Brief Description

MiniMEP Recording Systems (dataloggers) are designed for paper-less longtime data recording of temperature values and (dep. on type) relative humidity.
Thus the user is able to get a proof about the course of temperatures and humidity in corresponding rooms, without application of additional components as e.g. mechanical printers or PC.
The MiniMEP dataloggers are able to measure temperatures with high accurate probes and to store the measured values in a battery-free memory, which is able to store the values for an unlimited time
All temperature values with date, time and position name can be read at the display of the device. If the memory is full, always the first logged data will be erased to store the newest data.
It is ideal for compliance with 21 CFR process control for food storage regulations and HACCP Quality Assurance Systems.
The wide temperature range qualifies a MiniMep for both freezing applications and ‚hot' industrial processes.

The Recording System MiniMEP meets all requirements of the EU Standard EN 12830.

Please note that you are obliged to ensure regular monitoring of function and accuracy, depending on the DIN EN 13486 standard.

Overview of Functions

- Records the values of temperature sensors resp. humidity transmitters for up to 20 years ! Adjustable storage interval.
  Example 1: **781 days with a 5 minute interval**.
  Example 2: > **6 years with a 15 min. interval**
- Data storage is unlimited even without mains voltage
- Real time clock with typ. 10 years battery backup
- Continuous recording by external lead accu possible *
- Alarm too high/low with time delay for each input *
- Monitored sensor inputs
- Error message memory shows the last 6 occured errors
- Clear assignment of measuring position, time and value plain text designation in the display
- Networkable via interface
- LC dot matrix display, backlighted, 4 languages
- Display shows actual temperature, time and date
- Lets you view all recorded values at any time
- Easy operating by 3 keys
- Digital inputs e.g. for door-contact or other messages *
- Isolated alarm relay and built-in buzzer *
- Four display languages selectable:
  german, english, french, dutch

* (not type 404 S, 2404S)

Please note Operating & Safety Instructions on page 8 !

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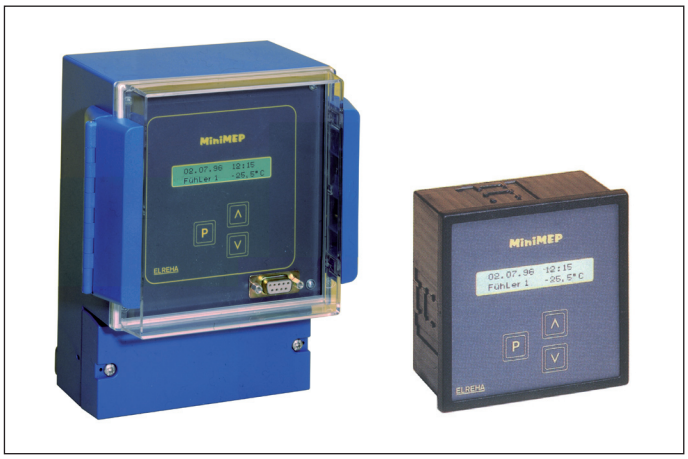
Technical Manual **5310965-00/25**e
Data Logger System from Softw.Vers 2,5x

Types: MiniMEP 404 S
424 A
434 A
524 A
534 A



Supplied Accessories

Type 5xx
- This manual
- Power Supply module

Type 4xx
- This manual
- 1 x Fitting PG 9
- 1 x Fitting PG 11
- 1 x Fitting PG 13,5
- 3 x Screws 4 x 40
- 3 x Dowels 6mm

Not supplied Accessories

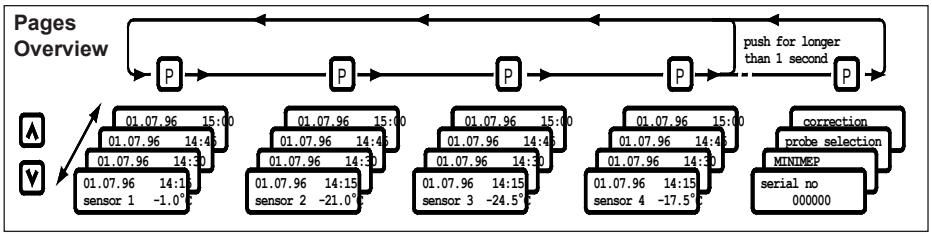
Temperature Sensors
- TF 501/3M, diam. 6mm, 5 m shielded cable
  TF 501/10M, diam. 6mm, 10 m shielded cable
  TF 501/15M, diam. 6mm, 15 m shielded cable
  ! Attention: TF Standard Sensors only suitable for up to +80°C !
- Humidity: **FF 2520**, huidity transmitter with 4/20mA output, must be supplied by an external AC-Adaptor
- PC-Software CV-Scheduler
- PC-Cable
- External Accumulator or Accuset

Type Overview	Housing	Inputs	Recording Range	Digital Inputs	Alarm Limits Alarm Relays	LC-Display	Input for additional accum.	Memory capacity with 15 min. interval	Supply Voltage
MiniMEP 404 S	wall mounting	4x temp	-110/+600°C	-	-	X	-	366 days	230V~
MiniMEP 2404 S	wall mounting	4x temp	-110/+600°C	-	-	X	-	366 days	115V~
MiniMEP 424 A	wall mounting	4x temp	-110/+600°C	3x 230V	1x SPDT	X	X	appr. 6 years	230V~
MiniMEP 2424 A	wall mounting	4x temp	-110/+600°C	3x 115V	1x SPDT	X	X	appr. 6 years	115V~
MiniMEP 424/12V	wall mounting	4x temp	-110/+600°C	3x 12V=	1x SPDT	X	X	appr. 6 years	12V~
MiniMEP 434 A	wall mounting	2x temp 2x humidity	-110/+600°C 0...100% r.H.	3x 230V	1x SPDT	X	X	appr. 6 years	230V~
MiniMEP 2434 A	wall mounting	2x temp 2x humidity	-110/+600°C 0...100% r.H.	3x 115V	1x SPDT	X	X	appr. 6 years	115V~
MiniMEP 524 A	panel mounting	4x temp	-110/+600°C	3x 230V	1x SPDT	X	X	appr. 6 years	230V~
MiniMEP 2524 A	panel mounting	4x temp	-110/+600°C	3x 115V	1x SPDT	X	X	appr. 6 years	115V~
MiniMEP 534 A	panel mounting	2x temp 2x humidity	-110/+600°C 0...100% r.H.	3x 230V	1x SPDT	X	X	appr. 6 years	230V~
MiniMEP 2534 A	panel mounting	2x temp 2x humidity	-110/+600°C 0...100% r.H.	3x 115V	1x SPDT	X	X	appr. 6 years	115V~

This manual, which is part of the product, has been set up with care and our best knowledge, but mistakes are still possible. Technical details can be changed without notice, especially the software. Please note that the described functions are only valid for units containing the software with the version-number shown on page 1 of this manual. Units with an other version number may work a little bit different.

Operating

Organisation of the display pages
All parameters and values are partitioned on four sensor pages and a parameter page. The sensor pages contain the recorded values. The parameter page contains setpoints, times, error messages, etc. Operating the MiniMEP is very easy by three buttons.



Read of recorded values

```
02.07.96    12:27
Sensor 1    -23.5°C
```

After power-up, the display shows date, current time and value of sensor 1.

```
02.07.96    12:15
Sensor 1    -23.5°C
```

```
02.07.96    12:00
Sensor 1    -23.5°C
```

```
02.07.96    11:45
Sensor 1    -23.5°C
```

By pushing the ‚up/down' buttons you can select the desired values. Every keypress brings you to the next recorded value. Holding an ‚up' or ‚down' button effects an automatic, accelerating scrolling.

Every push on button ‚P' brings you to the page of the next sensor.

```
02.07.96    12:15
Sensor 1    -23.5°C
```
P
```
02.07.96    12:15
Sensor 2    -12.0°C
```
P
```
02.07.96    12:15
Sensor 3    21.5°C
```
P
```
02.07.96    12:15
Sensor 4    -5.5°C
```

Basic Settings / Reading Error Messages

Holding the button ‚P' for more than 1 sec. brings you to the parameter page.
Select parameter by the ‚up/down' keys (see parameter descriptions on the next pages).
Holding the ‚P' button again brings you back to the sensor 1 page.

```
02.07.96    12:15
Sensor 1    -23.5°C
```
P
```
serial no
000000
```
P
```
02.07.96    12:15
Sensor 1    -23.5°C
```

Programming / Access Authorization

- Select desired parameter by the ‚up/down' keys
- Press ‚P'-key short
- An access code is requested
- Enter access code by ‚up/down' keys

```
Identification 1
entry : > 0 <
```

The code is related from the time of the day as the sum of the hour (0 to 23) plus ‘10’.
Example: At 9:35 a.m. the code is 9 + 10 = 19.
At 9:35 p.m. the code would be 21 + 10 = 31

- Notation of parameter flashes
- Change value by the ‚up/down' keys
- Press ‚P'-key short
- Select new parameter if necessary

If you have pressed the ‚P' key longer than 1 second or no key is pressed for about 1 minute after entering the code, the display will switch back to the actual value of sensor 1.

Reading the Current Error

While the display flashes, you can read the current error by holding

⋀ for > 1 sec.

The parameter (*actual error*) will be displayed

Reset of Error Messages

If an error message occurs,

push ⋀ shortly

Buzzer and relay will be reset, but will come back after the set alarm repetition time.
If an error with a higher priority occurs, it will come at once. (not 404 S)

Buzzer / Relay Test

To test, if the internal buzzer and the alarm relay works correctly,

push P and ⋁

at the same time while the actual values are displayed. The buzzer sounds and the relay switches off as long as you press the keys. (not 404 S)

Error Messages

If a failure occurs, the MiniMEP generates an error message by de-activating the alarm relay and switching ON the internal buzzer. Additionally, the display starts flashing to get your attention. Each error message has a priority level. If several messages occur, the messages with higher priority are displayed on top, messages with lower priority are blinded by the higher ones.

x34 types only:

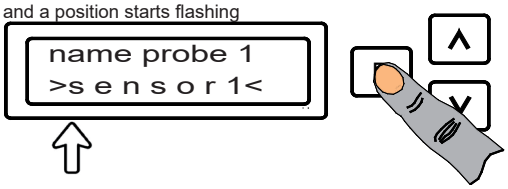
If the current inputs get > 20mA or if they are not connected:
display shows 100%, no error message.

	‚——‘ ..... no error
	‚Poff' ..... main power was switched off
prio.1	‚al1‘ ..... digital input 1 (Default=al1) was/is not connected
prio.2	‚al2‘ ..... digital input 2 (Default=al2) was/is not connected
prio.3	‚door' ..... digital input 3 (Default=door) was/is not connected
prio.4	probe 1, ‚p-break‘ (sensor is broken) or ‚p-short‘ (sensor has short circuit)
prio.5	probe 2, ‚p-break‘ (sensor is broken) or ‚p-short‘ (sensor has short circuit)
prio.6	probe 3, ‚p-break‘ (sensor is broken) or ‚p-short‘ (sensor has short circuit)
prio.7	probe 4, ‚p-break‘ (sensor is broken) or ‚p-short‘ (sensor has short circuit)
prio.8	‚ot 1‘ ..... sensor 1 has increased the warning limit
prio.9	‚ot 2‘ ..... sensor 2 has increased the warning limit
prio.10	‚ot 3‘ ..... sensor 3 has increased the warning limit
prio.11	‚ot 4‘ ..... sensor 4 has increased the warning limit
prio.12	‚accu‘ ..... accu operation after mains is lost
prio.13	‚dch.‘ ..... accu discharged or defect
prio.14	‚ut 1‘ ..... sensor 1 has decreased the warning limit
prio.15	‚ut 2‘ ..... sensor 2 has decreased the warning limit
prio.16	‚ut 3‘ ..... sensor 3 has decreased the warning limit
prio.17	‚ut 4‘ ..... sensor 4 has decreased the warning limit
	‚prb1‘ to ‚prb4‘ ..... an error is occured on sensor x

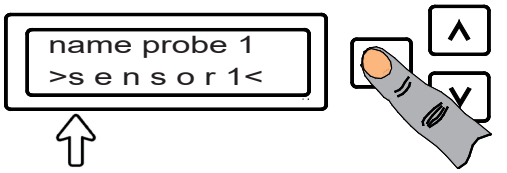
Text input for probes and digital inputs

Each sensor and each alarm input can be assigned a name which may consist of up to 8 characters. This name appears in the display and the printout.
So a clear assignment of a value to a probe is possible.

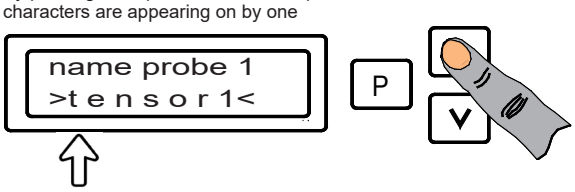
Push „P“-button, parameter name and a position starts flashing



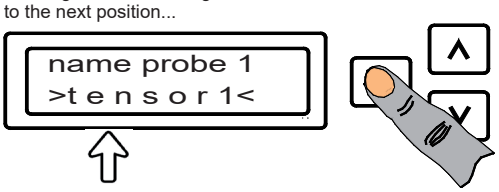
By pushing the ‚P‘-button you select the position of the new character



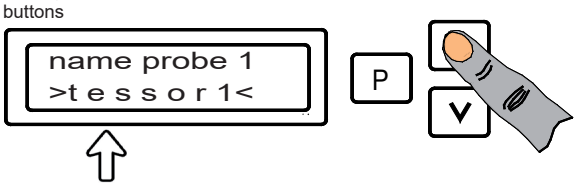
By pushing the ‚up/down‘ buttons all presentable characters are appearing on by one



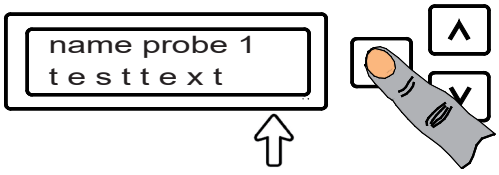
Pushing the ‚P‘ button again moves the cursor to the next position...



...and you can select the next character with the ‚up/down‘ buttons



If you have entered the desired name with this method, store it by pushing the ‚P‘ button again.



Functions

Error memory

The last 6 occured errors will be stored with error code, name, date and time and can be read on the parameter page (last error 1 - last error 6).

Clear identification

Every MiniMEP has its own, individual serial number. This number is located both on type label and in memory. You can read the number by scrolling through the parameter page.

Recording

The MiniMEP records sensor values with the selected storage interval (parameter ‚recording‘) and stores them into its non-volatile memory. If a value leaves the specified range, display shows
‚> +600°C‘ (+1112°F) resp. ‚< -110°C‘ (-166°F). (Type 502/504 „>+25°C (+77°C) resp. <-35°C (-31°F)“). This values are not recorded.

Different languages

With parameter ‚*Sprache/language*‘ you can switch the display language to german, english, french or dutch.

Displaying °C and °F

With parameter ‚Unit‘ the display can be configured to show all temperature values as °C or °F. Displaying °F, all values are shown with a 0,2°F resolution.

Over-/Undertemperature resp. humidity alarm

Each sensor input has its individual alarm setpoint (*H-limit / L-limit probe x*). In the MiniMEP 434/534 additionally humidity limits can be defined.
If the actual value passes this limits and the time delay is run down (delay probe x), an error message will be generated (no acoustic alarm or alarm relay in the 404 S).

Alarm repetition (not 404 S)

After a reset of an error message, the message will be recreated after the time set by (alarm repeat). This function can also be switched off.

Digital (Report) Inputs (not type 404 S, 2404 S)

The 3 present digital inputs work active-low, that means that a message will be generated if no mains voltage is present at the input (12VDC with type 424/12V). With the digital inputs parameter ‚*1(al) 2(al2) 3(door)*‘ this inputs can be enabled or disabled. For each input you can assign an individual designation, 4 characters are possible. The default (factory set) designations are ‚al1‘, ‚al2‘ and ‚door‘.
Each input has its individual time delay „*probe XX delay*“, ‚XX‘ corresponds to the given text. An error message will be displayed and stored with the given designation. If the parameter „*DI alrm w. accu*“ is set to ‚on‘, error messages from the inputs are disabled during accu operation.

Real time clock

The integrated x-tal controlled real time clock can be corrected by only 24 hours. The automatic summer/winter-shift can be disabled for export purposes. The battery buffer of the real time clock has a life time of about 10 years. But if the MiniMEP is stored without mains voltage for a longer time or at low temperatures, the battery may be weakened after 3-4 years and must be replaced earlier.

Accu operation (not type 404 S, 2404 S, 424/12V)

Without mains voltage the MiniMEP records no data, but stores the error message that mains voltage was lost.
If your application needs temperature recording also without mains voltage, the unit must be supplied by an external accumulator. For this reason the models with option ‚A‘ (e.g. MiniMEP 424 A) are prepared for connecting an external accu-unit (order name.: ‚AccuSet‘). This accu-unit ensures continuous recording for 4 hours minimum. The accu will be charged and monitored by an internal charge controller.
During accu operation without mains voltage the alarm relay remains deactived. Parameter (*accu alarm mess.*) is able to suppress the accu alarm message during accu operation.

The accu unit is optional and not required for data storage !

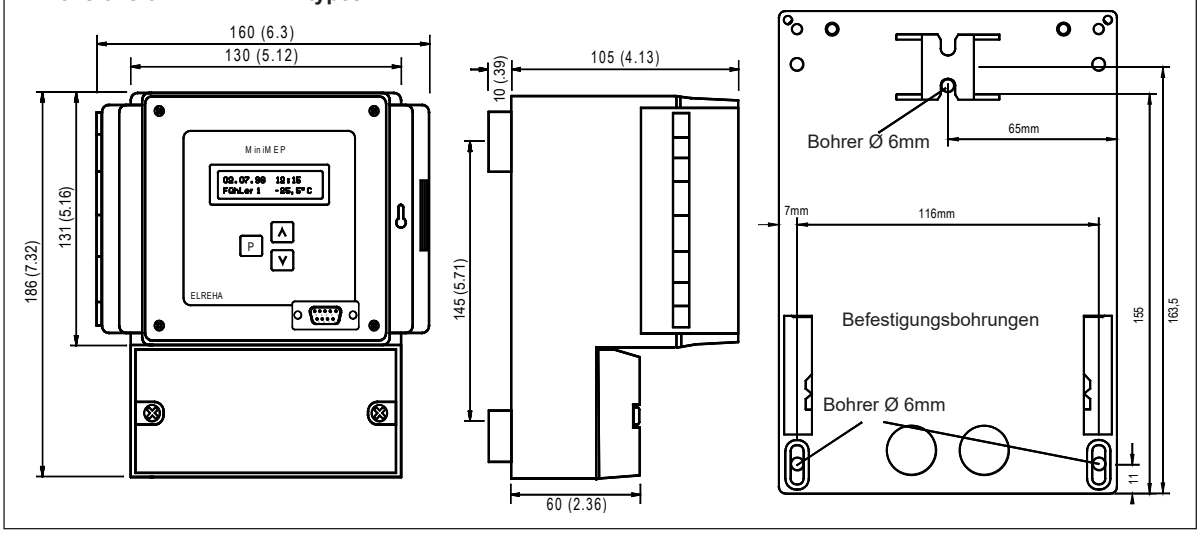
Printout of values

A printer with a serial interface can be connected to the RS-232-Interface at the front. Because at this time such printers are disappeared from the market, this function becomes uninteresting.
We recommend to use a PC/Laptop with the software „CV-Scheduler“ to printout or to backup data (older MiniMEPs: Software MiniMEP-BED, up to Win-XP only).

Parameter Page

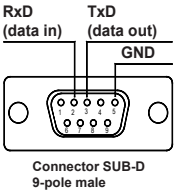
Parameter Name	404 S	424 A	524 A	434 A	534 A	Description	Range	Default V alue
serial number	x	x	x	x	x	individual serial number for clear idenfication of the unit	--	--
software	x	x	x	x	x	version no. of the software + additional info	add.info ‚pro': unlocked for PC-Software	
MiniMEP	x	x	x	x	x	shows type of unit, quantity and kind of probe inputs		
recording	x	x	x	x	x	storage interval in minutes	1....6,10,12,15,20,30,60 min.	5 min.
unit	x	x	x	x	x	physical unit of all temperature values (°F in 0,2°F- steps)	°C(elsius), °F(ahrenh.)	°C
(probe 1) corr. 1 *up to* (probe 1) korr. 4	x	x	x			the last four corrections of this input		
(probe 1) off/on	x	x	x			if you don't want to use input 1, switch it off here	off / on	on
probe 1 L-Limit	x	x	x			under temperature limit probe 1	-160...+850°C	-160°C (-256°F)
probe 1 H-Limit	x	x	x			overtemperature limit probe 1	-160...+850°C	+850°C (+1562°F)
probe 1 delay	x	x	x			if this delay is run down, an alarm message will be generated	0:01...4:00 h:min	1:00 h:min
(transm 1) corr. 1 *up to* (transm 1) corr. 4				x	x	the last four corrections of this input *(Correction process: read chapter ‚Start-up')*	-6%...+6%	0%
(transm 1) off/on				x	x	if you don't want to use input 1, switch it off here	off / on	on
transm 1 L-Limit				x	x	humidity low limit transducer 1	0,0%...100,0%	0%
transm 1 H-Limit				x	x	humidity high limit transducer 1	0,0%...100,0%	100%
transm 1 delay				x	x	if this delay is run down, an alarm message will be generated	0:01...4:00 h:min	1:00 h:min
name probe/transmitter 1	x	x	x	x	x	individual name for this probe input (max. 8 characters)	see table	probe 1
(probe 2) corr. 1 *up to* (probe 2) corr. 4	x	x	x			the last four corrections of this input *(Correction process: read chapter ‚Start-up')*		
(probe 2) off/on	x	x	x			if you don't want to use input 2, switch it off here	off / on	off
probe 2 L-Limit	x	x	x			under temperature limit probe 2	-160...+850°C	-160°C (-256°F)
probe 2 H-Limit	x	x	x			overtemperature limit probe 2	-160...+850°C	+850°C (+1562°F)
probe 2 delay	x	x	x			if this delay is run down, an alarm message will be generated	0:01...4:00 h:min	1:00 h:min
name probe 2	x	x	x			individual name for this probe input (max. 8 characters)	see table	probe 2
(probe 3) corr. 1 *up to* (probe 3) corr. 4	x	x	x			the last four corrections of this input *(Correction process: read chapter ‚Start-up')*		
(probe 3) off/on	x	x	x			if you don't want to use input 3, switch it off here	off / on	off
probe 3 L-Limit	x	x	x			under temperature limit probe 3	-160...+850°C	-160°C (-256°F)
probe 3 H-Limit	x	x	x			overtemperature limit probe 3	-160...+850°C	+850°C (+1562°F)
probe 3 delay	x	x	x			if this delay is run down, an alarm message will be generated	0:01...4:00 h:min	1:00 h:min
(transm 3) corr. 1 *up to* (transm 3) corr. 4				x	x	the last four corrections of this input *(Correction process: read chapter ‚Start-up')*	-6%...+6%	0%
(transm 3) off/on				x	x	if you don't want to use input 3, switch it off here	off / on	off
transm 3 L-Limit				x	x	humidity low limit transducer 3	0,0%...100,0%	0%
transm 3 H-Limit				x	x	humidity high limit transducer 3	0,0%...100,0%	100%
transm 3 delay				x	x	if this delay is run down, an alarm message will be generated	0:01...4:00 h:min	1:00 h:min
name probe/transmitter 3	x	x	x	x	x	individual name for this probe input (max. 8 characters)	see table	probe3
(probe 4) corr. 1 *up to* (probe 4) corr.	x	x	x			the last four corrections of this input		
(probe 4) off/on	x	x	x			if you don't want to use input 4, switch it off here	off / on	off
probe 4 L-Limit	x	x	x			under temperature limit probe 4	-160...+850°C	-160°C (-256°F)
probe 4 H-Limit	x	x	x			overtemperature limit probe 4	-160...+850°C	+850°C (+1562°F)
probe 4 delay	x	x	x			if this delay is run down, an alarm message will be generated	0:01...4:00 h:min	1:00 h:min
name probe 4	x	x	x			individual name for this probe input (max. 8 characters)	see table	probe 4
alarm repeat	x	x	x	x	x	alarm repetition time after a reset with a failure still present	on, 0:01 ... 4:00 h:min	off
accu alarm mess.	-	x	x	x	x	accu alarm message if mains voltage fails	on, off	on
DI alarm w. accu	-	x	x	x		alarms from digital inputs allowed while accu operation	on, off	on
digital inputs	-	x	x	x	x	here the digital inputs can be switched on or off	al1 al2 door, off off offf up to on on on, off off off	
delay door		x	x	x	x	time delay for digital input #3	0:00...4:00 h:min	0:00 h:min
L/inp. 3 (door)		x	x	x	x	individual name for digital input #3	see table	door
delay al2		x	x	x	x	time delay for digital input #2	0:00...4:00 h:min	0:00 h:min
L/inp. 2 (al2)		x	x	x	x	individual name for digital input #2	see table	al2
delay al1		x	x	x	x	time delay for digital input #1	0:00....4:00 h:min	0:00 h:min
L/inp. 1 (al1)		x	x	x	x	individual name for digital input #1	see table	al1
actual time	x	x	x	x	x	can only be corrected by one hour	h:min:sec	factory set
actual date	x	x	x	x	x	cannot be corrected		factory set
summer/winter	x	x	x	x	x	regulation for the summer / winter shifting	EU since 96, NO	EU since 96
actual error							„see failure codes"	
last error 1 *up to* last error 6							date, time, errot	
DDC-baud rate	x	x	x	x	x	communication speed with PC-software	1200...57600 Baud	9600, N ,8 ,1
begin print	x	x	x	x	x	date/time of the first value that should be printed out		
end print	x	x	x	x	x	date/time of the last value that should be printed out		
print	x	x	x	x	x	start with key ‚arrow up', break with ‚arrow down'.	begin print - end print	
Sprache / language	x	x	x	x	x	display language	german, E, F, NL	german
address (in network)	x	x	x	x	x	address of the unit within a network	0 -78	78

Dimensions of MiniMEP 4xx types

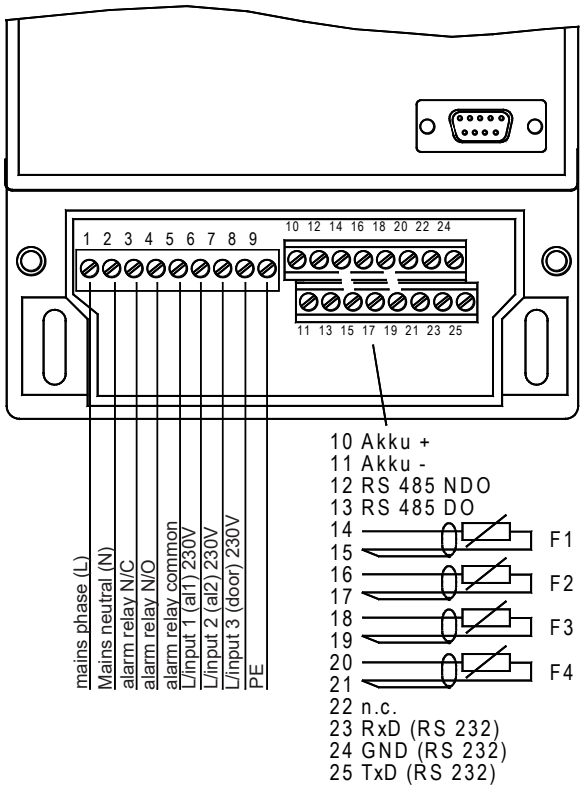


Interface Connector

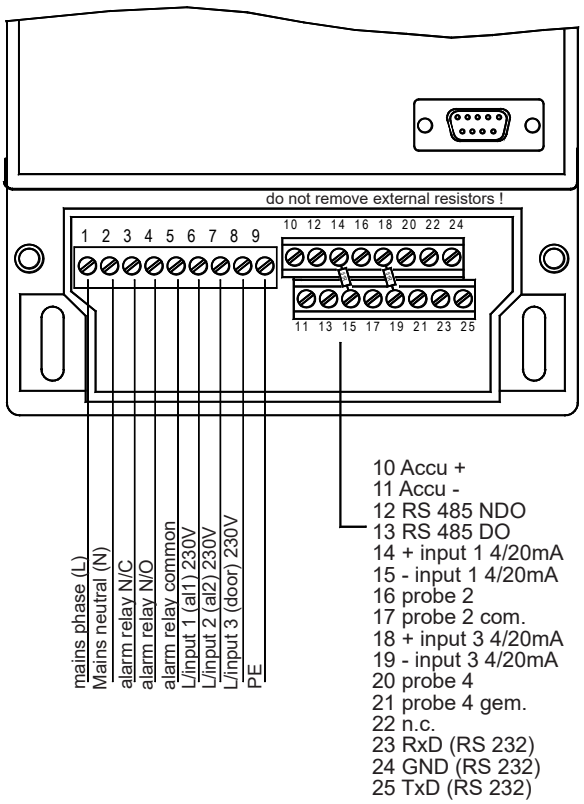
These ports are also connected to screw terminals.
They may not be connected at the same time.



Connection MiniMEP 404S, 424A



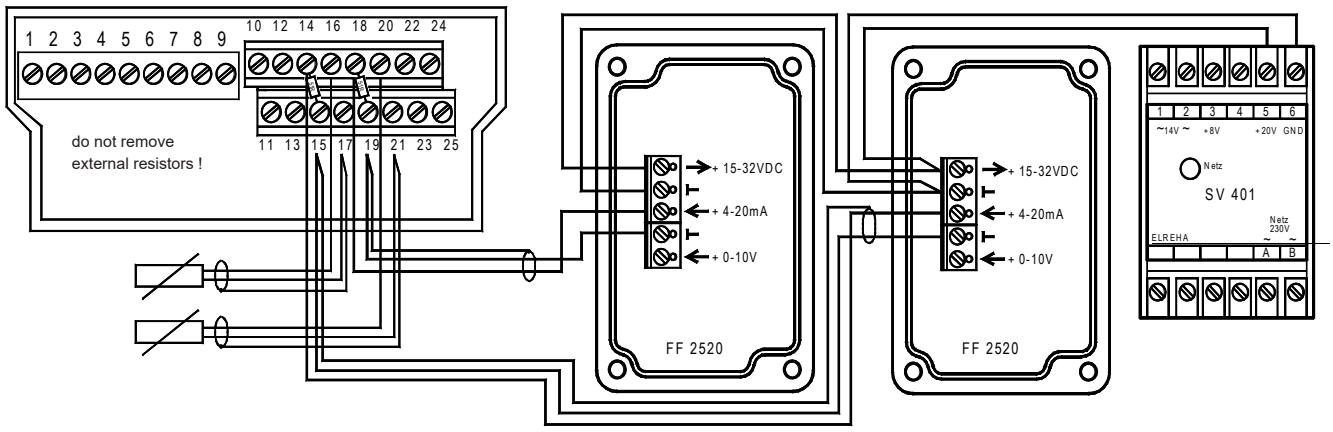
Connection MiniMEP 434 A



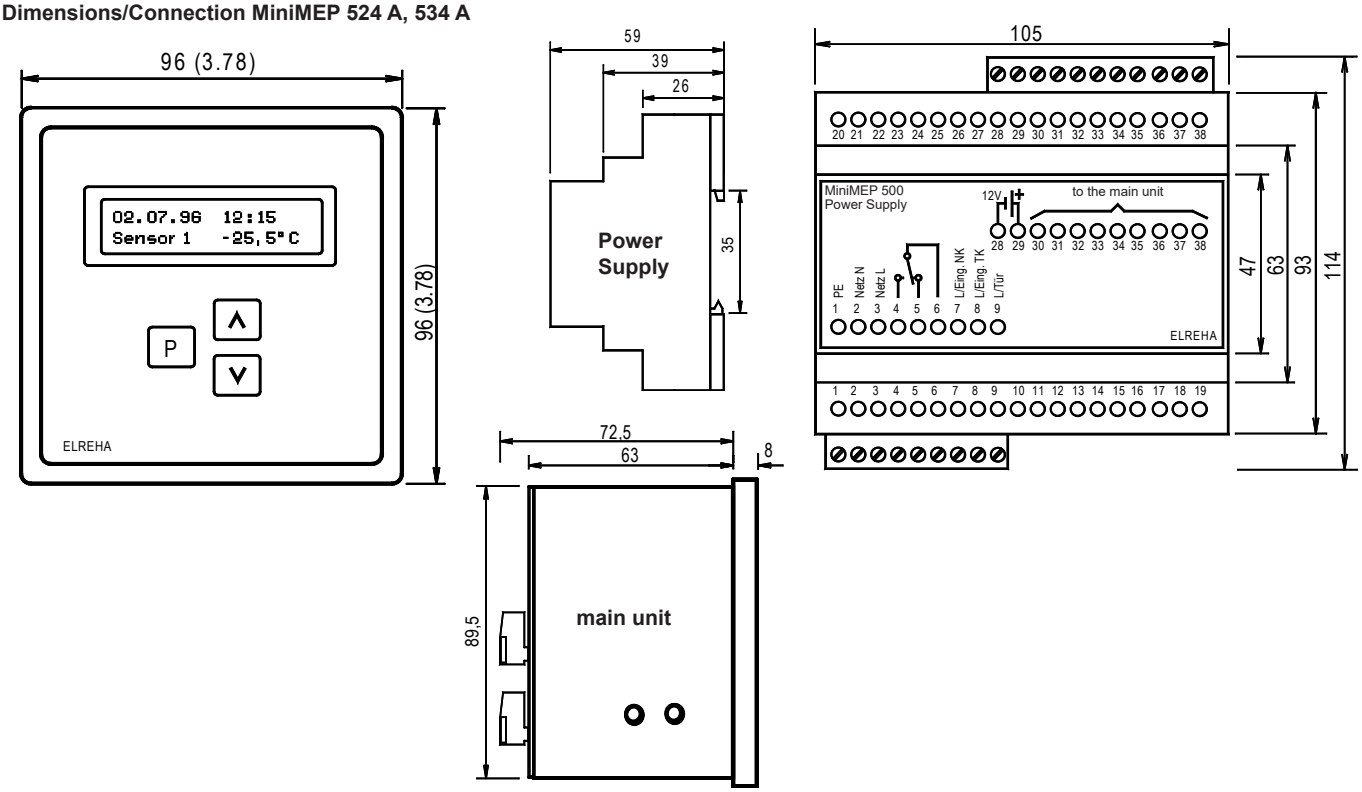
- The terminals 10 and 11 are valid only for MiniMEPs with option „A“
- Terminals 3 up to 8 not available in type MiniMEP 404 S

Connection Example MiniMEP 434 A

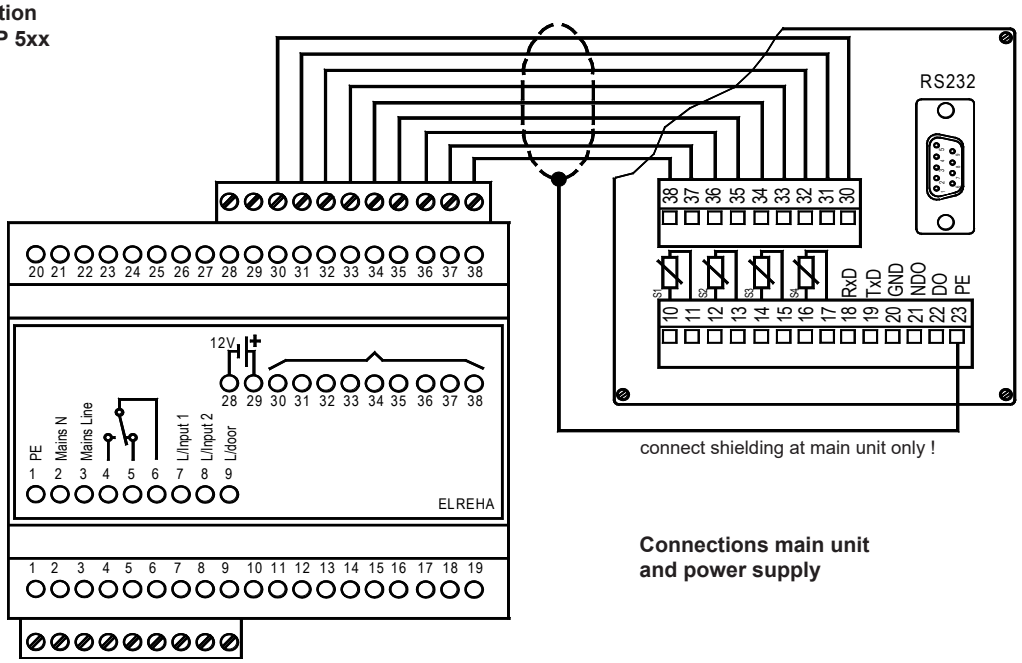
Humidity transmitters must be supplied by an external AC-Adaptor. This example shows an SV 401 adaptor supplying two FF 2520 transmitters.



Dimensions/Connection MiniMEP 524 A, 534 A



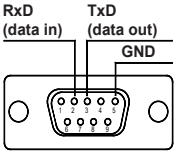
Connection MiniMEP 5xx



Connections main unit and power supply

Interface Connector

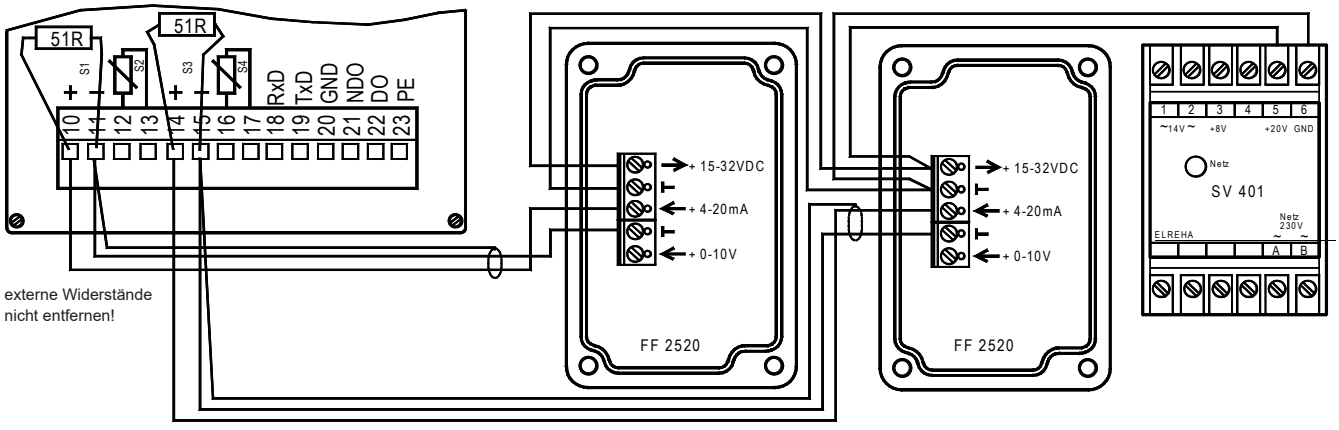
These ports are also connected to screw terminals.
They may not be connected at the same time.



Connector SUB-D 9-pole male

Connection Example MiniMEP 534 A

Humidity transmitters must be supplied by an external AC-Adaptor. This example shows an SV 401 adaptor supplying two FF 2520 transmitters.



Processing of recorded data / Unlock unit for use with PC-Software

The values recorded by the MiniMEP can be retrieved via its interfaces and processed by PC-Software. Here are the most important szenarios in practise:

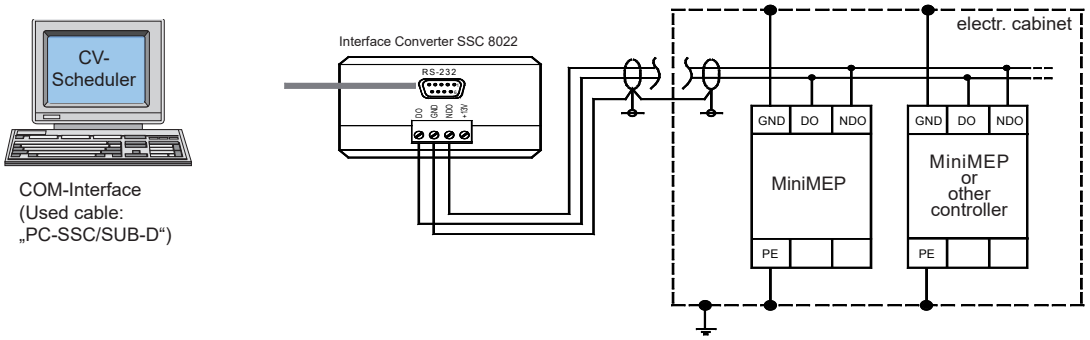
- **Networking together with other controllers**
  The MiniMEP is connected to a controller network via its RS-485-interface which allows remote access from a host. In this case, each unit on the bus gets an individual address (Parameter ‚*address*' on parameter page).
- **Direct PC connection**
  As a low cost alternative for a serial printer, a PC can be connected to the RS-232-interface.
- **Direct PC connection of several MiniMEP**
  Electrical connection must be done as described above via RS-485 interface. The PC must be equipped with an RS-485-interface, or an Interface Converter of the series SSC must be used.

PC-Software
If the MiniMEP is connected to controller network, the software „*COOL-Vision*" is used normally. If a PC should operate with one or more Mini-MEP exclusively, the software „***CV-Scheduler***" is recommended.

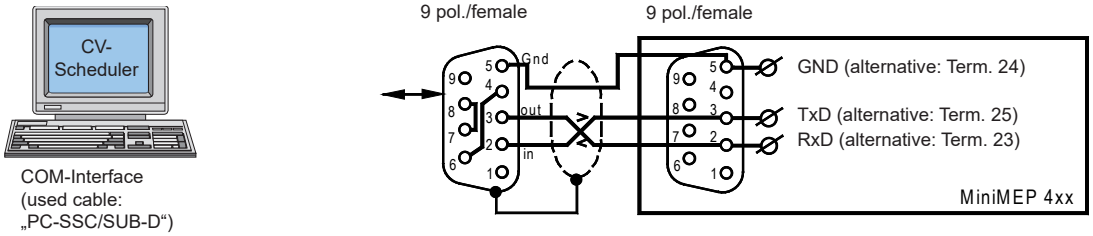
Unlock unit for use with PC-Software
If a MiniMEP is intended to operate with PC-Software,an unlock code must be entered while start-up. You get this unlock code with the software, please see software manual for further information. Without this code, retrieve and processing of data with the software is impossible.

How to check if your MiniMEP is unlocked for CV-Scheduler software:
- Access parameter page,
- Select parameter ‚software',
- If the unit is unlocked, you will find the additional info „pro" behind the software version.

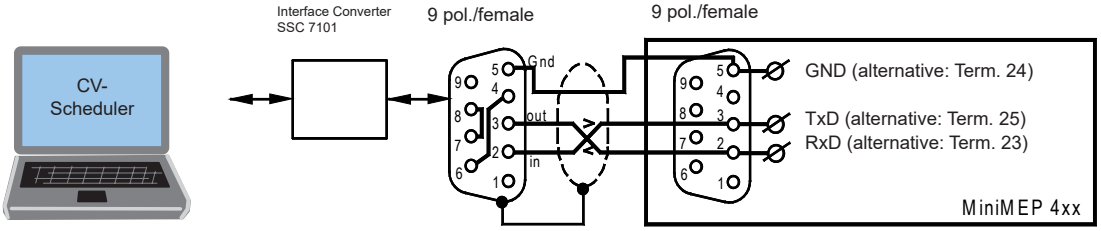
Connection of several MiniMEP / controller units via RS-485 interface and SSC converter



Connection of a single MiniMEP via RS-232 Schnittstelle



Connection of a single MiniMEP to a PC with USB Interface



Sensor/Probe - Installation

Temperature Sensors
With the three offered sensor types of the TF 501 series, the MiniMEP is able to work within the specified accuracy range.

TF 501 sensor versions are specified up to 80°C only. To measure higher temperatures, please use another sensor type.

Cable Lenght
The cable can be shortened every time, if it must be extended please note the following:

- If the resistance of the additional terminal is less than 0,1 ohms, you can extend with a shielded cable type as shown in this table.

Cable Diameter	0,5mm²	1mm²	1,5mm²
TF 501/3M	< 20m	< 40m	< 60m
TF 501/10M	< 15m	< 30m	< 45m
TF 501/15M	< 10m	< 20m	< 30m

Accu - Operation

The MiniMEP types (2)424 A, (2)524 A and (2)534 A are equipped with terminals for an external Lead Accu. The integrated charge controller cares for a slow but sparing charge of the accu while the MiniMEP works with mains voltage.

- **Connect accu first, if the MiniMEP is ready for operation with mains voltage.**
- **To prevent the accu from deep-discharge, disconnect accu or switch ON the MiniMEP with mains voltage if the unit has been shut-down by the charge monitoring function after some hours of accu-operation.**
- **Charge process may last up to some days.**

Cleaning
The use of a dry, lint-free cloth is sufficient to clean the product. Never use liquids or acidic fluids! Risk of damage!

Notice

Technical Data

Supply Voltage.....230V / 50-60Hz
US-Versions (2)xxx 115V/60Hz
Version 424/12V..... 12V DC
Power Consumption ..... typ. 6VA, 9,2VA max.
Ambient Temperature ..... 0...+50°C (32...+122°F)
Ambient Humidity .....85% r.H. max., not condensing
Inputs.....max. 4 x TF 501 (MiniMEP x34 A: 2x 4...20mA, 2x TF 501)
Digital Inputs (not at 404S)..... 3 x 230V, freely usable
Calibration ..... factory set, maintenance free
Display Resolution..... -160...+850°C = 0,1K / -256...+1562°F = 0,2°F
Display Accuracy / Accuracy Class..... <= 1K / S, A, 1
Protocol Resolution .....-110...-50°C = 0,5K
-50...+100°C = 0,1K +100...+150°C = 0,5K
+150...+300°C = 1,0K +300...+600°C = 2,0K
-166...-58°F = 1°F -58...+212°F= 0,2°F
+212...+302°F= 1°F +302...+572°F= 1,8°F
+572...+1112°F= 3,6°F 0...100% = 0,1%
Storage Intervals ..... 1/2/3/4/5/6/10/12/15/20/30/60 min.
Outputs..... Buzzer,1x relay (SPDT), potential free, 4A res. bei 250VAC
Interface..... 1x RS 232, 1x RS 485
Data Memory .....see type overview
Accu Interface..... Charge controller for 1,3 Ah Lead Accus
(not types 404 S, 2404 S, 424/12V)
Real Time Clock .....automatic summer/winter shift, can be disabled
Data Storage .....unlimited, clock backup typ. 10 years
Housing 4xx types ..... plastic, wall mounting, IP 54
Housing 5xx types ..... plastic, panel mounting, IP 54 from front

Start-up

When voltage is applied to the controller, date, current time and actual sensor input 1 value is displayed. By pressing any key the displays backlight turns on.

- Switch ON the needed sensor inputs on parameter page
- Select storage interval (parameter ‚recording')
- Check the displayed temperatures refering to a calibrated thermometer at the position of the sensor. Register the results on the start-up checklist (‚Prüfprotokoll', section 2) (DIN EN 13486, first step). If, contrary to expectations, a greater deviation is present, the sensor can be corrected as follows:
  - Parameter Listing: Select ‚*(probe x) corr.1*' (x = probe number)
  - Push ‚P'-Button, the device expects to enter a date dependent code, which is formed from **date + 10**.
    Example: If you want to setup the unit at December, 5th, you must enter the code 15.
  - Confirm with the ‚P'-Button, then the parameter starts blinking and can be changed as desired.
- If desired, you may fix a name for each sensor or digital input (see page 3).
- If additional functions are used (overtemperature alarm, etc.) then the matching setpoints can be entered now.

Thus, the setup is completed.

Final decommissioning and disposal

The symbol indicates that this product should not be treated as normal household waste.
It can be dropped at a collection point for the recycling of electrical and electronic equipment.

Battery disposal

These devices are supplied with an external 12V lead acid battery, depending on customer requirements. It must not be disposed of with normal household waste. You can drop the battery at a public collection point or wherever batteries of this type are sold.

Battery removal

The lead battery is only connected via an external cable.
MiniMEP 4xx (After removing the front panel by loosening the 4 screws you can see two socketed blocks, the higher one contains the battery, it can be easily removed and disposed of).
MiniMEP 5xx (Remove the front foil, loosen 4 screws, remove the rear cover, pull out the printed circuit boards to the rear, unscrew the display board, on the second circuit board you see 2 socketed blocks, the higher one contains the battery). It can be easily removed and disposed of.

CONNECTION INFORMATION & SAFETY INSTRUCTIONS

Notice

The guarantee will lapse in case of damage caused by failure to comply with these operating instructions! We shall not be liable for any consequent loss! We do not accept liability for personal injury or damage to property caused by inadequate handling or non-observance of the safety instructions! The guarantee will lapse in such cases.
This manual contains additional safety instructions in the functional description. Please note them!

Danger

If you notice any damage, the product may not be connected to mains voltage! Danger of Life!
A riskless operation is impossible if:

- The device has visible damages or doesn't work
- After a long-time storage under unfavourable conditions
- The device is strongly draggled or wet
- After inadequate shipping conditions

- Never use this product in equipment or systems that are intended to be used under such circumstances that may affect human life. For applications requiring extremely high reliability, please contact the manufacturer first.
- **The product may only be used for the applications described on page 1.**
- **Electrical installation and putting into service must be done from qualified personnel.**
- **During installation and wiring never work when the electricity is not cut-off ! Danger of electric shock!**
- **Never operate unit without housing. Danger of electric shock!**
- **All 'PE' terminals must be connected to ground. Danger of electric shock!** Without PE the internal noise filter will not work, faulty indicated values may occur.
- Please note the safety instructions and standards of your place of installation!

Caution

- Before installation: Check the limits of the controller and the application (see tech. data). Check amongst others:
  - Make sure that all wiring has been made in accordance with the wiring diagram in this manual.
  - Supply voltage (is printed on the type label).
  - Environmental limits for temperature/humidity.
  - Maximum admitted current rate for the relays. Compare it with the peak start-up currents of the controlled loads (motors, heaters,etc.).

  Outside these limits malfunction or damages may occur.
- Sensor/probe cables must be shielded. Don't install them in parallel to high-current cables. Shielding must be connected to PE at the end close to the controller.
  If not, inductive interferences may occur.
- Please note for elongation: The wire gauge is not critical, but should have 0,5mm² as a minimum.
- Mounting the controller close to power relays is unfavourable. Strong electro-magnetic interference, malfunction may occur!
- Take care that the wiring of interface lines meets the necessary requirements.
- All used temperature sensors must be identical. Never use different types at the same time. This will not work.
- TF-type sensors are not designed for being immersed in fluids permanently. In such a case, always use dip-fittings. With extreme temperature variations, the sensor may be damaged.

EG-Statement of Conformity

CE

We state the following: When operated in accordance with the technical manual, the criteria have been met that are outlined in the guidelines of the council for alignment of statutory orders of the member states on EMC-Directive (2004/108/EC) and the Low Voltage Directive (LVD 2006/95/EC). This declarations are valid for those products covered by the technical manual which itself is part of the declaration. To meet the requirements, the currently valid versions of the relevant standards have been used

This statement is made from the manufacturer / importer *by:*

ELREHA Elektronische Regelungen GmbH
D-68766 Hockenheim
www.elreha.de
(Name / Anschrift / *name / adress*)

Werner Roemer, Technischer Leiter, *Technical Director*

Hockenheim.....**5.12.2008**.....
Ort/*city* Datum/*date* Unterschrift/*sign*

set up: 4.4.18, tkd/jr	checked: 6.4.18, ek/jk	approved: 6.4.18, mkt/sha	transl.(E):	transl()	corr.: