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JUMO LOGOSCREEN 500

for stock items see price list

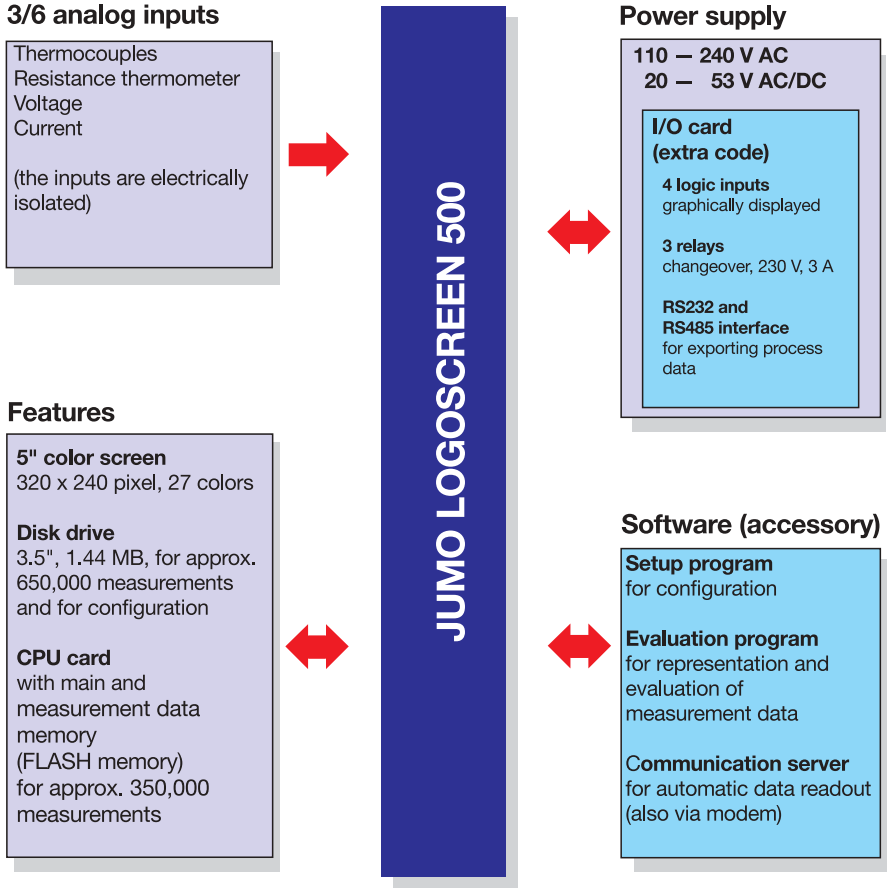
Paperless recorder for capturing, visualizing, storing and evaluating measurement data

Brief description

The main feature of the LOGOSCREEN 500 is a 5" color screen on which the measurement data are displayed vertically, as is the case with familiar chart recorders. However, in contrast to conventional recorders, the LOGOSCREEN 500 does not require a paper chart. Measurement data are electronically stored and are available for evaluation both on site and on a PC.
The LOGOSCREEN 500 can be equipped with 3 or 6 isolated measurement inputs.
The instrument is programmable from 8 keys or a PC (via diskette or serial interface).
The bezel size is 144 mm x 144 mm, the depth behind panel 214 mm.

Type 955015/...

Block structure



Features

- representation of measurement data in vertical diagrams (with scaling, numerical display or bargraph)
- representation of event traces, such as “logic inputs”
- local availability of the measurement data stored in the FLASH memory
- measurement data are retained even after a power failure
- data storage on a formatted 3.5" diskette
- instrument configuration from the keys or via the setup program (diskette or serial interface)
- evaluation of archived data through PC evaluation program
- conversion of measurement data into spreadsheet formats
- search function for history analysis
- adaptation of the storage cycles to the individual process through normal, event and daytime operation
- freely programmable inputs
- internal sampling rate 250 msec with 3 or 6 analog inputs; minimum storage cycle 1 sec
- counters and integrators
- math and logic module

Technical data

Analog inputs

Input for DC voltage, DC current

Basic measurement range	Accuracy[1]	Input resistance
-20 to +70 mV	±80 µV	$R_E \geq 1$ MΩ
-3 to +105 mV	±100 µV	$R_E \geq 1$ MΩ
-10 to +210 mV	±240 µV	$R_E \geq 470$ kΩ
-0.5 to +12 V	±6 mV	$R_E \geq 470$ kΩ
-0.05 to +1.2 V	±1 mV	$R_E \geq 470$ kΩ
-1.2 to +1.2 V	±2 mV	$R_E \geq 470$ kΩ
-10 to +12 V	±12 mV	$R_E \geq 470$ kΩ
Shortest span	5 mV	
Range start/end	freely programmable within the limits in 0.01 mV steps	
-2 to +22 mA	±20 µA	burden voltage ≤ 1 V
-22 to +22 mA	±44 µA	burden voltage ≤ 1 V
Shortest span	0.5 mA	
Range start/end	freely programmable within the limits in 0.01 mA steps	
Over/underrange	to NAMUR NE 43	
Sampling cycle	3 or 6 channels 250 msec	
Input filter	2nd order digital filter; filter constant adjustable from 0 — 10.0 sec	
Test voltage of electrical isolation	350 V (by optocoupler)	
Resolution	>14 bit	

1. The accuracy refers to the maximum span. Reduced accuracy for shorter spans.

Thermocouple

Designation	Type	Standard	Range	Accuracy[1]
Fe-Con	L	DIN 43 710	-200 to + 900 °C	±0.1 %
Fe-Con	J	EN 60 584	-210 to +1200 °C	±0.1% above -100 °C
Cu-Con	U	DIN 43 710	-200 to + 600 °C	±0.1 % above -150 °C
Cu-Con	T	EN 60 584	-270 to + 400 °C	±0.1 % above -150 °C
NiCr-Ni	K	EN 60 584	-270 to +1372 °C	±0.1 % above -80 °C
NiCr-Con	E	EN 60 584	-270 to +1000 °C	±0.1 % above -80 °C
NiCrSi-NiSi	N	EN 60 584	-270 to +1300 °C	±0.1 % above -80 °C
Pt10Rh-Pt	S	EN 60 584	-50 to +1768 °C	±0.15% above 0 °C
Pt13Rh-Pt	R	EN 60 584	-50 to +1768 °C	±0.15% above 0 °C
Pt30Rh-Pt6Rh	B	EN 60 584	0 — 1820 °C	±0.15% above 400 °C
W3Re/W25Re	D		0 — 2400 °C	±0.15% above 500 °C
W5Re/W26Re	C		0 — 2320 °C	±0.15% above 500 °C
Shortest span			Type L, J, U, T, K, E, N: 100 °C Type S, R, B, D, C: 500 °C	
Range start/end			freely programmable within the limits in 0.1°C steps	
Cold junction			Pt100 internal or thermostat external constant	
Cold junction accuracy (internal)			± 1°C	
Cold junction temperature (external)			-50 to +150 °C adjustable	
Sampling cycle			3 or 6 channels 250 msec	
Input filter			2nd order digital filter; filter constant adjustable from 0 — 10.0 sec	
Test voltage of electrical isolation			350 V (by optocoupler)	
Resolution			>14 bit	
Special features			programmable also in °F	

1. The accuracy refers to the maximum span. Reduced accuracy for shorter spans.

Resistance thermometer

Designation	Standard	Connection circuit	Range	Accuracy[1]	Measuring current
Pt 100	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
Pt 100	JIS	2/3-wire	-200 to +100°C	±0.5°C	500µA
		2/3-wire	-200 to +650°C	±0.8°C	250µA
		4-wire	-200 to +100°C	±0.5°C	500µA
		4-wire	-200 to +650°C	±0.5°C	250µA
Ni 100		2/3-wire	-60 to +180°C	±0.4°C	500µA
		4-wire	-60 to +180°C	±0.4°C	500µA
Pt 500	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
Pt 1000	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
Pt 50		2/3-wire	-200 to +100°C	±0.5°C	500µA
		2/3-wire	-200 to +1100°C	±0.9°C	250µA
		4-wire	-200 to +100°C	±0.5°C	500µA
		4-wire	-200 to +1100°C	±0.6°C	250µA
Cu 50		2/3-wire	-50 to +100°C	±0.5°C	500µA
		2/3-wire	-50 to +200°C	±0.9°C	250µA
		4-wire	-50 to +100°C	±0.5°C	500µA
		4-wire	-50 to +200°C	±0.6°C	250µA
Connection circuit		2-, 3- or 4-wire circuit			
Shortest span		15°C			
Sensor lead resistance		max. 30Ω per core for 3-/4-wire circuit max. 10Ω per core in 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 — 10sec			
Test voltage of electrical isolation		350V (by optocoupler)			
Resolution		> 14bit			

1. The accuracy refers to the maximum span. Reduced accuracy for shorter spans.

Transducer short-circuit/break

	Short-circuit[1]	Break[1]
Thermocouple	not detected	detected
Resistance thermometer	detected	detected
Voltage up to 210mV	not detected	detected
Voltage above 210mV	not detected	not detected
Current	not detected	not detected

1. Programmable reaction of instrument, e.g. triggering alarm

Logic inputs (extra code)

Number	4 to DIN 19 240; max. 1Hz, max. 32V
Level	logic “0”: -3 to +5V, logic “1”: 12 to 30V
Sampling cycle	1sec
Count frequency	30Hz max.
Auxiliary voltage (output)	24V ±10%, 50mA (short-circuit proof)

Outputs (extra code)

3 relays	changeover (230V, 3A)

Serial interface (extra code)

RS232 / RS485	for exporting measurement and instrument data (Modbus protocol)

Screen

Resolution	320 x 240 pixel
Size	5"
Number of colors	27
Refresh rate	≥150Hz
Contrast setting	adjustable on instrument
Screen saver (switch-off)	through waiting time or operating signal

Electrical data

Supply (switched mode power supply)	110 — 240V +10/-15% AC 48 — 63Hz, or 20 — 53V AC/DC 48 — 63Hz
Test voltages (type test) supply circuit to measurement circuit supply circuit to housing (protective earth) measurement circuits to measurement 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 DC/AC supply: 510V 50Hz, 1min with AC supply: 2.3kV 50Hz, 1min, with DC/AC supply: 510V 50Hz, 1min 350V 50Hz, 1min up to 30V AC and 50V DC
Supply voltage error	< 0.1% of span
Power consumption	25VA approx.
Data backup	see page 6
Electrical connection	at the back through screw-clamp connectors, max. 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
Electrical safety	to EN 61 010
Protection	to EN 60 529 category 2, front IP54, rear IP20
Ambient temperature range	0 to +45°C
Ambient temperature error	0.03% per °C
Storage temperature range	-20 to +60°C

Housing

Housing type - Housing door	housing for flush-panel mounting to DIN 43 700, galvanized steel zinc die-casting
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 fixing	in panel to DIN 43 834
Climatic conditions	≤ 75% rel. humidity, no condensation
Operating position	unrestricted, taking account of the viewing angle of the screen, horizontal ±50°, vertical ±30°
Protection	to EN 60 529 category 2, front IP54, (IP65 with extra code 266), rear IP20
Weight	3.5kg approx.

Operation and configuration

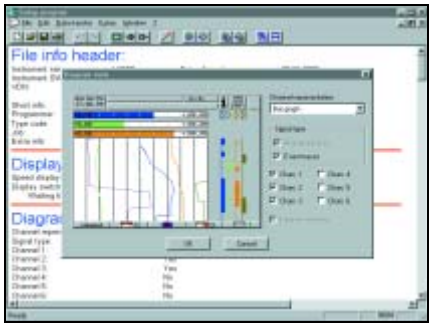
On the recorder

Configuration takes place menu-led from eight keys. Three have fixed functions assigned (enter, menu, exit), five alter their function and visual representation according to the menu. The current functions are shown at the bottom of the screen so that key functions are always unambiguous during operation.

A code number ensures tamper-proof configuration of the instrument.

Via setup program for PC (accessory)

The recorder can be configured using the setup program for PC. This is more convenient than from the keys.



The configuration data can be compiled on a data storage medium (diskette) and read into the 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.

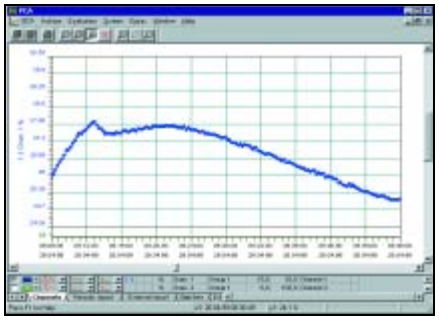
Operating language

The operating language for the instrument can be configured for different languages. English, German, French, Dutch, Spanish, Italian, Hungarian, Czech, Swedish, Polish, Danish, Finnish, Portuguese and Russian have already been implemented.

Others on request.

Evaluation program

The PC evaluation program (PCA) is a program which runs under Windows 95/98 and NT4.0. It is available for managing, archiving, visualizing and evaluating the recorder data which have been saved to diskette.



- The data of instruments 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 enter an identifier (supplementary description) manually.
- The user can at any time access specific data sets which can be differentiated by the identifier. In addition, the time periods to be evaluated can be restricted.
- Any analog channel and event traces of the recorder can subsequently be combined into PCA groups.
- 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, …)
- Using the PCA communication server (accessory), the data can be read out from the recorder via the serial interface (RS232 or RS485). The data can be read out manually or automatically (e.g. daily at 23.00 hrs).
- The PCA evaluation program supports the network capability, i.e. 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 and stored in the database. The evaluation software stops automatically after archiving.

Interface

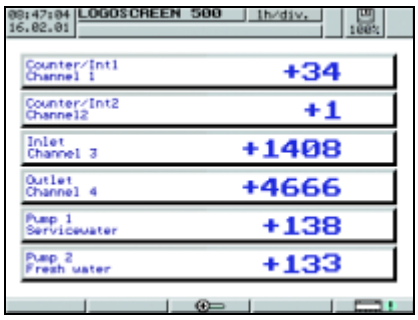
- The current process data, as well as specific instrument data, can be exported via the RS232 and RS485 interfaces, which are available as extra code.
  In conjunction with the PCA communication server, the archived data (FLASH memory) can also be read out.
  When using the RS232 interface, the maximum permitted cable length is 15m.
  With the RS485 interface, a cable length of 1.2km is permitted.
  Connection is by a 9-pin sub-D connector at the instrument rear.
  Modbus and J-bus protocols are available, the transmission mode used is RTU (Remote Terminal Unit).
- Changeover between the RS232 and RS485 interfaces takes place via the program.

New functions

From the instrument software 133.03.xx, the paperless recorder can be equipped with new additional functions (extra code 260).

Counters/integrators/ timers

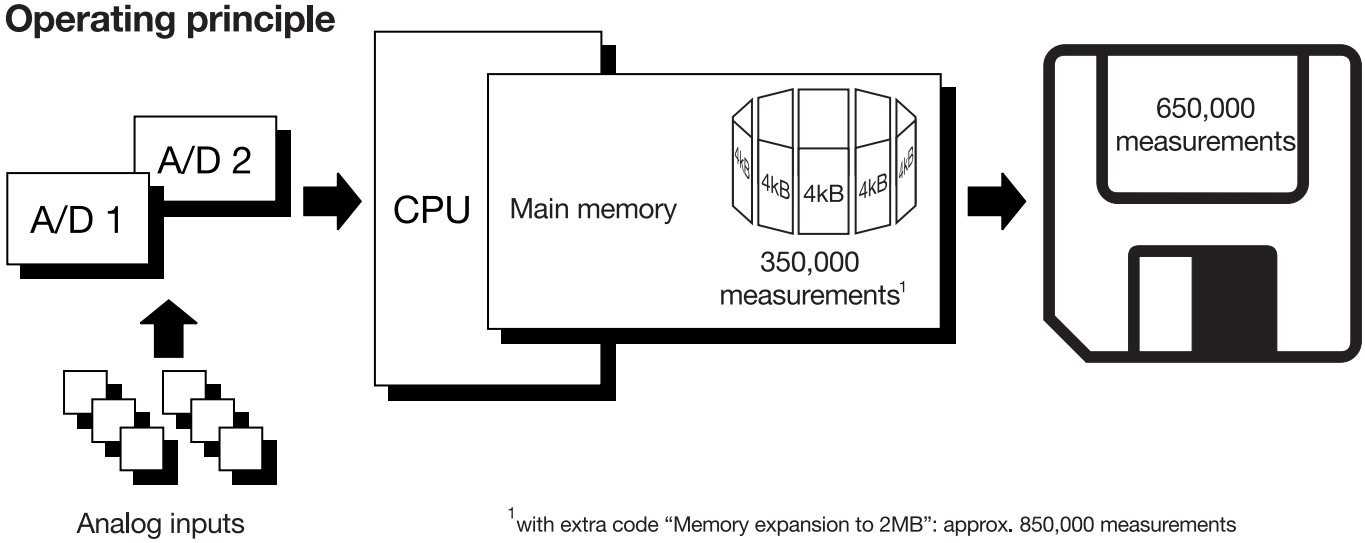
6 additional internal channels serve as counters, integrators or timers. The counters are operated through the logic inputs, alarms, or by means of the logic channels. A separate window with a maximum of 9 digits is available for the numerical display. The count period can be selected as periodic, daily,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



Math/logic module

The math and logic module (can only be configured using 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.

Operating principle



[1] with extra code “Memory expansion to 2MB”: approx. 850,000 measurements

Data processing

The measurements of the analog inputs are acquired continuously in a 250 msec sampling cycle. Based on these measurements, limits are also monitored.
Depending on the programmable storage cycle and stored value (average / instantaneous / minimum / maximum values or peak value), the measurements are transferred to the main memory of the instrument.

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 will automatically be overwritten with new data. The storage capacity is sufficient for approx. 350,000 measurements (with extra code “memory expansion to 2MB”: approx. 850,000 measurements)

Diskette
A standard DOS formatted 3.5" diskette with a capacity of 1.44 Mbyte is used to store the data. The storage capacity is sufficient for approx. 650,000 measurements.
Each write procedure is verified so that diskette errors can be identified immediately.
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 be used to operate a relay, for example (warning signal “replace diskette”).

Data backup
The data are stored in coded form in a proprietary format.
When the diskette is removed from the instrument, this will not result in immediate loss of data, since they continue to be stored in the FLASH memory.
Data will only be lost when, after removal of the diskette, the FLASH memory is also completely freshly written to.

When the instrument is disconnected from the supply:
- Configuration and measurement data are retained even after disconnecting the recorder from the supply.
- When the lithium battery, supplied ex-factory, is exhausted (≥ 10 years), or the storage capacitor, which is available on request, is discharged (typically 2 weeks), all measurement not yet stored on diskette, as well as the time, will be lost. Since the correlation of measurements with time is no longer correct, a new diskette has to be inserted and the time reset.

Recording duration
Depending on the instrument configuration, the recording duration can vary over a considerable period (e. g. from a few days to several months).

Limit monitoring/ change of operating mode

Over/underlimit conditions trigger an alarm. The alarm can be output to a relay or can be used as an operating signal to switch the operating mode from normal/ timed operation to event operation. Storage cycle and stored value can be configured separately for all three operating modes.
The alarm delay function filters out any brief occurrence of over/underlimit conditions, with the result that no alarm is produced.

Normal operation
If the instrument is **not** in event operation and **not** in timed operation, then normal operation is active as standard. Normal operation can be deliberately deactivated, so that data recording takes place in event or timed operation only.

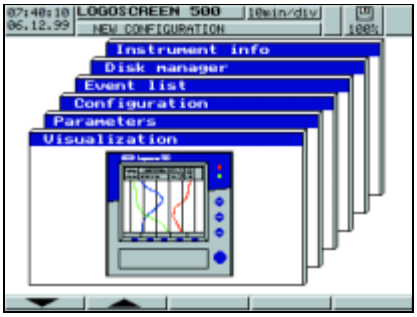
Event operation
Event operation is activated/deactivated by an operating signal (logic input, combination alarm, …). As long as the operating signal is active, the recorder is in event operation.

Timed operation
Timed operation is active daily within a programmable time period.
The operating modes have different priorities.

Operating mode	Priority
Event operation	1 (higher)
Timed operation	2
Normal operation	3 (lower)

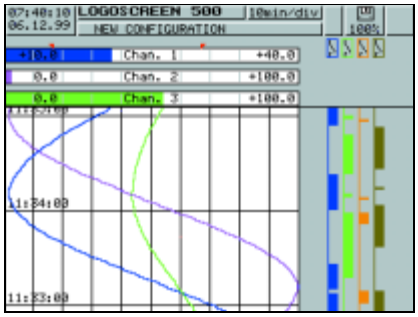
Representation modes

Main menu



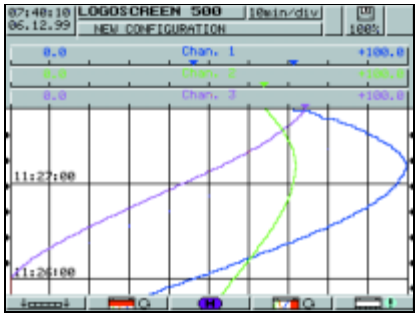
- branching out into menus (levels)
  - visualization
  - parameter setting
  - configuration
  - event list
  - disk manager
  - instrument info

Visualization



- analog channels and event traces
- in addition to the curves, measurements can be made visible in numerical form, scalings or bargraph representation
- softkeys can be made visible or hidden

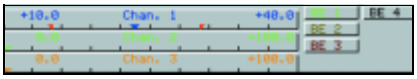
Visualization



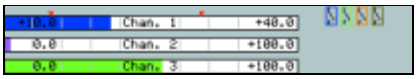
- graphical representation of the analog channels (without event traces)
- display of scaling and limit markers for the channels

Visualization

- display mode “Measurements” (numerical display)

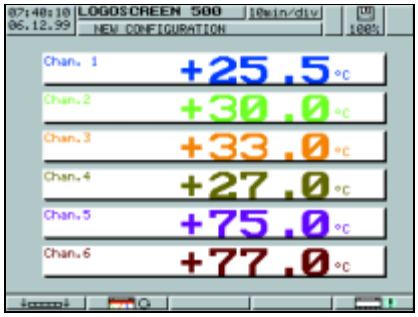


- display mode “Scaling” including limit markers



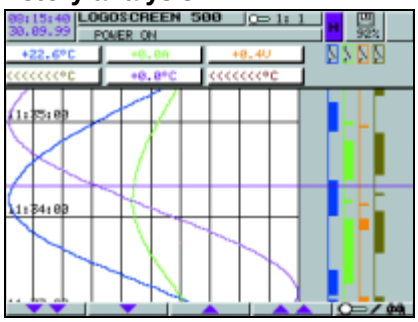
- display mode “Bargraph” including limit markers

Visualization



- instead of the graphical representation, you can switch to a larger numerical display

History analysis

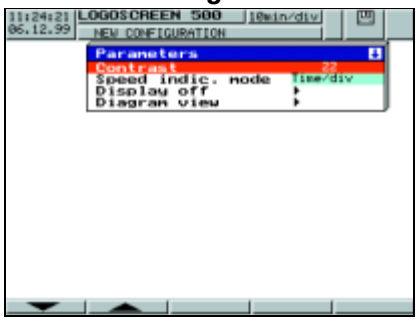


- graphical representation of all stored measurement data at different zoom steps
- numerical display of the measurements for the analog channels at the cursor position
- shifting of the visible window within the stored measurement data
- when recorded as envelope: maximum /minimum value display changeable within the channel line

Configuration

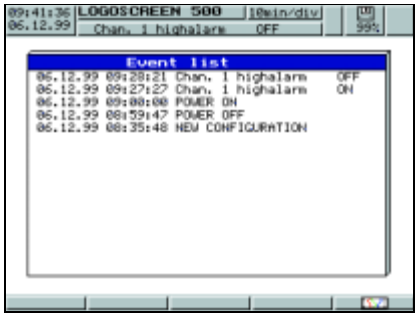
- configuration from instrument keys
- password protected
- configuration transferable to diskette
- configuration diskette with setup program readable and changeable

Parameter setting



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

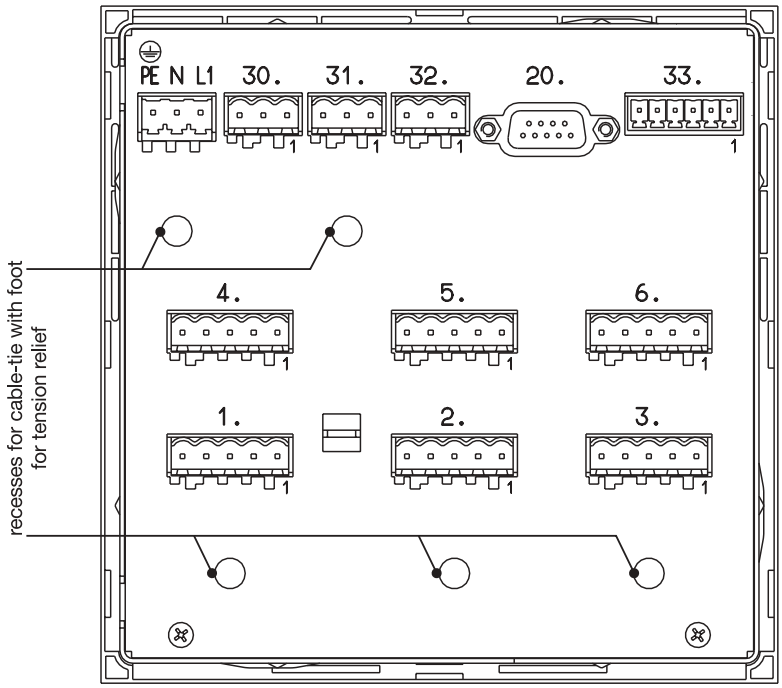
Event list

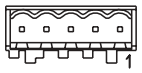
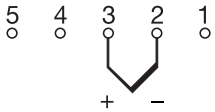
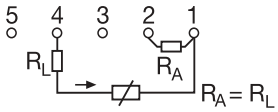
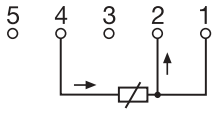
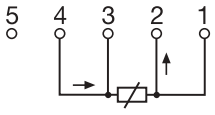
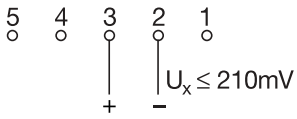
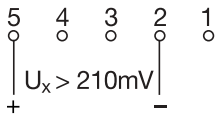
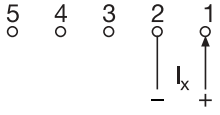


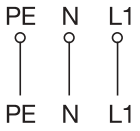
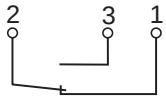
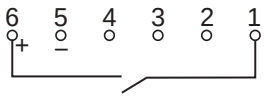
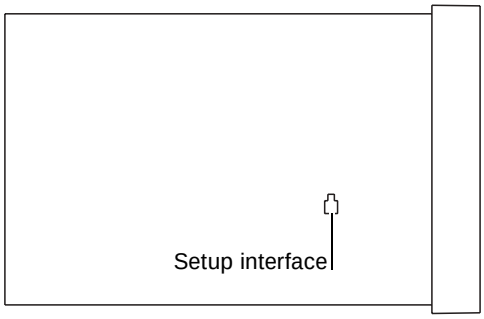
- important events in plain language (alarm messages, external texts or system messages)

Connection diagram

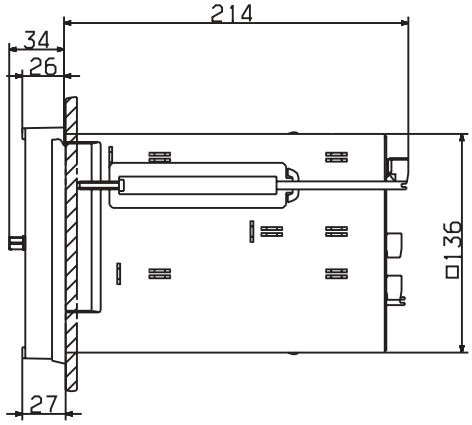
Rear view of 3/6-channel paperless recorder with screw-clamp connectors

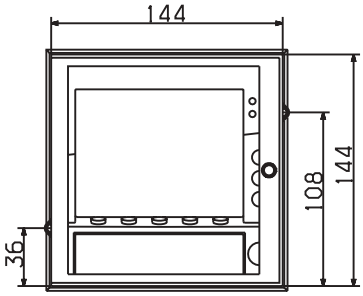


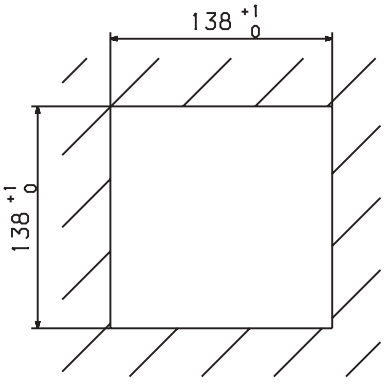
Connection 3/6-channel paperless recorder		Diagram
Analog inputs	Connector	
Thermocouple	1 to 6	
Resistance thermometer in 2-wire circuit	1 to 6	
Resistance thermometer in 3-wire circuit	1 to 6	
Resistance thermometer in 4-wire circuit	1 to 6	
Voltage input up to 210 mV	1 to 6	
Voltage input above 210 mV	1 to 6	
Current input	1 to 6	

Supply		
Supply	PE ⏚ N (L-) L1 (L+)	
Relay outputs (extra code)		
Relays K1, K2, K3 (changeover)	30, 31, 32	
Interfaces (extra code) **(configuration on the instrument determines which interface is used)**		
RS232C 9-pin sub-D	20	2 RxD receiving data 3 TxD transmitting data 5 GND ground
RS485 9-pin sub-D	20	3 TxD+/RxD+ transmitting/receiving data + 5 GND ground 8 TxD-/RxD- transmitting/receiving data -
Logic inputs (extra code)		
Supply 24V 50mA 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 (BE4), operated from 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: Paperless recorder for capturing, visualizing, storing and evaluating measurement data

					(1) Basic version
				955015/14	paperless recorder with 3 analog inputs
				955015/24	paperless recorder with 3 analog inputs incl. setup and PCA evaluation program
				955015/15	paperless recorder with 6 analog inputs
				955015/25	paperless recorder with 6 analog inputs incl. setup and PCA evaluation program
					(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 backup (ex-factory)
x	x	x	x	021	storage capacitor for memory backup (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	955015/14	-	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 with new orders (not for retrofitting).
3. List extra codes in sequence, separated by commas.

Standard accessories

- 1 Operating Instructions B 95.5015
- 2 mounting brackets
- cable tie with foot (can be released), for strain relief of the connected sensor leads

Accessories

Article	Sales No.
PC evaluation program, multilingual (108.xx.xx)	95/00378126
PCA communication server, multilingual (139.xx.xx)	95/00378279
Setup program, multilingual	95/00378521
PC interface cable with TTL/RS232 converter and adapter	95/00350260
Serial interface converter cable USB/RS232	95/00408077
Enabling extra code: integrators and counters / math and logic module (from instrument software version 133.03.xx). The math and logic module can only be configured through the PC setup program.	95/00393217

Universal carrying case TG-35

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