MINIPAN® **digital panel meters, temperature- and mains controlling, special purpose instruments for customer requirements** *www.ziehl.com*

ZIEHL

Operating Manual

Universal Digital panel meter MINIPAN 300

date / name) : 06.09.07 WL / Fz/Fu   Z. Nr.: 12110-0710-01
Page 1 of 12   Type: Minipan 300
ZIEHL industrie-elektronik GmbH + Co KG, Daimlerstr.13, D-74523 Schwäbisch Hall, Tel.: +49 791 504-0, Fax: -56, e-mail: info@ziehl.de
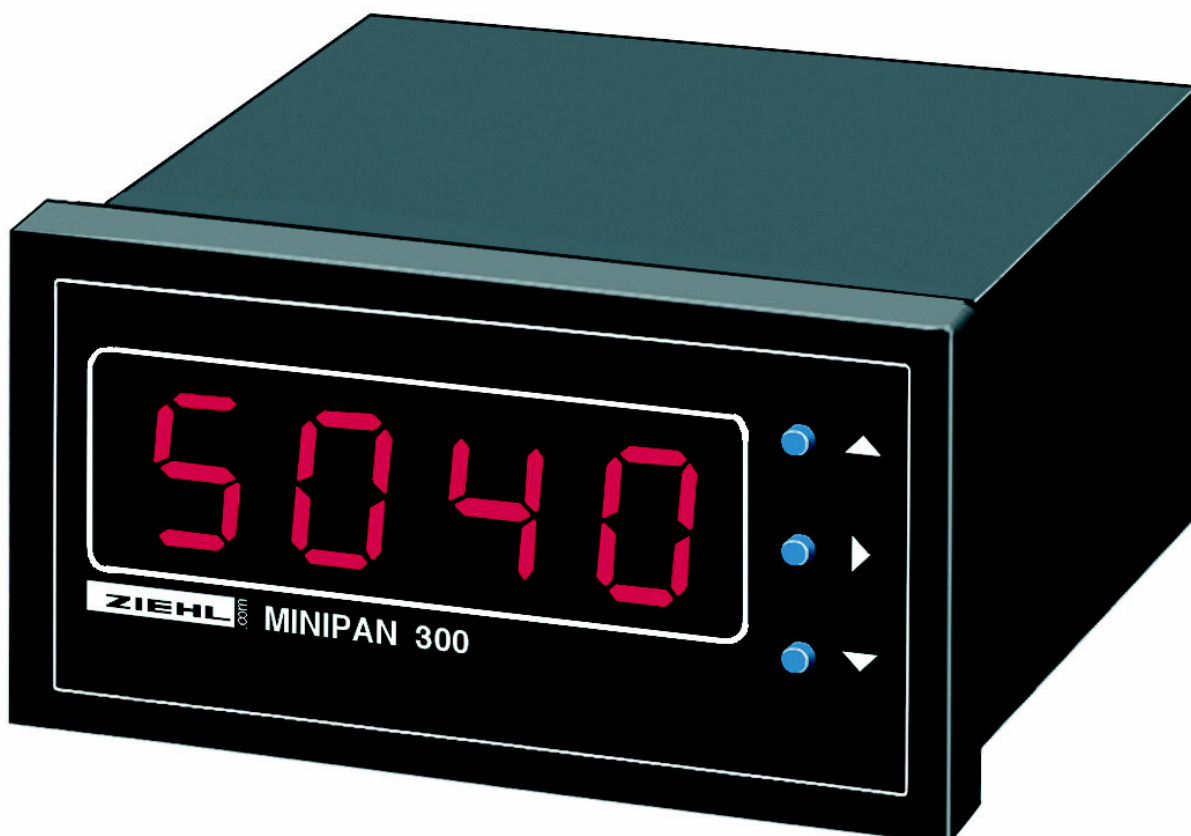
Contents   Page

Application and short description

With its 4 digit, 14 mm high display, Digital Panel meters of MINIPAN 300- series allow the accurate display of different values in the range -1999 ... +9999.

Only 3 designs cover the measuring of DC voltage and current, AC voltage and current and temperature with Pt 100- sensors (RTD).

The display can be easily programmed by the customer (e.g. input 0-10 V --> display 0-350.0 ms or AC 0-1 A ---> 0- 400.0 A

With the built-in universal power supply AC/DC 24-240 V it is especially versatile.

Overview of functions and connection plan

Easy programming with 3 buttons:

- Display (scaling, decimal-point)
- Display of MIN- and MAX-values
- Delay for display at unstable signals
- Code-lock against manipulation of settings
- Terminals pluggable
- Face-Plate 36 x 72 mm

date / name) : 06.09.07 WL / Fz/Fu   Z. Nr.: 12110-0710-01
Page 2 of 12   Type: Minipan 300
ZIEHL industrie-elektronik GmbH + Co KG, Daimlerstr.13, D-74523 Schwäbisch Hall, Tel.: +49 791 504-0, Fax: -56, e-mail: info@ziehl.de
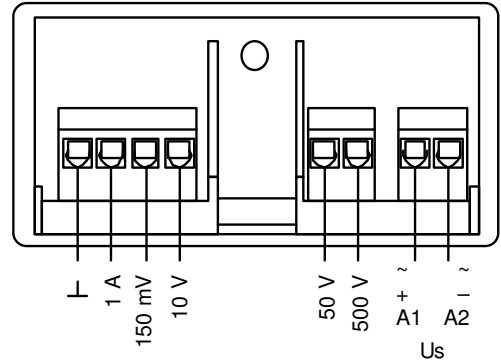
Inputs DC-Meter:

- Measuring of current with external shunt max. 300 mV
- 1 A for direct measuring of current
- 0/4-20 mA for standard signals
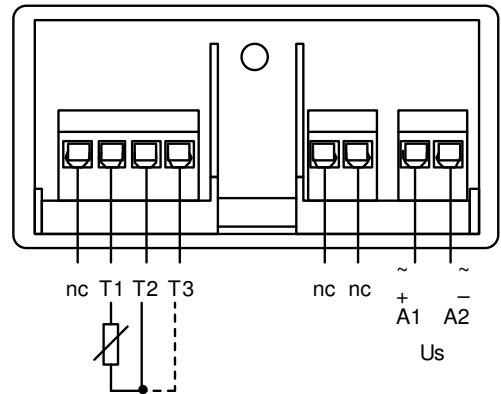- 0-10 V for standard-signals
- 100/500 V switch able
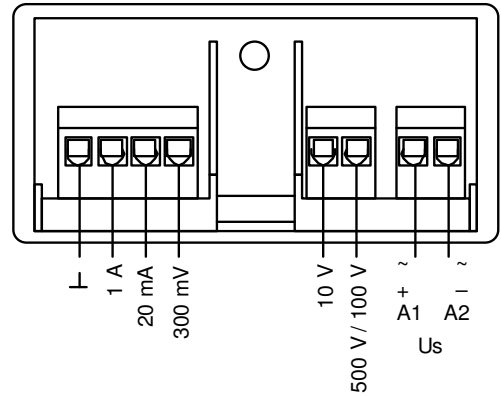
Inputs AC-Meter:

- 500 V
- 50 V
- 10 V
- Measuring of current with external shunt max. 150 mV
- 1 A for direct measuring of current or with external transformer

Measuring of Temperature Pt 100 (RTD)

- Pt 100 in 2- or 3-wire connection
- Measuring Range -199,9 ... +850,0 °C
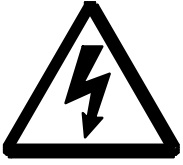- Resolution 0,1 °C
- Display in °C or °F

Display and operating elements

1. Digital display with 4 digits
2. Button "Up"
3. Button "Set/Reset"
4. Button "Down"
5. Decimal point behind last digit:
   - off = display mode (measured values)
   - on = menu mode, select the menu items
   - blinking = parameter setting mode
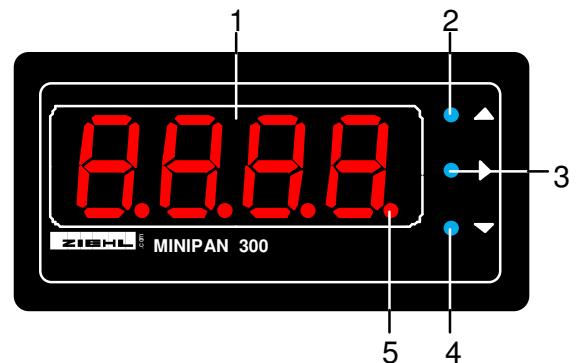
Important information's

Only let persons work with the equipment who are familiar with installation, start and use and who have appropriate qualification corresponding to their function. They must observe the contents of the instructions manual, the information which are written on the equipment and the relevant security instructions for the setting up and the use of electrical units.
The equipments are built according to DIN / EN and checked and leave the plant according to security in perfect condition.
If, in any case the information in the instructions manual is not sufficient, please contact our company or the responsible representative.
Instead of the industrial norms and regulations written in this instructions manual valid for Europe, you must observe the valid and relevant regulations of the corresponding country.

⚠ The **measuring inputs** is are insulated from supply-voltage but not from each other. **Connect one input only!**

Universal power supply.
The device has got a universal power supply, that is suitable for DC- and AC-voltages.
Before connecting the device to supply-voltage make sure that the connected voltage corresponds with the voltage on the type plate on the device.

Assembly

Slide-in the MINIPAN 300 (1) into the prepared panel-cut-out ($33^{+0,6}$ x $68^{+0,7}$ mm) from
The front side.
Slide the holding clamp (2) over the screw from the backside.
Screw on the knurled nut (3).
Ensure a right angle between holding clamp and panel.

date / name) : 06.09.07 WL / Fz/Fu   Z. Nr.: 12110-0710-01
Page 4 of 12   Type: Minipan 300
ZIEHL industrie-elektronik GmbH + Co KG, Daimlerstr.13, D-74523 Schwäbisch Hall, Tel.: +49 791 504-0, Fax: -56, e-mail: info@ziehl.de
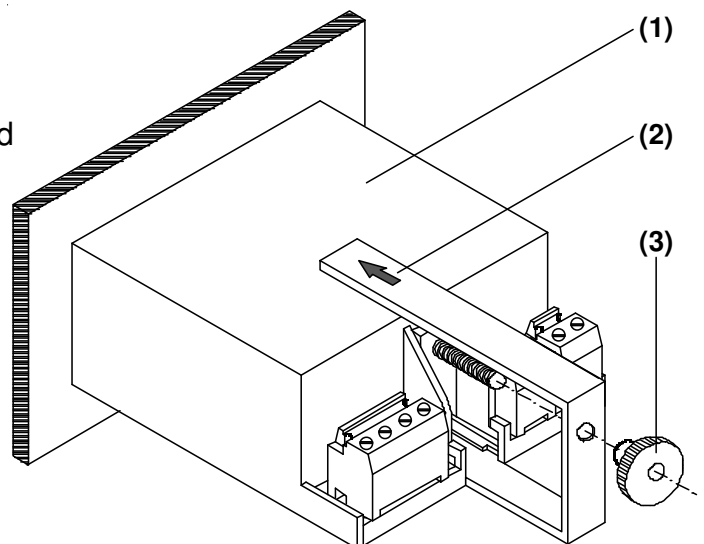
Putting into Operation

Connect supply-voltage Us.
Connect signal to measuring input. **Connect one input only!**

Setting of Parameters:

Decimal point behind last digit:
off   = display mode (measured values)
on   = menu mode, select the menu items
blinking   = parameter setting mode

Display Mode

Display of actual measured value.
Function buttons Up/Down
Push short	Change to menu mode, selection of menu item
Push for > 2 s	Display of stored MIN- or MAX- values

Function of button Set /Reset
Push short	no function
Push for > 2 s	Reset of MIN- or MAX-value (with Min- or Max-button pushed simultaneously)
Push for > 10 s	Display of software-version

Menu Mode   (Decimal point behind last digit ON)

Selection of the menu items for changing the parameters.
Function buttons Up/Down
Push short	Selection of menu item; Change into display mode

Function Taste Set/Reset
Push short	Change into parameter setting mode

Parameter setting mode (Decimal point behind the last digit FLASHES)

Function buttons Up/Down
Push short/long	Adjustment of parameter value (slow/fast)

Function button Set/Reset
Push short	Storage of setting and choice of next parameter. Change into menu mode after the last parameter

Parametrizing of Input / Measuring Range

Select menu item with Up/Down until display I nPU and measuring range alternate.
Change into parametrizing mode with Set and select measuring range with Up/Down.
Confirm and change to next menu with Set.
When changing measuring range parameters for scaling the display are set to:
I nLo = 0%, I nHi = 100 % of measuring range, di Li = 0, di Hi = 5000 und dP = 0000.

Scaling the Display

Select menu item with Up/Down until display ScAL and mode (AUto or USEr) alternate.
Change into parametrizing mode with Set and select mode with Up/Down.
 AUto: Display = measured signal without scaling.
 USEr: Range of input-signal and range of display can be set by the user. The range of the input-signal must be within the measuring range.

date / name) : 06.09.07 WL / Fz/Fu   Z. Nr.: 12110-0710-01
Page 5 of 12   Type: Minipan 300
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Examples:

	InPU	ScAL	InLo	InHi	diLo	diHi	dP
Input 0..10 V Display 30..100 %	10	USEr	0.00	10.00	30	100	0000.
Input 4..20 mA Display 0..100 %	4-20	USEr	4.00	20.00	0	100	0000.
Input 0..20 mA Display 50.0..500.0	0-20	USEr	0.00	20.00	500	5000	000.0
Input 10..90 V Display 50.0..500.0	100	USEr	10.0	90.0	500	5000	000.0
Input 0-60 mV Display 0,0..30.0	300	USEr	0	60	0	300	000.0
Input 2..5 V Display -50.0..100.0	10	USEr	2.00	5.00	-500	1000	000.0

Confirm and change to next menu with Set.

Delay of Display (recommended at unstable signals)
   Select menu item with Up/Down until display ddiS and programmed value alternate.
   Change into parametrizing mode with Set and set delay of display with Up/Down.
   Now the measured value will be written into the display every 0,1 ... 2 s.
Confirm and change to next menu with Set.

Fixed Digits (recommended when measured signal is very unstable or changing rapidly)
   Select menu item with Up/Down until F and the fixed digits blinking are displayed. When no
   fixed digit is programmed, the last 2 digits are dark.
   Set the fixed digits:
   Fi   no
   Fi 0   last digit fixed (0)
   Fi 00   last digit fixed (00)
   These digits display 0, independent from measured value.
Confirm and change to next menu with Set.

Code-lock
   Select menu item with Up/Down until display CodE programmed state alternate.
   Here the parameters can be protected by activating the code-lock. After pushing Set, Pin is
   displayed. Change to Pin 504 with buttons Up/Down (factory setting). After pushing Set the
   code-lock can be activated or de-activated. After pushing Set again, an individual Pin
   Can be selected (write down)
   With activated code-lock, all parameters can be seen but not changed any more.
   In case of problems with the code-lock (forgotten Pin), the lock can be switched off and the
   Pin can be set back to 504,by pushing the button Set/Reset while connecting the device to
   supply voltage until CodE / oFF is displayed.

date / name) : 06.09.07 WL / Fz/Fu   Z. Nr.: 12110-0710-01
Page 6 of 12   Type: Minipan 300
ZIEHL industrie-elektronik GmbH + Co KG, Daimlerstr.13, D-74523 Schwäbisch Hall, Tel.: +49 791 504-0, Fax: -56, e-mail: info@ziehl.de

<u>Line-Resistance at version for Pt 100-sensors (RTD):</u>
Select menu item with Up/Down until display ᒪ-ᖇ and programmed parameter alternate.
Change into parametrizing mode with Set and do the line-compensation with Up/Down (enter value of line-resistance) or 3-wire (ᖯ-ᒪ).
2-wire-configuration, compensation of cable-resistance:
Short-circuit the wires nearby the sensor and measure the resistance of the cable. Set „ᒪᖇ" to this value.

<u>Measuring Unit (°C or °F) at version for Pt 100-sensors (RTD):</u>
Select menu item with Up/Down until display Uᴨᵢᵗ and programmed unit alternate.
Change into parametrizing mode with Set and select unit (°C or °F).

Tips:
- After finishing one menu item it is switched automatically to the next one.
- When the right decimal point in the 7 segment display is on, the display mode has been left, and the menu items can be chosen with up/down (menu mode).
- When the right decimal point blinks, you are in the parameter setting mode and can change the setting with up/down.
- Long pushing on up/down speeds up the changes in the display.
- Pushing button up and down at the same time sets values to zero.
- With reset (press set/reset for 2s) the display mode can be reached from every position of the parameter setting mode (the last selected value in is being stored).
- With �I ᴨᒪᴏ and �I ᴨᕼᵢ scaling is simplified when measuring-range and range of signal are different.
Example: Display 0-500.0 at input-signal 10-90 V:
- Connect to measuring input 100 V and select I ᴨᕵᑌ = �IᴏᴏO
- Set I ᴨᒪᴏ to Iᴏ.ᴏ
- Set I ᴨᕼᵢ to Iᴏᴏ.ᴏ
- Set ᑯᵢ ᒪᴏ to ᴏ
- Set ᑯᵢ ᕼᵢ to ᕒᴏᴏᴏ
- Set ᑯᕵ to ᴏᴏᴏ.ᴏ

date / name) : 06.09.07 WL / Fz/Fu   Z. Nr.: 12110-0710-01
Page 7 of 12   Type: Minipan 300
ZIEHL industrie-elektronik GmbH + Co KG, Daimlerstr.13, D-74523 Schwäbisch Hall, Tel.: +49 791 504-0, Fax: -56, e-mail: info@ziehl.de

Indication of the digital display:

Code	Description
InPU	= measuring input / measuring range
500	= 500 V
100	= 100 V
50	= 50 V
10	= 10 V
300	= 300 mV
150	= 150 mV
0-20	= 0-20 mA
4-20	= 4-20 mA
1	= 1 A
ScAL	= scaling of measuring range and display
AUto	= Zero, FullScale and decimal-point are taken over from selected measuring range
USEr	= scaling of measuring input and measuring range by the user
InLo	= measuring range - Zero
InHi	= measuring range - FullScale
diLo	= displayed value at measured signal = InLo
diHi	= displayed value at measured signal = InHi
dP	= decimal point
ddiS	= delay of display
Fi	= fixed digits
CodE	= code
Pin	= factory-setting of Pin = 504
on, oFF	= an / off
L-A	= line compensation
3-L	= 3-wire
Unit	= measuring unit for temperature Pt 100 (°C, °F)
====	= Min
	= Max
ErLo	= input current <3,8 mA at measuring range 4-20 mA
Er8, Er9	= error in device
-EEE	= signal lower than measuring range / display range
EEEE	= signal higher than measuring range / display range

date / name) : 06.09.07 WL / Fz/Fu   Z. Nr.: 12110-0710-01
Page 8 of 12   Type: Minipan 300
ZIEHL industrie-elektronik GmbH + Co KG, Daimlerstr.13, D-74523 Schwäbisch Hall, Tel.: +49 791 504-0, Fax: -56, e-mail: info@ziehl.de
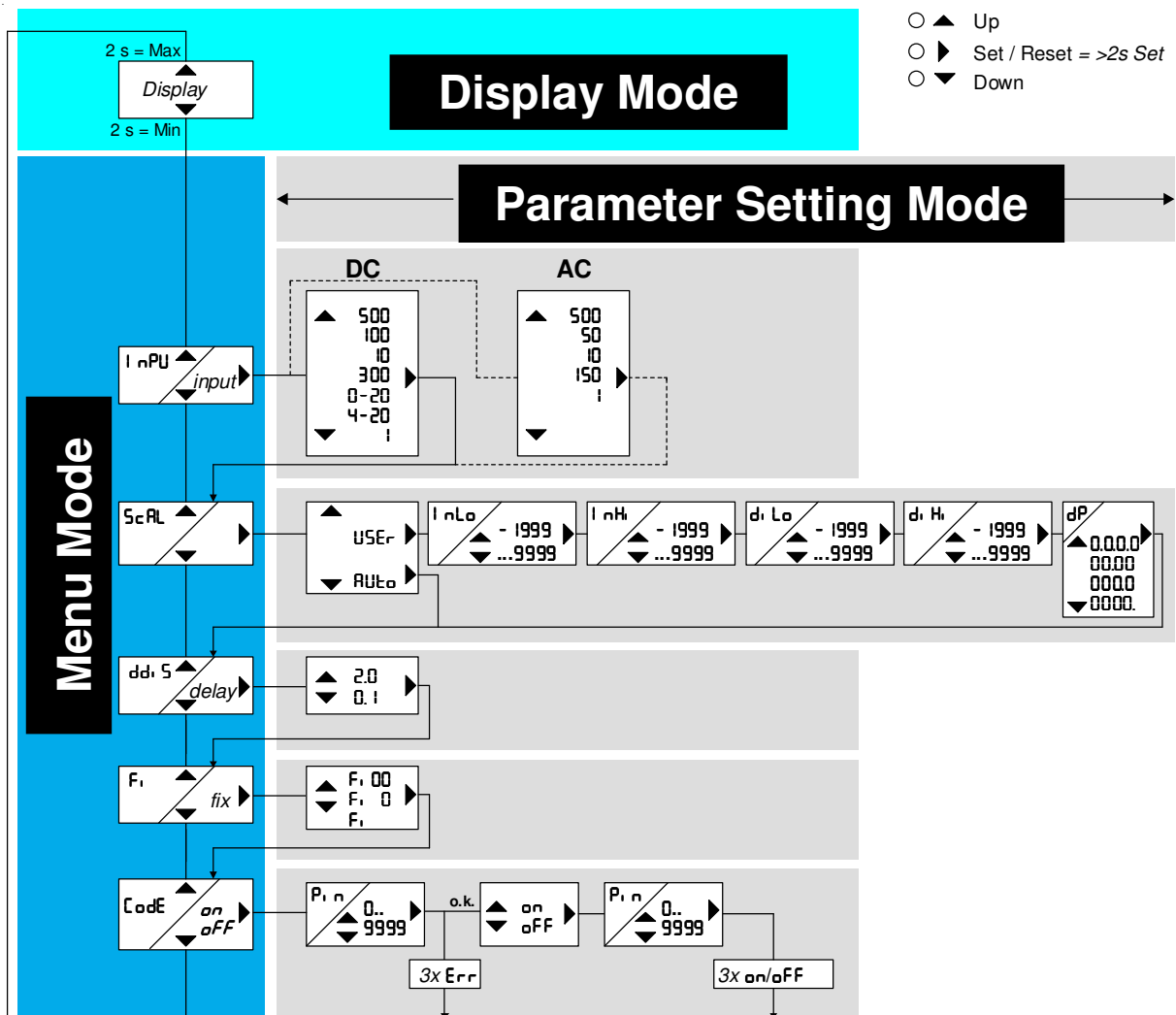
Factory-preset:

Reset to factory setting: Push button Set for 10 s when applying supply voltage until "----" is displayed.

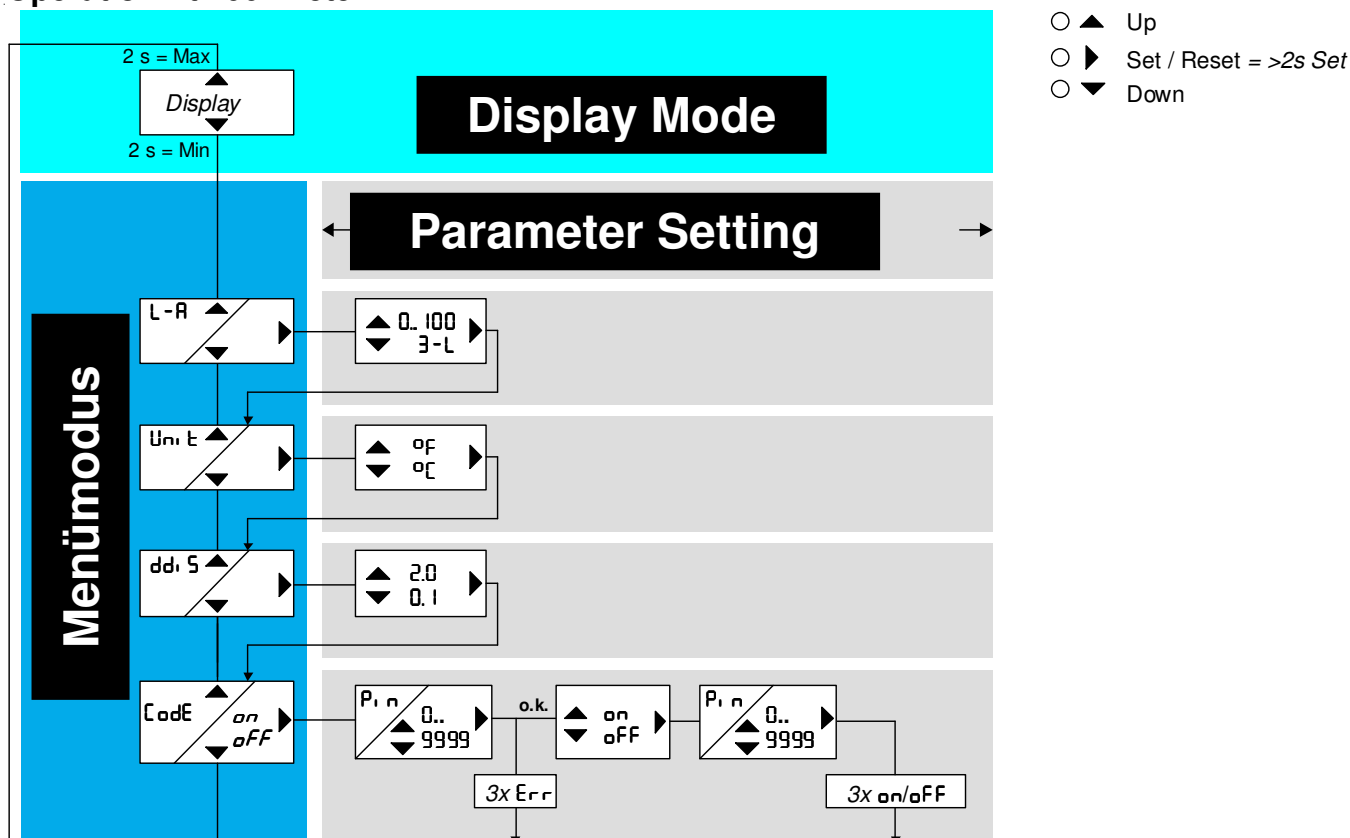| Parameter	Version			Users own Data
	MINIPAN DC	MINIPAN AC	MINIPAN Pt 100	
InPU	10	1	-	
L-A	-	-	3-L	
Unit	-	-	ºC	
ScAL	AUto	AUto	-	
InLo	0.00	0.000	-	
InHi	10.00	1.000	-	
diLo	0	0	-	
diHi	5000	5000	-	
dP	0000.	0000.	-	
ddiS	0.5	0.5	0.5	
Fi	Fi	Fi	-	
CodE	oFF	oFF	oFF	
Pin	504	504	504	

Operation
DC- and AC-Meters

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Operation Pt 100- Meter

○ ▲ Up
○ ▶ Set / Reset = *>2s Set*
○ ▼ Down

2 s = Max
Display
2 s = Min

Display Mode

Parameter Setting

Menümodus

L-A ▲▼ ▶ → ▲ 0..100 / ▼ 3-L ▶

Unı E ▲▼ ▶ → ▲ °F / ▼ °C ▶

ddı S ▲▼ ▶ → ▲ 2.0 / ▼ 0.1 ▶

CodE / on / oFF ▶ → Pın / ▲▼ 0.. 9999 ▶ —o.k.→ ▲▼ on / oFF ▶ → Pın / ▲▼ 0.. 9999 ▶

3x Err   3x on/oFF

Trouble shooting

- <u>Unit cannot be programmed – Code lock</u>
  The code lock gives protection against unauthorized manipulation of the unit. When code lock is activated the parameters can not be changed. The pin can be set by the user.
  Pin unknown? Make code-reset: When switching in supply-voltage keep pushed button „Set" for **2 s**.
  Display indicates: "8888"; "CodE"; "oFF"; "8888" release button „Set".
  Code = oFF, Pın = 504.
- <u>Indicated temperature does not correspond to the sensor temperature</u>
  1. Is the correct measuring unit selected (°C or °F)?
  2. Check programmed sensor-connection (2- or 3-wire, line-resistance).
- <u>Displayed value wrong or no signal</u>
  Check if the correct input is selected and if the signal is connected to the correct terminals.
  Check if terminals have been plugged correctly.
- <u>Display „ErLo"</u>
  input current <3,8 mA at measuring range 4-20 mA. Check lines for break.
- <u>Display „Er8" „Er9"</u>
  Er8 and Er9 are internal errors (hardware / parameters). Switch off and on supply-voltage and reset parameters to factory-setting.
  If the error still exists send it back to factory for repair.
- <u>Display „-EEE"</u>
  signal lower than measuring range / display range.
- <u>Display „EEEE"</u>
  signal higher than measuring range / display range.
- <u>Display of software-version:</u> push Set for >10 s in display mode.

date / name) : 06.09.07 WL / Fz/Fu   Z. Nr.: 12110-0710-01
Page 10 of 12   Type: Minipan 300
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Technical data

Power Supply

Rated supply voltage Us	AC/DC 24-240 V
Tolerance DC	DC 20 - 297 V (0,85 x 24 V...1,35 x 220 V)
Tolerance AC	AC 20 - 264 V (0,85 x 24 V...1,1 x 240 V)
Power consumption	< 3 VA
Frequency	48...62 Hz

Measuring Inputs insulated from supply-voltage
(connect 1 input only)

DC-Meter
Measuring range / resistance of input
/ overload capacity

± **300 mV** / 120 kΩ / max. ±2,5 V
± **10.00 V** / 1 MΩ / max. ±50 V
± 500.0 V / 3 MΩ / max. ±600 V
± 100.0 V / 3 MΩ / max. ±600 V
± 20.00 mA / Shunt 15 Ω/ max. ±100
± **1.00 A** / Shunt 150 mΩ / max. ±2 A

AC-Meter
Measuring range / resistance of input
/ overload capacity

150 mV / 900 Ω / max. 2,5 V
10.00 V / 100 kΩ / max. 50 V
50.0 V / 1 MΩ / max. 60 V
500.0 V / 3 MΩ / max. 600 V
1.00 A / Shunt 150 mΩ / max. 2 A

Measuring time AC/DC	< 400 ms + delay of display ddi 5
Pt 100- Meter	**- 199,9 ... + 850,0 °C** (= -328 ... +1563 °F)
Sensor-connection	Pt 100, 2- or 3-wire
Wire-resistance 3-wire	max. 3 x 50 Ω
Measuring time temperature	< 400 ms + delay of display ddi 5

Accuracy

Resolution	+9999 / -1999
Error (of full measuring range)	
DC voltage and current	± 0,1 % ± 1 Digit
AC voltage and current	± 0,5 % ± 1 Digit
Temperature factor	± 0,02 % / Kelvin
Total error	
At Pt 100- Meter	± 0,3 % of value ± 0,5 K
Temperature factor	± 0,03 °C / K

Test conditions EN 50178 / EN 61010-1
EN 61326-1 industrial applications

Measuring category	CAT II 600 V DOUBLE INSULATION
	CAT III 300 V DOUBLE INSULATION
Contamination level	2
On-time	100 %
Rated ambient temperature range	-20 °C ... +60 °C
	EN 60068-2-1 dry heat
Vibration resistance EN 60068-2-6	2…25 Hz ±1,6 mm
	25 ... 150 Hz 5 g

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Page 11 of 12   Type: Minipan 300
ZIEHL industrie-elektronik GmbH + Co KG, Daimlerstr.13, D-74523 Schwäbisch Hall, Tel.: +49 791 504-0, Fax: -56, e-mail: info@ziehl.de

Housing   Panel-mount housing
  Dimensions (h x w x d) mm   36 x 72 x 79 mm
  Terminals
  Wire connection one wire   1 x 0,5…1,5 mm^2
  Stranded with insulated ferrules   1 x 0,14…1 mm^2
  Attachment Mounting   Panel-mount, panel cut-out 33 $^{+0,6}$ x 68$^{+0,7}$ mm
                                       max. thickness of panel 8 mm

  Protection housing   IP 30
  Protection terminals   IP 20
  Weight   approx. 120 g

Subject to technical changes

Form   Dimensions in mm

Panel cut-out 33$^{+0,6}$ x 68$^{+0,7}$ mm