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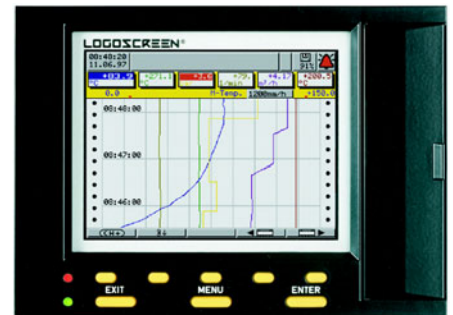e-mail: info@JumoUSA.com
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JUMO

LOGOSCREEN®

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

MEMBER OF PROFIBUS INTERNATIONAL
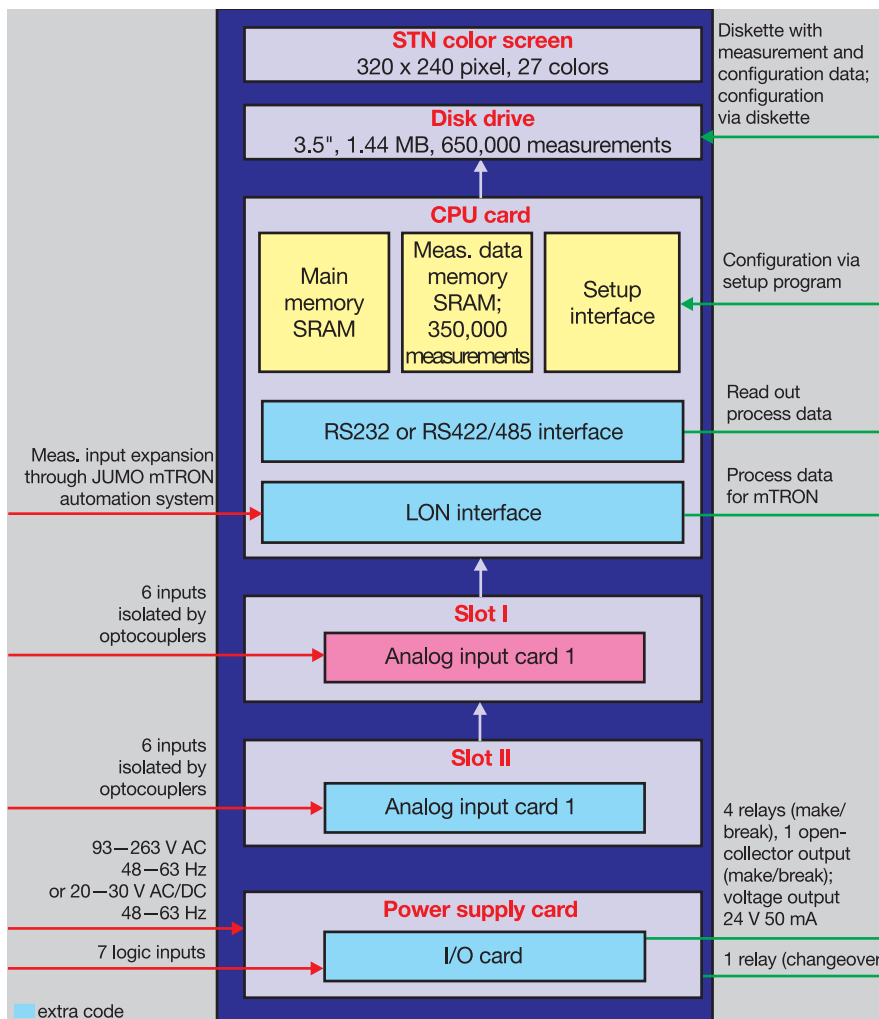
for stock items see price list

Brief description

The main feature of the LOGOSCREEN is a 5.7" color screen on which the measurement data are displayed in different presentation formats (numbers, diagrams, bargraph...). In contrast to conventional recorders, the LOGOSCREEN does not require a paper chart. Measurement data are electronically stored and are available for evaluation both locally and on a PC. The LOGOSCREEN is internally equipped with 6 or 12 measurement inputs and can be expanded to a maximum of 36 inputs through the JUMO mTRON automation system. 8 measurement inputs can be mathematically linked via a logic module.
The instrument can be programmed via 8 keys or from a PC.
The bezel size is 144 mm x 200 mm, the mounting depth 225 mm.

Type 955010/…

Block structure

- STN color screen
  320 x 240 pixel, 27 colors
- Disk drive
  3.5", 1.44 MB, 650,000 measurements
- CPU card
  - Main memory SRAM
  - Meas. data memory SRAM; 350,000 measurements
  - Setup interface
- RS232 or RS422/485 interface
- LON interface
- Slot I — Analog input card 1
- Slot II — Analog input card 1
- Power supply card — I/O card

Diskette with measurement and configuration data; configuration via diskette

Configuration via setup program

Read out process data

Process data for mTRON

Meas. input expansion through JUMO mTRON automation system

6 inputs isolated by optocouplers

6 inputs isolated by optocouplers

93—263 V AC 48—63 Hz or 20—30 V AC/DC 48—63 Hz

7 logic inputs

4 relays (make/break), 1 open-collector output (make/break); voltage output 24 V 50 mA

1 relay (changeover)

extra code

Features

- no chart /pens
- presentation of the measurement data in vertical/horizontal diagrams, bargraph, numerical, …
- expanded batch reporting
- local availability of the measurement data stored in RAM
- database can be saved to a formatted 3.5" diskette
- configuration of the instrument via keys, diskette or setup program
- evaluation of the archived data through the PC evaluation program
- conversion of the measurement data into spreadsheet formats
- search function for history analysis
- adaptation of the storage cycles to the individual process through
  - normal operation
  - event operation
  - daytime operation
- report with minimum/maximum/ average values and integrator
- freely programmable inputs for resistance thermometers, thermocouples, d.c. current and d.c. voltage
- sampling rate minimum 125 msec with 12 analog inputs
- PROFIBUS-DP and Ethernet conn.

Technical data

Internal analog inputs (channels 1 to 12)

Thermocouple

Designation	Type	Standard	Range	Linearization 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
Shortest span			Types L, J, U, T, K, E, N: 100 °C Types S, R, B: 500 °C	
Range start/end			freely progammable within the limits in 0.1 °C steps	
Cold junction			Pt 100 internal or thermostat external constant	
Cold junction accuracy (internal)			± 1 °C	
Cold junction temperature (external)			-50 to +100 °C, adjustable through setup software	
Sampling cycle			6 or 12 channels 125 msec	
Input filter			2nd order digital filter; filter constant adjustable from 0 — 10.0 sec	
Test voltage			500V (across optocoupler)	
Resolution			better than 14 bit	
Features			also programmable in °F	

1. The linearization accuracy refers to the maximum span.
   The linearization accuracy is reduced for shorter spans.

Resistance thermometers

Designation	Standard	Connection	Range	Linearization accuracy	Measuring current
Pt 100	EN 60 751	2/3-wire	-200 to +500 °C	±0.4 °C	500 µA
		2/3-wire	-200 to +850 °C	±0.8 °C	250 µA
		4-wire	-200 to +500 °C	±0.4 °C	500 µA
		4-wire	-200 to +850 °C	±0.5 °C	250 µA
Pt 100 JIS		2/3-wire	-200 to +500 °C	±0.4 °C	500 µA
		2/3-wire	-200 to +650 °C	±0.8 °C	250 µA
		4-wire	-200 to +500 °C	±0.4 °C	500 µA
		4-wire	-200 to +650 °C	±0.5 °C	250 µA
Pt 500	EN 60 751	2/3-wire	-200 to +500 °C	±0.4 °C	250 µA
		2/3-wire	-200 to +850 °C	±0.8 °C	250 µA
		4-wire	-200 to +500 °C	±0.4 °C	250 µA
		4-wire	-200 to +850 °C	±0.5 °C	250 µA
Pt 1000	EN 60 751	2/3-wire	-200 to +500 °C	±0.4 °C	500 µA
		2/3-wire	-200 to +850 °C	±0.8 °C	250 µA
		4-wire	-200 to +500 °C	±0.4 °C	500 µA
		4-wire	-200 to +850 °C	±0.5 °C	250 µA
Ni 100	EN 60 751	2/3-wire	-60 to +180 °C	±0.4 °C	500 µA
		4-wire	-60 to +180 °C	±0.4 °C	500 µA
Connection type		2-, 3- or 4-wire circuit			
Shortest span		15 °C			
Probe lead resistance		max. 30 Ω per core for 3- and 4-wire circuit max. 10 Ω per core for 2-wire circuit			
Range start/end		freely programmable within the limits in 0.1 °C steps			
Sampling cycle		6 or 12 channels 125 msec			
Input filter		2nd order digital filter; filter constant adjustable from 0 — 10 sec			
Test voltage		500V (across optocoupler)			
Resolution		better than 14 bit			
Features		also programmable in °F			

Resistance transmitter and potentiometer

Range	Accuracy	Measuring current
up to 180Ω up to 390Ω up to 2000Ω up to 4000Ω	±150mΩ ±300mΩ ±2Ω ±4Ω	500µA 250µA 500µA 250µA
Connection type		resistance transmitter: 3-wire circuit potentiometer: 2-/3-wire circuit
Shortest span		6Ω
Probe lead resistance		max. 30Ω per core in 4-wire circuit max. 20Ω per core in 2- and 3-wire circuit up to 200Ω range: max. 10Ω per core in 2-and 3-wire circuit
Resistance values		freely programmable within the limits in 0.1Ω steps
Sampling cycle		6 or 12 channels 125msec
Input filter		2nd order digital filter; filter constant adjustable from 0 — 10.0sec

Input for DC voltage or DC current

Basic range	Range	Accuracy	Input resistance
1V	-20 to +70mV	±80µV	$R_{IN} \geq 1\,M\Omega$
1V	-5 to +105mV	±100µV	$R_{IN} \geq 1\,M\Omega$
1V	-10 to +210mV	±240µV	$R_{IN} \geq 470\,k\Omega$
1V	-0.5 to +12 V	±6mV	$R_{IN} \geq 470\,k\Omega$
1V	-0.05 to + 1.2V	±1mV	$R_{IN} \geq 470\,k\Omega$
12V	-1.2 to + 1.2V	±2mV	$R_{IN} \geq 470\,k\Omega$
12V	-12 to +12 V	±12mV	$R_{IN} \geq 470\,k\Omega$
Shortest span	5mV		
Range start/end	freely programmable within the limits (up to 999mV in 0.01mV steps, above 1V in 1mV steps)		
22mA	-2 to +22mA	±20µA	burden voltage 1V max.
22mA	-22 to +22mA	±44µA	burden voltage 1V max.
Shortest span	0.5mA		
Range start/end	freely programmable within the limits in 0.1mA steps		
Sampling cycle	6 or 12 channels 125msec		
Input filter	2nd order digital filter; filter constant adjustable from 0 — 10.0sec		
Features	adjustable linearizations for thermocouples and resistance thermometers (for connection to transmitters without linearization)		

Transducer short-circuit/break

	Short-circuit[1]	Break[1]
Thermocouple	not detected	detected
Resistance thermometer	detected	detected
Resistance transmitter	detected	detected
Potentiometer	not detected	detected
Voltage up to ± 1V	not detected	detected
Voltage above ± 1V	not detected	not detected
Current	not detected	not detected

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

Logic inputs (extra code)

Number	7 to DIN VDE 0411, Part 500 25Hz max., 32V max.
Level	logic "0": -3 to +5V, logic "1": 12 to 30V
Sampling cycle	minimum 1 sec

Outputs

1 relay (ex-factory)	changeover, 3A, 230V AC[1]
4 relays (extra code)	make/break, 3A, 230V AC[1]
1 open-collector output (extra code)	25V max., 100mA max.

1. with resistive load. It is not permissible to mix SELV circuits and supply circuits.

Screen

Resolution	320 x 240 pixels
Size	5.7"
Number of colors	27 colors

Electrical data

Supply (switch-mode power supply)	93 — 263V AC 48 — 63Hz, or 20 — 30V AC/DC 48 — 63Hz
Test voltages (type test) - mains supply circuit to measurement circuit - mains 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: 3.7kV 50Hz, 1min, with AC/DC supply: 510V 50Hz, 1min with AC supply: 2.3kV 50Hz, 1min, with AC/DC supply: 510V 50Hz, 1min 510V 50Hz, 1min up to 30V AC and 50V DC
Supply voltage error	less than 0.1% of span
Power consumption	25VA approx.
Data backup	see page 6/11
Electrical connection	at rear through plug-in screw terminals, 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

Housing

Housing type	housing for flush-panel mounting to DIN 43 700, galvanized steel
Bezel size	200mm x 144mm
Depth behind panel	225mm
Panel cut-out	138$^{+1.0}$mm x 138$^{+1.0}$mm
Housing fixing	in panel to DIN 43 834
Ambient temperature range	0 to +45°C
Ambient temperature error	0.03% per °C
Storage temperature range	-20 to +60°C
Climatic conditions	not exceeding 75% relative humidity, no condensation
Operating position	unrestricted, taking into account the viewing angle of the screen, horizontal ±50°, vertical ±30°
Protection	to EN 60 529 Category 2, front IP54 rear IP20
Weight	3.5kg approx.

External analog measurement inputs / logic inputs / logic outputs

Type	JUMO mTRON automation system
Sampling cycle	1sec
Technical data	see Data Sheet: 70.4015 Relay module 70.4020 Analog input module 70.4030 Logic module
Configuration	iTOOL Project design software (70.4090)

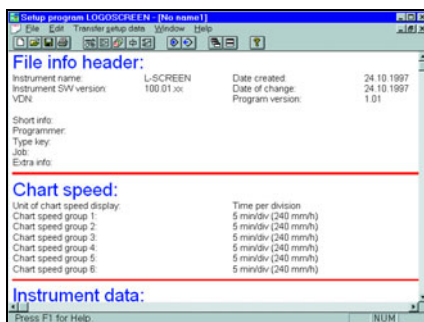# Operation and configuration

On the recorder

The instrument is configured from eight keys under menu guidance. Functions of 5 keys (softkeys) alter according to the context so that there are always unique key functions during operation. Softkey functions are indicated on the screen in plain text or through symbols.

Configuration at the recorder is protected against unauthorized access by a code number.

Via setup program for PC (extra code)

More conveniently than from the instrument keys, the recorder can be configured via the setup program for PC.

The configuration data can be archived on a data storage medium and can be output to a printer.

Via diskette

The configuration can be saved to a diskette and read into the instrument from this diskette.

Operating language

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

Evaluation program (accessory)

PCA

The PC evaluation program (PCA) is a program which runs under Windows 95/98 and NT, and is used to manage, archive, visualize and evaluate the recorder data which have been saved to diskette.
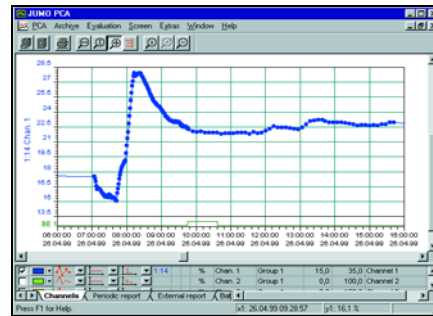
- The data of instruments with different configurations are recognized by the evaluation program and stored in an archive database. The complete management is performed automatically. The user only has to enter an identifier (supplementary description) manually.

- The user can at any time access specific sets of data which can be differentiated by the identifier. In addition, the time ranges to be evaluated can be limited.

- Any analog and digital channels of a paperless recorder can subsequently be combined into PCA groups in the PCA.

- Since each group is displayed in a separate 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, …).

- The evaluation program PCA 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. After archiving, the evaluation software will be stopped automatically.

Evaluation program (accessory)

Communications server

- The data can be read out from the paperless recorder via the serial interface (RS232/RS422/RS485). The data can be read out either manually or automatically (e.g. daily at 23 hrs).

- Data can also be retrieved via remote control, through a modem.

Interfaces

- The current process data, as well as specific instrument data, can be read out via the RS232 or RS422/RS485 interfaces.
  In conjunction with the PCA evaluation program, the archived data (RAM) can also be read out.
  Normally, the instrument is supplied with a RS232 interface which allows for a lead length of maximum 15m. The RS422/RS485 interface permits a lead length of 1.2 km.
  Connection is by a 9-pin SUB-D connector at the instrument rear. MODbus and Jbus are available as protocols, the transmission mode used is RTU (Remote Terminal Unit).

- The LON interface (extra code) is used for measurement channel expansion (channels 13 — 36) through the JUMO mTRON automation system.

- The paperless recorder can be integrated into a fieldbus system according to the PROFIBUS-DP standard, via the PROFIBUS-DP interface.
  This PROFIBUS variant is particularly suitable for the communication between automation systems and distributed peripheral devices at the field level.
  Data transmission takes place serially according to the RS485 standard, at a maximum of 12Mbit/sec.
  Using the project design tool that is included in the delivery (GSD generator; GSD = Device Base Data), an application-specific GSD file is created, which is used to integrate the paperless recorder into the fieldbus system.
  Up to 36 channels can be read in via PROFIBUS.

- The Ethernet connection can be implemented via an external COM-server module (10BaseT).
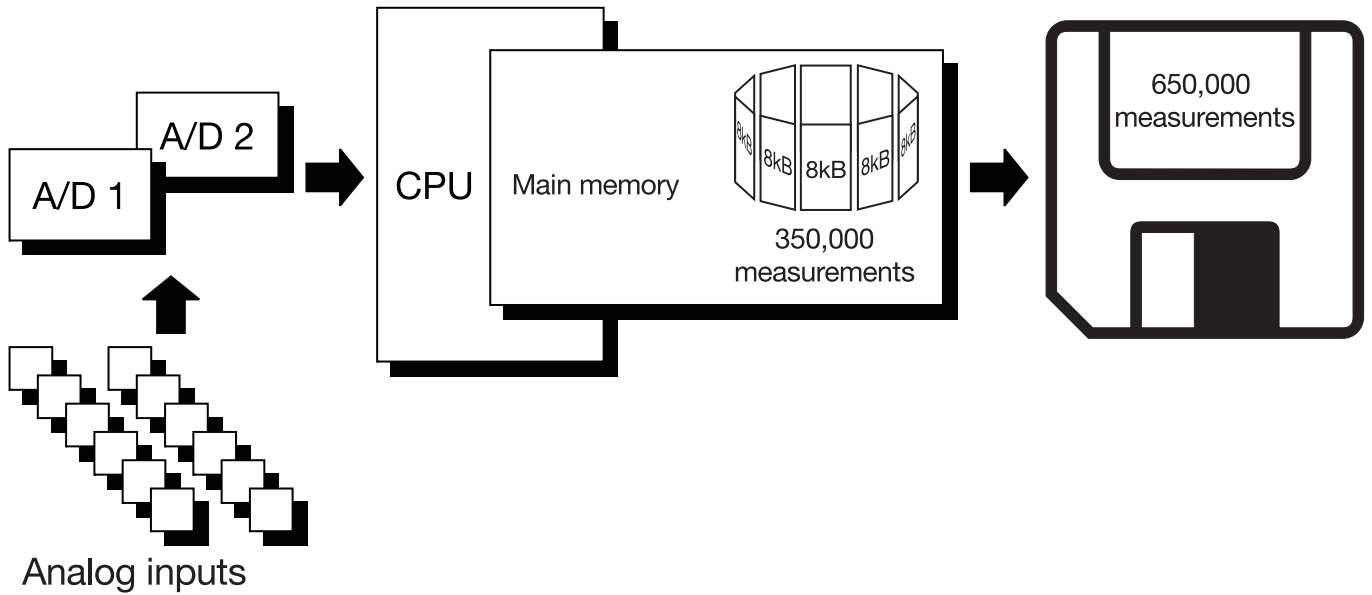
Data processing

The measurements of the analog inputs are acquired continuously in a 125 msec sampling cycle. Based on these measurements, reports are compiled and limits monitored.

Depending on the programmable storage cycle and stored value (maximum/minimum/average or instantaneous value), the measurements are transferred to the main memory of the instrument.

Main memory (RAM)

The data which are stored in RAM are regularly copied to diskette in 8 kbyte blocks. The RAM is written to as a ring memory, i.e. when the RAM is full, the oldest data will automatically be overwritten by new data. The storage capacity is sufficient for 350,000 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 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 e.g. for operating a relay (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, there will be no immediate loss of data, since they continue to be stored in the RAM.

Data will only be lost when the diskette is removed, and then the RAM is also completely freshly written.

When the instrument is disconnected from the supply:

- SRAM and time with lithium battery (ex-factory) more than 4 years, with storage capacitor more than 2 days (at 15 — 25°C ambient temperature)

- configuration data are in the non-volatile flash memory

Recording duration

Depending on the configuration of the instrument, the duration of the recording can vary over a considerable range (from a few days up to several months). An advance calculation is possible using the setup program.

Reports

For each input, a report (maximum/minimum/average and integrator) can be run over a defined period.

Limit monitoring/ change of operating mode

Over/underlimit conditions trigger an alarm. The alarm can be used e.g. 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 a brief occurance of over/underlimit conditions, with the result that no alarm is produced.

Normal operation

If no alarm is present and the instrument is **not** in timed operation, normal operation is active.

Event operation

Event operation is activated/deactivated by an operating signal (log. input, group/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 period of time.

The operating modes have different priorities:

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

Batch reports

Batch reporting can be performed in conjunction with an external report. Start, end and duration of a batch are recorded. Together with a batch counter and freely definable texts, these times can be displayed on the paperless recorder and within the PCA evaluation program.

Batch reporting can, for instance, be started by

- logic inputs 1 — 7 (extra code)

- MODbus flag (serial interface)

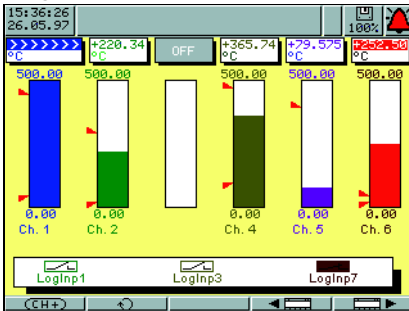- external logic inputs 1 — 6 (JUMO mTRON system)

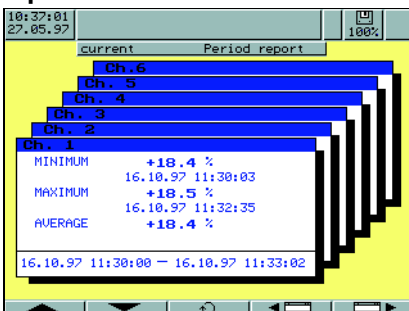# Presentation modes on the recorder

Group manager
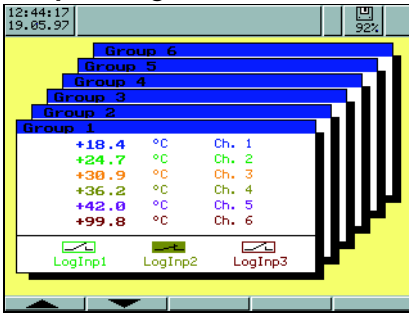
- 6 groups, each with any 6 analog and 3 logic inputs
- one input can be assigned to several groups
- display of current measurements or states of inputs
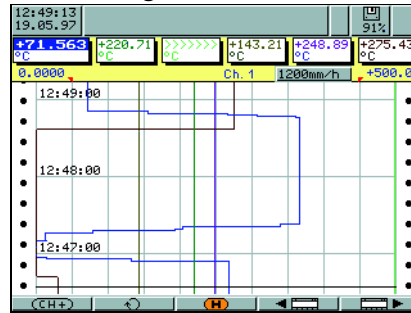- groups can be active/inactive

Vertical diagram

- recorder chart presentation of the analog channels
- scaling and limit marker indication on one channel
- numeric display of the current analog channels

Horizontal diagram

- graphical presentation of the analog and digital channels
- scaling and limit marker indication on one channel
- numeric display of the current measurements of the analog channels

Bargraph presentation

- bargraph presentation of the analog channels
- on/off presentation of the digital channels
- display of the current analog channels with scaling and limit markers
- colour change of bargraph to red on overlimit condition

Numeric presentation
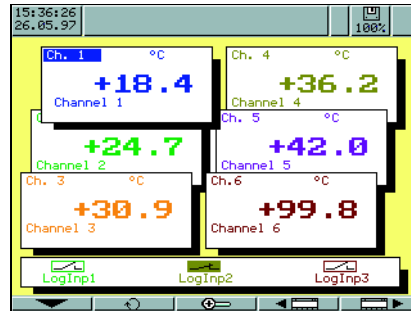
- large numeric presentation of the analog channels including the 2-line channel description
- each analog channel can be switched to the foreground
- on/off presentation of the digital channels

Numeric 1-channel presentation

- clear presentation of one analog channel
- one analog channel is presented simultaneously as bargraph and number
- display of the 2-line channel designation
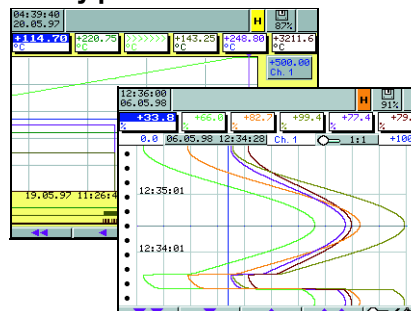- indication of scaling and limit markers

Report

- report of one analog channel in its own window
- indication of minimum, maximum, average/integral value and time period
- display of previous report

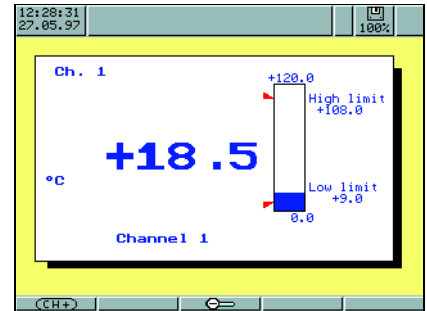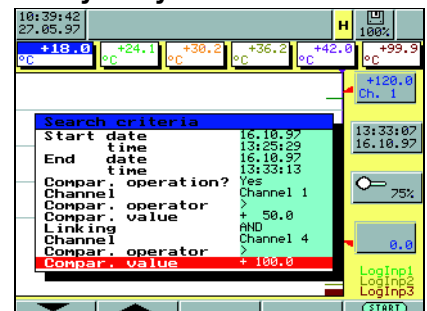## History presentation vert./horiz.

- graphical presentation of all stored measurement data at different zoom steps
- indication of scaling and limit markers for one channel
- numeric display of the measurements of the analog channels at the cursor position
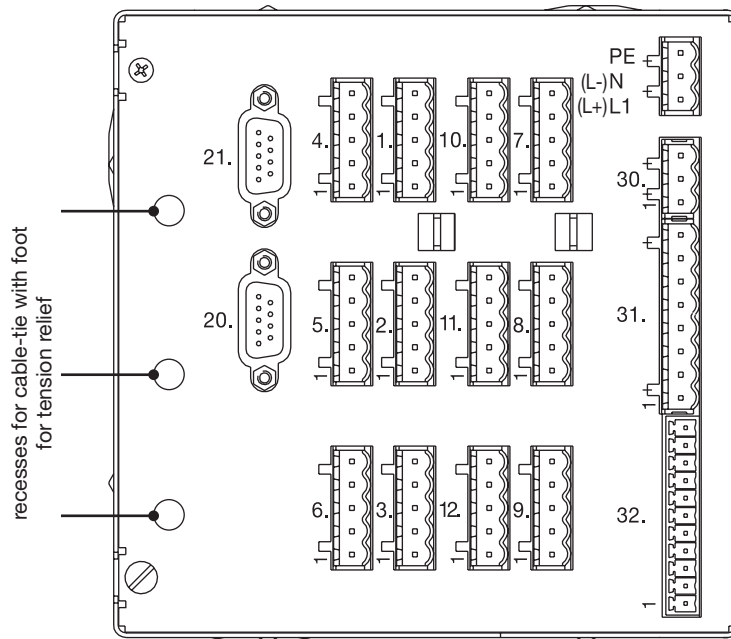- shifting of the visible window within the stored measurement data

History analysis

- restriction to a specific time period
- comparison with a specific measurement
- logic linkage of two analog channels is possible

10.04/00342583

Connection diagram

Rear view of 6/12-channel version (precision high-speed board) with plug-in screw terminals

Connection 6/12-channel version (precision high-speed board)		Diagram
Analog inputs	Connector	
Thermocouple	1 to 12	
Resistance thermometer in 2-wire circuit	1 to 12	
Resistance thermometer in 3-wire circuit	1 to 12	
Resistance thermometer in 4-wire circuit	1 to 12	
Resistance transmitter	1 to 12	
Potentiometer in 2-wire circuit	1 to 12	
Potentiometer in 3-wire circuit	1 to 12	
Potentiometer in 4-wire circuit	1 to 12	

Voltage input up to 200mV	1 to 12	1 2 3 4 5 $U_x \leq 200mV$
Voltage input above 200mV	1 to 12	1 2 3 4 5 $U_x > 200mV$
Current input	1 to 12	1 2 3 4 5 I_x
Supply		
Supply	L1 (L+) N (L-) PE	L1 N PE L1 N PE
Digital interfaces		
RS232C 9-pin SUB-D socket	20	2 RxD receive data 3 TxD transmit data 5 GND ground
RS422 9-pin SUB-D socket (extra code)	20	3 TxD+ transmit data + 4 RxD+ receive data + 5 GND ground 8 TxD- transmit data - 9 RxD- receive data -
RS485 9-pin SUB-D socket (extra code)	20	3 TxD+/RxD+ transmit/receive data + 5 GND ground 8 TxD-/RxD- transmit/receive data -
LON interface 9-pin SUB-D socket (extra code)	21	3 Net_A 9 Net_B

PROFIBUS-DP
9-pin SUB-D socket
(extra code)
	21	3 RxD/TxD-P receive/transmit data-Plus
		               B-cable
		5 DGND data transmission potential
		6 VP supply voltage-Plus
		8 RxD/TxD-N receive/transmit data-N
		               A-cable

Relay outputs		
Relay K1 (changeover)	30	1 3 2
Relay K2 to K5 (make/break) (extra code)	31	1 2 3 4 5 6 7 8 K2 K3 K4 K5
Digital I/O		
Open-collector output (extra code)	32 3 ground 4 collector	3 4
Logic inputs (extra code) voltage-operated LOW = -3 to +5V DC HIGH = 12 to 30V DC Supply 24V/50mA	32 1 +24V auxiliary supply not stabilized 2 GND 5 logic input 7 … 11 logic input 1	BE7 … BE1 1 2 3 4 5 6 7 8 9 10 11 Example: Logic input 4 (BE4) operated from the internal supply voltage

Dimensions
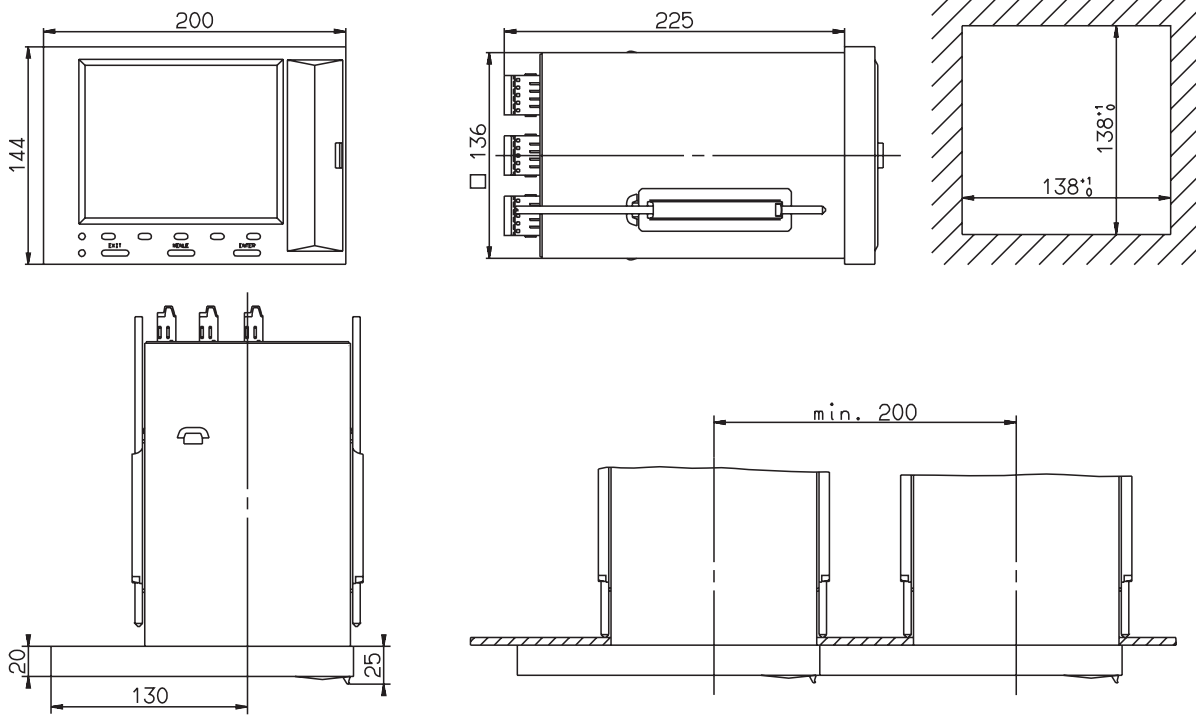
Extra code TG-35

Universal carrying case TG-35
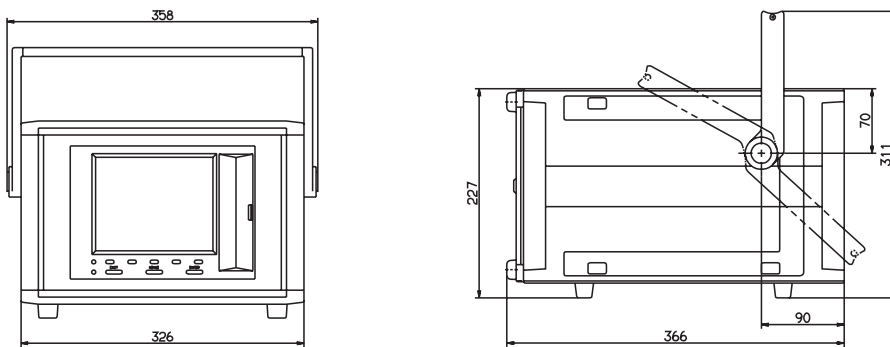
Order details <small>Paperless recorder for capturing, visualizing, storing and evaluating measurement data</small>

Universal carrying case TG-35

- to take a paperless recorder with bezel size 144 mm x 200 mm
- 326 mm x 227 mm x 366 mm (W x H x D) cut-out: 138 mm x 138 mm

- paperless recorder accessible from the back

(1) Basic version

Code	Description
955010/00	paperless recorder without analog inputs
955010/01	paperless recorder without analog inputs incl. setup and PC evaluation programs and interface cable/adapter
955010/10	paperless recorder with 6 analog inputs
955010/20	paperless recorder with 6 analog inputs incl. setup and PC evaluation programs and interface cable/adapter
955010/11	paperless recorder with 12 analog inputs
955010/21	paperless recorder with 12 analog inputs incl. setup and PC evaluation programs and interface cable/adapter

(2) Inputs 1 — 6 (programmable)

	Code	Description
x x	000	not assigned
x x x x	888	factory-set

(3) Inputs 7 — 12 (programmable)

	Code	Description
x x x x	000	not assigned
x x	888	factory-set

(4) Interface

	Code	Description
x x x x x x	51	RS232C (standard)
x x x x x x	54	RS422/485, MODbus
x x x x x x	66	RS232C and LON
x x x x x x	67	RS422/485 and LON
x x x x x x	68	RS232C and PROFIBUS-DP
x x x x x x	69	RS422/485 and PROFIBUS-DP

(5) Supply

	Code	Description
x x x x x x	01	93 — 263V AC 48 — 63Hz (not with UL approval)
x x x x x x	23	110 — 240V AC +10/-15%, 48 — 63Hz
x x x x x x	25	20 — 30V AC/DC 48 — 63Hz

(6) Extra codes

	Code	Description
x x x x x x	020	lithium battery for memory buffer (ex-factory)
x x x x x x	021	storage capacitor for memory buffer (on request)
x x x x x x	061	UL approval
x x x x x x	258	7 logic inputs, 1 open-collector output, 4 relay outputs, voltage output 24V DC 50mA
x x x x x x	350	universal carrying case TG-35[2]

	(1)	(2)	(3)	(4)	(5)	(6)
Order code	____ -	____ -	____ -	____ -	____ /	____ ,...
Order example	955010/10 -	888 -	000 -	51 -	01 /	020[1]

1. List extra codes one after another, separated by commas.
2. The UL approval (061) only applies to the panel-mounting instrument.

Standard accessories

- 1 Operating Instructions
- 2 fixing brackets
- cable-tie with foot (can be released) for tension relief of the sensor cables connected

Accessories

- setup program on CD-ROM, multilingual
- PC interface cable with TTL/RS232 converter and adapter
- PC evaluation program on CD-ROM, multilingual
- PCA communications server on CD-ROM, multilingual
- configuration of the inputs to customer specification