

Calibration values for analog input signals (Calib. mode)

Menu entrance: <SCAL><ACAL>

Display scaling can be carried out in two ways:

- Calib.mode = 'on': Default input signal-values are used and scaling can be carried out without connecting an external measurement signal.
- Calib.mode = 'OFF': The applied measurement signal is read in and used for display scaling.

Analog input min. (Ain min).

Menu entrance: <SCAL><AL L>

Display scaling for the analog input – min. signal value.

Calib.mode = on:

1. Min. input signal-value is entered.
Data range (depending on signal type): 0..20,00mA/0..1,000V/0..10,00V/0..100,0%/0..400,0Ohm/0..50,00mV
2. Display value corresponding to min. analog input signal is entered.
Data range: -9999..+9999 display units.

Calib.mode = OFF:

1. Min. input signal is applied.
2. Display value corresponding to min. analog input signal is entered.
Data range: -9999..+9999 display units.

Analog input max. (Ain max).

Menu entrance: <SCAL><AI H>

Display scaling for the analog input – max. signal value.

Calib.mode = on:

1. Max. input signal-value is entered.
Data range (depending on signal type): 0..20,00mA/0..1,000V/0..10,00V/0..100,0%/0..400,0Ohm/0..50,00mV
2. Display value corresponding to max. analog input signal-value is entered.
Data range: -9999..+9999 display units.

Calib.mode = OFF:

1. Max. input signal is applied.
2. Display value corresponding to max. analog input signal is entered.
Data range: -9999..+9999 display units.

Analog output min (Aout min):

Menu entrance: <SCAL><AO L>

Signal scaling for analog output – min. output value.

1. Display value corresponding to min. analog output is entered.
Data range: -9999..+9999 display units.
2. Analog output signal value (f.inst 4,00mA) - corresponding to the entered display value - is entered.
Data range: 0..20,00mA

Analog output max (Aout max):

Menu entrance: <SCAL><AO H>

Signal scaling for analog output – max. output value.

1. Display value corresponding to max. analog output is entered.
Data range: -9999..+9999 display units.
2. Analog output signal value (f.inst 4,00mA) - corresponding to the entered display value - is entered.
Data range: 0..20,00mA

Signal correction (Display offset):

Menu entrance: <SCAL><OFFS>

- The parameter is added to the display value (also affects the alarm handling and analog output).
- Data range: -9999..+9999 display units.

Cold Junction compensation offset (CJC offset):

Menu entrance: <SCAL><CJCc>

- The parameter (temperature) is added to the measurement value for temperature measurements with thermocouples, if CJC type 'OFFS' is selected.
- Data range: -100..+100 °C

UNIVERSAL DIGITAL METER

DP545

USER'S MANUAL



Configuration options / parameters:

Data protection (access code / access level):

Menu entrance: <CODE>

The access level determine which parameters are available for modification. Parameters are always available for display. Access code '5' has to be entered (and accepted by 'MENU') before access level can be modified.

When access level ACP0..ACP4 are selected, the key 'MENU' has to be activated more than 3 sec. to activate the menu system.

Access level:

AC 0	all levels are protected -> no parameters can be modified.
AC 1..AC 4	parameters on level 1..4 can be modified
ACP0	all levels are protected -> no parameters can be modified (+delay)
ACP1..ACP4	parameters on level 1..4 can be modified (+delay)

Display intensity (Display light):

Menu entrance: <DISP><LIGH>

Data range: 5..20 (5: min light, 20: max light).

Alarm limit (Limit 1):

Menu entrance: <DISP><AL 1>

Limit for activation / deactivation of relay 1 (refer to Rel. 1 function).

Data range: -9999..+9999 display units

Alarm limit (Limit 2):

Menu entrance: <DISP><AL 2>

Limit for activation / deactivation of relay 2 (refer to Rel. 2 function).

Data range: -9999..+9999 display units

Peak value (Peak low):

Menu entrance: <DISP><PE L >

Display of the lowest (smallest) measurement value, registered since last clear or power-up.
The registered value can be cleared by simultaneously activating the keys 'UP' and 'RIGHT'.

Peak value (Peak high):

Menu entrance: <DISP><PE H >

Display of the highest (largest) measurement value, registered since last clear or power-up.
The registered value can be cleared by simultaneously activating the keys 'UP' and 'RIGHT'.

Display averaging – period (Display delay):

Menu entrance: <DISP><ddEL>

Time for averaging measurement values.

Data range: 0,5..2,9 sec.

Display averaging – window (Disp. del. win.):

Menu entrance: <DISP><ddLI>

Averaging is active when the difference between the display value and the latest A/D conversion is less than 'window'. When the difference between two A/D conversions is greater than 'window', the values are displayed without averaging.

Data range: 5..+9999 display units

Relay function (Rel 1 func.):

Menu entrance: <Hard><rEL1>

H on	Relay 1 is activated (duration > time 'alarm delay') when measurement value >= alarm limit. Relay 1 is deactivated when measurement value < (alarm limit – alarm hysteresis).
HoFF	Relay 1 is deactivated (duration > time 'alarm delay') when measurement value >= alarm limit. Relay 1 is activated when measurement value < (alarm limit – alarm hysteresis).
L on	Relay 1 is activated (duration > time 'alarm delay') when measurement value <= alarm limit. Relay 1 is deactivated when measurement value > (alarm limit + alarm hysteresis).
LoFF	Relay 1 is deactivated (duration > time 'alarm delay') when measurement value <= alarm limit. Relay 1 is activated when measurement value > (alarm limit + alarm hysteresis).

Technical specifications.

General specifications:

Ambient temperature:	-10..+50 °C
Display:	4 digit red LED (+/-9999 counts)
Digit size:	13 mm
Calibration values:	better than +/- 0,1% FS
Reference temperature:	23 °C
Temperature coefficient:	< 0,01% FS / °C
Linearity:	< +/- 0,1% FS
EMC – immunity:	influence < 0,3% FS

Mechanical specifications:

Materiel (housing):	Noryl 2 SE1 GFN (UL94V-1)
Weight:	220 g
Protection (front):	IP65
Front panel cut out:	44,5 x 91,5 mm.
Terminals:	detachable / 2,5 mm ² wire.

CE-marking: EN50081-1, EN50082-2

Power supply:

Supply voltage:	24 VDC +/- 30%
	24 VAC +10% / -30%
Supply current @24VDC:	typ. 55 mA (relays activated)
	max: 100 mA (outputs loaded)

I/O specifications.

Measurement input:

DC current.	
Measuring range:	0..20mA / 4..20mA (max 25mA)
Input resistance:	50 Ohm (power supply connectet)

DC voltage.

1. Measuring range:	0..10V / 2..10V (max 12V)
Input resistance:	typ. 130 KOhm
2. Measuring range:	0..1V / 0,2..1V (max 1,2V)
Input resistance:	typ. 10 MOhm

Potentiometer (3-wire connection).

Resistance:	100 Ohm .. 10 Kohm
Reference voltage:	typ. 1,2 VDC

Linear resistance (3-wire connection).

Measuring range:	0..400 Ohm
Measuring current:	typ. 1 mA.
Cable resistance:	max. 10 Ohm / conductor.

Pt100 (3-wire wire compensation).

Measuring range:	-200..800 °C (FS)
Display resolution:	0,1 °C
Sensor current:	typ. 1 mA.
Cable resistance:	max. 10 Ohm / conductor.
Basic accuracy:	+/- 0,5 °C
Temperature coefficient:	< +/- 0,04 °C / °C amb. temp.

Thermocouple.

type E	measuring range:	-60..+ 780 °C (FS)
type J	measuring range:	-60..+1000 °C (FS)
type K	measuring range:	-100..+1300 °C (FS)
type R	measuring range:	-50..+ 980 °C (FS)
type S	measuring range:	-100..+1750 °C (FS)
type T	measuring range:	-100..+ 400 °C (FS)
Display resolution:	1 °C	
Basic accuracy:	+/- 2 °C	
CJC accuracy (internal):	+/- 2 °C	
Temperature coefficient:	< +/- 0,1°C / °C amb. temp. (E,J,K,T)	
	< +/- 0,3°C / °C amb. temp. (R,S)	

Digital input:

Activated input:	> 12 VDC
Deactivated input:	< 5 VDC
Input current:	10mA @ 24V input

Analog output:

1. Signal range:	0..20mA / 4..20mA (max. 22mA)
Load resistance:	max. 500 Ohm
2. Signal range:	0..10V / 2..10V (jumper) (max. 11V)
Output resistance:	typ. 500 Ohm

Relay outputs (change-over contacts):

Voltage:	max. 250 V AC RMS
Current:	max. 2 A AC
Power:	max. 500 VA

2-wire transmitter supply:

Output voltage:	typ. 15VDC @ 20mA
Current limit:	typ. 24mA

Potentiometer reference:

Output voltage:	typ. 1,2 VDC
Current limit:	typ. 24mA

Measuring current - resistance input:

Source current:	typ. 1mA
Load resistance:	max. 450 Ohm

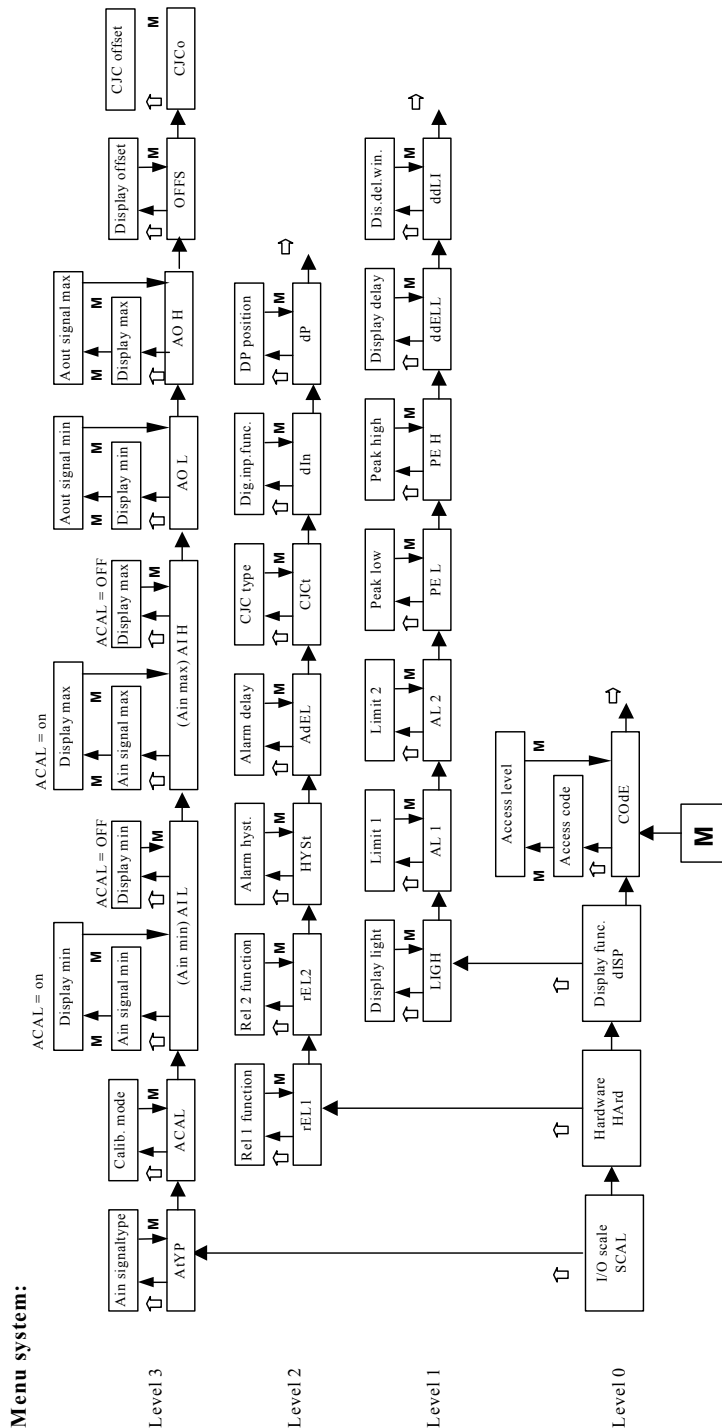
Type number: DP545 - A B C D [option]

A 1: 24V AC/DC supply

B 1: current output
+ relay outputs
+ digital input

C 1: LED display (red)

D 1: universal input
X: option (+ option type)



With power supply connected the DP545 is operating in one of two modes:

- Measuring mode:** Measurement value in display.
All I/O-functions are active.
- Setup mode:** Display / enter parameters via a menu system.
I/O-functions are not active.

Setup mode / menu function:

Entering setup mode.

The configuration menu system is activated by the key 'MENU' and the menu entrances is selected by use of the 'UP' and 'RIGHT' keys.

The parameter value, corresponding to each menu entrance, is activated by the key 'UP'.

The parameter value is accepted by the activating the key 'MENU' (the menu system remains active).

Terminating setup mode.

Setup mode (and the menu system) is terminated by activating the key 'MENU'.

If no parameter has changed, the DP545 immediately enters 'Measuring mode'.

If one or more parameters has changed, the operator has to decide if the new parameter should be used (and stored) when the DP545 enters 'Measuring mode'. There are two options:

- 'ESC': New data are **not** used (undo).
- 'SAUE': New data are used and stored in the internal EEPROM.

The keys 'UP' and 'RIGHT' are used to select the desired option.

When entering the key 'MENU', the selected option is accepted, and the DP545 enters 'Measuring mode'.

Buttons – function when activated:

- M** (MENU) The menu system is activated.
Data accepted - when entering parameters.
The menu system is terminated (if active).
- (UP) Changing parameter data – the selected (flashing) digit is incremented by 1.
Continuous activation (> 3 sek.) - data is incremented by 10.
Activation in 'Measuring mode' gives direct access to alarm limit 2.
- (RIGHT) Digit select when entering data – the selected digit flashes.
Continuous activation (> 3 sek.) - data sign changes.
Activation in 'Measuring mode' gives direct access to alarm limit 1.

Simultaneously activation of the keys 'UP' and 'RIGHT' - clear data.