Universal Digital Indicator DPM 4-digit

Application/specified usage

- Machine and switch cabinet construction
- Indicating and transforming of process values
- Available inputs: current/voltage, Pt100 or potentiometer signals

Application examples

- Realising a small process controlling
- In-situ indication of process parameters
- Pt100 temperature transmitter with integrated display

Features

- Protection class IP65 front side
- Completely programmable via key pad
- Integrated sensor supply
- Unit symbol changeable (illuminated)
- Housing also available as 96 mm x 96 mm

Options

- Alarm modul: 2 or 4 alarm relays available
- Analog output: (0/4...20 mA, 0...10 V DC)

Authorizations

CE

Digital indicator DPM-PT

Specification		
Housing	control board mounting	96 mm x 48 mm x 130 mm, 2 side mounting clips
Panel cut-out	(W x H)	92.5 mm x 45 mm, tolerance +0.5 mm
Protection class	front/rear	IP65/IP20
Ambient	operation temperature storage temperature humidity	0...+50 °C -20...+70 °C 0...95 % no condensation
Input	Pt100 current/voltage potentiometer	-100.0...+600.0 °C 0/4...20 mA (R_i = 50 Ω), 0...1 V, 0...10 V (R_i = 50 kΩ) min. 0...100 Ω | max. 0...10 kΩ
Accuracy		0.1 % ± 1 digit, 15 bit
Display	7-segment	-1999...+9999; height: 13 mm
Sensor supply	short-circuit proof	ca. 20 V DC, maximum 30 mA
Supply voltage	DPM/.../230 V AC DPM/.../115 V AC DPM/.../24 V DC Rated voltage Insulation voltage	50 Hz...60 Hz, max. 7 VA 50 Hz...60 Hz, max. 7 VA 20 V...30 V, max. 7 W 250 V AC 3000 V AC, CAT II
Alarm outputs	option -2GW or -4GW	250 V/3 A AC changeover contacts hysteresis and switching function adjustable
Analog output	option -SA option -SPA	current 0/4...20 mA, 12 bit resolution, maximum 500 Ω burden voltage 0...10 V
Weight		maximum 500 g

Warnings | Electrical connection

Details: Non observance of this warning notice may cause troubles.

Danger: Non observance of this warning notice may cause serious injury of persons and/or damages or destruct the unit.

Information/Tip: This symbol indicates useful additional informations.

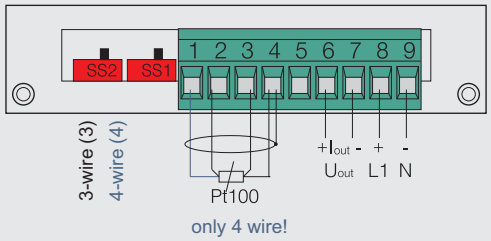
Global safety instructions

- Mounting, electrical connection, set up and maintenance of the unit must be done by trained and skilled personnel. They must have read and understood these installation and operating instructions. They must follow them carefully.
- Do not use the product where flammable or combustion gases are present.
- The product has been designed for industrial areas and must be used in an installed condition. (See assembly instructions)
- This product is not a safety device. Product failure may prevent operation of outputs. Take safety measures, such as installing a separate monitoring system, to ensure safety and to prevent serious accidents caused by such failure, thus ensuring safety.
- Do not open the housing, there are no serviceable parts inside. Inside are high voltage circuits.

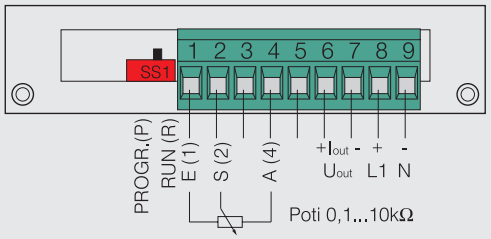
Note on CE

- Applicable guidelines:
  - Electromagnetic Compatibility Directive 2014/30/EU
  - Low Voltage Directive 2014/35/EU
- The accordance with applicable EU-guidelines is confirmed with CE-labeling of the device.
- You have to guarantee the compliance of all guidelines applicable for the entire equipement.

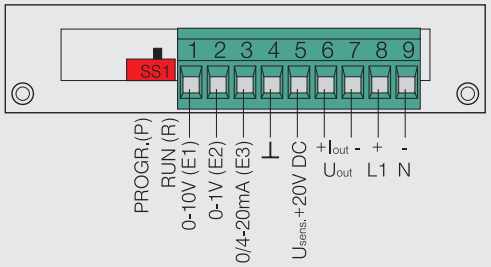
Electrical connection DPM-PT



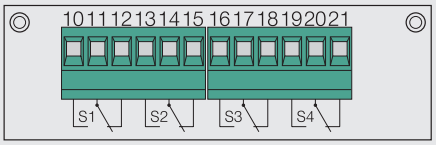
Electrical connection DPM-P



Electrical connection DPM-GS



Connection of the optional alarm outputs

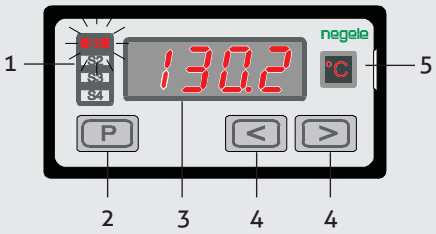


Assembly instructions

The DPM is designed for mounting into a front panel.

1. Introduce the necessary aperture (WxH: 92.5 mm x 45 mm, tol. +0.5 mm) in your front panel.
2. Insert the display into the prepared aperture from the front.
3. Attach the supplied retainer clips on both sides.
4. Secure the clips on the front panel and check that the display is firmly seated.
5. Supply: Rated voltage 250 V AC, insulation voltage 3000 V AC.
6. Switch outputs: Rated voltage 250 VAC, insulation voltage 3000 V AC.
7. The device is only suitable for installation in stationary and weather-protected switch cabinets and housings. Ensure that all lines and connectors are de-energized during installation.
8. The building equipment must feature an electrical disconnect device such as a switch or circuit breaker in an accessible location and labeled as a disconnect for this device. This disconnect device must be able to disconnect from the device all cables conducting line power.
9. The external fuse is specified at 1 A.

Control elements

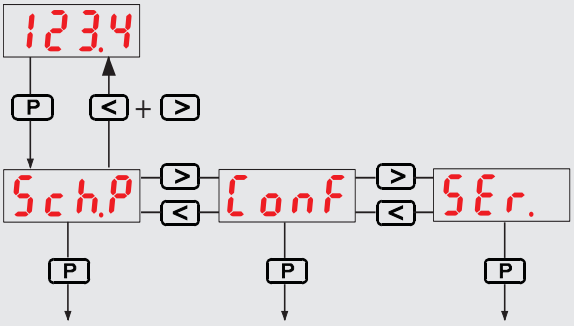


1: Status indicators for optional alarm relais
2: Program/enter button
3: Indicator
4: Increase/decrease buttons
5: Unit indicator
(sidewise insertable behind display frame)

Information

If "Loc" is displayed while pressing the P -button, set the sliding switch SS1 on the back to "Progr." to unlock the parameter setting.

PAGE-Selection

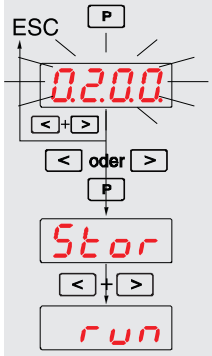


see parameters "Sch.P" on page 3

see parameters "ConF" on page 4

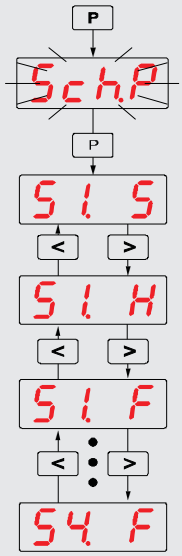
see parameters "SEr." on page 5

Change parameters



1. Select parameters (see above)
2. Press the P -button
3. Parameter value is flashing
4. Decrease value with the < -button or increase it with the > -button
5. Press the P -button to save settings
6. Press < and > at the same time to return into the display mode

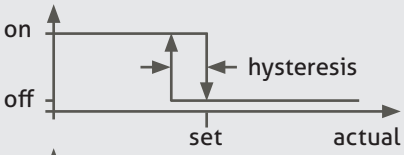
List of parameters on PAGE switching point (Sch.P)



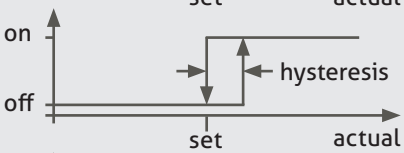
1. Press P -button
   you see the PAGE "Sch.P"
2. Press P -button
3. S1 switching point for alarm relay
4. S1 Hysteresis: Difference between relay ON and relay OFF
5. S1 switching function of the alarm relay S1
   0 = OFF if value **higher** (max. inv.)
   1 = OFF if value **lower** (min. inv.)
   2 = ON if value **higher** (max.)
   3 = ON if value **lower** (min.)
6. Referring to this the parameters of the alarm relais S2...S4 can be adjusted

Switching functions as diagram

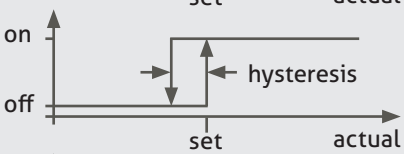
higher OFF
max. inverted
Sx.F = 0



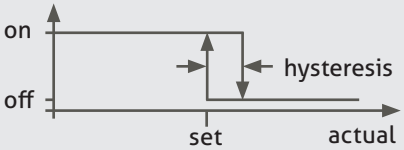
lower OFF
min. inverted
Sx.F = 1



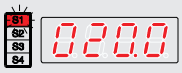
higher ON
max.
Sx.F = 2



lower ON
min.
Sx.F = 3

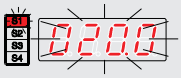


Displaying an alarm value (S1...S4)



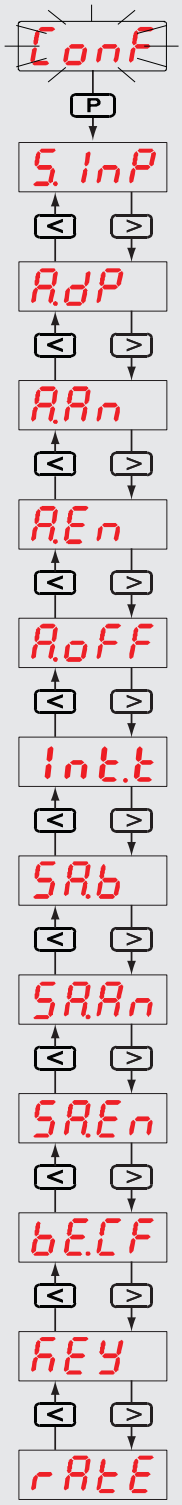
Press < or > to display values S1... S4. Device returns to the display mode after 5 seconds.

Fast Setting an alarm value (S1...S4)



1. Select an alarm value (see above)
2. Hold button P pressed and change the value with < or >

Parameter list on PAGE (ConF) for DPM-GS / -PT



press P with > change to page "ConF". (see PAGE-Selection)

press P -button

Signal input (*1)
0...20 mA/4...20 mA/0...1 V/0...10 V

Display decimal point (*1)
none (1111)/1. place (111.1)
2. place (11.11)/3. place (1.111)

Display LO (*1)
displayed value if input
0/4 mA respectively 0 V

Display HI (*1)
displayed value if input
20 mA respectively 1/10 V

Display Offset
zero offset e.g. for wire compensation of Pt100 with 2-wire-connection

Integration time (*2)
0...60 seconds (affects display, switching points and analog output)

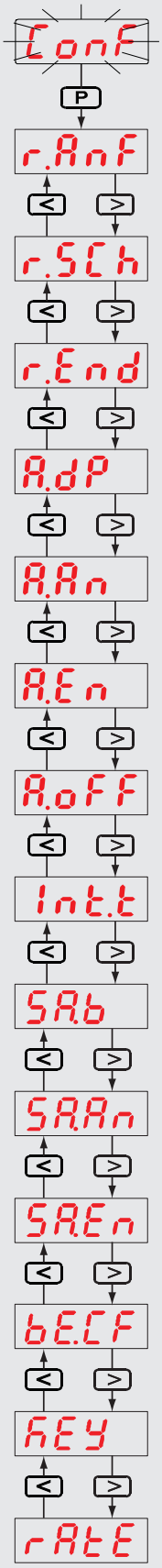
Signal output range
(only option -SA / -SPA)
0 = 0...20 mA/0...10 V
1 = 4...20 mA
Signal output LO
(only option -SA / -SPA)
display value to output
0/4 mA/0 V
Signal output HI
(only option -SA/-SPA)
display value to output
20 mA/10 V

Service configuration
fast changing of alarms
0 = protected, 1 = possible

Codeprotection
access to parameter values only by means of code "**6090**"
0 = access without code
1 = code protection
Updating of measurement value
0 = updating every 0.25 seconds
1 = updating every 0.08 seconds

*1 = Not with input Pt100 (DPM-PT...)
*2 = Parameter is only displayed if "rAtE" is "1"

Parameter list on PAGE (ConF) for DPM-P



press P with > change to page "ConF". (see PAGE-Selection)

press P -button

Poti initial value in Ohm
Resistance between initial- and slider value when slider in initial position

Poti slider value
Resistance which is used by the slider

Poti final value
Resistance between final- and slider value when slider in final position

Display decimal point (*1)
none (1111)/1. place (111.1)
2. place (11.11)/3. place (1.111)

Display LO
displayed value when slider in initial position

Display HI
displayed value when slider in final position

Display Offset
zero offset
(1999...+5000)

Integration time (*2)
0...60 seconds (affects display, switching points and analog output)

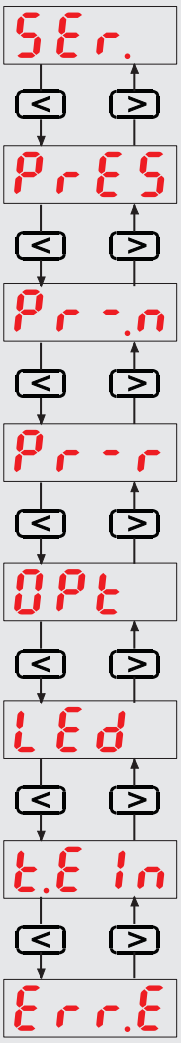
Signal output range
(only option -SA/-SPA)
0 = 0...20 mA/0...20 V
1 = 4...20 mA
Signal output LO
(only option -SA/-SPA)
display value to output
0/4 mA/0 V
Signal output HI
(only option -SA/-SPA)
display value to output
20 mA/10 V
Service configuration
fast changing of alarms
0 = protected, 1 = possible

Codeprotection
access to parameter values only by means of code "**6090**"
0 = access without code
1 = code protection
Updating of measurement value
0 = updating every 0.25 seconds
1 = updating every 0.08 seconds

Information

All parameters on PAGE Service "SEr." are protected through the code "4095" against changing by mistake. Enter code "**4095**" to overwrite password protection.

Parameter list on PAGE (SEr.)



Select PAGE "SEr."
(see PAGE-Selection)

Device preset
0 = no function
1 = set device to factory setting
(Error message E.80 will be cleared)

Program name
Indicating the program name
No settings available

Program release
Display the version number
No settings available

Options
Display the option code
00...FF (hex)
No settings available

LED Unit array
0 = Unit array illuminating off
1 = Unit array illuminating on

Temperature unit (only DPM-PT)
0 = Deg. Celsius (-200.0...+600.0 °C)
1 = Deg. Fahrenheit (-328.0...+999.9 °F)
Attention!
Fahrenheit equals -200...+537.7 °C

Monitoring input (only DPM-GS)
0 = Monitoring deactivated
1 = 3,5 mA monitoring active
2 = 22 mA monitoring active
3 = 3.5 and 22 mA monitoring active

If value is outside the monitoring area, error "F.EIn" will be displayed (see troubleshooting).

Troubleshooting

F.nEt

Supply voltage
Supply voltage was at least 20 % below.
Reaction: Relais off/analog output: 0 V/0 mA
Correction: Check supply voltage.

F.uEb

Error overflow display > 9999
Wrong scaling/input too high or reverse poled.
Correction: Correct scaling, check input signal.

F.unt

Error underflow display < 9999
Wrong scaling/input too low or reverse poled.
Correction: Correct scaling, check input signal.

F.SEn

Error sensor (only DPM-PT)
Sensor broken, short circuit
Reaction: Relais off/ analog output: 0 V/0 mA
Correction: Check sensor and wiring.

F. InP

Error input
Measurement range min. 100 % overloaded
Reaction: Relais off/ analog output: 0 V/0 mA
Correction: Check measurement range.

F.E In

Error input
Error monitoring input active (as in parameter "Err.E" in Page "SEr." activated)
Reaction: Relais off/ analog output: 0 V/0 mA
Correction: Check sensor and wiring.

E.

Error
An internal error occurred.
Error number will be displayed.
Correction: See error code list below.

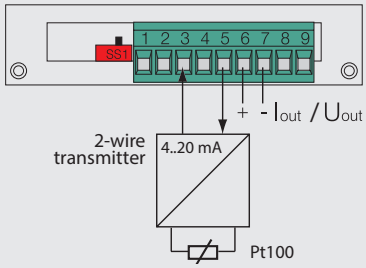
Error codes

If more than one error occurs at the same time, they will be added.
Example:
E A1 means Error 80/20/01 occurs at the same time.

Error code list

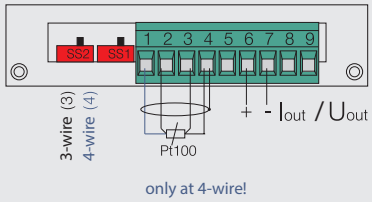
- **01 Device identification has changed**
  Correction: Device defect -> send back
- **02 Error during reading the EEPROM**
  Correction: Device defect -> send back
- **20 Error at calibration data**
  Correction: Device must be calibrated -> send back
- **80 Error at parameter list**
  Correction: Enter parameter new

Temperature measurement with two wire transformer e.g. TFP with integrated transmitter



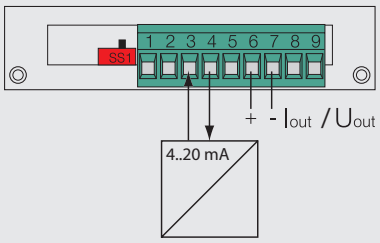
Connection:	see page 2	
Adjustment:	4...20 mA = -10...140 °C	
Analog output:	0...20 mA = 0...100 °C	
Relais:	10 °C, 90 °C, hysteresis 5 °C	
The transmitter will be supplied through the sensor supply terminal 5 on the DPM.		
Page: ConF		
S.InP	4-20	Signal input 4...20 mA
A.dP	111.1	Decimal point on digit
A.An	-10	Displayed value by 4 mA
A.En	140	Displayed value by 20 mA
A.oFF	0	Display offset
End, if no output is needed.		
SA.b	0	Output 0...20 mA
SA.An	0	Displayed value by 0 mA
SA.En	100	Displayed value by 20 mA
End, if no relais are needed.		
Page: Sch.P		
SI.S	10	Switching point 10 °C
SI.H	5	Hysteresis 5 °C
SI.F	0	Relay off if value is higher
Repeat the steps at Page Sch.P for each switching point.		

Temperature measurement with Pt100 e. g. with TFP-...



Connection:	see page 2	
Adjustment:	Pt100 temperature measurement	
Analog output	4...20 mA = 0...150 °C	
Switch 3L/4L (SS2) according to used sensor (3-wire or 4-wire).		
Page: ConF		
A.oFF	0	0 Display offset e.g. for wire compensating
End, if no output is needed.		
SA.b	1	Output 4...20 mA
SA.An	0	Displayed value by 4 mA
SA.En	150	Displayed value by 20 mA

Level detection in linear tanks e. g. with NSK-...



Connection:	see page 2	
Adjustment:	4...20 mA = 0...180 m³	
Analog output:	4...20 mA = 10...170 m³	
Page: ConF		
S.InP	4-20	Signal Input 4...20 mA
A.dP	111.1	Decimal point on digit
A.An	0	Displayed value 4 mA
A.En	180	Displayed value 20 mA
A.oFF	0	Display offset
End, if no output is needed.		
SA.b	1	Output 4...20 mA
SA.An	10	Displayed value 4 mA
SA.En	170	Displayed value 20 mA

DPM | Universal indicator 4-digit

Specified usage

- Indicating and transforming of process values like: current, voltage, temperature- or potentiometer signals

Features

- Completely programmable via key pad
- Free scalable display range
- Integrated sensor supply (GS version)
- Unit symbol changeable (illuminated)
- Housing also available as 96 mm x 96 mm
- Alarm modul: 2 or 4 alarm relays available (option)
- Analog output: (0/4...20 mA, 0...10 V DC) (option)

PEZ | Universal counter

Specified usage

- Selectable input types: pulse counter, frequency counter, revolution counter, timer or distance meter with rotation encoder

Features

- Completely programmable via key pad
- Display range and counter settings free programmable
- Sum or difference counting by means of two inputs
- Hold and reset function, min and max drag indicator
- Two alarm relays
- Unit symbol changeable
- Analog output 0/4...20 mA (option)

PEM-DD | Vessel level indicator

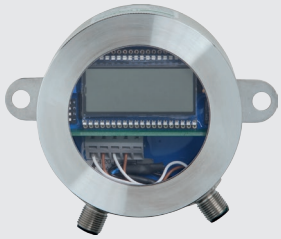
Specified usage

- Accurate vessel content measurement, also for pressurized vessels by means of difference pressure measurement.

Features

- Completely programmable via key pad
- 2 inputs 0/4...20 mA e.g.. for pressure transmitter
- Linearization for 6 standard vessels preprogrammed
- Linearization of special vessel dimensions by means of up to 25
- Basic values (volume or high percent)
- Input for additional level sensor for zero correction
- Unit symbol changeable
- Analog output 0/4...20 mA (option)

DOH-VA | Indicator without supply



Specified usage

- On-site indicating of process value

Features

- No power supply needed, operating in 4...20 mA current loop
- Less wiring
- Sturdy and industrial proofed stainless steel housing, IP 69 K
- Display range and decimal point free programmable
- Ambient temperature up to 70 °C
- Version with 2-wire transducer for Pt100 available

Order code

DPM (W x H: 96 x 48 mm)
DPM-96 (W x H: 96 x 96 mm)

Input
- **GS** (0/4...20 mA, 0...1/10 V)
- **special** (special input for GS)
- **PT** (Pt100 3/4-wire)
- **P05** (potentiometer 3-wire, 0.1...0.5 kΩ)
- **P10** (potentiometer 3-wire, 0.5...10 kΩ)

Alarm output
- **0GW** (no alarm output relay)
- **2GW** (2 alarm output relays)
- **4GW** (4 alarm output relays)

Analog output
- **X** (without analog output)
- **SPA** (with analog output 0...10 V)
- **SA** (with analog output 0/4...20 mA)

Display range
- **X** (input GS, P05/P10: free adjustable between -1999...9999, input PT: -100.0...600.0 °C)
- **xxx...yyy** (factory-made adjustment according to specification)

Units
°C, °F, %, m³, l/min, mA, bar, others on request

Supply
- **230VAC** (supply 230 V AC)
- **115VAC** (supply 115 V AC)
- **24VAC** (supply 24 V AC)
- **24VDC** (supply 24 V DC)

DPM / GS / 4GW / SA / 10...30 / bar / 115VAC

Transport/storage

- Use suitable transport packaging only to avoid damage of the equipment!
- No outdoor storage
- Store dry and dust free
- Not exposed to corrosive media
- Protect against solar radiation
- Avoiding mechanical shock and vibration
- Storage temperature -20...70 °C
- Relative humidity maximum 95 %

Disposal

- This instrument is not subject to the WEEE directive 2002/96/EG and the respective national laws.
- Pass the device directly on to a specialised recycling company and do not use the municipal collecting points.

Cleaning

The device may only be wiped down with a dry cloth.

NEGELE MESSTECHNIK GMBH
Raiffeisenweg 7
87743 Egg an der Guenz

Phone +49 (0) 83 33 . 92 04 - 0
Fax +49 (0) 83 33 . 92 04 - 49
sales@anderson-negele.com

Tech. Support:
support@anderson-negele.com
Phone +49 (0) 83 33 . 92 04 - 720