

Nokeval

No 090203

Manual

Model 592D



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Dual large field displays

Analog input:

- Dual 5 digits, 57 mm display
- Microprocessor based
- Pt100 sensor, thermocouples, 0/4..20 mA, 0/5..10V, potentiometers



Field display 592D has 57 mm digit height. The large display is designed for max. 20 meters distance. The field display consists of two displays, 5 digits, max. 99999. Model has red LED display which can be seen also outdoor applications using a sun shade in the enclosure. The

analog conversion is 15 bit and resolution 1/32000. Continuous autocalibration guarantees long term accuracy. When you display big numbers the last digits on right may be set to indicate zeros (null digits).

Specification:

Voltage inputs:

Scaleable inputs: -9999..99999
0-1V, 0..5V, 1-5V, 0-10VDC
Input ranges : 20, 50, 500, 1000 mV
Input impedance: 1 Mohm, for 500 and 1000 mV, 10 kohm for 25 and 50 mV.
Decimal point selectable
Accuracy: 0.05 % of FS.

Current input 0/4..20 mA:

Display range: -9999....+99999
Offset: 0-99 %
Decimal point selectable
Input impedance: 50 ohm .
Accuracy: 0,05 % of FS.

Potentiometer input:

Input range 25....1000 ohm or
2...10 kohm
Scaleable display.

RTD sensors:

Pt100
2-, 3-, or 4 wire connection
Temperature range -200... +700 °C
Resolution 0.1 or 1 °C
Accuracy:
0,05% of FS + 0,1 °C (4-wire.)
0,05% of FS + 0.2 °C. (3-wire)
Error between channels, max. ± 0,1 °C.
Lead wire resistance effect:
(3-wire) 0.005%/ohm.
Other RTD-sensors available:
PT500, Pt1000, Ni100, Ni1000

Thermocouples:

K	-100....+1250 °C
J,J/DIN	-100..... +900 °C
T	-50..... +350 °C
E	-50..... +350 °C
R,S	0.....+1700 °C
B	0... . +1800 °C
W3	0.....+2300 °C
W5	0.....+2490 °C
W	1000.. ..+2300 °C
N	-200.....+1200 °C

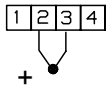
Accuracy 1.5 °C ± 1 numero
S,R types 2.5 °C ± 1 numero
Lead wire < 1000 ohms, no effect
Cold junction effect: < 0.05 °C/°C.

General specification:

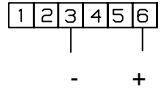
5 digits., red, LED, digit height 57 mm. Grey plastic case.
Digit size 57 mm
Protection IP65
Power supply 230 VAC, 20 W

Connections

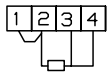
Thermocouple and mV-input:



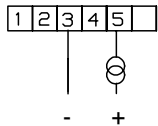
Input: 0/1..5/10VDC:



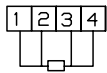
Pt100 3-wire.



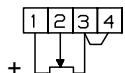
Current 0/4..20 mA:



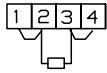
Pt100 4-wire.



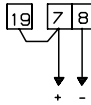
Potentiometer:



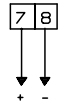
Pt100 2-wire.



**Output (V)
0/1..5/10 V**



**Output (mA):
(0) 4..20 mA**

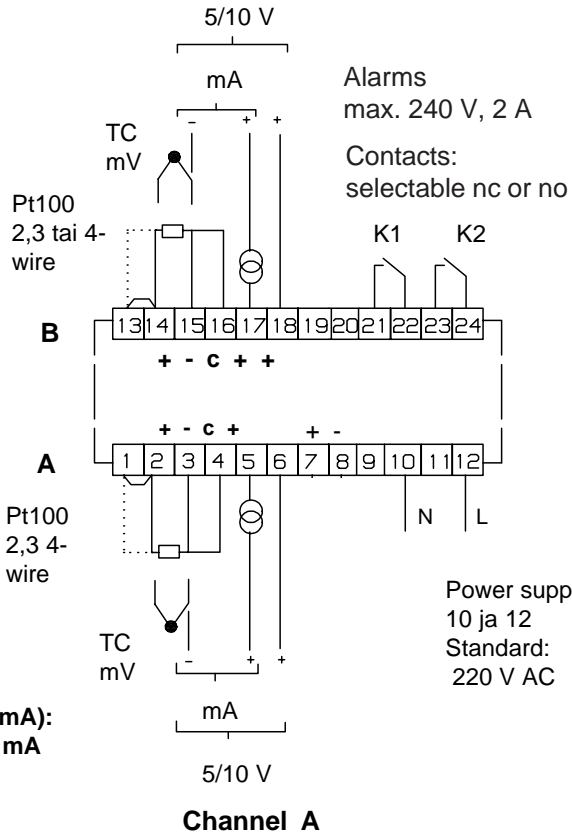


Connections for channel B as channel A.

Note 1.

Output 0/1..5/10 : Connect jumper to connectors 7 and 19.

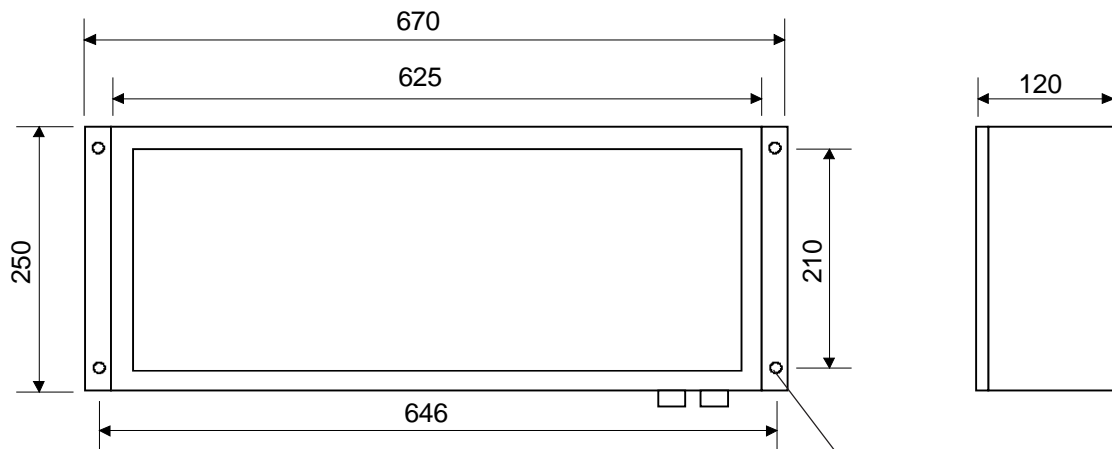
Channel B



Power supply:

Standard 220
Others 110, 24 V AC or
24 V D
24 VDC, connectors:
11(+) ja 10 (-).

Dimensions

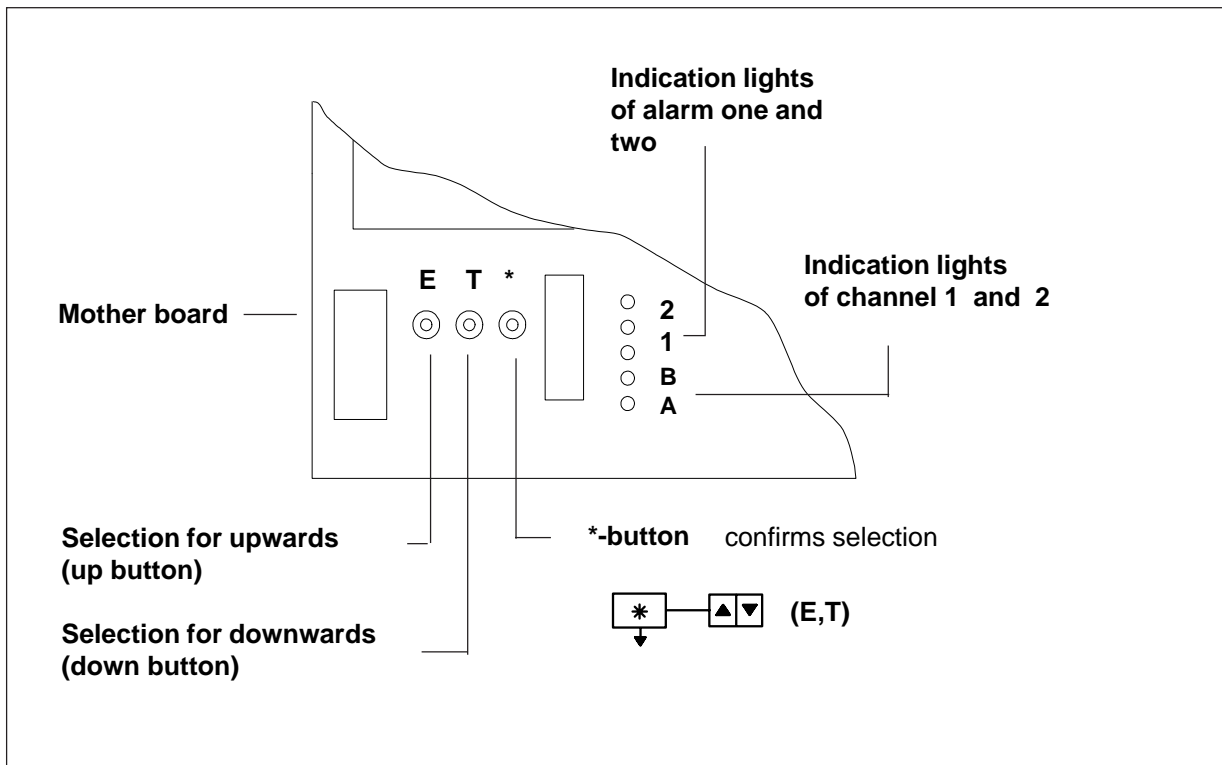
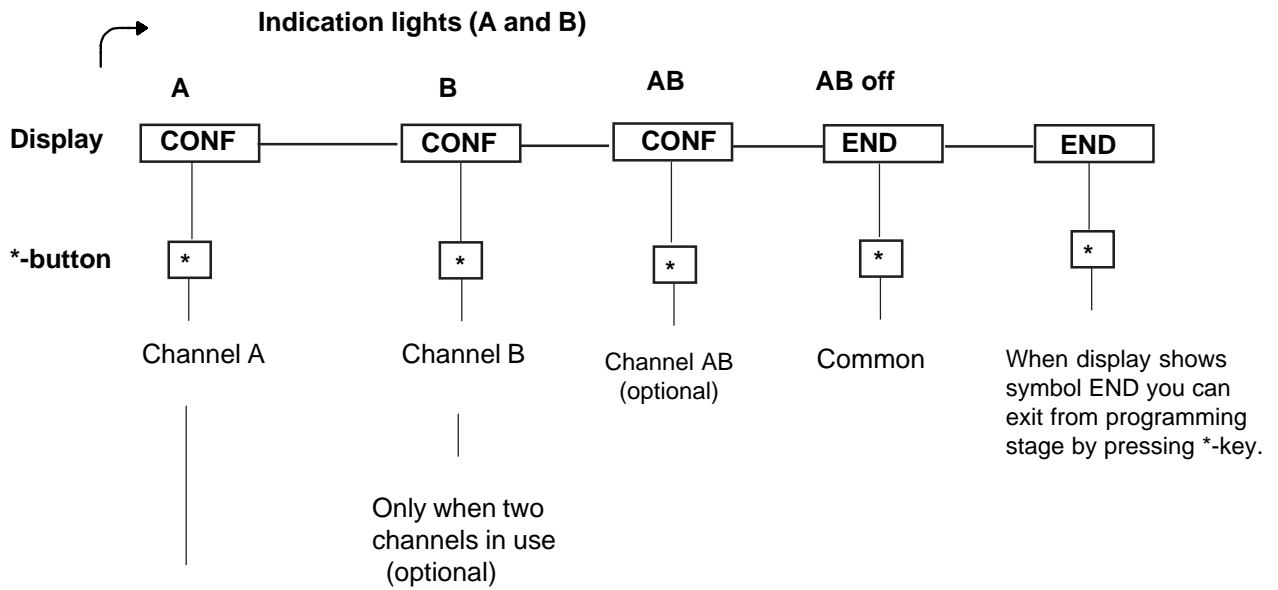


Protection: IP65
Black metal case
Wire connections: 2 x 13.5 mm
Dimensions: mm

Keyboard for configuration

You can enter configuration stage through three buttons on circuit board. Buttons E and T, on the left, transfer indication lights in main menu and *-button confirms selection. Alarms are available on request.

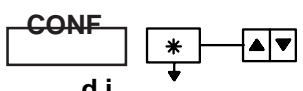
You can enter initial setting stage when all indication lights are OFF. See chapter "initial settings" on next page.



Configuration

You can configure the meter by three push buttons on circuit board. Display will show symbols, which can be changed, or the settings may be controlled only. *-button will not change settings but it transfers display and program to next stage.

**Select config stage by pressing E , T and * -buttons at the same time.
CONF-text appears on the display. Now you are ready to start configuration.**

Initial settings	You can select the number of channels, output etc.
<p>Display Push buttons</p>  <p>d i CH x SP 0 OU x AL 0 1 nc 1 nc F 50 CCxx</p>	<p>Turn off lights A ja B by arrow keys and press *-button.</p> <p>Select the number of digits (4 or 5 digits) Select one or two input channels. A=(CH1)1, B=(CH2) 2 Extended channel AB. 0=OFF 1=ON Factory default, must be set to = 0 Factory default, must be set to = 0 Factory default, do not change Factory default, do not change Select line 50 or 60 Hz (default 50 Hz) Special functions. Setting of secret code xx = 88, Secret code for configuration xx = 89, Secret code for only alarms</p>

Setting of secret code for configurations

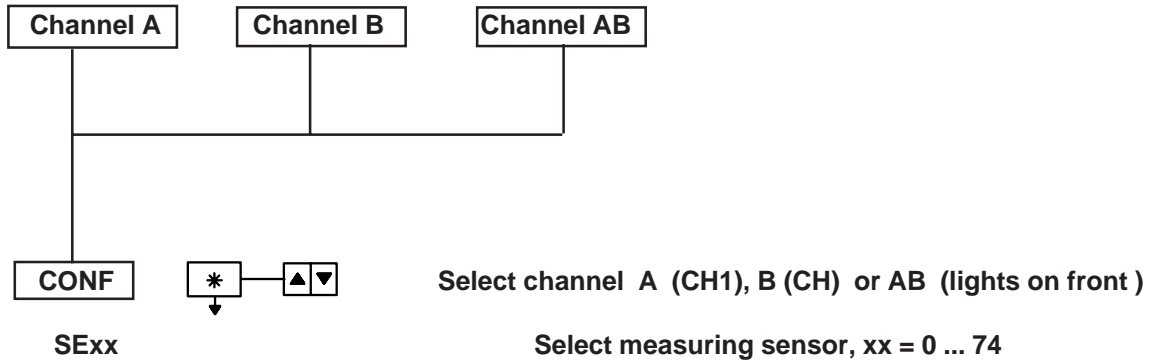
CC 88	Choose number 88 by down-button. Display will show text CODE.
CODE	Press *-button.
0000	Display will show number number 0000 and first 0 is blinking. Choose any number between 0..9 and make following number to blink by *-button. When 4 number code is set press *-button. Exit by choosing CC90 and press *-button. Secret code is saved first when you leave program stage (END). Code number 0000 is not in use. You may select any number between 0001...9999.

Setting of secret code for only alarms

CC 89	Choose number 89 by down-button. Display will show text CODE.
CODE	Press *-button.
0000	Display will show number number 0000 and first 0 is blinking. Choose any number between 0..9 and make following number to blink by *-button. When 4 number code is set press *-button. Exit by choosing CC90 and press *-button. Secret code is saved first when you leave program stage (END). Code number 0000 is not in use. You may select any number between 0001...9999.

Channel settings

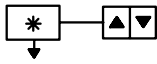
You can configure both channel individually. Sensor types, alarms, display scaling and output signals. Before channel configuration you shall decide in chapter "Initial Settings" whether one or two channels, secret code etc. will be used. See chapter "Initial settings".



1	0..20 mA	Scaleable display	
2	4..20 mA	Scaleable display	
11	Pt100	3-wire	
12	Pt100	4-wire	
13	Pt500	3-wire	*
14	Pt500	4-wire	*
15	Pt1000	3-wire	*
16	Pt1000	4-wire	*
17	Ni100	3-wire	*
18	Ni100	4-wire	*
19	Ni1000	3-wire	*
20	Ni1000	4-wire	*
21	1000 ohm	Linear resistor	0..1000 ohm
22	500 ohm	Linear resistor	0...500 ohm
31	TC	B	Thermocouple *
32	TC	E	Thermocouple
33	TC	J	Thermocouple ANSI FeCuNi
34	TC	J DIN	Thermocouple DIN FeCuNi
35	TC	K	Thermocouple
36	TC	N	Thermocouple
37	TC	R	Thermocouple
38	TC	S	Thermocouple
39	TC	T	Thermocouple
40	TC	W	Thermocouple *
41	TC	W3	Thermocouple *
42	TC	W5	Thermocouple *
51	0...10 V	Scaleable display	
52	0...5 V	Scaleable display	
53	1...5 V	Scaleable display	
54	0...1V	Scaleable display	
61	Potentiometer max. 0-1000 ohm		
62	Potentiometer max. 0-500 ohm		
63	Potentiometer max. 0-50 ohm		
64	Potentiometer max. 0-25 ohm		
71	1000 mV		
72	500 mV		
73	50 mV		
74	25 mV		

* = preliminary information

FU x



Select function for channel A or B

- 0 Linear display
- $\sqrt{\quad}$ 1
- 2 x
- 3 log x
- 4 ln x
- 5 10
- 6 x e
- 7 average (3 measuring values)
- 8 average (5 measuring values)
- 9 min. value Reset: press both arrows keys
- 10 max. value Reset: press both arrows keys

simultaneously

simultaneously

EN x

tic

ED x

DE x

LOFF

value

xxxx

Select whether the channel will be displayed by automa-

scanning =0 (not displayed), 1= (displayed)

External display, 0=Off, 1=On (only for serial output)

Decimals in display , x = 0 ... 3

Offset changing, f.ex. -1.0 degrees below measured

Select offset value. You can change it any time

Scaleable inputs:

If sensor number is 1, 2, 12, 13, 14, 15, 16, 17, 18 or 19, you have to select min/max display as follows:

Low-end of display (f.ex.. 4mA=0.0)

Select value

High-end of display (f.es. 20 mA=100.0)

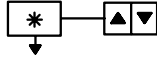
Select value

LO

xxxx

HI

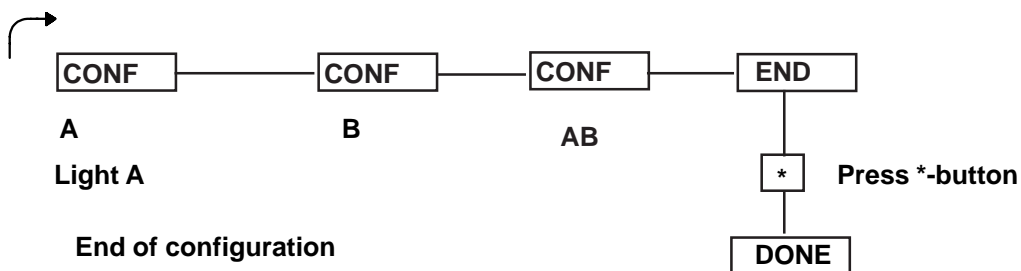
xxxx



OC x

Factory default = 0, do not change

Select END-text by arrow buttons and press *-button. When text [DONE] appears, all parameter are saved to memory and indicator is ready to measure in a few seconds..



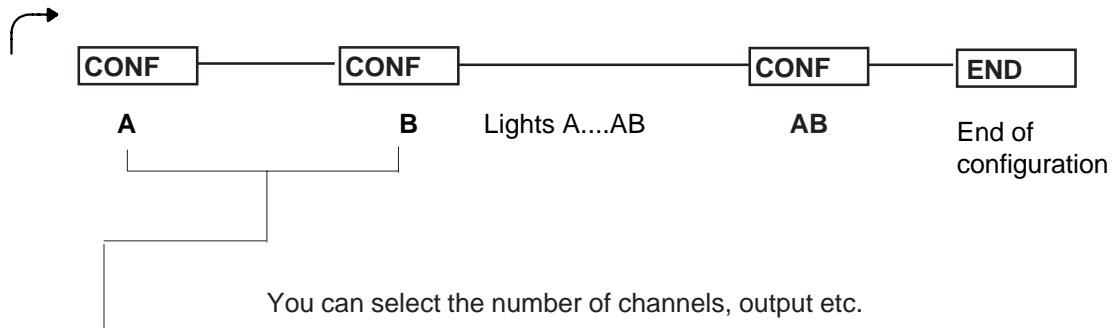
Potentiometer input

Meter accepts pot. input in both channels, each having its own scaling. Standard ranges are 0..25...1000 ohm. Inside the meter you can change two resistor for range 10 times, ie. 0..250...10000 ohm. If you use the expanded range you can not use RTD's. Standard range allows RTD, or some other sensor on the other channel. You can set all mathematical functions also to pot. input as f. ex. logarithmic scaling display. You can also have output signal by

adding output card.

Teaching potentiometer position

If the path of the actuator is not from zero to max. value but, only a part of it, you may calibrate meter to correspond the real-path. Indicator saves to its memory min./max. positions and this does not change the scaling of the display. F.ex. display is scaled 0..100% corresponding 0-1000 ohm. In the field, however, when the valve is closed the real value is 70 ohm and when closed the real value is 872 ohm. This means that display do not show 0-100% as desired. This drawback can be easily corrected as follows:



Display Push buttons



Turn off lights A ja B by arrow keys and press *-

button.
CH x
 channels
SP 0
OU x
 used=0
CCxx
 output

Select one or two input channels, x, , 1=1 2=2

Exrtended channel AB. 1=OFF, 1=ON
 Output 0/4..20 mA or 0/1..5/10VDC On=1, Not

Customized calibration of potentiometers and current

xx = 11, Potentiometer, channel A
xx = 12, Potentiometer, channel B
 xx = 21, Current output 0/4..20 mA
 xx = 22, Voltage output, 0/1..5/10 V

CC 11 (A) or CC 12 (B) (Select number by arrow-keys).

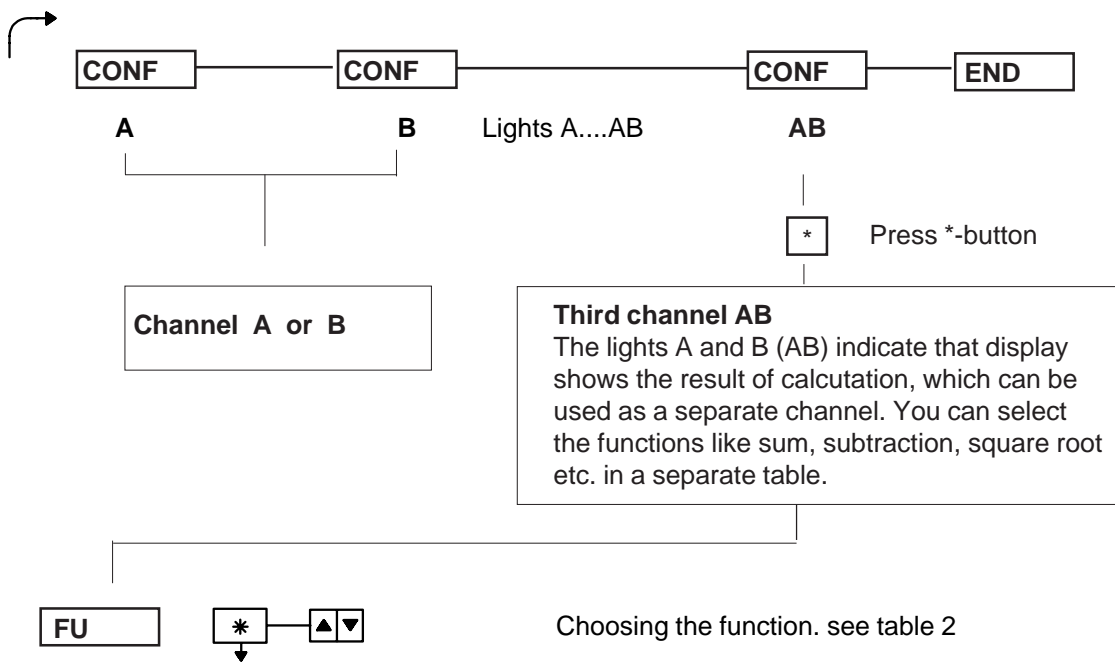
1. Run potentiometer to min. position (or max. position in of reverse function) when display shows symbol P_lo and press then *-button. Resp. when display shows P_Hi
2. Return by arrow buttons symbol 0 and press *-button so many times until display shows configuration start symbol CONF. You can now get symbol END by arrow buttons. Confirm exit by *-button. The display now shows symbol DONE and the meter is calibrated for the real path angle.

Definition of mathematical functions for third channel (optional)

The display may show the third (extended channel) i.e. the result of the calculations between the two channels. The both signal lights A and B lit at the same time. The third channel operates exactly like the physical channels and may have alarms or output signal.

Definition of functions to channel AB

Choose channel AB to display by arrow buttons and press *-button



Third channel AB
The lights A and B (AB) indicate that display shows the result of calculation, which can be used as a separate channel. You can select the functions like sum, subtraction, square root etc. in a separate table.

Choosing the function. see table 2

You can pass a channel in automatic scanning,
0=pass, 1=shows
External display 0=OFF, 1=ON
Number of decimals, x = 0 ... 3

AC x

Alarms and output can be chosen for channel A and B. Set output and alarms to channel A and B. Go to page "programming" and continue from point A Cxx or press *-button, without doing any settings, see point "exit".

Functions of channel A and B

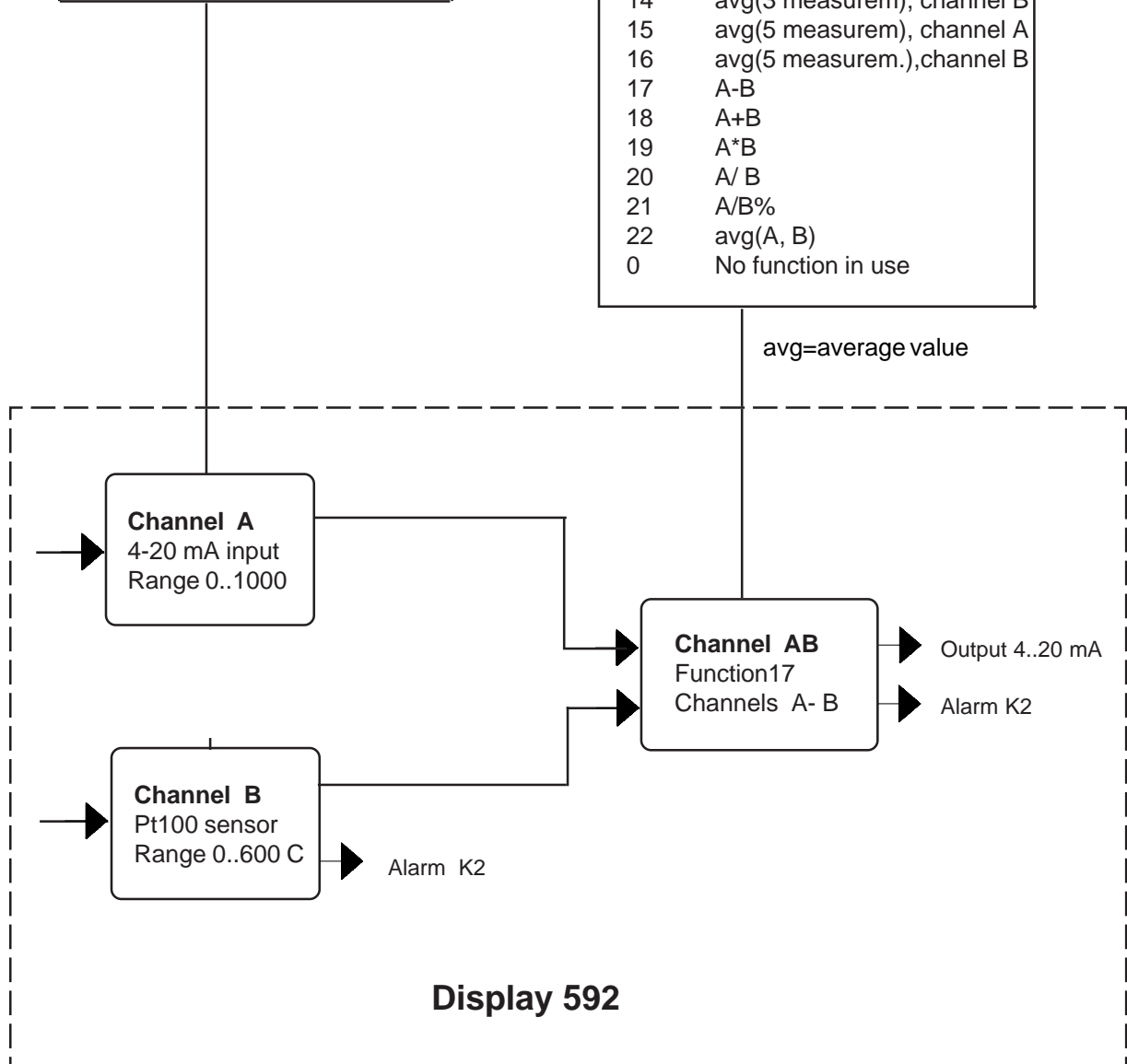
Table 1

No	Function
1	\sqrt{x}
2	x^2
3	log x
4	ln x
5	10 ^x
6	6x e
7	avg(3 measurements)
8	avg(5 measurements),
9	min. value
10	max. value
11	min.value, with reset
12	max. value, with reset
0	No functions

Functions of channel AB (optional)

Table 2

No	Function
1	\sqrt{x} (channel A)
2	\sqrt{x} (channel B)
3	x^2 (channel A)
4	x^2 (channel B)
5	log x (channel A)
6	log x (channel B)
7	ln x (channel A)
8	ln x (channel B)
9	10 (channel A)
10	10 (channel B)
11	x e (channel A)
12	x e (channel B)
13	avg(3 measurem) channel A
14	avg(3 measurem), channel B
15	avg(5 measurem), channel A
16	avg(5 measurem.),channel B
17	A-B
18	A+B
19	A*B
20	A/ B
21	A/B%
22	avg(A, B)
0	No function in use



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