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DIGITAL PROCESS MONITOR WITH ACCESSORIES

DMP 01

2 LIMITS

4 LIMITS

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A. BASIC PREVIEW OF MENU ADDRESSES AND SUB-ADDRESSES

Address ****)	Description	Sub-addresses
A_00	Analogue output and display filter SELECTION The filtration level is configured on address A_30!!	0 : w/out filter (basic x > 50Hz filtration) 1 : moving average 2 : trend filter
A_01	INPUT SIGNAL type selection **)	0 : 0 – 20 mA DC 1 : 4 – 20 mA DC 2 : 0 – 10 V DC 3 : user defined
A_02	Scale beginning adjust	valid only if 0, 1, 2 selected on address A_01 max scale range +/- 29 999dig.
A_03	Scale end adjust	
A_05	DECIMAL POINT	-
A_06	LED display BRIGHTNESS	0 : 100% 1 : 50%
A_07	OFFSET value for measured value	+/- 29999 dig.
A_08	ANALOGUE INPUT - begin of user defined input	valid only if 3 selected on address A_01 (usr. def. input)
A_09	ANALOGUE INPUT – end of user defined input	valid only if 3 selected on address A_01 (usr. def. input)
A_10	ANALOGUE OUTPUT - begin of usr.defined output	valid only if 3 selected on address A_24 (usr. def. output)
A_11	ANALOGUE OUTPUT – end of user defined output	valid only if 3 selected on address A_24 (usr. def. output)
A_14	Set limit L1 in main display ***)	0 : disabled 1 : enabled 2 : enabled with limit. (A_70,71)
A_15	Limit L1 numeral setting	in full range of scale
A_16	Limit L1 HYSTERESIS numeral setting	positive range of scale
A_17	Limit L1 HYSTERESIS timing	from 0 to 299.9 s, step: 0.1 s
A_18	L1 relay output function: direct: relay closes, inverted: relay opens	0 : inverted 1 : direct
A_19	Set limit L2 in main display ***)	0 : disabled 1 : enabled
A_20	Limit L2 numeral setting	in full range of scale
A_21	Limit L2 HYSTERESIS numeral setting	positive range of scale
A_22	Limit L2 HYSTERESIS timing	from 0 to 299.9 s, step: 0.1 s
A_23	L2 relay output function: direct: relay closes, inverted: relay opens	0 : inverted 1 : direct
A_24	Output signal TYPE selection - PRESET <i>Output signal is assigned to input signal in full range</i>	0 : 0 – 20 mA DC 1 : 4 – 20 mA DC 2 : 0 – 10 V DC
	Output signal TYPE selection – USER DEFINED <i>Output signal is defined by values on addresses A_25, A_26</i>	3 : user def. output 0 – 20 mA 4 : user def. output 4 – 20 mA 5 : user def. output 0 – 10 V
A_25	SCALE range for analogue output – beginning <i>Valid only if selection 3,4 or 5 is set on A_24</i>	in full range of scale
A_26	SCALE range for analogue output – end <i>Valid only if selection 3,4 or 5 is set on A_24</i>	in full range of scale
A_30	Analogue output and display filter LEVEL SELECTION	1 – 9 filtration stage is set from lowest (1) to highest (9) *)
A_44	Set limit L3 in main display ***)	0 : disabled 1 : enabled
A_45	Limit L3 numeral setting	in full range of scale

A_46	Limit L3 HYSTERESIS numeral setting	positive range of scale
A_47	Limit L3 HYSTERESIS timing	from 0 to 299.9 s, step: 0.1 s
A_48	L3 relay output function: direct: relay closes, inverted: relay opens	0 : inverted
		1 : direct
A_49	Set limit L4 in main display ***)	0 : disabled
		1 : enabled
A_50	Limit L4 numeral setting	in full range of scale
A_51	Limit L4 HYSTERESIS numeral setting	positive range of scale
A_52	Limit L4 HYSTERESIS timing	from 0 to 299.9 s, step: 0.1 s
A_53	L4 relay output function: direct: relay closes, inverted: relay opens	0 : inverted
		1 : direct
A_70 NEW	RESTRICTION of L1 settings in main display – lower limit	in full range of scale
A_71 NEW	RESTRICTION of L1 settings in main display – upper limit	in full range of scale
NOTICE:		
*) more samples slows the display refresh rate		
**) if you choose USER DEFINED input (A_01 -> 3) only USER DEFINED output could be selected! combination of STANDART INPUT and USER DEFINED OUTPUT is possible.		
***) enabling this feature provides full access to the value of limits without password protection !		
****) the number of displayed addresses depends on instrument configuration		

B. DETAIL DESCRIPTION OF EACH ADDRESS FUNCTION

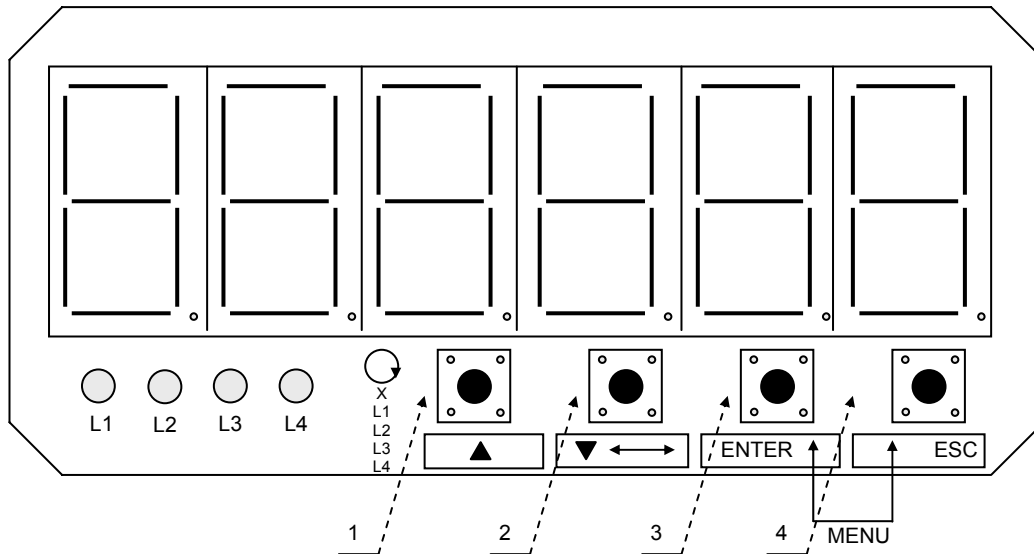
Address	Description
A_00	For selection 1 or 2 the address A_30 sets the filtration level ! NOTICE: FILTER IS ALWAYS ACTIVE BOTH FOR DISPLAY AND ANALOGUE OUTPUT.
A_01	type of input signal - user can choose from typical type inputs : 0-20 mA , 4-20 mA , 0-10 VDC
	In case of non-typical input , user can choose user defined input. Device let user to choose from these ranges of input signal: - current input: 0 - 22 mA (for ex. 2 - 12 mA DC) - voltage input: 0 - 11 VDC (for ex. 0,5 - 4,9 V DC)
A_02	Scale beginning adjust - the value of scale beginning , that is equal to zero value of analogue input - for ex.: input signal is represented by height 0 - 4,000 m. We setup the value of scale beginning to 0,000
A_03	Scale end adjust - the value of scale end , that is equal to max. value of analogue input - for ex.: input signal is represented by height 0 - 4,000 m. We setup the value of scale end to 4,000
A_05	position of Decimal Point - DP (changing by button no.2) - DP position is used for limits too - for ex.: input signal has a scale 0 - 4.000 m -> DP is set to x x . x x x
A_06	level of LED display BRIGHTNESS - 0 means 100% BRIGHTNESS and 1 means 50% BRIGHTNESS
A_07	OFFSET SETTINGS - value set on this address will be added to measured value (minus sign is respected). Displayed value is now adjusted by the value of the OFFSET - by setting zero value we will turn of the OFFSET function.
A_08	ANALOGUE INPUT - begin of user defined input - we convey input signal to the input terms and set the value shown on the display which is equal to this input signal - for ex.: input signal 12 mA is equal to 2,000 m - if the input signal falls under 12 mA, device automatically calculate (linear) the value on display





A_09	<p>ANALOGUE INPUT - end of user defined input</p> <ul style="list-style-type: none"> - we convey input signal to the input terms and set the value shown on the display which is equal to this input signal - for ex.: input signal 18 mA is equal to 3,500 m - if the input signal rises over 18 mA, device automatically calculate (linear) the value on display
A_10	<p>beginning of user defined analogue output</p> <ul style="list-style-type: none"> - it is necessary to set the value 3 on adress A_24 (switch to the user defined output) - we convey signal to the input terms which is equal to the beginning of analog. output - we connect multimeter to the output terms (AO) and on address A_10 we setup the value of AO (by chng. value on A_10) - for ex.: input signal will be 6mA and the output signal will be 2mA
A_11	<p>end of user defined analogue output</p> <ul style="list-style-type: none"> - it is necessary to set the value 3 on adress A_24 (switch to the user defined output) - we convey signal to the input terms which is equal to the end of analog. output - we connect multimeter to the output terms (AO) and on address A_11 we setup the value of AO (by chng. value on A_11) - eg. input signal will be 12mA and the output signal will be 20mA
A_14	<p>Set limit L1 in main display</p> <p>option 0 - no direct access of L1 in main display option 1 - direct access L1 in main display option 2 – direct access L1 in main display with restriction (A70, A_71)</p> <p><i>If option 2 is selected, the restriction for L1 settings from main display is activated. If the user sets value out of the restricted area (defined by A_70 and A_71), error message EE L1n is displayed and the value is set : if higher to value A_71 or lower to A_70 and not saved int EEPROM. The value is saved into EEPROM only if user sets value within restricted area (A_70 and A_71).</i></p>
A_15	<p>Limit L1 numeral setting</p> <ul style="list-style-type: none"> - when the measured value reach the L1, relay RE1 will open/close(depends on value on A_18) - the value of L1 could be set in full range of scale (max. +/- 29 999) - the limit must be setuped according to the decimal point - for ex.: the scale is 0,000 - 4,000 m: so the limit L1 must be 0,500 m (xxx , xxx) not 50,000 or 5,000 (of course if you want to setup the value of L1 as is written , you can)
A_16	<p>limit L1 HYSTERESIS (dL1) numeral setting:</p> <ul style="list-style-type: none"> - this address provides limit L1 HYSTERESIS numeral setting - the value of dL1 could be set in positive range of scale (max. 0 - 29 999) - the limit must be setuped according to the decimal point (see in address 5) - the value of dL1 is symetric in both direction (for ex.: L1=100 ; dL1=10 ; first point of L1 will be 90 and second point will be 110)
A_17	<p>Limit L1 HYSTERESIS timing: dtL1</p> <ul style="list-style-type: none"> - this address provides limit L1 HYSTERESIS timing - the value od dtL1 could be set from 0 to 299.9 s (step: 0.1 s) - description: if the input signal reach the value of L1, relay closes/opens (see address 18) after the time of dtL1 countdown. (from 0s to 299,9s) - if the input signal overloads the value of L1, dtL1 count down is activated. If the input signal falls under the value of L1 during the dtL1 count down is timing, the relay RE1 will not be activated and the dtL1 count down timing is reseted.
A_18	<p>Selection of function RE1 when the measured value reach limit L1 :</p> <ul style="list-style-type: none"> - direct function: when relay RE1 reach L1 opens /the hook contact of RE1 is activated/ - indirect function : when relay RE1 reach L1 closes /the unhook contact of RE1 is activated/
A_19	<p>Set limit L2 in main display</p> <p>0 - no direct access of L2 in main display , 1 - direct access L2 in main display this selection enables setting of limit L2 in main display, instead of entering menu (by typeing password) and accessing the address 20. You can simply list L2 in main display (by button no. 1) and by pressing enter button you can setup the value of limit L2.</p>
A_20	<p>Limit L2 numeral setting</p> <ul style="list-style-type: none"> - when the measured value reach the L2, relay RE2 will open/close(see address 22) - the value of L2 could be set in full range of scale (max. +/- 29 999) - the limit must be setuped according to the decimal point - for ex.: the scale is 0,000 - 4,000 m: so the limit L2 must be 0,500 m (xxx , xxx) not 50,000 or 5,000 (of course if you want to setup the value of L2 as is written , you can)
A_21	<p>limit L2 HYSTERESIS (dL2) numeral setting:</p> <ul style="list-style-type: none"> - this address provides limit L2 HYSTERESIS numeral setting - the value of dL2 could be set in positive range of scale (max. 0 - 29 999) - the limit must be setuped according to the decimal point (see in address 5) - the value of dL2 is symetric in both direction (for ex.: L2=100 ; dL2=10 ; first point of L2 will be

	90 and second point will be 110)												
A_22	<p>Limit L2 HYSTERESIS timing: dtL2</p> <ul style="list-style-type: none"> - this address provides limit L2 HYSTERESIS timing - the value of dtL2 could be set from 0 to 299.9 s (step: 0.1 s) - description: if the input signal reach the value of L2, relay closes/opens (see address 23) after the time of dtL2 countdown. (from 0s to 299,9s) - if the input signal overloads the value of L2, dtL2 count down is activated. If the input signal falls under the value of L2 during the dtL2 count down is timing, the relay RE2 will not be activated and the dtL2 count down timing is reseted. 												
A_23	<p>Selection of function RE2 when the measured value reach limit L2 :</p> <ul style="list-style-type: none"> - direct function: when relay RE2 reach L2 opens /the hook contact of RE2 is activated/ - indirect function : when relay RE2 reach L2 closes /the unhook contact of RE2 is activated/ 												
A_24	<p>Output signal type selection</p> <ul style="list-style-type: none"> - PRESETED output signals <ul style="list-style-type: none"> 0-20 mA (option 0) 4-20 mA (option 1) 0-10 VDC (option 2) These options cannot be combined with user defined input - USER DEFINED output signals: <ul style="list-style-type: none"> In range of 0-20 mA (option 3) In range of 4-20 mA (option 4) In range of 0-10 V (option 5) These options can be combined with all input types 												
A_25	<p>SCALE range for analogue output – beginning</p> <p>User sets the numeral value which is assigned to beginning of analogue output.</p> <ul style="list-style-type: none"> - eg.: output signal 0-20 mA (option 3 on address A_24): we set 100.00, and the device will assign 0mA to 100.00 on display (scale) <p>Valid only if options 3,4 or 5 is selected on address A_24</p>												
A_26	<p>SCALE range for analogue output – end</p> <p>User sets the numeral value which is assigned to end of analogue output.</p> <ul style="list-style-type: none"> - eg.: output signal 0-20 mA (option 3 on address A_24): we set 200.00, and the device will assign 20mA to 200.00 on display (scale) <p>Valid only if options 3,4 or 5 is selected on address A_24</p>												
A_30	<p>Filtration level selection for both display and analogue output.</p> <p>NOTICE: Do not forget to set filter type on address A_00. If A_00 is set to 0, only basic 50Hz filter is active.</p> <p>Unit step response (0% na 100%)</p> <table border="1"> <thead> <tr> <th>Sample count</th> <th>1</th> <th>5</th> <th>9</th> </tr> </thead> <tbody> <tr> <td>moving average</td> <td>0,25 s</td> <td>0,74 s</td> <td>1,16 s</td> </tr> <tr> <td>trend filter</td> <td>0,2 s</td> <td>0,64 s</td> <td>1,08 s</td> </tr> </tbody> </table>	Sample count	1	5	9	moving average	0,25 s	0,74 s	1,16 s	trend filter	0,2 s	0,64 s	1,08 s
Sample count	1	5	9										
moving average	0,25 s	0,74 s	1,16 s										
trend filter	0,2 s	0,64 s	1,08 s										
A_44	<p>Set limit L3 in main display</p> <p>0 - no direct access of L3 in main display , 1 - direct access L3 in main display</p> <p>this selection enables setting of limit L3 in main display, instead of entering menu (by typing password) and accessing the address 45. You can simply list L3 in main display (by button no. 1) and by pressing enter button you can setup the value of limit L3.</p>												
A_45	<p>Limit L3 numeral setting</p> <ul style="list-style-type: none"> - when the measured value reach the L3,relay RE3 will open/close(see address 48) - the value of L3 could be set in full range of scale (max. +/- 29 999) - the limit must be setuped according to the decimal point - for ex.: the scale is 0,000 - 4,000 m: so the limit L3 must be 0,500 m (xxx , xxx) not 50,000 or 5,000 (of course if you want to setup the value of L3 as is written , you can) 												
A_46	<p>limit L3 HYSTERESIS (dL3) numeral setting:</p> <ul style="list-style-type: none"> - this address provides limit L3 HYSTERESIS numeral setting - the value of dL3 could be set in positive range of scale (max. 0 - 29 999) - the limit must be setuped according to the decimal point (see in address 5) - the value of dL3 is symetric in both direction (for ex.: L3=100 ; dL3=10 ; first point of L3 will be 90 and second point will be 110) 												
A_47	<p>Limit L3 HYSTERESIS timing: dtL3</p> <ul style="list-style-type: none"> - this address provides limit L3 HYSTERESIS timing - the value of dtL3 could be set from 0 to 299.9 s (step: 0.1 s) - description: if the input signal reach the value of L3, relay closes/opens (see address 48) after the time of dtL3 countdown. (from 0s to 299,9s) - if the input signal overloads the value of L3, dtL3 count down is activated. If the input signal falls under the value of L3 during the dtL3 count down is timing, the relay RE3 will not be 												

	activated and the dtL3 count down timing is reseted.
A_48	Selection of function RE3 when the measured value reach limit L3 : - direct function: when relay RE3 reach L3 opens /the hook contact of RE3 is activated/ - indirect function : when relay RE3 reach L3 closes /the unhook contact of RE3 is activated/
A_49	Set limit L4 in main display 0 - no direct access of L4 in main display , 1 - direct access L4 in main display this selection enables setting of limit L4 in main display, instead of entering menu (by typeing password) and accessing the address 50. You can simply list L4 in main display (by button no. 1) and by pressing enter button you can setup the value of limit L4.
A_50	Limit L4 numeral setting - when the measured value reach the L4, relay RE4 will open/close (see address 53) - the value of L4 could be set in full range of scale (max. +/- 29 999) - the limit must be setuped according to the decimal point - for ex.: the scale is 0,000 - 4,000 m: so the limit L4 must be 0,500 m (xxx , xxx) not 50,000 or 5,000 (of course if you want to setup the value of L4 as is written , you can)
A_51	limit L4 HYSTERESIS (dL4) numeral setting: - this address provides limit L4 HYSTERESIS numeral setting - the value of dL4 could be set in positive range of scale (max. 0 - 29 999) - the limit must be setuped according to the decimal point (see in address 5) - the value of dL4 is symetric in both direction (for ex.: L4=100 ; dL4=10 ; first point of L4 will be 90 and second point will be 110)
A_52	Limit L4 HYSTERESIS timing: dtL4 - this address provides limit L4 HYSTERESIS timing - the value od dtL4 could be set from 0 to 299.9 s (step: 0.1 s) - description: if the input signal reach the value of L4, relay closes/opens (see address 53) after the time of dtL4 countdown. (from 0s to 299,9s) - if the input signal overloads the value of L4, dtL4 count down is activated. If the input signal falls under the value of L4 during the dtL4 count down is timing, the relay RE4 will not be activated and the dtL4 count down timing is reseted.
A_53	Selection of function RE4 when the measured value reach limit L4 : - direct function: when relay RE4 reach L4 opens /the hook contact of RE4 is activated/ - indirect function : when relay RE4 reach L4 closes /the unhook contact of RE4 is activated/
A_70	RESTRICTION of L1 settings in main display – lower limit <i>For more info please see address A_14, option 2</i>
A_71	RESTRICTION of L1 settings in main display – upper limit <i>For more info please see address A_14, option 2</i>
NOTICE: *) Addresses shown in main menu may vary due to device optional accessories Error message list: 01__A – please contact manufacturer for more information EE Lin – value sets is out of restricted area (A_70 and A_71)	

C. DETAIL DESCRIPTION OF BUTTONS USAGE



1	 X L1* L2* L3* L4*	<p>1. function: in measuring state this button provides cycle showing of L1,L2, L3 and L4 when is button pressed the value on display is shown in this direction:</p> <ul style="list-style-type: none"> - measured value : the device automatically shows measured value on each turn on and automatically returns in less than 10 s from L1, L2, L3 or L4 (if no button is pressed) - limit L1: symbol ' L1 ' is shown for less than 10 s and then if no button pressed returns to the measured value, if enter button is pressed the value of limit will be shown. By pressing enter button again, you will access setting value of limit L1. - limit L2, L3 and L4: same as limit L1 <p>Then the set of L1, L2, L3 or L4 is standart as a normal access to the L1, L2 from the menu. Anytime you can exit by pressing ESC button without changes.</p> <p>* displayed symbols L1, L2, L3 and L4 depends on actual configuration of process meter and on settings on address A_14, A19, A_44 or A49</p>
		<p>2. function: in programming state this button provides increasing the value on the selected digit of display.(xxx(x)xx highlited 'x' is blinking and button ^ increase value):</p> <ul style="list-style-type: none"> - to setup numeral data in basic addresses : A_00 - A_71 (see notice bellow) - to setup the selection in SUB-ADRESSES - to setup all numeral values (eg. L1, L2 etc...)
2		<p>1. function: in programming state this button provides switching the highlighted (blinking) digit on display (eg. xxx(x)xx, <-> , xxx(x)x , <-> , xxx(x) , <-> (x)xxxx)</p> <ul style="list-style-type: none"> - valid only for setup in addresses where is the numeral value setuped. - not valid for setting SUB-ADRESSES switches / "program switches" / (for ex.: A_00, A_71)
		<p>2. function: in menu this button provides decreasing numeral value of address A_00 - A_71 . (for ex. A_15 button pressed A_14 , Butt Pressed , A_13)</p> <p>notice: if you press the button and the numeral value of adress is 1 (A_00) the next value will be 71 (A_53) -> cycle</p>
3+4	ENTER + ESC	<p>pressing together button "ENTER" and "ESC" provides entering to the password protected menu.</p> <ul style="list-style-type: none"> - by pressing ENTER+ESC together, on display appears " 0 0 0 0 " and device is waiting for the password. (if no button pressed in 5 second the device returns back) - user password : provides access to the address A_00 - A_70 ('user setup area') - with buttons n.1 and n.2 write the password and then confirm by pressing ENTER button. <p>notice: the password cannot be change so be careful and hide the password from any unauthorized person</p>
3	ENTER	<p>ENTER provides confirm and saving values</p> <ul style="list-style-type: none"> - by confirm (pressing ENTER butt) address (eg. A_10) you enter the programming state - now you can set the value or exit by pressing ESC button. - by next pressing ENTER the setuped value is saved into EEPROM memory and on display appears message 'hotouo' - Confirm this message by pressing ESC button
4	ESC	ESC provides escaping the programing state , menu , etc...

D. SAFETY OPERATIONS

1. SETTING IN OPERATION

Device doesn't require any before running procedures and is ready to use after unpacking. Make sure that proper supply voltage is set and all input and outputs are connected correctly before connection to supply system.

Device is factory pre-seted, if no other specifications were received: *)

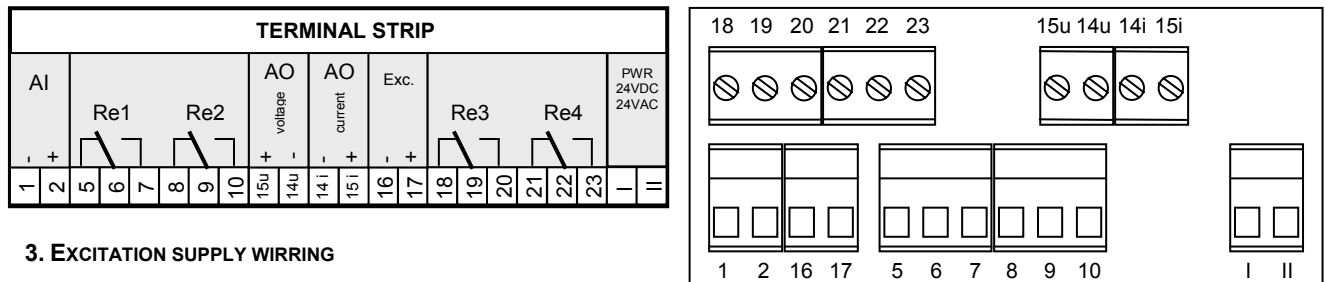
Input: 4-20mA DC range: 0.00-200.00 limits: L1 = 20.00, L2 = 40.00, L3 = 60.00, L4 = 80.00

Output: 4-20mA DC excitation supply: 24V DC, max. 30mA

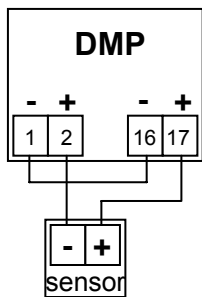
*) available functions may vary due to device configuration

Electrical wiring has to be done by skilled person, device setup can be done by instructed person.

2. TERMINAL STRIP



3. EXCITATION SUPPLY WIRING



4. INSTALLATION AND MAINTAINANCE INSTRUCTIONS

Instrument is continuous run device and doesn't have own power-off switch. Installation must contain some power-off switch or building distribution circuit-breaker (e.g. power-off switch in switchboard or main distribution circuit-breaker). It has to be easily accessible by operating staff and has to be marked as cutting-off element.

DMP01 is constructed to require minimal maintenance. Front panel with foil keypad isn't resistant to organic solvents (e.g. toluene, acetone etc...)

Use only suitable non-aggressive cleaners for cleaning front panel (e.g. industrial alcohol).

To prevent long-term failure-free operation, it is recommended to use the device in the specified temperature range, not expose to extreme climatic conditions, which have an effect on the long-time lifecycle of electronic components.

5. REPAIR INSTRUCTIONS

Each device was subjected to components quality check control, pre-setting circuits and 24 hours burn-in on power supply. After 24 hours burn-in, a pre-set parameters check was made. If device failure occurs (e.g. by overvoltage, mechanical damage, device malfunction ...), that impacts its own functionality, it is necessary to contact the manufacturer, which will provide appropriate repair.

6. WARRANTY

Manufacturer guarantees in accordance with §429 Commercial code (Czech Republic) for technical and operating characteristics, specified in accompanying technical documentation. Device has 36 months warranty and after warranty service is provided. This warranty does not apply: (a) to damage caused by accident, abuse, misuse, misapplication; (b) to unauthorized repair or modification or (c) if serial number has been removed or defaced.