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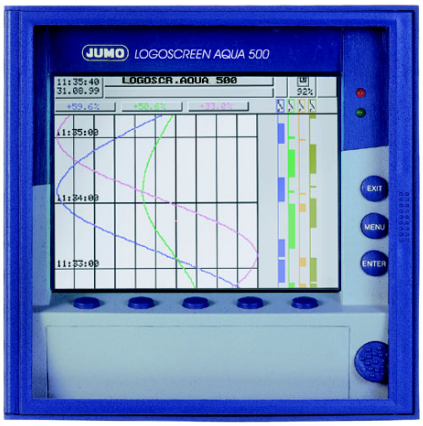
JUMO LOGOSCREEN AQUA 500

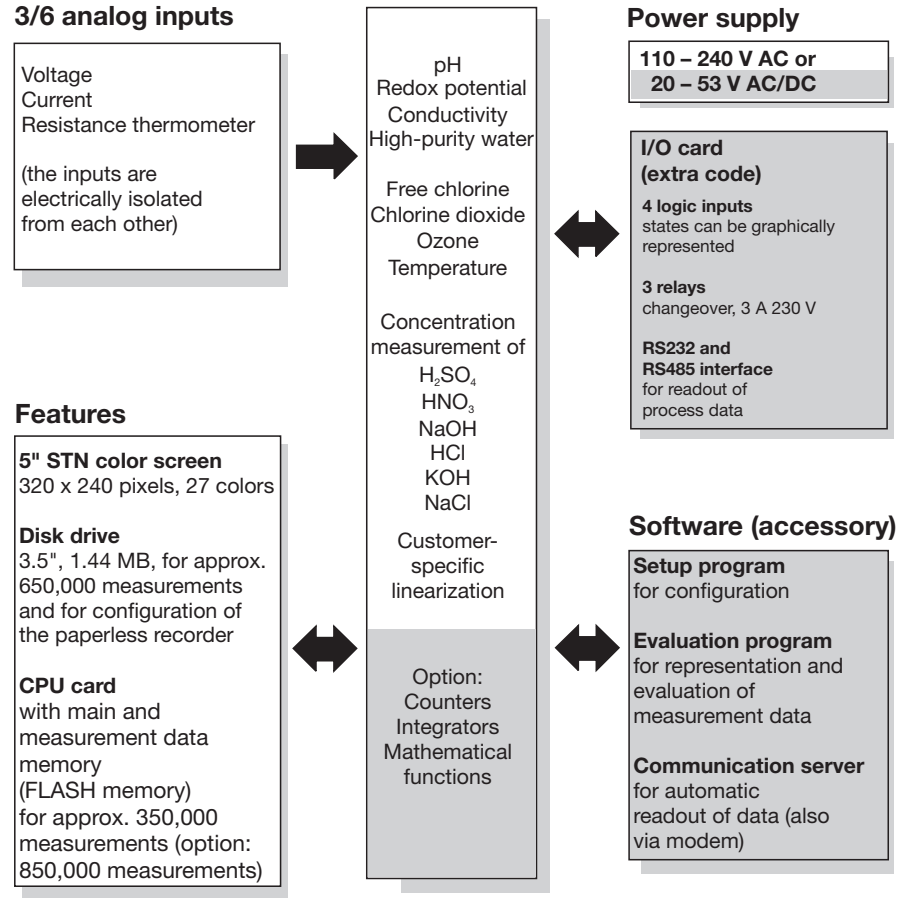
Multiparameter acquisition system for analytical measurement



Brief description

The LOGOSCREEN AQUA 500 is a universal acquisition system for a very diverse range of sensor signals.
In addition to current, voltage and temperature sensor signals, special measurement variables such as pH, redox potential, free chlorine, chlorine dioxide, ozone or conductivity and concentration measurement can also be acquired as input signals. The instrument can be equipped with 3 or 6 isolated measurement inputs and offers many different recording functions.
Calibration procedures and temperature compensation, for instance for pH measurement, are integrated in the instrument. This means that there is no need for a separate, fully fitted transmitter.
The instrument can be programmed from 8 keys or from a PC (via the serial interface or diskette).
The bezel size is 144mm x 144mm, depth behind panel 214mm.

Block structure



= extra code

Features

- Recording functions: diagrams, event traces, event list
- Evaluation of archived data through the PC evaluation program
- Measurement data are retained, even after a power interruption
- Freely programmable inputs
- Counters and integrators (option)
- Instrument configuration from the keys or through the setup program (diskette or serial interface)

pH / redox measurement

- Connection of conventional pH and redox electrodes via 2-wire transmitter or impedance converter
- Menu-led calibration of the sensors
- 1-, 2- or 3-point calibration
- Automatic temperature compensation

Conductivity measurement

- Connection of conductive and inductive measuring cells via standard signal
- Calibration of cell constants and temperature coefficient
- Automatic temperature compensation
- Non-linear concentration curves are integrated (H_2SO_4, HNO_3, NaOH, etc.)
- High-purity water measurement according to ASTM and USP

Free chlorine, chlorine dioxide and ozone measurement

- Connection of the measuring cells via current (or voltage) signal
- Cell calibration
- pH and temperature-compensated chlorine measurement

For all measurement inputs

- Evaluation of the electrode condition in plain text (depending on the process variable)
- Logbook on calibration procedures and sensor ageing

Technical data

Analog inputs

pH sensors via impedance converter

Indication range	Basic range	Compensation[1]	Accuracy
-1 to 14 pH	-600 to 600 mV	-50 to 250°C	±0.1% or 0.02 pH

Redox sensors via impedance converter

Indication range	Basic range	Compensation	Accuracy
-2000 to 2000 mV	-2000 to 2000 mV	not required	±0.1% or 4 mV

Conductivity measurement via conductivity transmitter

Indication range	Basic range	Compensation	Accuracy
0 to 2000 mS/cm	0 to 2000 mS/cm	linear 0 to 5.5%/°C; -50 to 250°C	see footnote [2]

High-purity water measurement via conductivity transmitter

Indication range	Basic range	Compensation	Accuracy
µS/cm	0 to 10 µS/cm	0 to 100°C, pollution by - salts - acidic media - alkaline media	see footnote [2]
MOhm-cm	0 to 20 MOhm-cm		
ppm	0 to 10 ppm		

Measurement of free chlorine HOCl e.g. via sensors as per Data Sheet 20.2630

Indication range	Basic range	Compensation	Accuracy
0 to 20 mg/liter	0 to 20 mg/liter	6.5 to 8.5 pH +5 to 45°C	see footnote [2]

Measurement of chlorine dioxide ClO_2 e.g. via sensors as per Data Sheet 20.2630

Indication range	Basic range	Compensation	Accuracy
0 to 20 mg/liter	0 to 20 mg/liter	not required	see footnote [2]

Measurement of ozone O_3 e.g. via sensors as per Data Sheet 20.2630

Indication range	Basic range	Compensation	Accuracy
0 to 20 mg/liter	0 to 20 mg/liter	not required	see footnote [2]

Measurement of sulfuric acid H_2SO_4 via conductivity transmitter

Indication range	Basic range	Compensation	Accuracy
0 to 28 % weight (range I)	0 to 2000 mS/cm	0 to 100°C	see footnote [2]
36 to 85 % weight (range II)	0 to 2000 mS/cm	0 to 115°C	
92 to 99 % weight (range III)	0 to 1000 mS/cm	0 to 115°C	

Measurement of nitric acid HNO_3 via conductivity transmitter

Indication range	Basic range	Compensation	Accuracy
0 to 25 % weight (range I)	0 to 2000 mS/cm	0 to 80°C	see footnote [2]
36 to 82 % weight (range II)	0 to 2000 mS/cm	-20 to 80°C	

Measurement of caustic soda NaOH via conductivity transmitter

Indication range	Basic range	Compensation	Accuracy
0 to 15 % weight (range I)	0 to 2000 mS/cm	0 to 90°C	see footnote [2]
36 to 82 % weight (range II)	0 to 2000 mS/cm	0 to 90°C	

Measurement of hydrochloric acid HCl via conductivity transmitter

Indication range	Basic range	Compensation	Accuracy
0 to 18 % weight (range I)	0 to 2000 mS/cm	0 to 65°C	see footnote [2]
22 to 44 % weight (range II)	0 to 2000 mS/cm	-20 to 65°C	

Measurement of caustic potash KOH via conductivity transmitter

Indication range	Basic range	Compensation	Accuracy
0 to 25 % weight (range I)	0 to 2000 mS/cm	0 to 60°C	see footnote[2]
30 to 45 % weight (range II)	0 to 2000 mS/cm	-20 to 60°C	

Measurement of sodium chloride solution NaCl via conductivity transmitter

Indication range	**Basic range**	**Compensation** within range	**Accuracy**
0 to 25 % weight (range I)	0 to 500 mS/cm	0 to 55°C	see footnote [2]

[1] possible through manual entry or via any channel
[2] dependent on the upstream transmitter and the input values for the LOGOSCREEN AQUA 500

Customized signal linearization within the permissible limits

50 freely definable value pairs, linear approximation, monotony

Other analytical measurement variables can be connected via current or voltage signals.
Input DC voltage, DC current

Basic range	**Accuracy[3]**	**Input resistance**
-20 to +70mV	±80µV	$R_{IN} \geq 1$ MΩ
-3 to +105mV	±100µV	$R_{IN} \geq 1$ MΩ
-10 to +210mV	±240µV	$R_{IN} \geq 1$ MΩ
-0.5 to +12V	±6mV	$R_{IN} \geq 470$ kΩ
-0.05 to +1.2V	±1mV	$R_{IN} \geq 470$ kΩ
-1.2 to +1.2V	±2mV	$R_{IN} \geq 470$ kΩ
-10 to +12V	±12mV	$R_{IN} \geq 470$ kΩ
Shortest span	5mV	
Range start/end	freely programmable within the limits in 0.01 mV steps	
-2 to +22mA	±20µA	burden voltage ≤ 1V
-22 to +22mA	±44µA	burden voltage ≤ 1V
Shortest span	0.5mA	
Range start/end	freely programmable within the limits in 0.01 mA steps	
Overrange/underrange	according to NAMUR NE 43	
Sampling cycle	250 to 750msec, depending on variable to be measured and extent of calculation	
Input filter	2nd order digital filter; filter constant adjustable from 0 to 10.0sec	
Test voltage of electrical isolation	350V (via optocoupler)	
Resolution	>14 bit	
Ambient temperature error	0.03%/°C	

[3] The accuracy refers to the maximum range span. The accuracy is reduced with short spans.

Resistance thermometer

Designation	**Standard**	**Connection circuit**	**Measuring range**	**Accuracy[3]**	**Measuring current**
Pt100	EN 60 751	2/3-wire	-200 to +100°C	±0.5°C	500µA
		2/3-wire	-200 to +850°C	±0.8°C	250µA
		4-wire	-200 to +100°C	±0.5°C	500µA
		4-wire	-200 to +850°C	±0.5°C	250µA
Pt500	EN 60 751	2/3-wire	-200 to +100°C	±0.5°C	250µA
		2/3-wire	-200 to +850°C	±0.8°C	250µA
		4-wire	-200 to +100°C	±0.5°C	250µA
		4-wire	-200 to +850°C	±0.5°C	250µA
Pt1000	EN 60 751	2/3-wire	-200 to +100°C	±0.5°C	500µA
		2/3-wire	-200 to +850°C	±0.8°C	250µA
		4-wire	-200 to +100°C	±0.5°C	500µA
		4-wire	-200 to +850°C	±0.5°C	250µA
Connection circuit		2-, 3- or 4-wire			
Shortest span		15°C			
Sensor lead resistance		max. 30Ω per core with 3-/4-wire circuit max. 10Ω per core with 2-wire circuit			
Range start/end		freely programmable within the limits in 0.1°C steps			
Sampling cycle		3 or 6 channels 250msec			
Input filter		2nd order digital filter; filter constant adjustable from 0 to 10sec			
Test voltage of electrical isolation		350V (via optocoupler)			
Resolution		> 14bit			
Ambient temperature error		0.03%/°C			

[3] The accuracy refers to the maximum range span. The accuracy is reduced with short spans.

Transducer short circuit/break

	Short circuit[1]	**Break[1]**
Voltage (basic range) ≤ 210mV	not recognized	recognized
Voltage (basic range) > 210mV	not recognized	not recognized
pH / redox potential when using an impedance converter	not recognized	not recognized
Current	not recognized	not recognized
Resistance thermometer	recognized	recognized

[1] Programmable reaction of instrument, e.g. alarm generation

Logic inputs (extra code)

Number	4, to DIN 19 240; 1Hz max., 32V max.
Level	logic “0”: -3 to +5V, logic “1”: 12 to 30V
Sampling cycle (logic inputs without counter function)	1sec
Count frequency (logic inputs with counter function)	30Hz max.
Auxiliary voltage (output)	24V, 30mA (short-circuit-proof)

Outputs (extra code)

3 relays	changeover (3A, 230V)

Serial interface (extra code)

RS232 / RS485	to read out measurement and instrument data (Modbus protocol)

Screen

Resolution	320 x 240 pixels
Size	5"
Number of colors	27 colors
Refresh rate	≥150Hz
Contrast	can be set on instrument
Screen saving (switch-off)	through waiting time or control signal

Electrical data

Supply voltage (switched-mode PSU)	110 — 240V AC +10/-15%, 48 — 63Hz or 20 — 53V AC/DC, 48 — 63Hz
Supply voltage error	< 0.1% of range span
Power consumption	approx. 25VA
Data backup	memory backup: approx. 10 years with buffer battery, approx. 2 weeks with capacitor
Electrical connection	at the back through plug-in screw terminals, conductor cross-section ≤ 2.5mm^2 or 2x 1.5mm^2 with ferrules
EMC - interference emission - immunity to interference	EN 61 326 Class B to industrial requirements
Safety regulation	to EN 61 010
Test voltages (type test) - supply circuit to measuring circuit - supply circuit to housing (protective earth) - measuring circuits to measuring circuit and housing - electrical isolation between the analog inputs	to EN 61 010, Part 1, March 1994 overvoltage category II, pollution degree 2 with AC supply: 2.3kV/50Hz, 1min, with AC/DC supply: 510V/50Hz, 1min with AC supply: 2.3kV/50Hz, 1min, with AC/DC supply: 510V/50Hz, 1min 350V/50Hz, 1min up to 30V AC and 50V DC

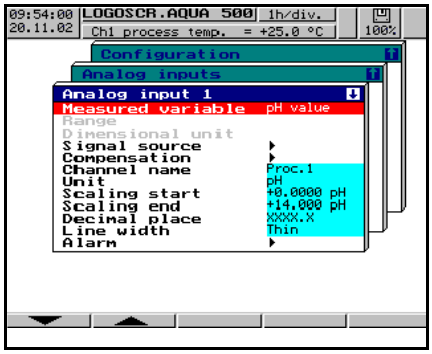
Housing

Housing type	housing for flush panel mounting to DIN 43 700, galvanized steel sheet
Bezel size	144mm x 144mm
Depth behind panel	214mm including connectors
Panel cut-out	$138^{+1.0}$mm x $138^{+1.0}$mm
Panel thickness	2 — 40mm
Housing mounting	in panel to DIN 43 834
Operating position	unrestricted, taking account of the viewing angle of the screen, horizontal ±50°, vertical ±30°
Ambient temperature range	0 to +45°C
Storage temperature range	-20 to +60°C
Protection	to EN 60 529 Category 2, front IP54, rear IP20
Climatic conditions	≤ 75% rel. humidity, no condensation
Weight	approx. 3.5kg

Operation and configuration

On the instrument

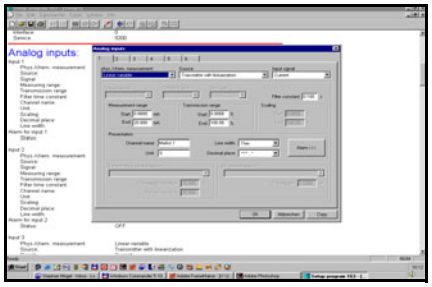
Instrument operation takes place menu-led from eight keys. Three keys have fixed functions assigned (enter, menu, exit). The functions for the other keys depend on the menu. The current functions are shown at the bottom of the screen so that key functions are always unambiguous during operation. Operating languages are German, English or French.



A code number protects configuration and calibration on the instrument from unauthorized access.

Via setup program for PC (accessory)

The instrument can also be configured using the setup program for PC. This is more convenient than from the keys. In addition, it can also be used to define customer-specific linearization tables and enter formulae for the math/logic module.



The configuration data can be compiled on a data storage medium (diskette) and read into the paperless recorder, or they can be transferred to the instrument via the serial interface (setup cable is required).
Using a PC, the settings can be output to a printer.

Measurement

The signals from the analog inputs are continuously acquired, with a sampling cycle of 250 msec. The measurements are determined every 250 — 750 msec (depending on the measurement variable and the extent of the calculation). Monitoring of limits is also based on these measurements.

Calibration

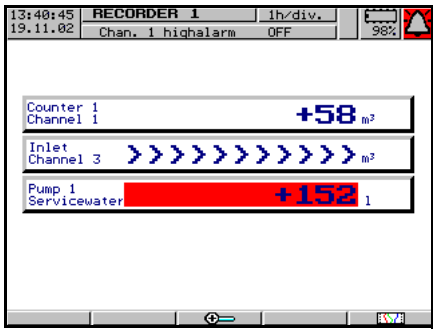
There is a choice of different calibration methods, depending on the measurement variable.

Measurement variable	Calibration procedure	Calibrate
pH	1-point calibration	zero point
	2-point calibration	zero point and slope
	3-point calibration	zero point, acidic slope, alkaline slope
Redox	1-point calibration	zero point
Conductivity	1-point calibration	cell constant
	2-point calibration	temperature coefficient
High-purity water	1-point calibration	cell constant
Free chlorine	1-point calibration	sensitivity
Chlorine dioxide	1-point calibration	sensitivity
Ozone	1-point calibration	sensitivity
Concentration via conductivity	1-point calibration	cell constant

Depending on the programmable storage cycle and stored value (average, instantaneous, minimum, maximum value or peak value), the measurements are accepted in the working memory of the instrument.

Counters/integrators/ service hour counters (option)

6 additional internal channels serve as counters, integrators or service hour counters. The counters are operated through the logic inputs, alarms, or by means of the logic channels. A separate window with a maximum of 9 digits is available for numerical display. The record period can be selected as periodic, daily, weekly, monthly, yearly, as well as external, total (totalizer) or daily from-to.



Math/logic module (option)

The math and logic module (configurable only via the setup software) enables analog channels to be linked to each other, to counters and/or logic inputs. The operators +, -, *, /, SQRT(), MIN(), MAX(), SIN(), COS(), TAN(), **, EXP(), ABS(), INT(), FRC(), LOG(), LN(), humidity and sliding average or !, &, |, ^, as well as (and) are available as formulae.

Limit monitoring

Infringement of a limit will trigger an alarm. The alarm can be output to a relay (option) or used as a control signal.
The alarm delay function filters out a brief occurrence of an over/underlimit condition, with the result that no alarm is produced.

Change of operating mode

The LOGOSCREEN AQUA 500 can be operated in 3 modes. Each mode has its distinct (individually adjustable) storage cycle and stored value. The storage cycle defines how often a measurement is recorded, i.e. stored.

Normal operation (continuous)
This is the standard operating mode.

Event operation
In event operation, a storage cycle can be selected that differs from normal operation (is shorter, for example), for a more detailed recording of an event.
Event operation is started and stopped by a control signal (e.g. logic input, alarm, calibration, etc.).

Timed operation
In timed operation, a storage cycle can be selected that differs from normal operation (is longer, for example), to cover a period which is likely to be uneventful, and to save storage space.
If desired, timed operation is active daily within a programmable time period.

Priorities
The operating modes have different priorities.

- Normal operation has the lowest priority.
  On reaching the time window for timed operation, the instrument goes into timed operation.
  If an event occurs that triggers event operation, the instrument moves into event operation.
- Timed operation has a higher priority than normal operation, but a lower one than event operation. Timed operation interrupts normal operation and can itself be interrupted by event operation.
- Event operation has the highest priority. It can interrupt the other operating modes.

Memory / data security

Main memory (FLASH memory)

The data stored in the main memory are regularly copied onto diskette in 4 kbyte blocks. The memory is written to as ring memory, i.e. when it is full, the oldest data are automatically overwritten with new data. The storage capacity is sufficient for approx. 350,000 measurements (with extra code “memory expansion to 2 MB”: about 850,000 measurements).

Diskette

A standard 3.5" diskette is used for storing the data. The storage capacity is sufficient for about 650,000 measurements.
Each write procedure is verified so that diskette errors can be immediately identified.
The instrument monitors the capacity of the diskette and activates the “memory alarm” signal when the capacity has fallen below the (configurable) residual capacity of the diskette. The signal can, for instance, be used to operate a relay (warning signal: “replace diskette”).

Recording duration

The recording duration depends on the length of the recording cycles and the number of measurement inputs used. This means that the recording duration can vary, from a few days up to several months.

Data security

The data are stored in coded form in a proprietary format (certified by TÜV, Munich).
If the diskette is removed from the instrument, the data continue to be stored in the main memory (FLASH).
Data will only be lost when, after removal of the diskette, the FLASH memory is also completely overwritten.

Instrument response to power interruptions

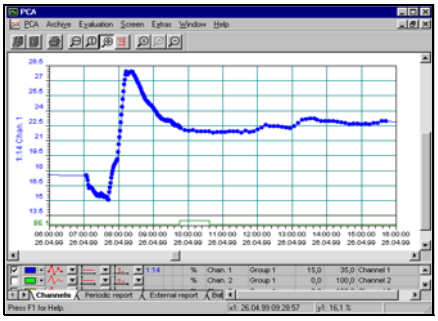
- The lithium battery supplied ex-factory protects against loss of data for about 10 years.
- The storage capacitor (available on request) provides protection for about 2 weeks.

Interface

- Current process data, as well as specific device data can be read out via the RS232 and RS485 interfaces (available as an extra).
  In conjunction with the PCA communication server, the archived data (FLASH memory) can also be read out.
  When using the RS232 interface, the maximum permitted cable length is 15m. With the RS485 interface, a cable length of 1.2km is permissible.
  Connection is by a 9-pole SUB-D connector at the back of the instrument.
  MODbus and Jbus protocols are available, the transmission mode used is RTU (Remote Terminal Unit).
- Changeover between the RS232 and RS485 interfaces takes place via the program.

Evaluation program

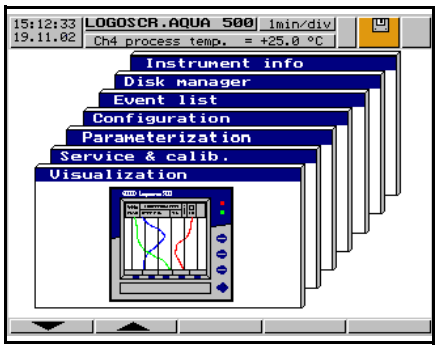
The PC evaluation program (PCA) is a program running under Windows 95/98 and NT4.0. It can be used for managing, archiving, visualizing and evaluating the paperless recorder data that have been saved to diskette (measurements, digital signals, calibration logbook, etc.).



- Data from devices with different configurations are recognized by the evaluation program and stored in an archive database. The complete management is performed automatically. The user only has to manually enter an identifier (supplementary description).
- The user can at any time access specific data sets which can be differentiated by an identifier. In addition, the time periods to be evaluated can be restricted.
- Any analog channels and event traces of a paperless recorder can subsequently be combined into PCA groups in the PCA.
- Since each group is displayed in its own window, several groups can be shown simultaneously on the screen and compared.
- Operation by mouse and keys
- It is possible to export the stored data via the export filter for processing in other programs (Excel, …)
- Data can be read out from the recorder using the PCA communication server (accessory), via the serial interface (RS232 or RS485). Data can be read out manually or automatically (e.g. daily at 23.00 hrs).
- The PCA evaluation program supports the network capability, which means that several users can obtain data from the same database in the network, independently of each other.
- Using the rapid-start function of the evaluation program, data diskettes can be read out or stored in the database. The evaluation software stops automatically after archiving.

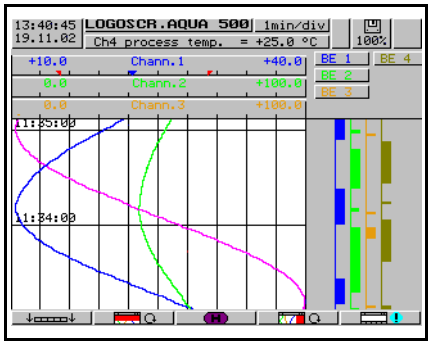
Representation modes on the recorder

Main menu



- Branching out into the menus (levels)
  - visualization
  - service & calibration
  - parameterization
  - configuration
  - event list
  - disk manager
  - instrument info

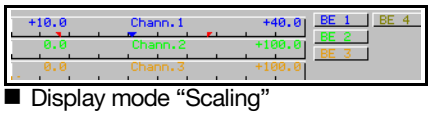
Visualization



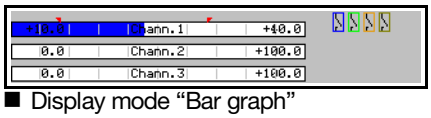
- Analog channels and event traces
- In addition to the curves, measured values can be made visible in numerical form, and as scaling or bar graph
- Softkeys can be shown or hidden

Visualization

- Display mode “Measurement” (numerical display)

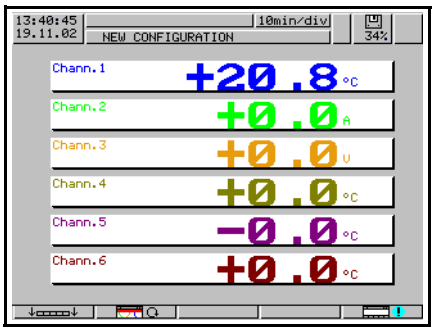


- Display mode “Scaling” including limit markers



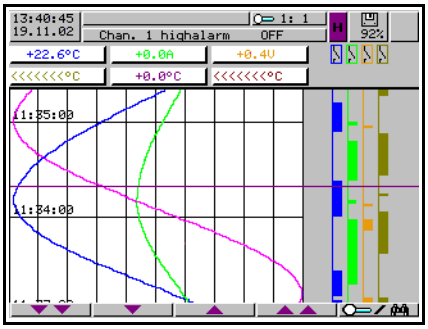
- Display mode “Bar graph” including limit markers

Visualization



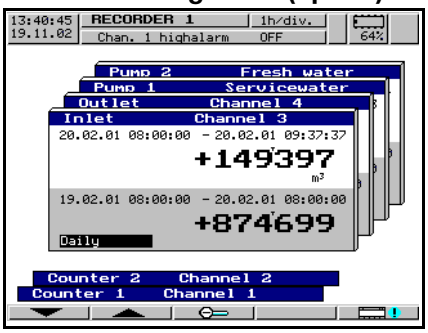
- You can opt for a larger numerical display, instead of the curve representation

History representation



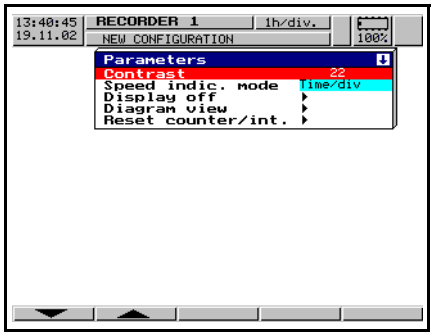
- All stored measurement data can be represented as curves in different zoom steps
- Numerical display of the measurements for the analog channels at the cursor position
- Shifting of the visible window within the stored measurement data
- When recorded as envelope: maximum or minimum value display changeable within the channel line

Counters / integrators (option)



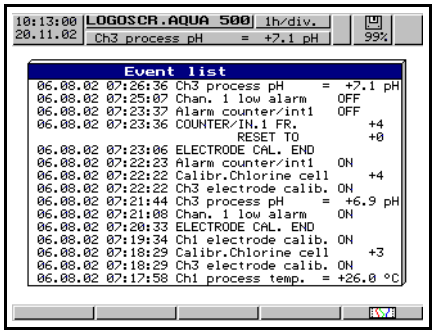
- Representation of the recording periods, and of the current and concluded counts

Parameterization



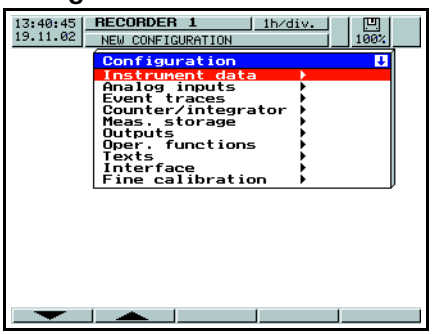
- General setting without password
- Selection of screen representation, such as analog data and/or event traces with or without channel line

Event list



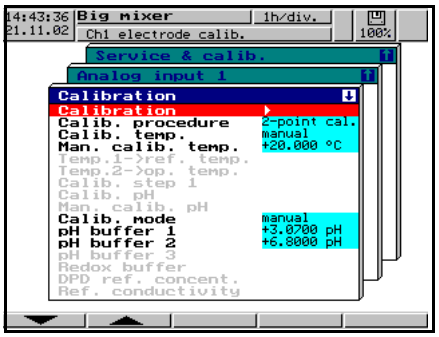
- Important events in plain text (alarm messages, external texts or system messages)

Configuration



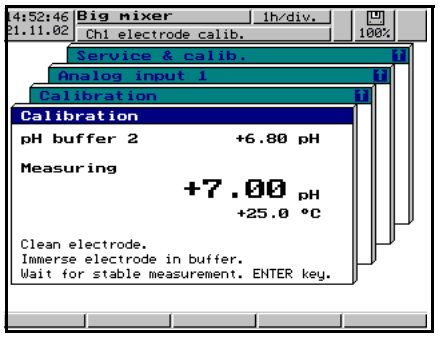
- Configuration from instrument keys
- Password protected
- Configuration transferable to diskette
- Configuration diskette with setup program readable and changeable

Service / Calibration



- Calibration conditions
- Methods
- Reference values

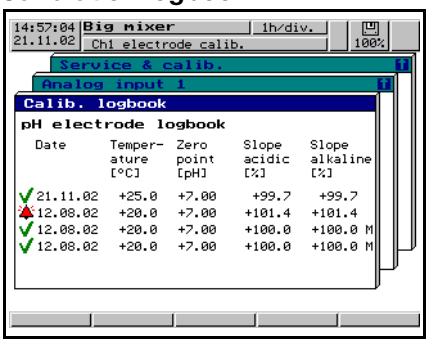
Calibration



For example:

- Display of reference value
- Display of measured value
- Display of calibration conditions
- Notes on calibration

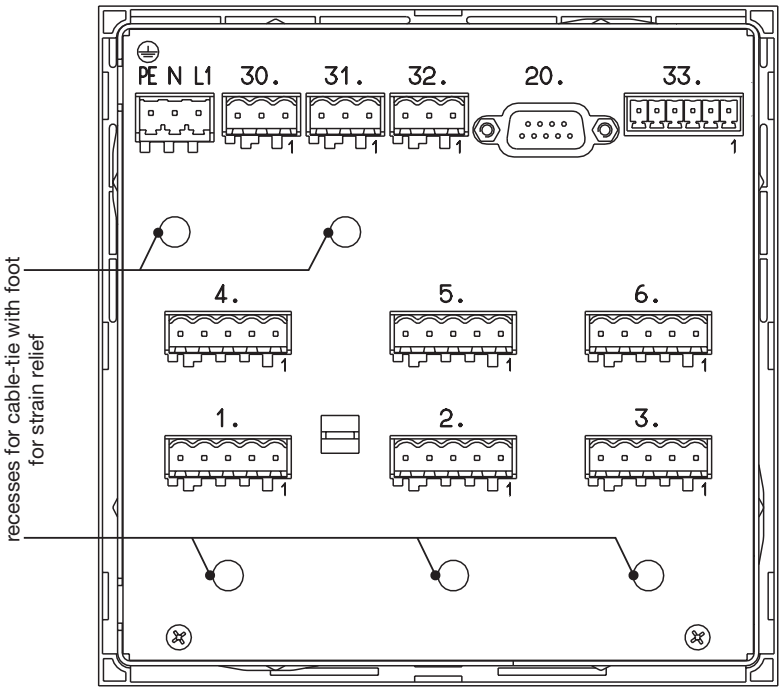
Calibration logbook

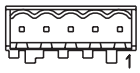
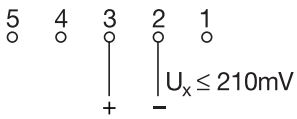
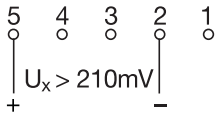
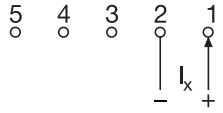
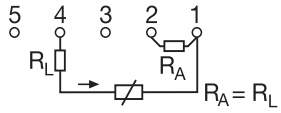
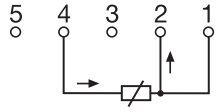
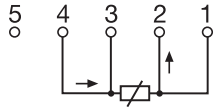


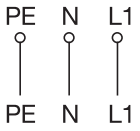
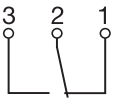
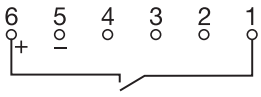
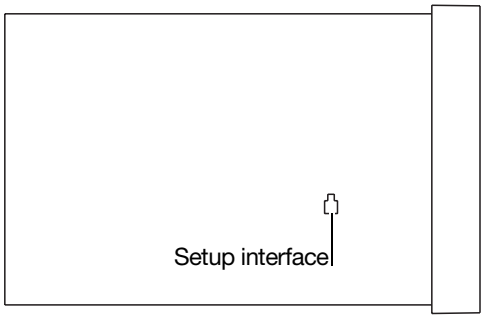
- Calibration date
- Ambient conditions during calibration
- Calibration values
- Symbolic evaluation
- Marking manual adjustments with “M”

Connection diagram

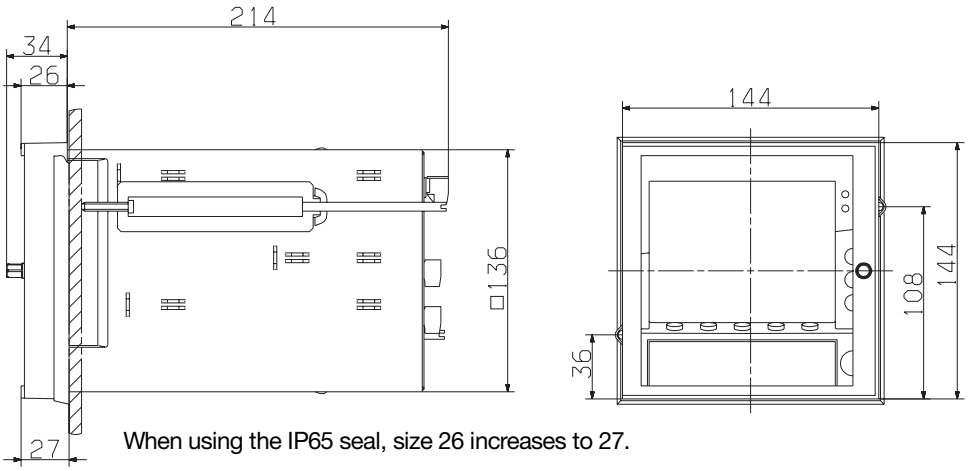
Rear view of the LOGOSCREEN AQUA 500 with pluggable screw terminals



Terminal assignment		**Diagram**
Analog inputs	Connector	
Voltage input ≤ 210mV	1 to 6	
Voltage input > 210mV or pH or redox potential via impedance converter	1to 6	
Current input	1 to 6	
Resistance thermometer in 2-wire circuit	1 to 6	
Resistance thermometer in 3-wire circuit	1 to 6	
Resistance thermometer in 4-wire circuit	1 to 6	

Supply		
Supply voltage	PE ⏚ N (L-) L1 (L+)	
Relay outputs (extra code)		
Relay K1, K2, K3 (changeover)	30, 31, 32	
Interfaces (extra code) **(configuration on the instrument determines which interface is used)**		
RS232C 9-pole SUB-D	20	2 RxD receive data 3 TxD transmit data 5 GND ground
RS485 9-pole SUB-D	20	3 TxD+/RxD+ transmit/receive data + 5 GND ground 8 TxD-/RxD- transmit/receive data -
Logic inputs (extra code)		
Supply voltage 24V/30mA Logic inputs voltage-operated LOW = -3 to +5V DC HIGH = 12 to 30V DC	33 6 +24V auxiliary supply 5 GND 4 logic input 1 3 logic input 2 2 logic input 3 1 logic input 4	 Example: logic input 4, operated from the internal supply voltage
Setup interface		
The setup interface can be found on the left side of the housing (seen from the front)		

Dimensions



When using the IP65 seal, size 26 increases to 27.

Order details:

Multiparameter acquisition system for analytical measurement

					(1) Basic version
				202595/14	Paperless recorder with 3 analog inputs
				202595/24	Paperless recorder with 3 analog inputs including setup and PCA evaluation programs
				202595/15	Paperless recorder with 6 analog inputs
				202595/25	Paperless recorder with 6 analog inputs including setup and PCA evaluation programs
					(2) Inputs 1 — 3 (programmable)
x	x	x	x	888	factory-set
					(3) Inputs 4 — 6 (programmable)
x	x			000	not used
		x	x	888	factory-set
					(4) Supply
x	x	x	x	22	20 — 53V AC/DC, 48 — 63Hz
x	x	x	x	23	110 — 240V AC +10/-15%, 48 — 63Hz
					(5) Extra codes
x	x	x	x	020	lithium battery for memory buffering (ex-factory)
x	x	x	x	021	storage capacitor for memory buffering (on request)
x	x	x	x	260	integrators and counters / math and logic module[1]
x	x	x	x	261	4 logic inputs, 3 relay outputs, serial interface RS232/RS485 (MODbus, Jbus)
x	x	x	x	264	memory expansion to 2MB[2]
x	x	x	x	265	door with lock (IP54)
x	x	x	x	266	IP65 seal, wide mounting brackets
x	x	x	x	350	universal carrying case TG-35

	(1)		(2)		(3)		(4)		(5)	
Order code		-		-		-		/		,...
Order example	202595/14	-	888	-	000	-	23	/	020[3]	

1. The math and logic module can only be used in conjunction with the setup program.
2. Memory expansion is only possible for new orders (not for retrofitting).
3. List extra codes in sequence, separated by commas.

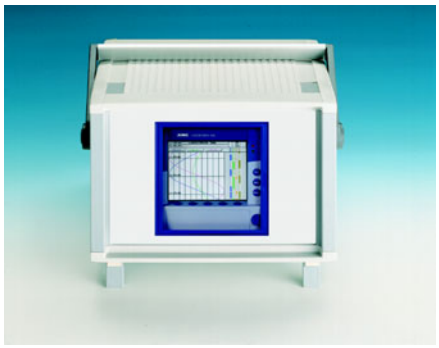
Standard accessories

- 1 Operating Instructions B 20.2595
- 2 mounting brackets
- cable-tie with foot (can be released) for strain relief of the connected sensor leads

Accessories

Designation	Sales No.
Setup program on CD-ROM, multilingual	20/00409689
PC interface cable with TTL/RS232 converter and adapter	95/00350260
PC evaluation program on CD-ROM, multilingual	95/00378126
PCA communication server on CD-ROM, multilingual	95/00378279

Universal carrying case TG-35

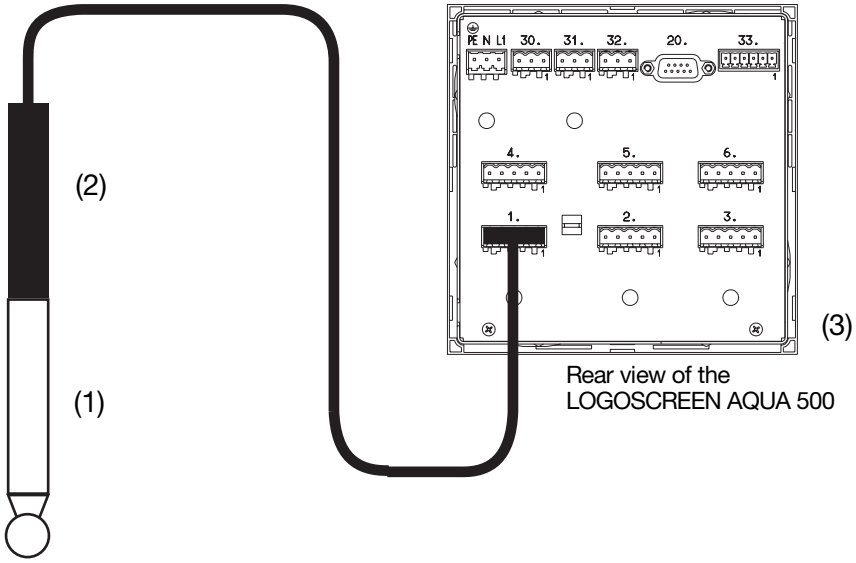


- to take a paperless recorder with 144mm x 144mm bezel size
- 326mm x 227mm x 366mm (W x H x D) cut-out: 138mm x 138mm
- paperless recorder accessible from the back

Connection examples

pH measurement or redox potential measurement

(Example for pH measurement with a pH combination electrode using an impedance converter)

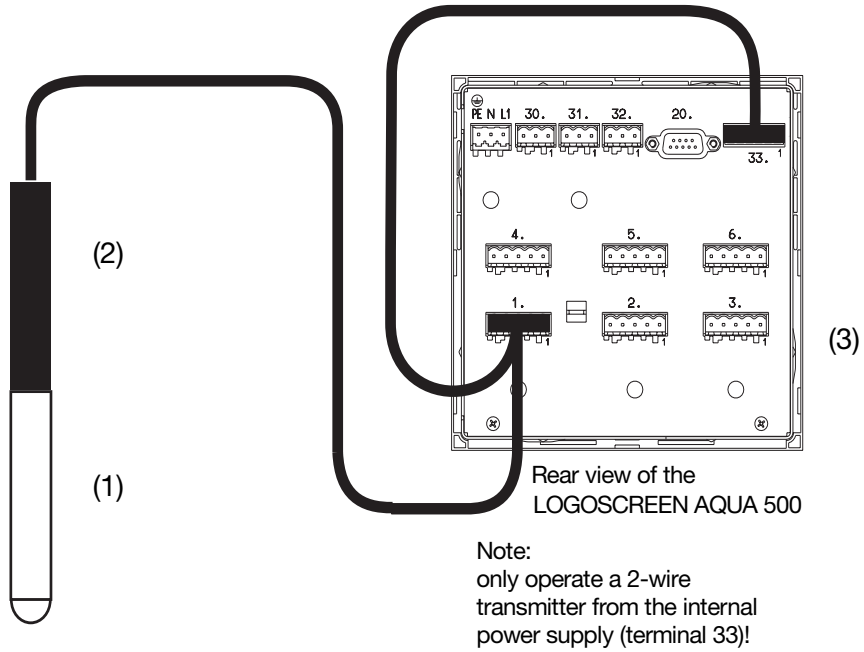


Components used

No.	Description	JUMO Data Sheet
(1)	pH combination electrode or metal combination electrode	20.2900
(2)	Impedance converter Type 2AMZ-20	20.2995
(3)	LOGOSCREEN AQUA 500	20.2595

pH measurement or redox potential measurement

(Example for redox potential measurement with a metal combination electrode using a 2-wire transmitter)

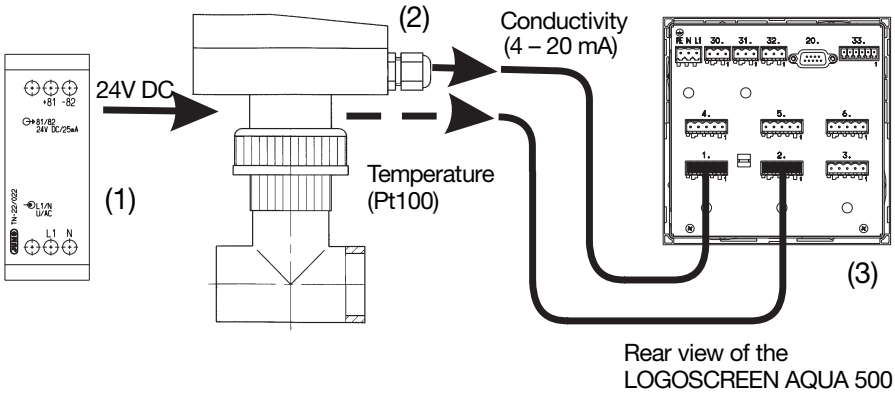


Note:
only operate a 2-wire transmitter from the internal power supply (terminal 33)!

Components used

No.	Description	JUMO Data Sheet
(1)	pH combination electrode or metal combination electrode	20.2900
(2)	2-wire transmitter for pH Type 202701 or for redox Type 202702	20.2701
(3)	LOGOSCREEN AQUA 500	20.2595

Conductivity / concentration measurement



Components used

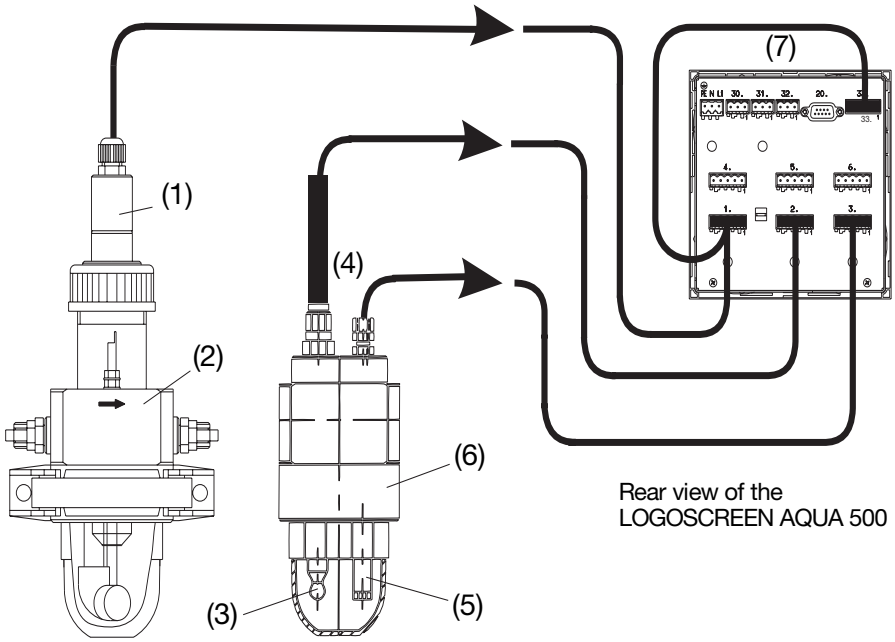
No.	Description	JUMO Data Sheet
(1)	PSU Type PS5R-A-24	
(2)	Conductivity transmitter Type CTI-Junior with extra code /263 or Type CTI-920	20.2754 or 20.2752
(3)	LOGOSCREEN AQUA 500	20.2595

Example 1: Conductivity measurement
If the analog input is configured accordingly, the conductivity is automatically displayed compensated for temperature.

Example 2: Concentration measurement
If the analog input is configured accordingly, the concentration of a substance (e.g. sulfuric acid, nitric acid, or similar) is automatically displayed compensated for temperature.

Measurement of free chlorine, chlorine dioxide or ozone

Example for measurement of free chlorine that is pH- and temperature-compensated



Components used

No.	Description	JUMO Data Sheet
(1)	Measuring cell for free chlorine Type 202630/40	20.2630
(2)	Flow-through fitting Type 202810/01-102-86-080/055	20.2630
(3)	pH combination electrode	20.2900
(4)	Impedance converter Type 2AMZ-20	20.2995
(5)	Compensation thermometer Type 2K-2	20.2900
(6)	Flow-through fitting Type 202810/03-104-87-080/000	20.2810
(7)	LOGOSCREEN AQUA 500	20.2595

If the analog input is configured accordingly, the concentration of free chlorine is displayed compensated for temperature and pH.

Components (3) to (6) do not apply for the measurement of chlorine dioxide and ozone.