1.3332 mbar)
The mbar or mmHg unit for partial pressure is selected in the Parameter setting menu under "Cal preset values".

Modification 10:
PID: PI controller with vertex points
The PID 3400(X)-121 controller module now provides an additional nonlinear PI controller. Selection is made in the initial menu. With the "PI nonlinear" controller, you can specify a vertex point for each control section using X/Y coordinates.

PI Controller with Vertex Points (Analog Controller IV1/IV2)

For control of pH neutralization processes, a nonlinear controller (controller with vertex points) often provides better results since the control curve can be better adapted to a titration curve.
The PID 3400(X)-121 controller module provides an additional nonlinear PI controller. Selection is made in the initial menu. With the "PI nonlinear" controller, you can specify a vertex point for each control section using X/Y coordinates.



The nonlinear PI controller with vertex points is selected in the menu

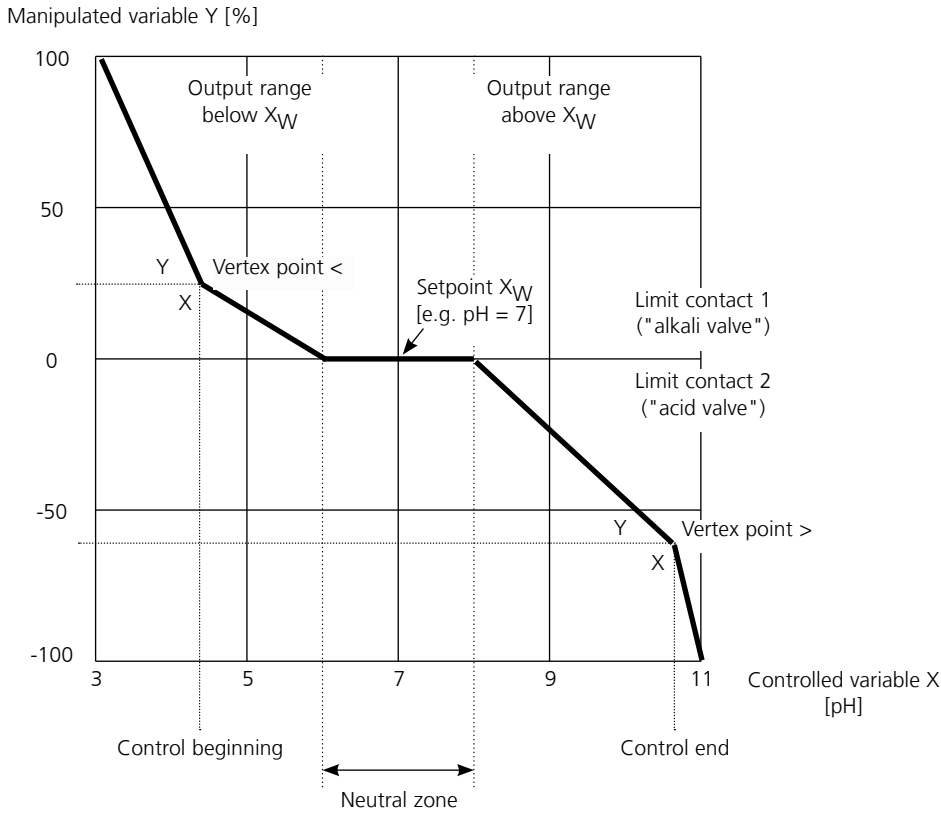
Parameter setting / Module PID 3400-121

The following parameters can be set:

- Controller type
- Controlled variable
- Desired value
- Neutral zone
- < control beginning
- < vertex X
- < vertex Y
- > control end
- > vertex X
- > vertex Y
- (I) Reset time
- Feed time alarm after
- Behavior during HOLD
- Output IV1/IV2

Characteristic of nonlinear PI controller with vertex points

Analog Controller IV1/IV2



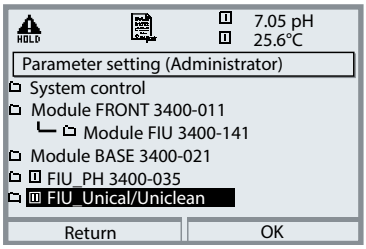
Controller characteristic of PI controller with vertex points

Modification 11:

Unical: Start calibration when cal timer expired
Now a Unical calibration can be started automatically at expiry of the cal timer. The program which is to be started is selected in the "Cal preset values" menu.

Open parameter setting

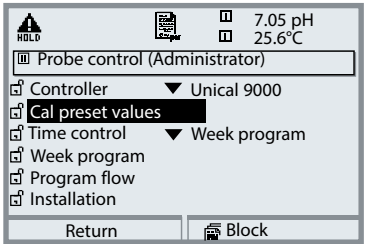
From the measuring mode:
Press **menu** key to select menu.
Select parameter setting using arrow keys, press **enter** to confirm.



Select probe controller

(FIU_Unical/Uniclean)
Icons to assign the measured values displayed:

- specifies module slot I
- specifies module slot II

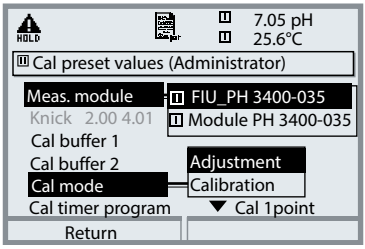


Cal presettings for Unical 9000

- Select measuring module:
  Select the pH module for evaluation with the Unical 9000 controller (only if equipped with more than one pH module).

Select cal mode

- Adjustment: The values determined by a calibration are taken over.
- Calibration: The values determined by a calibration are logged, but not taken over.

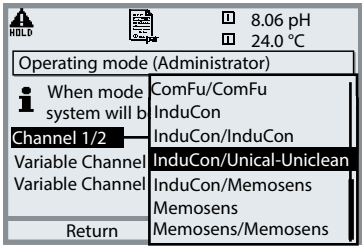


Cal timer program

Starts the selected program after cal timer expiry.

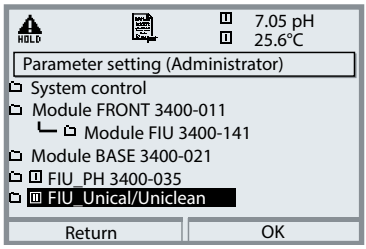
Modification 12:

FIU 3400-141 module supplemented by Unical/Uniclean function:



Selecting an operating mode

Select operating mode using arrow keys, confirm with **enter**.
When the operating mode is changed (or selected for the first time), parameter setting must be exited so that the system can be re-initialized.
After that, the required virtual measuring modules are available for configuration:



Select probe controller

(FIU_Unical/Uniclean)
Icons to assign the measured values displayed:

- specifies module slot I
- specifies module slot II

Modification 13:
Unical/Uniclean: Sensor dismount guard
So far, the dismount guard only worked for CERAMAT. It was not provided for all other retractable probes, in particular SensoGate.
When the sensor is pulled off, the probe does not move into the process, behavior as with dismount guard.

Modification 14:
Sensor data / Sensor monitoring menu supplemented
With extremely low-resistance OXY sensors (e.g. from Mac Sense), the sensor impedance is below the impedance range. Sensocheck is activated, Sensoface becomes sad.
For these sensors, Sensocheck can now be switched off (Sensocheck Off). Then, Sensoface is not influenced by Sensocheck. The branch of the sensor network diagram is gray and set to 100%.

Modification 15:
New toroidal sensor "InPro 7250 PFA"
(cell factor = 2.3 / transfer ratio = 120)
The terminal assignments are as for the InPro 7250 ST sensor

Version 8.1 Sept. 26, 2008

SZ34Z80000/1 Build 17446
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z80000/1
	FRONT	3400X-015	SW version:	SZ34Z80000/1
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	3.3
	OXY	3400(X)-066	SW version:	3.3 (is to be stopped)
	OXY	3400(X)-067	SW version:	2.3
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	2.1
	CO_2	3400(X)-130	SW version:	1.4
	COMFF	3400(X)-085	SW version:	1.1
	FIU	3400X-140	SW version:	2.0
	FIU	3400-141	SW version:	2.0
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	Required SW version:
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-013	Reserved: Memosens functionality	
SW 3400-014	2nd channel for FIU 3400-140 module	7.0
SW 3400-015	Reserved: Oxy standard measurement for FIU 3400-140 module	
SW 3400-016	Reserved: Oxy trace measurement for FIU 3400-140 module	
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes/Supplements Compared to SW Version 8.0:
The "Digital sensor" icon, implemented with SW 8, is not displayed any more.

Version 8.2 July 20, 2009

SZ34Z80000/2 Build xxxxx
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z80000/2
	FRONT	3400X-015	SW version:	SZ34Z80000/2
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	2.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	3.4
	OXY	3400(X)-066	SW version:	3.4 (is to be stopped)
	OXY	3400(X)-067	SW version:	2.4
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	2.1
	CO_2	3400(X)-130	SW version:	1.5
	COMFF	3400(X)-085	SW version:	1.1
	FIU	3400X-140	SW version:	2.2
	FIU	3400-141	SW version:	2.2
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-013	Reserved: Memosens functionality	
SW 3400-014	2nd channel for FIU 3400-140 module	7.0
SW 3400-015	Reserved: Oxy standard measurement for FIU 3400-140 module	
SW 3400-016	Reserved: Oxy trace measurement for FIU 3400-140 module	
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes/Supplements Compared to SW Version 8.1:

1) FIU module: Operation with Memosens pH glass sensors
   Memosens glass sensors are supported, also together with the Unical control integrated in the FIU module. Wear information is not evaluated any more, the wear monitor is omitted.
2) FIU module: Operation with Memosens pH ISFET sensors
   Memosens ISFET sensors (E+H) are supported, also together with the Unical control integrated in the FIU module. The ISFET operating point (± 500 mV, adjustable) is monitored via Sensoface and error message (ERR 072 ISFET operating point). Wear information is not evaluated any more, the wear monitor is omitted.
3) FIU module: Operation with Memosens OXY sensors
   Memosens OXY sensors are supported. Wear information is not evaluated any more, the wear monitor is omitted. Standard sensors as well as trace sensors with or without polarization voltage are supported. In the menu a pressure value can be manually specified for pressure compensation, air pressure and external pressure compensation are omitted.
4) FIU module: Operation with Memosens COND sensors
   Memosens 2-electrode conductivity sensors are supported.
5) The Memosens activation code (TAN) is omitted.
6) The Memosens icon is displayed during Memosens operation
7) Memosens manufacturer ID
   Memosens does not provide a manufacturer ID. For the sensor pop-up window and for records, the manufacturer is derived from the sensor designation. This only works for Knick and E+H sensors.
   For other manufacturers, this information is omitted.
8) Operation of Memosens Ex sensors
   Up to now, Memosens sensors could not be operated with Ex devices because of unsolved explosion-protection problems. This lock has been removed.
9) OXY 3400(X)-067 now also supports standard sensors.
   Up to now, this module only allowed operation with OXY trace and "super trace" sensors. Now, the function has been opened up to standard sensors.

10) New ProgaLog version
A new ProgaLog version for SW version 8.2 will be available shortly (approx. 2 – 4 weeks) after the release of SW 8.2.

Note:
The new functions for Memosens can only be used with a FIU 3400-14x module, software version 2.2 or above.

Version 8.3 Oct. 19, 2009

SZ34Z80000/3 Build 18094
Bootloader 0.6

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z80000/2
	FRONT	3400X-015	SW version:	SZ34Z80000/2
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	2.3
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	3.4
	OXY	3400(X)-066	SW version:	3.4 (is to be stopped)
	OXY	3400(X)-067	SW version:	2.4
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	2.1
	CO_2	3400(X)-130	SW version:	1.5
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	2.4 (not for ComFu)
	FIU	3400-141	SW version:	2.4
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	Required SW version:
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141 module	7.0
SW 3400-015	Reserved: Oxy standard measurement with FIU 3400(X)-140/141 module	
SW 3400-016	Reserved: Oxy trace measurement with FIU 3400(X)-140/141 module	
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Changes/Supplements Compared to SW Version 8.2:
Sensocheck sensor monitoring adapted to Memosens:
changed limit values and adapted temperature switch-off
Impedance: min. = 20 MΩ / nom. = 280 MΩ / max. = 999 MΩ
Monitoring is switched off for < 0 °C and > 75 °C.

Version 9.0 Sept. 1, 2010

SZ34Z90000/0 Build 19750 / Bootloader 0.6 (de/en/fr/it/es/sv)
SZ34P90000/0 Build 19751 / Bootloader 0.6 (de/en/fr/it/es/pt)

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z(/P)90000/0
	FRONT	3400X-015	SW version:	SZ34Z(/P)90000/0
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	3.4
	OXY	3400(X)-066	SW version:	3.4 (is to be stopped)
	OXY	3400(X)-067	SW version:	3.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	3.0
	CO_2	3400(X)-130	SW version:	1.6
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.1
	FIU	3400-141	SW version:	3.1
	MS	3400(X)-160	SW version:	1.0
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141 module	7.0
SW 3400-015	Oxygen standard measurement with FIU 3400(X)-140/141, MS 3400(X)-160 modules	9.0
SW 3400-016	Analogment with FIU 3400(X)-140/141, MS 3400(X)-160 modules	9.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

General changes:

1) ORP/rH menu: default reference electrode
2) Buffer tables supplemented
3) Portuguese texts
4) New menu structure for digital sensors
5) FIU/MS module: change of measured variable
6) Memosens pH sensors
7) Memosens ISFET sensors
8) Memosens ORP sensors
9) Memosens OXY sensors
10) Memosens COND sensors
11) Integration of the SE 670 digital CONDI sensor
12) COND/CONDI: Calibration of concentration measurement
13) OXY 3400(X)-065/066/067: Pressure correction
14) Audit Trail: Entering lot numbers for the buffer solutions
15) Operation with pH ISM sensors (PH 3400(X)-035 module)
16) Operation with O_2 ISM sensors (OXY 3400(X)-065/066/067 modules)
17) COMPA 3400-081: Remaining lifetime and lot number of buffer solution
18) MS 3400(X)-160 module
19) Unical/Uniclean

Point 1: ORP/rH menu: default reference electrode

"Ag/AgCl, KCl 3mol" is set as default reference electrode type.

Point 2: Buffer tables supplemented

New buffer tables integrated:

Ciba (94) 2.06/4.00/7.00/10.00

Reagecon 2.00/4.00/7.00/9.00/12.00

Point 3: Portuguese texts

One firmware version has Portuguese texts implemented instead of Swedish texts. There are two firmware versions:

Texts in: German / English / French / Spanish / Italian / Swedish

Texts in: German / English / French / Spanish / Italian / Portuguese

By default, the Protos comes with Swedish texts. The Brazilian office is provided with a SW repair card to allow switching from Swedish to Portuguese if required.

Point 4: New menu structure for digital sensors
For a better overview in the main menus ("maint", "par", "diag"), the digital sensors are indicated more clearly. The sensor types selected in the FIU or MS module are directly shown in the main menu. The display resembles Windows Explorer, the sensor parameters can be set in the submenu as before.

Point 5: FIU/MS module: change of measured variable
When the measured variable is changed in the "Operating mode" menu of the FIU or MS module or activated in the Unical, for example, the Protos will automatically perform a restart when the user returns to the main menu. The following window will pop up:

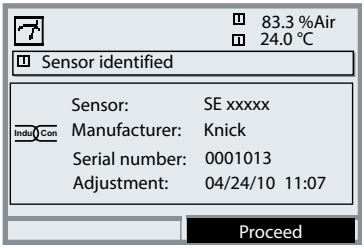
Initialization occurs automatically

It can take several seconds until the initialization starts, then a module scan will be performed as for an ordinary restart. The Protos will then switch to measuring mode. If required, the user must open the parameter setting menu once more.

General information for operation with Memosens and InduCon sensors:
- Up to two Memosens sensors can be operated simultaneously on the FIU module.
- The Memosens type (pH, OXY or COND) is selected in a menu of the FIU module.
- After a new installation or change of sensor type, all parameters for these virtual modules must be set.
- Mixed operation with Memosens and InduCon sensors is permitted.
- Settings which are possible for InduCon but not for Memosens, for example, are hidden in the menus. Status indications (sensor network diagram) which cannot be operated are shown in gray (100%).
- Together with Unical, one InduCon or one Memosens pH sensor (glass or ISFET) can be directly operated on the FIU module.
- The TAN for Memosens is omitted.
- The ISFET TAN is no more required for operation with Memosens ISFET.
- The new Memosens icon is displayed as soon as at least one Memosens sensor is connected.

- The Ex lock for Memosens is omitted. Ex and non-Ex sensors can be operated on Ex or non-Ex devices.
- The integration of Memosens sensors required SW changes in the PROTOS FRONT as well as in the FIU 3400X-140/3400-141 modules.

Sensor pop-up window for Memosens:



Point 6: Memosens pH sensors

Sensocheck glass el:

Fixed limits are specified for impedance display of the glass electrode in the sensor network diagram: Nom. impedance = 280 MΩ, min = 20 MΩ and max = 999 MΩ. Fixed temperature limits are also used for switch-off of impedance monitoring based on the temperature: $temp_{min}$ = 0 °C and $temp_{max}$ = 75 °C.
Exception: a glass impedance of exactly 0.0 MΩ is always recognized as error.

Viso / pHiso

Both values, Viso and pHiso, are stored in the Memosens. Protos only uses the Viso value for the inputs. When writing the calibration data in the Memosens, pHiso is calculated and also saved.

pH/ORP/rH measurement

As Memosens cannot simultaneously measure the pH value and the ORP value, ORP and rH value are omitted when measuring pH using Memosens. The two values neither appear in the selection menus nor in the secondary display.
For ORP measurement, a separate Memosens ORP sensor is used. Here, the pH and rH values are omitted.
There is no cross-calculation of the rH value from a Memosens pH sensor and a Memosens ORP sensor!

Point 7: Memosens ISFET sensors

The E+H Memosens ISFET sensor is operated on the FIU module, also together with the Unical control in the FIU module.

Special features of the ISFET sensor

The operating point of the ISFET sensor (asymmetry potential) is stored in a memory location in the sensor. It can be up to ± 500 mV. Protos uses two memory locations, one for the zero point (6 … 8 pH = approx. ± 60 mV) and a separate memory location for the ISFET offset, which usually is only calibrated separately for the initial use of the sensor.
Calimatic and Sensocheck only work with the zero point. When a Memosens ISFET sensor is connected, the operating point, which is stored in the sensor, is splitted into the zero point pH 7 (= 0 mV) and the offset (remaining value). During calibrations in the Protos (Calimatic or manual) only the zero point is changed. The operating point is rewritten to the sensor as the sum of zero point (converted to mV) and offset. This allows precalibrating the Memosens ISFET sensor at any time.
Minor disadvantage: Sensoface will become sad when the zero point, determined by a calibration in the Protos, is out of range. If the sensor then is removed and reconnected, Sensoface will become friendly again because the zero point is now combined with the operating point and reset to pH 7 (0 mV). The measured values are okay.

Viso / pHiso

Both values, Viso and pHiso, are stored in the Memosens. Protos only uses the Viso value for the inputs. When writing the calibration data in the Memosens, pHiso is calculated and also saved.

Point 8: Memosens ORP sensors

For Memosens ORP, a new virtual ORP module has been implemented in the FIU and MS modules.
The reference electrode type is fixed to "Ag/AgCl, KCl 3mol", selection of other types of reference electrodes and rH calculation are omitted.

ORP calbration/adjustment

The potential of an ORP (redox) electrode is calibrated using an ORP (redox) buffer solution. In the course of that, the difference between the measured potential and the potential of the calibration solution is determined. This potential difference is printed on the calibration solution bottle and is

defined as the voltage across the ORP electrode and a reference electrode.
Examples: 220 mV Pt against Ag/AgCl, KCl 3 mol/l
(427 mV Pt against SHE)
During measurement this difference is added to the measured potential.

$mV_{ORP} = mV_{meas} + \Delta_{mV}$

mV_{ORP} = displayed oxidation-reduction potential (measured ORP)

mV_{meas} = direct electrode potential (ORP input, see Sensor monitor)

ΔmV = delta value, determined by the device during calibration

ORP offset may be -200 … +200 mV.

Point 9: Memosens OXY sensors

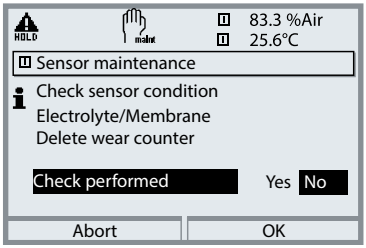
Parameter setting / Sensor monitoring details:
The following menus are omitted:
- Sensocheck
- CIP counter
- Autoclaving counter
- Membrane body changes
- Inner body changes

Diagnostics / Sensor wear monitor:
- Evaluation of inner body wear is omitted
- CIP cycles omitted
- Autoclaving counter omitted
- Disabled parameters (SIP counter) are not displayed

"Sensor wear" specifies how far the sensor membrane is worn out or the electrolyte is used up during normal operation.
When sensor monitoring is switched on, the message "116: Electrolyte/ Membrane replacement" reminds the user to perform a sensor check including replacement of electrolyte/membrane. The user must confirm the servicing and reset the sensor wear counter in the Maintenance menu.

Maintenance:
The following entries are omitted:
- Autoclaving counter
- Membrane body changes
- Inner body changes

They are replaced by a new submenu: "Sensor maintenance".



Point 10: Memosens COND sensors

The following menus are omitted:

- Temperature detection

New menus: Sensor data / Sensor monitoring details

- Sensor operating time
- CIP counter
- SIP counter
- Cell constant
- Additional Sensocheck/Sensoface evaluation:
- Polarization warning
- Monitoring the cell constant
- SIP: Number of sterilizations
- CIP: Number of CIP cycles

Point 11: Integration of the SE 670 digital CONDI sensor

The SE 670 digital sensor is a special case.
It is a digital sensor, the complete signal processing is carried out in the sensor. It is connected to the RS485 interface of the FIU 3400-141 or MS 3400-160 module (like Memosens or InduCon). The data, such as cell factor and zero point, however, are stored in the device and not in the sensor. When the sensor is selected in the CONFIG menu, the default values are taken as calibration data. They can then be modified by calibration, just like for an analog sensor.
For faster temperature measurement (reduction of temperature settling time), the temperature is calculated in the sensor itself using the TICK procedure. The adjustment parameters for the neuronal network (TICK) are stored in the PROTOS. When the user selects a sensor, they are saved to the sensor.

Point 12: COND/CONDI – Calibration of concentration measurement

In the data entry calibration mode a concentration calibration can be performed by changing the cell factor. When the cell factor is changed using the cursor keys, the indicated calibration and concentration values are automatically adjusted. Calibration is terminated by pressing the [enter] key or the "End" softkey.
Caution! The cell factor is immediately changed in the memory by actuating the cursor keys. Even when the function is aborted by pressing the [meas] key, the cell factor will remain changed.

Point 13: OXY 3400(X)-065/066/067: Pressure correction

When "Pressure transmitter: Difference" has been selected, the values for current start and end are entered with sign (-9999 … +9999 mbar). With "Pressure transmitter: Absolute", the input remains positive (0000 … 9999 mbar).

Point 14: Audit Trail: Entering lot numbers for the buffer solutions

In the pharmaceutical and food industries it is often required to record the lot number of the buffer solutions used for calibration. The AuditTrail function (SW3400-107) has been extended so that the user can enter the LOT number of the buffer solution during calibration. This number is included in the calibration record and saved to the SmartMediaCard (AuditTrail). Furthermore, it can be transmitted via Profibus (COMPA 3400-081 module) or FF bus (COMFF 3400-085 module) to the superordinate control system.

Calibration by hand

With the calibration methods Calimatic (automatic calibration) or Manual (by entering buffer values), the lot number of the buffer solution used can be entered for each calibration step (1 … 3).
In the calibration record the lot number is documented together with the respective buffer solution.

Calibration using Unical

When calibrating automatically using Unical, the lot number can be specified in the "Cal preset values" submenu of the PHU 3400(X)-110 module or the FIU 3400X-140 / FIU 3400-141 module, resp.

Point 15: Operation with pH ISM sensors (PH 3400(X)-035 module)

The "Sensor monitoring details" has been extended by the menu item:
"Mode Load matrix / DLI Lifetime Indicator"
In the DLI mode the sensor load diagram is omitted.
The calculations are always performed for both parameters, i.e., after switching from one mode to the other, the correct parameters are provided.
The remaining lifetime/DLI [h] can be transmitted via Profibus (COMPA 3400(X)-081 module).
With DLI selected, a new submenu appears under
"Sensor monitoring details": "TTM maintenance timer"
with the menu items: "Monitoring Off/Auto/Individual".
"Individual" requires input of a maintenance interval [h].
With "Auto", the interval is taken from the sensor.
During operation the maintenance timer is decremented every hour.
When the maintenance interval has expired (= 0), Sensoface becomes sad and a message is generated: "TTM maintenance timer expired".
When the maintenance timer has expired, a Unical program can be automatically started. For that purpose, the Unical "CAL preset values" menu is extended by the "TTM program" menu item.
Any desired Unical program can be selected to be started after expiration of the TTM maintenance timer.
After this program is started, the data of the TTM will be reset.

Point 16: Operation with O_2 ISM sensors (OXY 3400(X)-065/066/067 modules)

The "Sensor monitoring details" has been extended by the menu item:
"Mode Load matrix / DLI Lifetime Indicator"
Membrane wear is included in the sensor network diagram ("not used" up to now).
In the DLI mode the sensor load diagram is omitted.
The calculations are always performed for both parameters, i.e., after switching from one mode to the other, the correct parameters are provided.
With DLI selected, a new submenu appears under
"Sensor monitoring details": "TTM maintenance timer"
with the menu items: "Monitoring Off/Auto/Individual".

“Individual“ requires input of a maintenance interval [h].
With “Auto“, the interval is taken from the sensor.
When the membrane module or interior body have been replaced, the user must enter the date and a new serial number in the maintenance menu. The corresponding wear parameters will then be reset.

Point 17: COMPA 3400-081 – Remaining lifetime and lot number of buffer solution

Profibus cyclically transmits the remaining sensor lifetime/DLI as well as the extended calibration record with the lot number of the buffer solution.
For pH measurement using digital sensors (Memosens, InduCon or ISM), the remaining lifetime or the DLI can be switched to one of the 8 Analog Input blocks allowing to transmit them cyclically. (This is not possible for OXY sensors because the assignment table for OXY does not permit a further entry.)

Point 18: MS 3400(X)-160 module

- Occupies one module slot only.
- Power consumption like a normal measuring module.
- Accepts all Memosens sensors (pH glass, ISFET, OXY, COND, CONDI).
- Accepts the SE 670 digital CONDI sensor.
- I input: Pressure correction for oxygen measurements
- CONTROL: Input for flow monitoring

The menus for Memosens correspond to the menus in the FIU 3400(X)-140/141 module.

Point 19: Unical/Uniclean

ORP check

ORP check can be exited manually. For this purpose, the “End“ softkey is displayed after 10 sec to allow terminating the checking.
The bottom line in the “Response time“ menu is omitted and is replaced by the “End“ softkey.

Wear counter extended

In the maintenance instructions of the Ceramat it is recommended to check the O-rings after 10,000 … 20,000 strokes and have a complete maintenance performed by Knick after 100,000 strokes.

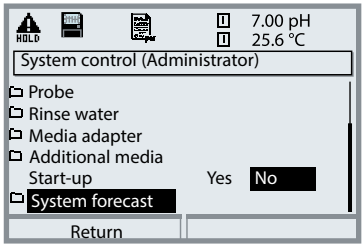
The previously used wear counter could only count up to 9,999 strokes.
It has been replaced by two larger resettable counters: check counter and maintenance counter.
Check and maintenance counter can be separately switched on or off. For each counter, an interval can be set which generates a message after expiry.

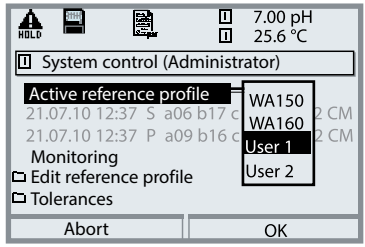
Unical / Uniclean system forecast

Sensor lock-gates frequently display signs of wear as a change in their travel behavior. The travel time can increase significantly if the sensor lock-gate becomes sticky or gaskets swell. The time can also decrease, however, if a gasket is heavily abraded or is missing completely. The switching behavior of control elements such as piezo valves also changes in the course of time, particularly with long dwell times in one position. The opening and closing times as well as the passing capacity of these valves can then be significantly changed. Over time, pneumatically-controlled valves are also subject to changed switching times as a result of increasing friction, fatty deposits or other influences. A duty cycle between travel time and air flow can help to detect whether the probe movement is continuous or jerky, which, for example, would indicate resinified grease.
These changes can be recorded in a probe movement profile, which measures opening, closing and switching times as well as duty cycles.
By determining these times and comparing them with reference times, an expert or the system itself can draw conclusions on the status of the separate components and generate appropriate messages.
System forecast is only active with Ceramat or SensoGate connected.
Procedure:
After installing or repairing a system, several travel cycles are carried out and so-called reference profiles are saved to the Unical with time and date.
A distinction is made here between retraction behavior S (service) and insertion behavior P (process). Plant-specific conditions such as barometric pressure and hose lengths are recorded. Up to 2 reference profiles (User1 / User2) can be saved. One reference profile is selected for automatic monitoring of the system during operation. The module comes with preset reference profiles, which cannot be changed, for the probe types Ceramat WA150, WA160 and Sensogate WA130S (short), WA130L (long).

These profiles are displayed in gray and are marked with the probe type. For special installation or pressure conditions, the user should create individual reference profiles (User1 / User2).

Parameter setting:
In the parameter setting menu: Unical/Uniclean / Installation the system forecast is selected and adjusted to the system conditions. A reference profile can be selected or created. Monitoring tolerances can be specified and monitored with messages. Recording to SmartMediaCard can be enabled here.





Recording an individual reference profile (User 1, User 2):
When an individual User1 or User 2 reference profile is selected, a new reference profile can be recorded by pressing the "Start" softkey. After a confirmation prompt, the system automatically starts three complete travel cycles and determines the individual travel times. The reference profile is created from the average values recorded for these three cycles. The system monitors whether the deviations between the three cycles lie within a specified tolerance. If the times exceed the tolerance, the profile will be aborted. In that case, there is probably a general error in the system, which must first be remedied. Otherwise, the tolerances must be appropriately increased (menu: Tolerances / Ref. profile tolerance).

Tolerance specifications:
For monitoring during operation, permissible deviations in the separate travel times can be set in the "Tolerances" menu.
The tolerances a ... e are permissible deviations from the active reference profile.
If the tolerances for the individual parameters are exceeded, maintenance request messages (warning) can be generated (System forecast menu: Monitoring On Off). This helps detecting wear of individual components and initiating predictive maintenance before a failure occurs which would cause a standstill of the system.
Diagnostics / System forecast:
In operation, travel times are saved for every cycle (max. 180) and compared with the selected reference profile.
When the "System forecast" menu is opened in the Diagnostics level, the active reference profile is displayed and the probe travel profile is loaded. This may take some time.
If a tolerance limit is exceeded in the probe travel profile, it will be marked and, if enabled, a message will be generated (Uxxx). The message texts can be viewed in the message list.
For better comparability, the representation can be changed using the right softkey:

Cycles in Service "S" and Process "P" directions
Cycles in Service "S" direction
Cycles in Process "P" direction

Recording on SmartMedia card:
If a SmartMedia card is installed, the probe travel times can be transmitted to the card and saved on it. The recording capacity is limited only by the amount of memory on the card. The data is stored in ASCII text format and can be read by standard computer tools (e.g.: Word).
Caution: In the Protos/Unical system the last 180 travel cycles are stored in a volatile memory, i.e., the data is lost after power switch-off or is deleted after power-on of the system to prevent undefined states.

Version 9.1 April 4, 2011

SZ34Z90000/1 Build 19750 / Bootloader 0.6 (de/en/fr/it/es/sv)
SZ34P90000/1 Build 19751 / Bootloader 0.6 (de/en/fr/it/es/pt)

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z(/P)90000/1
	FRONT	3400X-015	SW version:	SZ34Z(/P)90000/1
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	4.0
	OXY	3400(X)-066	SW version:	4.0 (is to be stopped)
	OXY	3400(X)-067	SW version:	3.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	3.0
	CO_2	3400(X)-130	SW version:	1.6
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.2
	FIU	3400-141	SW version:	3.2
	MS	3400(X)-160	SW version:	1.1
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141	7.0
SW 3400-015	Oxygen standard measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-016	Oxygen trace measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

General changes

Memosens ID via Profibus
The sensor ID is deleted when the sensor is removed. This allows the process control system to recognize that a Memosens sensor is removed or replaced.

OXY:
The uncompensated sensor signal (nA) can now be output via 0 (4) … 20mA current outputs.

Memosens OXY:
For calculations in the network diagram and for the Sensoface tolerances, the nominal slope is taken from the index structure of the sensor.

The air pressure measured in the OXY modules was no more transmitted to the Profibus via COMPA.
Note: With Memosens (FIU and MS modules), air pressure is not measured/ transmitted.

Version 9.2 May 25, 2011

SZ34Z90000/2 Build 19928 / Bootloader 0.6 (de/en/fr/it/es/sv)
SZ34P90000/2 Build 19929 / Bootloader 0.6 (de/en/fr/it/es/pt)

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z(/P)90000/2
	FRONT	3400X-015	SW version:	SZ34Z(/P)90000/2
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	4.0
	OXY	3400(X)-066	SW version:	4.0 (is to be stopped)
	OXY	3400(X)-067	SW version:	3.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	3.0
	CO_2	3400(X)-130	SW version:	1.6
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.2
	FIU	3400-141	SW version:	3.2
	MS	3400(X)-160	SW version:	1.1
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141	7.0
SW 3400-015	Oxygen standard measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-016	Oxygen trace measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Version 9.3 Feb. 1, 2012

SZ34Z90000/3 Build 20024 / Bootloader 0.6 (de/en/fr/it/es/sv)
SZ34P90000/3 Build 20025 / Bootloader 0.6 (de/en/fr/it/es/pt)

Modules supported:

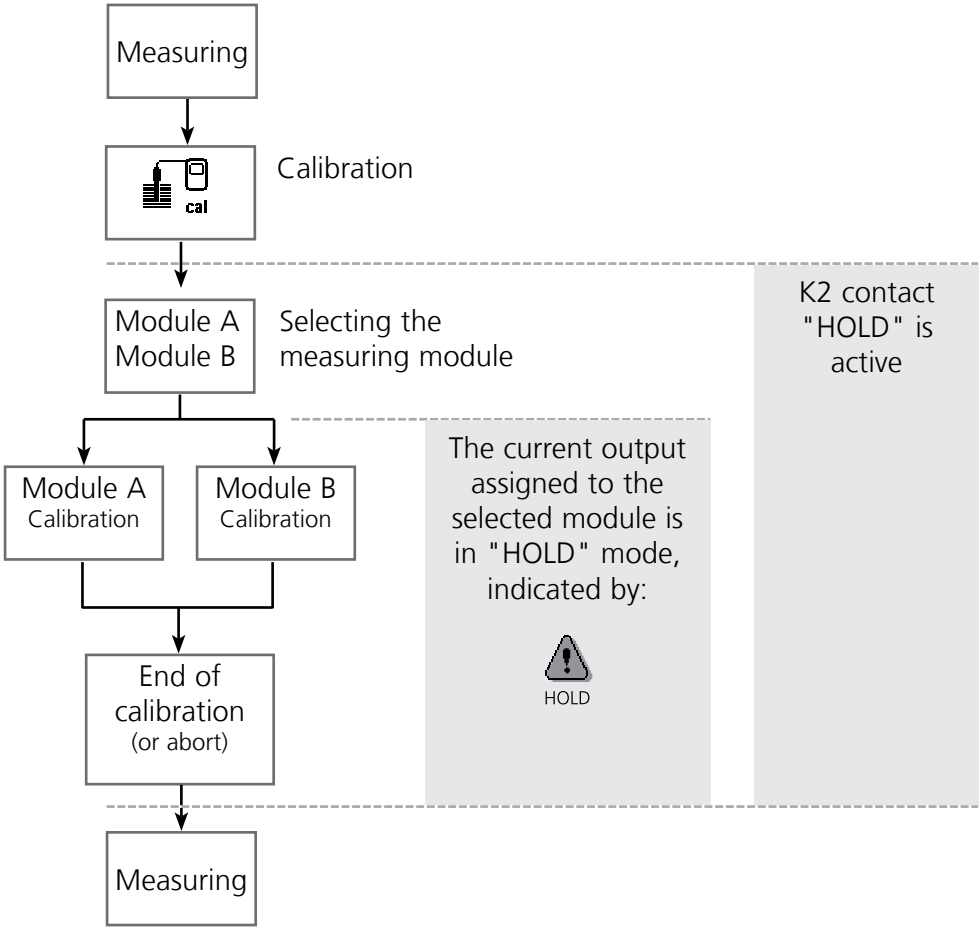
	FRONT	3400-011	SW version:	SZ34Z(/P)90000/3
	FRONT	3400X-015	SW version:	SZ34Z(/P)90000/3
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	4.0
	OXY	3400(X)-066	SW version:	4.0 (is to be stopped)
	OXY	3400(X)-067	SW version:	3.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	3.0
	CO_2	3400(X)-130	SW version:	1.6
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.2
	FIU	3400-141	SW version:	3.2
	MS	3400(X)-160	SW version:	1.1
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141	7.0
SW 3400-015	Oxygen standard measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-016	Oxygen trace measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

General changes

HOLD function during calibration

During calibration the HOLD is activated together with the K2 contact “NAMUR HOLD“, the output current is not frozen yet.
As of software version 9.3 the HOLD icon only appears when the module to be calibrated has been selected and the assigned output current is frozen.
The K2 contact “NAMUR HOLD“ still acts as soon as the calibration function is activated (factory setting).



New “Knick CaliMat“ buffer set introduced

New “Knick CaliMat“ buffer set has been introduced.
The “Knick“ buffer set is omitted.
Factory setting: Knick CaliMat.

Version 9.4 Oct. 1, 2012

SZ34Z90000/4 Build 20024 / Bootloader 0.6 (de/en/fr/it/es/sv)
SZ34P90000/4 Build 20025 / Bootloader 0.6 (de/en/fr/it/es/pt)

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z(/P)90000/4
	FRONT	3400X-015	SW version:	SZ34Z(/P)90000/4
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	4.0
	OXY	3400(X)-066	SW version:	4.0 (is to be stopped)
	OXY	3400(X)-067	SW version:	3.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	3.0
	CO_2	3400(X)-130	SW version:	1.6
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.2
	FIU	3400-141	SW version:	3.2
	MS	3400(X)-160	SW version:	1.1
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	Required SW version:
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141	7.0
SW 3400-015	Oxygen standard measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-016	Oxygen trace measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

General changes

Correction of ORP adjustment for ISM sensors

Additional function SW 3400-009 (concentration determination)

SW 3400-009 has been extended to include concentration measurement of Oleum.

Version 9.5 May 6, 2013

SF-3400-FRONT-V090500-B20127-TFB006000.HEX
Build 20127 / Bootloader 0.6 (de/en/fr/it/es/sv)
SF-3400-FRONT-P-V090500-B20128-TFB006000.HEX
Build 20128 / Bootloader 0.6 (de/en/fr/it/es/pt)

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z(/P)90000/5
	FRONT	3400X-015	SW version:	SZ34Z(/P)90000/5
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	4.0
	OXY	3400(X)-066	SW version:	4.0 (is to be stopped)
	OXY	3400(X)-067	SW version:	3.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	3.0
	CO_2	3400(X)-130	SW version:	1.6
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.2
	FIU	3400-141	SW version:	3.2
	MS	3400(X)-160	SW version:	1.1
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141	7.0
SW 3400-015	Oxygen standard measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-016	Oxygen trace measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

General changes

Response of current outputs to error messages (22mA message)
During Memosens operation, communication errors or disruptions as well as Sensocheck messages can now be signaled to the control room (22 mA).
So far, the output current has been frozen in these cases.
The following settings must be made:

- The 22-mA message in the "Behavior during messages" menu of output current 1 or 2, resp. must be activated in the BASE module settings.
- In the "Messages" menu of the communication module (FIU 3400(X)-140/141 or MS 3400-160) the messages for the measured variable assigned to the respective output current must be activated, e.g., "Device limits max." or "Variable limits".

The delay time from occurrence of fault (message in display) to output of 22-mA error current is fixed to approx. 30 sec.

Version 9.6 Aug. 26, 2013

SF-3400-FRONT-V090600-B20635-TFB006000.HEX
Build 20635 / Bootloader 0.6 (de/en/fr/it/es/sv)
SF-3400-FRONT-P-V090600-B20636-TFB006000.HEX
Build 20636 / Bootloader 0.6 (de/en/fr/it/es/pt)

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z(/P)90000/6
	FRONT	3400X-015	SW version:	SZ34Z(/P)90000/6
	BASE	3400-021	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.0
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	4.0
	OXY	3400(X)-066	SW version:	4.0 (is to be stopped)
	OXY	3400(X)-067	SW version:	3.0
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	3.0
	CO_2	3400(X)-130	SW version:	1.6
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.2
	FIU	3400-141	SW version:	3.2
	MS	3400(X)-160	SW version:	1.1
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141	7.0
SW 3400-015	Oxygen standard measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-016	Oxygen trace measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Version 9.7 xxx, 2014

SF-3400-FRONT-V090700-B21092-TFB006000.HEX
Build 21092 / Bootloader 0.6 (de/en/fr/it/es/sv)
SF-3400-FRONT-P-V090700-B21091-TFB006000.HEX
Build 21091 / Bootloader 0.6 (de/en/fr/it/es/pt)

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z(/P)90000/6
	FRONT	3400X-015	SW version:	SZ34Z(/P)90000/6
	BASE	3400-021	SW version:	1.1
	BASE	3400-029	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.2
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	4.1 (is to be stopped)
	OXY	3400(X)-066	SW version:	4.1 (is to be stopped)
	OXY	3400(X)-067	SW version:	3.1
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	3.0
	CO_2	3400(X)-130	SW version:	1.6
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.3
	FIU	3400-141	SW version:	3.3
	MS	3400(X)-160	SW version:	1.1
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141	7.0
SW 3400-015	Oxygen standard measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-016	Oxygen trace measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

General changes

1) Recognition of the power supply module BASE 3400-029 (PTS-HPW)
2) ISM sensors: Times of the TTM timer were corrected, reset of storage positions after replacement of an interior body was corrected.
3) The active calibration errors (also from Unical) are deleted after sensor replacement.

Version 9.8 May 23, 2014

SF-3400-FRONT-V090800-B21174-TFB006000.HEX
Build 21174 / Bootloader 0.6 (de/en/fr/it/es/sv)
SF-3400-FRONT-P-V090800-B21175-TFB006000.HEX
Build 21175 / Bootloader 0.6 (de/en/fr/it/es/pt)

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z(/P)90000/8
	FRONT	3400X-015	SW version:	SZ34Z(/P)90000/8
	BASE	3400-021	SW version:	1.1
	BASE	3400-029	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.2
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	4.1 (is to be stopped)
	OXY	3400(X)-066	SW version:	4.1 (is to be stopped)
	OXY	3400(X)-067	SW version:	3.1
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	3.0
	CO_2	3400(X)-130	SW version:	1.7
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.3
	FIU	3400-141	SW version:	3.3
	MS	3400(X)-160	SW version:	1.1
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141	7.0
SW 3400-015	Oxygen standard measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-016	Oxygen trace measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Software change

New menu available: “Adjust output current“.

Version A.0 xx/xx/2014

SW version A.0 only exists as test version and was delivered for test purposes only.

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z(/P)A0000/0
	FRONT	3400X-015	SW version:	SZ34Z(/P)A0000/0
	BASE	3400-021	SW version:	1.1
	BASE	3400-029	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.2
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	4.1 (is to be stopped)
	OXY	3400(X)-066	SW version:	4.1 (is to be stopped)
	OXY	3400(X)-067	SW version:	3.1
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	3.0
	CO_2	3400(X)-130	SW version:	1.7
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.3
	FIU	3400-141	SW version:	3.3
	MS	3400(X)-160	SW version:	2.0
	LDO	3400(X)-170	SW version:	0.6
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

Version A.1 Jan. 1, 2015

SF-3400-FRONT-V0A0100-B21219-TFB006000.HEX
Build 21219 / Bootloader 0.6 (de/en/fr/it/es/sv)
SF-3400-FRONT-P-V0A0100-B21220-TFB006000.HEX
Build 21220 / Bootloader 0.6 (de/en/fr/it/es/pt)

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z(/P)A0000/1
	FRONT	3400X-015	SW version:	SZ34Z(/P)A0000/1
	BASE	3400-021	SW version:	1.1
	BASE	3400-029	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.2
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-063	SW version:	2.2 (is to be stopped)
	OXY	3400(X)-065	SW version:	4.1 (is to be stopped)
	OXY	3400(X)-066	SW version:	4.1 (is to be stopped)
	OXY	3400(X)-067	SW version:	3.1
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.2
	PHU	3400(X)-110	SW version:	3.0
	CO_2	3400(X)-130	SW version:	1.7
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.3
	FIU	3400-141	SW version:	3.3
	MS	3400(X)-160	SW version:	2.1
	LDO	3400(X)-170	SW version:	1.0
	UNICAL	9000(X)	SW version:	3.1
	UNICLEAN	900(X)	SW version:	1.2

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141	7.0
SW 3400-015	Oxygen standard measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-016	Oxygen trace measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

Software changes

- Support of new module: LDO 3400-170
  (SE 740 optical oxygen sensor).
- New Memosens index structure (V1 protocol) in MS 3400(X)-160 module for Memosens CondI sensors, eg, Model SE 680.

Version A.2 Nov. 10, 2016

SF-3400-FRONT-V0A0200-B21452-TFB006000.HEX
Build 21452 / Bootloader 0.6 (de/en/fr/it/es/sv)
SF-3400-FRONT-P-V0A0200-B21453-TFB006000.HEX
Build 21453 / Bootloader 0.6 (de/en/fr/it/es/pt)

Modules supported:

	FRONT	3400-011	SW version:	SZ34Z(/P)A0000/2
	FRONT	3400X-015	SW version:	SZ34Z(/P)A0000/2
	BASE	3400-021	SW version:	1.1
	BASE	3400-029	SW version:	1.1
	BASE	3400X-025/VPW	SW version:	1.1
	BASE	3400X-026/24V	SW version:	1.1
	PH	3400-031	SW version:	1.2 (stopped)
	PH	3400(X)-032	SW version:	2.0
	PH	3400(X)-033	SW version:	2.0
	PH	3400(X)-035	SW version:	3.2
	COND	3400(X)-041	SW version:	2.0
	CONDI	3400(X)-051	SW version:	2.0
	OXY	3400-061	SW version:	1.4 (not supported any more)
	OXY	3400(X)-062	SW version:	2.2 (stopped)
	OXY	3400(X)-063	SW version:	2.2 (stopped)
	OXY	3400(X)-065	SW version:	4.1 (stopped)
	OXY	3400(X)-066	SW version:	4.1 (stopped)
	OXY	3400(X)-067	SW version:	3.1
	OUT	3400(X)-071	SW version:	1.1
	PID	3400(X)-121	SW version:	1.1
	COMPA	3400(X)-081	SW version:	2.4
	PHU	3400(X)-110	SW version:	3.1
	CO_2	3400(X)-130	SW version:	1.7
	COMFF	3400(X)-085	SW version:	1.2
	FIU	3400X-140	SW version:	3.5
	FIU	3400-141	SW version:	3.4
	MS	3400(X)-160	SW version:	2.2
	LDO	3400(X)-170	SW version:	1.0
	UNICAL	9000(X)	SW version:	4.3
	UNICLEAN	900(X)	SW version:	2.1

	Additional function	**Required SW version:**
SW 3400-001	KI recorder	5.0
SW 3400-002	Buffer sets, specifiable (pH)	1.0
SW 3400-004	ServiceScope	1.0
SW 3400-005	Tolerance band recorder (pH)	1.0
SW 3400-006	Current characteristic definable	1.0
SW 3400-008	TC ultrapure water	2.1
SW 3400-009	Concentration determination	1.0
SW 3400-011	DO measurement in beer	5.0
SW 3400-012	pH measurement using ISFET sensors in conjunction with PH 3400(X)-035 module	6.0
SW 3400-014	2nd channel for FIU 3400(X)-140/141	7.0
SW 3400-015	Oxygen standard measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-016	Oxygen trace measurement with FIU 3400(X)-140/141, MS 3400(X)-160	9.0
SW 3400-102	5 loadable parameter sets	2.0
SW 3400-103	Measurement recorder	2.0
SW 3400-104	Extended logbook	2.0
SW 3400-106	Software update	2.0
SW 3400-107	Data recording and backup according to FDA 21 CFR Part 11	4.0

General changes

COMPA bus communication: Operation lock

To improve understanding, the original menu "Release by DCS On Off" has been renamed "Operation lock On Off" and an explanatory text is shown: "Locks operation on device. Unlocking via bus only!"

Unical/Uniclean probe controller: Sensor immersion guard

In a new submenu, the sensor immersion guard can now be switched on and off.

Activation of system forecast

System forecast is used to acquire valuable information for service and maintenance for operation with retractable fittings. With this information, mechanical wear of the retractable fitting can be predicted early on and unexpected failures avoided.
For system forecast, there are software requirements for the following modules:

FIU 3400(X)-140/141	from software 3.4
FIU 3400(X)-110	from software 3.1
Unical 9000(X)	from software 4.3
Uniclean 900(X)	from software 2.1
COMPA 3400(X)-081	from software 2.4

System Forecast: Commissioning/reference profile

If "Active reference profile 'Auto'" is selected in the menu, a reference profile is automatically recorded during the first 20 probe movements.
With the "Auto - New record yes" menu item, a new reference profile is recorded and the old one deleted. An preceding safety prompt is intended to prevent accidental deletion. A confirmation text ("Automatic recording of new reference profile has started") shows that the function is active.
If "Active reference profile 'User'" is selected in the menu, the probe is immediately moved six times and a reference profile is simultaneously recorded.
The "User" reference profile can be manually edited with "Edit reference profile."

System Forecast: Classifying messages

In the “Messages” menu, all system forecast messages (Uxxx) are classified as failure or maintenance messages or switch on/off (active/inactive).

pH/ORP Memosens sensor

Error message 101 if the sensor is pulled off: “Communication interrupted.”
The “Manual temperature” icon is no longer displayed when the sensor is removed.
The “Statistics” menu was removed.

MS CONDI sensor

After Airset calibration, the newly calibrated zero position will be displayed.

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