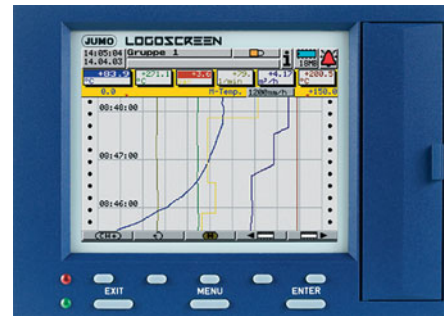


# LOGOSCREEN cf

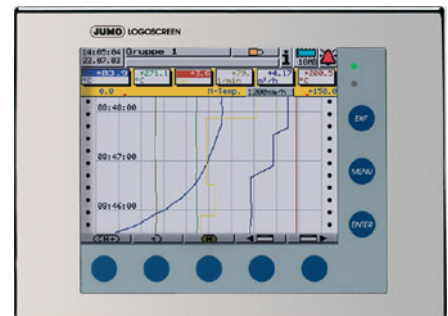
## Paperless Recorder with CompactFlash card as storage medium

### Brief description

Together with its PC software components, this recorder constitutes a system for the electronic acquisition, storage, archiving and analysis of a substantial amount of data. The recorder is internally equipped with 6 or 12 universal measurement inputs and can be expanded to a maximum of 36 inputs through the mTRON automation system. The acquired process data are saved to the internal backup memory (32 to 128 MByte) and transferred via the CompactFlash memory card, which is plugged in at the front. An optional Ethernet interface provides integration into PC networks in order to allow data to be accessed via networked PC stations. The recorder can be configured from 8 keys or from a PC. Front bezel size is 144 mm x 200 mm, max. depth behind panel is 228 mm.

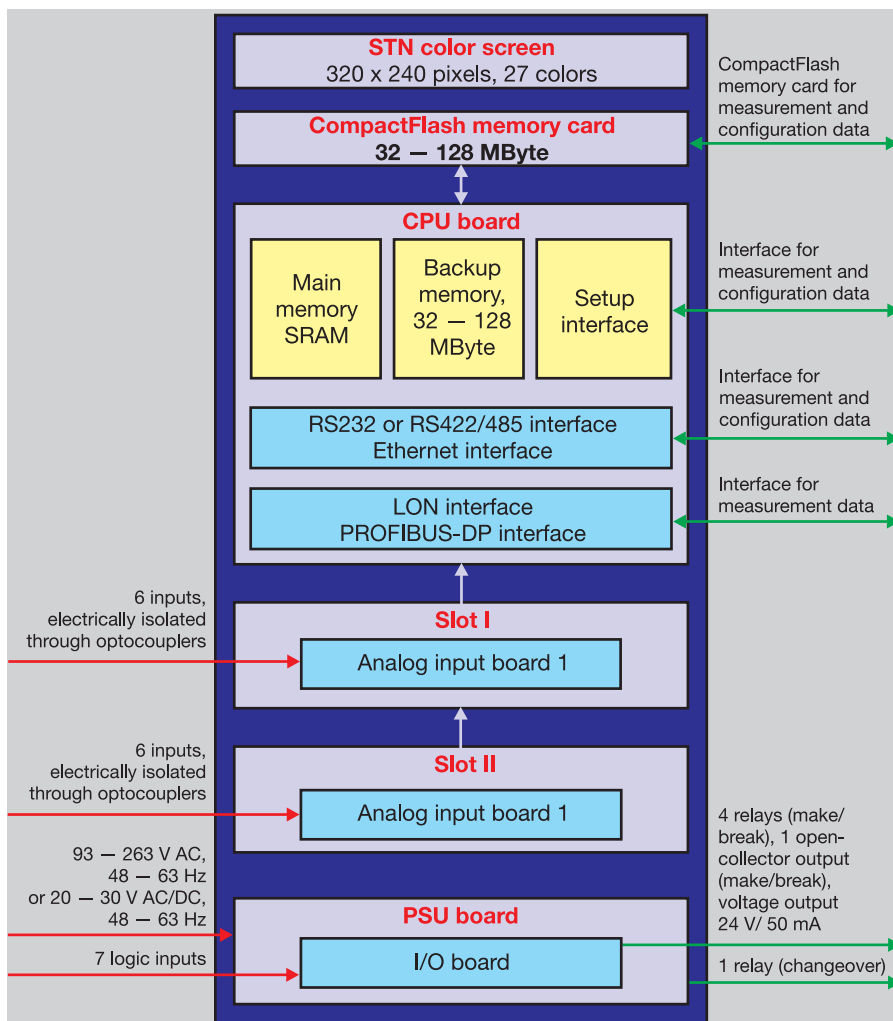


Type 706570/...



Type 706570/..., stainless steel front

### Block structure



### Key features

- No chart/pens
- Presentation of the measurement data in vertical/horizontal diagrams, bar graph, numerical, ...
- Batch documentation
- Local availability of the measurement data stored in RAM
- Data records can be saved to a CompactFlash memory card
- Instrument can be configured from the keys, via the CompactFlash memory card or serial interface
- Evaluation of the archived data through the PC evaluation software
- Adaptation of the storage cycles to the individual process through
  - normal operation
  - event operation
  - day-time operation
- Report with minimum/maximum/average values and integrator
- Freely programmable inputs for resistance thermometers, thermocouples, DC current and DC voltage
- Sampling cycle minimum 125 msec with 12 analog inputs
- PROFIBUS-DP and Ethernet connection

## Technical data

### Internal analog inputs (channels 1 to 12)

#### Thermocouple

| Designation                          | Type  | Standard   | Range  | Linearization accuracy <sup>1</sup> |
|--------------------------------------|---|------------|--|-------------------------------------|
| 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                              | ±0.15% 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 to 1820°C                                  | ±0.15% above 400°C                  |
| Shortest span                        |   |            | Types L, J, U, T, K, E, N:<br>Types S, R, B: | 100°C<br>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 +100°C, adjustable through setup software                      |            |  |                                     |
| Sampling cycle                       | 6 or 12 channels 125msec  |            |  |                                     |
| Input filter                         | 2nd order digital filter; filter constant adjustable from 0 — 10.0sec |            |  |                                     |
| Test voltage                         | 500V (across optocoupler)   |            |  |                                     |
| Resolution                           | better than 14 bit  |            |  |                                     |
| Special features                     | also programmable in °F   |            |  |                                     |

1. The linearization accuracy refers to the maximum range 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                 | 500µA             |
|                       |   | 2/3-wire   | -200 to +850°C | ±0.8°C                 | 250µA             |
|                       |   | 4-wire     | -200 to +500°C | ±0.4°C                 | 500µA             |
|                       |   | 4-wire     | -200 to +850°C | ±0.5°C                 | 250µA             |
| Pt 100 JIS            |   | 2/3-wire   | -200 to +500°C | ±0.4°C                 | 500µA             |
|                       |   | 2/3-wire   | -200 to +650°C | ±0.8°C                 | 250µA             |
|                       |   | 4-wire     | -200 to +500°C | ±0.4°C                 | 500µA             |
|                       |   | 4-wire     | -200 to +650°C | ±0.5°C                 | 250µA             |
| Pt 500                | EN 60 751   | 2/3-wire   | -200 to +500°C | ±0.4°C                 | 250µA             |
|                       |   | 2/3-wire   | -200 to +850°C | ±0.8°C                 | 250µA             |
|                       |   | 4-wire     | -200 to +500°C | ±0.4°C                 | 250µA             |
|                       |   | 4-wire     | -200 to +850°C | ±0.5°C                 | 250µA             |
| Pt 1000               | EN 60 751   | 2/3-wire   | -200 to +500°C | ±0.4°C                 | 500µA             |
|                       |   | 2/3-wire   | -200 to +850°C | ±0.8°C                 | 250µA             |
|                       |   | 4-wire     | -200 to +500°C | ±0.4°C                 | 500µA             |
|                       |   | 4-wire     | -200 to +850°C | ±0.5°C                 | 250µA             |
| Ni 100                | EN 60 751   | 2/3-wire   | -60 to +180°C  | ±0.4°C                 | 500µA             |
|                       |   | 4-wire     | -60 to +180°C  | ±0.4°C                 | 500µA             |
| Connection type       | 2-, 3- or 4-wire circuit  |            |                |                        |                   |
| Shortest span         | 15°C  |            |                |                        |                   |
| Probe lead resistance | max. 30Ω per core for 3- and 4-wire circuit<br>max. 10Ω 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 125msec  |            |                |                        |                   |
| Input filter          | 2nd order digital filter; filter constant adjustable from 0 — 10sec                 |            |                |                        |                   |
| Test voltage          | 500V (across optocoupler)   |            |                |                        |                   |
| Resolution            | better than 14 bit  |            |                |                        |                   |
| Special features      | also programmable in °F   |            |                |                        |                   |

**Resistance transmitter and potentiometer**

| Range                 | Accuracy   | Measuring current |
|-----------------------|--|-------------------|
| up to 180Ω            | ±150mΩ   | 500μA             |
| up to 390Ω            | ±300mΩ   | 250μA             |
| up to 2000Ω           | ±2Ω  | 500μA             |
| up to 4000Ω           | ±4Ω  | 250μA             |
| Connection type       | resistance transmitter: 3-wire circuit<br>potentiometer: 2-/3-wire circuit   |                   |
| Shortest span         | 6Ω   |                   |
| Probe lead resistance | max. 30Ω per core in 4-wire circuit<br>max. 20Ω per core in 2- and 3-wire circuit<br>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      | Accuracy  | Input resistance                                 |
|------------------|---|--|
| -20 to +70mV     | ±80μV   | R <sub>IN</sub> ≥ 1 MΩ                           |
| -5 to +105mV     | ±100μV  | R <sub>IN</sub> ≥ 1 MΩ                           |
| -10 to +210mV    | ±240μV  | R <sub>IN</sub> ≥ 1 MΩ                           |
| -0.5 to +12 V    | ±6mV  | R <sub>IN</sub> ≥ 470 kΩ                         |
| -0.05 to + 1.2V  | ±1mV  | R <sub>IN</sub> ≥ 470 kΩ                         |
| -1.2 to + 1.2V   | ±2mV  | R <sub>IN</sub> ≥ 470 kΩ                         |
| -12 to +12 V     | ±12mV   | R <sub>IN</sub> ≥ 470 kΩ                         |
| Shortest span    | 5mV   |  |
| Range start/end  | freely programmable within the limits<br>(up to 999mV in 0.01mV steps, above 1V in 1mV steps)                                     |  |
| -2 to +22mA      | ±20μA   | burden voltage 1V max.<br>burden voltage 1V max. |
| -22 to +22mA     | ±44μA   |  |
| 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   |  |
| Special features | adjustable linearizations for thermocouples and resistance thermometers<br>(for connection to transmitters without linearization) |  |

**Transducer short-circuit/break**

|                        | Short-circuit <sup>1</sup> | Break <sup>1</sup> |
|------------------------|----------------------------|--------------------|
| 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 <sup>1</sup> |
| 4 relays (extra code)                | make/break, 3A, 230V AC <sup>1</sup> |
| 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)                         | 110 — 240V AC +10/-15%, 48 — 63Hz or 20 — 30V AC/DC 48 — 63Hz  |
| Electrical safety   | to EN 61 010, Part 1, August 2002<br>overvoltage category II, pollution degree 2   |
| Test voltages (type test)                                 | with AC supply: 3.7kV 50Hz, 1 min,<br>with AC/DC supply: 510V 50Hz, 1 min  |
| - mains supply circuit to measurement circuit             | with AC supply: 2.3kV 50Hz, 1 min,<br>with AC/DC supply: 510V 50Hz, 1 min  |
| - mains supply circuit to housing (protective earth)      |  |
| - measurement circuits to measurement circuit and housing | 510V 50Hz, 1 min   |
| - electrical isolation between the analog inputs          | up to 30V AC and 50V DC  |
| Supply voltage error                                      | less than 0.1% of span   |
| Power consumption   | 25VA approx.   |
| Data backup   | see page 7   |
| Electrical connection                                     | at rear through plug-in screw terminals,<br>max. conductor cross-section 2.5mm <sup>2</sup> or 2x 1.5mm <sup>2</sup> with ferrules |

**Environmental influences**

|                            |  |
|----------------------------|--|
| 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 |
| EMC                        | EN 61 326  |
| - interference emission    | Class A  |
| - immunity to interference | to industrial requirements                           |

**Housing**

|                    |  |
|--------------------|--|
| Housing front      | zinc die-casting   |
| 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 <sup>+1.0</sup> mm x 138 <sup>+1.0</sup> mm  |
| Housing fixing     | in panel to DIN 43 834   |
| Operating position | unrestricted, taking into account the viewing angle of the screen,<br>horizontal ±50°, vertical ±30° |
| Protection         | to EN 60 529 Category 2,<br>front IP54 (IP65 with extra code stainless steel front),<br>rear IP20    |
| Weight             | 3.5kg approx.  |

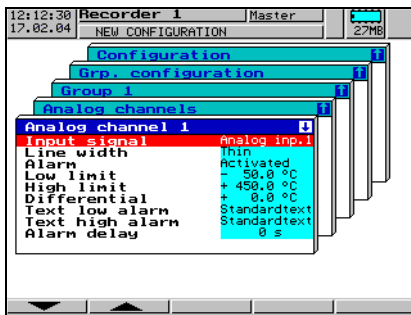
**External analog measurement inputs / logic inputs / logic outputs**

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

## Operation and configuration

### On the recorder

The recorder is configured from eight keys under menu guidance. Functions of 5 keys (softkeys) on the instrument 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.



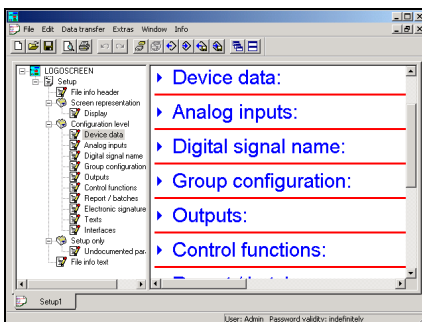
Integrated user lists (for various users with different access rights) protect the recorder from unauthorized access.

### 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.

Communication between the PC setup program and the paperless recorder can be made through:

- the setup interface
- the serial interface
- the Ethernet interface, or
- the CompactFlash memory card.



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

### Via CompactFlash memory card

The configuration can be saved to a CompactFlash memory card, and read into the instrument from this card.

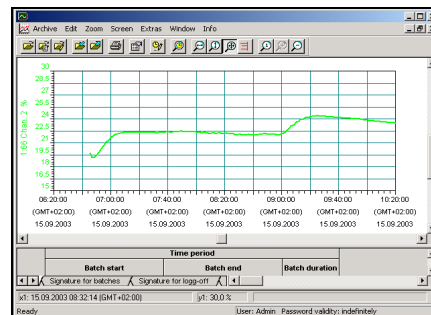
## Operating language

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.

## PC programs (accessories)

### PC evaluation software (PCA 3000)

The PC evaluation software (PCA 3000) is a program which runs under Windows NT4.0/2000/XP, and is used to manage, archive, visualize and evaluate the recorder data.



- The data of instruments with different configurations are recognized by the evaluation software 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 distinguished by the identifier. In addition, the time ranges to be evaluated can be limited.
- Any analog and digital channels of a paperless recorder can be subsequently combined into PCA groups in the PCA3000 software.
- 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, so that they can be processed in other programs, such as Excel.
- The PCA 3000 evaluation software has network capability, i.e. several users can obtain data from the same database in the network independently of each other.

### PCA communications software (PCC)

- The data can be read out from the recorder via the serial interface (RS232/RS422/RS485) or the Ethernet interface. 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

- Setup interface (fitted as standard)
- RS232 interface (fitted as standard)
- RS422/485 interface (extra code)
- Ethernet interface (extra code)
- LON interface (extra code)
- PROFIBUS-DP interface (extra code)

### Setup interface

The setup interface is used together with the PC interface cable (including the TTL/RS232 converter and adapter) for operation of the PC setup program (see Page 5). The paperless recorder has setup interfaces (connected in parallel) on both the front and back panels. They cannot both be used at the same time.

### RS232 interface

#### RS422/485 interface

The current process data, as well as specific instrument data, can be read out via the RS232 or RS422/RS485 interfaces.

The data that are stored in the backup memory can also be read out in conjunction with the PC evaluation software PCA3000 and the PCA communications software (PCC).

Normally, the instrument is supplied with a RS232 interface which allows for a lead length of maximum 15 meters. The RS422/RS485 interface permits a lead length of 1.2 km.

Connection is by a 9-pin SUB-D connector at the back of the instrument. Modbus and Jbus protocols are available, and the transmission mode used is RTU (Remote Terminal Unit).

### Ethernet interface

The Ethernet interface can be used in local networks for communication between the paperless recorder and the PC setup program or the PCA communications software. The IP address is given a fixed setting through configuration on the instrument or in the PC setup program.

When using the Ethernet interface, care must be taken to ensure that only one client at a time is permitted to access the instrument (server).

Transmission protocol: TCP/IP

Network type: 10BaseT

|  | Setup interface | RS232<br>RS422<br>RS485 | Ethernet | PROFI-BUS-DP | LON | External CF card |
|--|-----------------|-------------------------|----------|--------------|-----|------------------|
| Read/write measurements (present data) | yes             | yes                     | yes      | yes          | yes | no               |
| Read measurements (stored data)        | yes             | yes                     | yes      | no           | no  | yes              |
| Read/write configuration               | yes             | yes                     | yes      | no           | no  | yes              |
| Write user list                        | yes             | yes                     | yes      | no           | no  | yes              |
| Read screen memory                     | yes             | yes                     | yes      | no           | no  | no               |

### PROFIBUS-DP interface

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 the PROFIBUS.

### LON interface

The LON interface is used to expand the measurement channels (channels 13 — 36) through modules from the mTRON automation system.

### External CompactFlash memory card (CF)

The external CompactFlash memory card is used to transfer the data from the backup memory to the PC. Configuration data can be created on the PC and then transferred to the paperless recorder by means of the memory card.

On the PC side, data on the card is accessed with the help of a CompactFlash reader/writer.

## Data processing

### Data recording

The measurements of the analog inputs are acquired continuously in a 125msec 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 the RAM are regularly copied to the internal backup memory in 10 kByte blocks. This 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.

The data from the main memory can be shown as a history presentation on the paperless recorder.

### Backup memory (internal)

When a block of the main memory has been filled it is copied to the backup memory. The backup memory has a capacity of 32 — 128 MByte.

Every write action is monitored, so that any errors in saving data can be immediately identified.

The instrument monitors the capacity of the internal backup memory and activates one of the "memory alarm" signals when the capacity has fallen below the configurable residual capacity level. These signals can be used, for instance, to operate a relay.

### CompactFlash memory card (external)

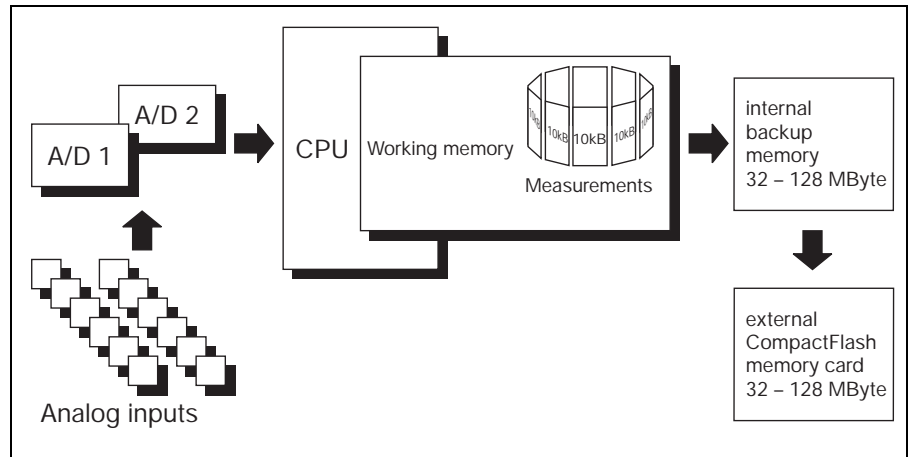
The external (replaceable) CompactFlash memory card can be used to transfer the data to a PC.

### Data security

The data are stored in coded form in a proprietary format. This ensures a high level of data security.

If the recorder is disconnected from the supply, then:

- RAM and clock time are buffered by a lithium battery (ex-factory) for more than 4 years, or more than 2 days with a storage capacitor (at 15 to 25°C ambient temperature)
- measurement data in the backup memory will not be lost
- configuration data are saved 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).

### Data transfer

Data transfer from the paperless recorder to a PC is made by means of the external CompactFlash memory card, via the serial interface, or via the Ethernet interface.

### Reports

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

### 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 recorder and within the PC evaluation software PCA3000.

Batch reporting can, for instance, be started by

- logic inputs 1 — 7 (extra code)
- Modbus flag (serial interface)
- external logic inputs 1 — 6 (mTRON system)

### Limit monitoring/ change of operating mode

Over/underlimit conditions trigger an alarm. The alarm can be used, for instance, as a control signal to switch the operating mode from normal/timed operation to event operation.

The storage cycle and stored value can be configured separately for all three operating modes.

With the help of the alarm delay function, brief occurrences of over/underlimit conditions can be filtered out, 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 a control signal (log. input, group/com-bination alarm, ...). As long as the control signal is active, the recorder is in event operation.

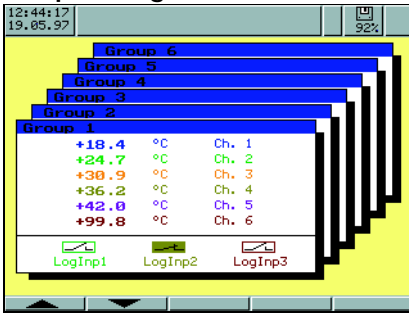
### Timed operation

Timed operation is active on a daily basis for 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)  |

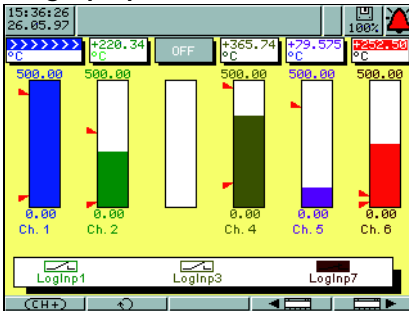
## Presentation modes on the recorder

### Group manager



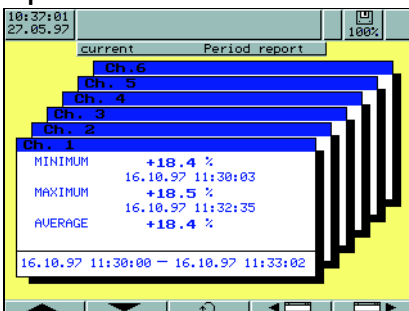
- 6 groups, each with any 6 analog and 3 logic inputs
- one input can be assigned to several groups
- display of present measurements or states of inputs
- groups can be active/inactive

### Bar graph presentation



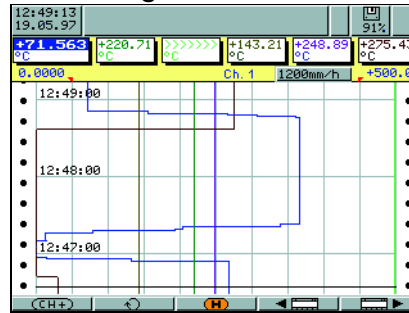
- bar graph presentation of the analog channels
- on/off presentation of the digital channels
- display of the present analog channels with scaling and limit markers
- color change of bar graph to red on overlimit condition

### Report



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

### Vertical diagram



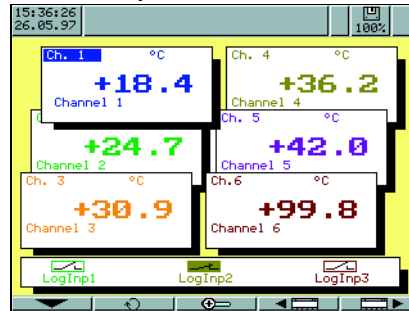
- recorder chart presentation of the analog channels
- scaling and limit marker indication on one channel
- numerical display of the present analog channels

### Horizontal diagram



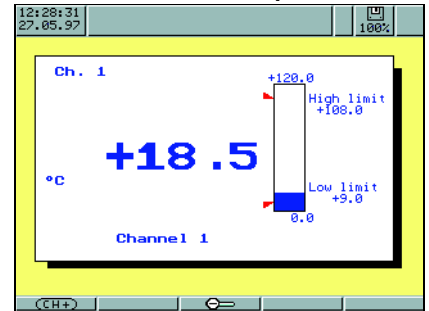
- graphical presentation of the analog and digital channels
- scaling and limit marker indication on one channel
- numerical display of the present measurements of the analog channels

### Numerical presentation



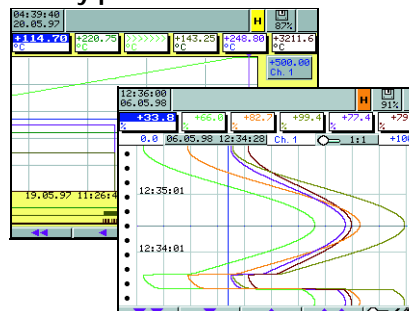
- large numerical presentation of the analog channels, including the 2-line channel description
- each analog channel can be switched to the foreground
- on/off presentation of the digital channels

### Numerical 1-channel presentation



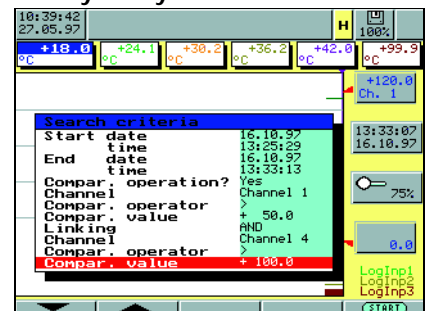
- clear presentation of one analog channel
- one analog channel is presented simultaneously as bar graph and number
- display of the 2-line channel designation
- indication of scaling and limit markers

### History presentation vert./horiz.



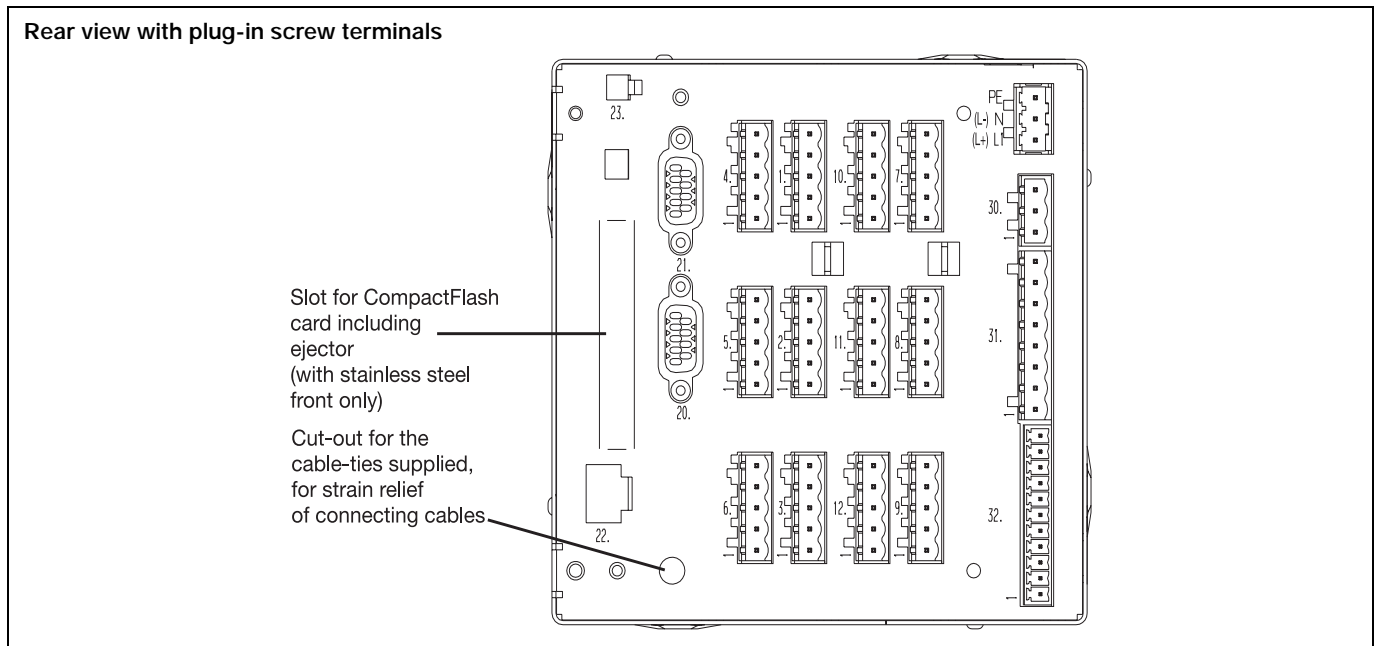
- graphical presentation of all stored measurement data at different zoom levels
- indication of scaling and limit markers for one channel
- numerical display of the measurements of the analog channels at the cursor position
- shifting of the visible window within the stored measurement data

### History analysis



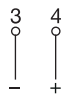
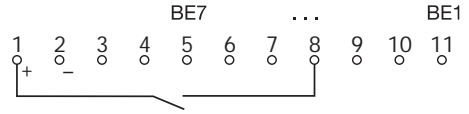
- restriction to a specific time period

### Connection diagram

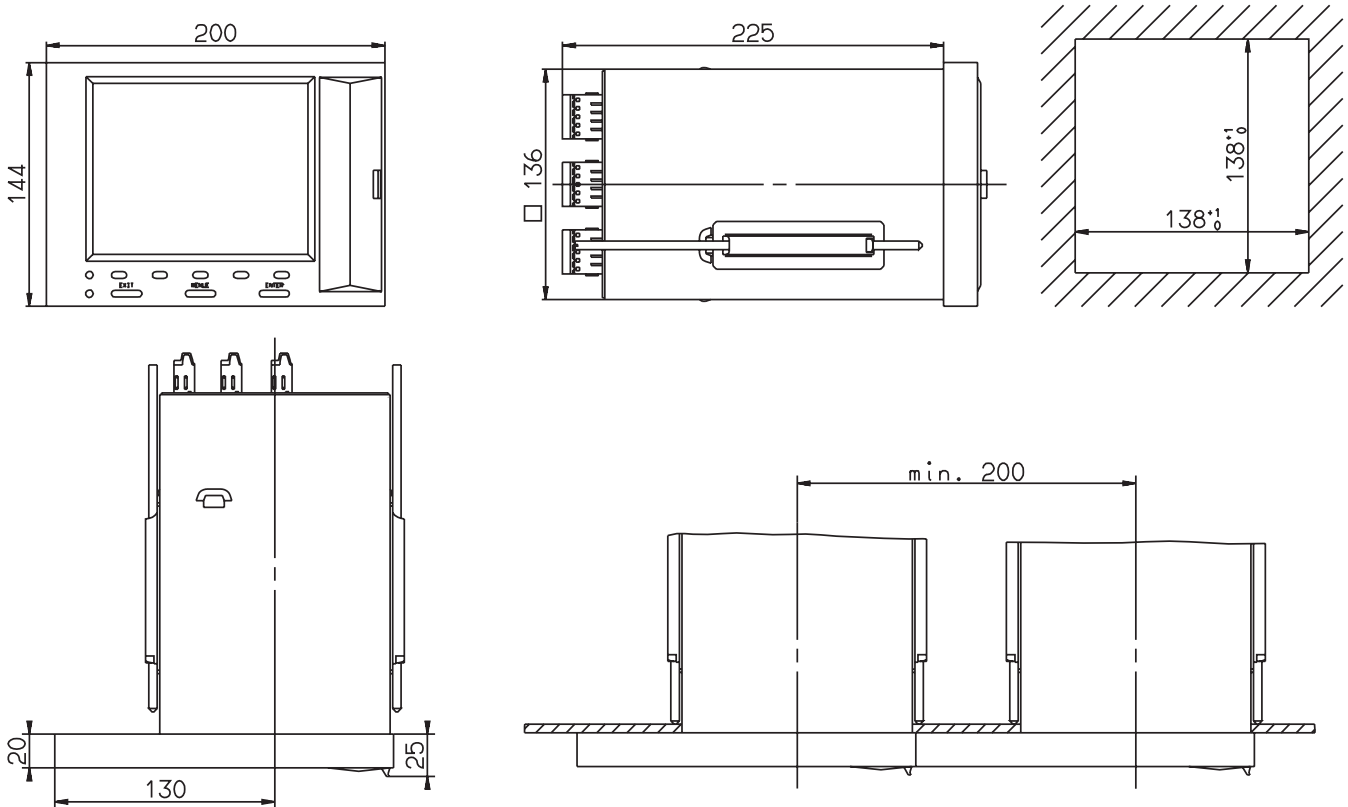


| Terminal assignment                      | Connector               | Diagram |
|--|-------------------------|---------|
| <b>Supply voltage</b>                    |                         |         |
| Supply voltage as per nameplate          | L1 (L+)<br>N (L-)<br>PE |         |
| <b>Analog inputs</b>                     |                         |         |
| 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 |   |
| Voltage input above 200mV                        | 1 to 12 |   |
| Current input                                    | 1 to 12 |   |
| <b>Digital interfaces</b>                        |         |   |
| RS232C<br>9-pin SUB-D socket                     | 20      | 2 RxD receive data<br>3 TxD transmit data<br>5 GND ground   |
| RS422<br>9-pin SUB-D socket<br>(extra code)      | 20      | 3 TxD+ transmit data +<br>4 RxD+ receive data +<br>5 GND ground<br>8 TxD- transmit data -<br>9 RxD- receive data -  |
| RS485<br>9-pin SUB-D socket<br>(extra code)      | 20      | 3 TxD+/RxD+ transmit/receive data +<br>5 GND ground<br>8 TxD-/RxD- transmit/receive data -  |
| LON interface<br>9-pin SUB-D socket (extra code) | 21      | 3 Net_A<br>9 Net_B  |
| PROFIBUS-DP<br>9-pin SUB-D socket (extra code)   | 21      | 3 RxD/TxD-P receive/transmit data-Plus<br>B-cable<br>5 DGND data transmission potential<br>6 VP supply voltage-Plus<br>8 RxD/TxD-N receive/transmit data-N<br>A-cable |
| Ethernet<br>RJ45 socket (extra code)             | 22      | 1 TX+ transmit data +<br>2 TX- transmit data -<br>3 RX+ receive data +<br>6 RX- receive data -  |
| Setup interface                                  | 23      | The paperless recorder also has a setup interface on the front panel (wired in parallel). It is not possible to use both at the same time.                            |
| <b>Relay outputs</b>                             |         |   |
| Relay K1<br>(changeover)                         | 30      |   |
| Relay K2 to K5<br>(make/break)<br>(extra code)   | 31      |   |

| Digital I/O   |   |   |
|---|---|---|
| Open-collector output (extra code)  | 32<br>3 ground<br>4 collector   |    |
| Logic inputs (extra code)<br>voltage-operated<br>LOW = -3 to +5V DC<br>HIGH = 12 to 30V DC<br>Supply 24V/50mA | 32<br>1 +24V auxiliary supply not stabilized<br>2 GND<br>5 logic input 7<br>...<br>11 logic input 1 |  <p>Example: Logic input 4 (BE4) operated from the internal supply voltage</p> |

**Dimensions (also for stainless steel front)**



**Extra code: universal carrying case TG-35 and stainless steel front**

