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MANUAL FOR CPU CONTROLLED PROCESS METER WITH SUMARIZATION

D M P 04

Basic preview of menu addresses and SUB-addresses DMP04

ADDRESS	DESCRIPTION	SUB-ADDRESSES
00	The point when the integration starts	0 .... from zero
		1 .... from the limit with signal below
		2 .... from the limit w/out signal below
01	Selection of input signal	0 ..... 0 - 20 mA DC
		1 .... 4 - 20 mA DC
		2 .... 0 - 10 V DC
		3 ..... user defined
02	SCALE: pre-set the beginning of scale on display	applies for 0,1,2 selections on A_01 max scale range: -/+ 29 999 digits
03	SCALE: pre-set the end of scale on display	
05	DECIMAL POINT	
04	SUMARIZATION CONSTANT assignment of constant - how many units of flow rate (∅) equal to 1 DIGIT of SUM (∑) on the display	0 .... SK = 1 : 1 digit ∑= 1 unit. ∅
		1 ... SK = 10 : 1 digit ∑= 10 unit.∅
		2 ... SK = 100 : 1 digit ∑= 100 unit.∅
		3 .... SK= 1000 : 1 digit ∑= 1000 unit.∅
		4 .... SK = 0.1 : 1 digit ∑= 0.1 unit.∅
		5 ... SK = 0.01 : 1 digit ∑= 0.01 unit.∅
		6 ... SK= 0.001: 1 digit ∑= 0.001 unit.∅
06	show the NUMBER OF SUM OVERFLOW	
07	SUM and OVERFLOW reset	more: access via password A_25
NOTICE: if an **user defined input** is selected **only user defined output** can be **selected!!!**		
08	1st point of SCALE of user input signal	applies only for selection 3 on A_01
09	final point of SCALE of user input signal	applies only for selection 3 on A_01
10	ANALOG OUTPUT: pre-set the beginning of AO	applies only for selection 3 on A_24
11	ANALOG OUTPUT: pre-set the end of AO	applies only for selection 3 on A_24
12	pre-set the **optical** decimal point for **SUM**	
13	Pre-set the time scale for sumarization of flow rate	0 ..... units / secs (eg. litres / secs)
		1 .... units / mins (eg. litres / mins)
		2 .... units / hours (eg. t / hours)

Basic preview of menu addresses and SUB-addresses DMP04

ADDRESS	DESCRIPTION	SUBADDRESSES
14	assignment of LIMIT L1	0 .... limit L1 is switching from signal X
		1 .... limit L1 is switching from SUM
15	First limit (L1) numeral settings	notice: in full range of scale
16	First limit HYSTERESIS numeral settings notice: in full range of scale	if A_14 is pre-set to 1 there is no settings and on display will appear "**OFF**"
17	First limit HYSTERESIS timing	notice: from 0,0 s to 299,9 s step: 0,1s
18	SELECT function of output relay Re1 / direct: relay closes, indirect: relay opens/	0 .... indirect
		1 .... direct
19	assignment of LIMIT L2	0 .... limit L2 is switching from signal X
		1 .... limit L2 is switching from SUM
20	Second limit (L2) numeral settings	notice: in full range of scale
21	Second limit HYSTERESIS numeral settings notice: in full range of scale	if A_14 is pre-set to 1 there is no settings and on display will appear "**OFF**"
22	Second limit HYSTERESIS timing	notice: from 0,0 s to 299,9 s step: 0,1s
23	SELECT function of output relay Re2 /direct: relay closes, indirect: relay opens/	0 .... indirect
		1 .... direct
24	Output signal SELECTION	0 .... 0 - 20 mA DC
		1 .... 4 - 20 mA DC
		2 .... 0 - 10 VDC
		3 .... user defined output (I, U)
25	The way of reset - SELECTION	0 .. on address A_07 only (pass. protect.)
		1 .. from main display "------" or A_07

NOTICE:

Detail description of each address function DMP04

ADDRESS	DESCRIPTION OF EACH ADDRESS FUNCTION
00	The point when the integration starts (PWIS): - we can choose, how the integration will start together with the PWIS the PWIS is in units of input signal - ex: flow rate 100.0 litres / s we want PWIS to be 1litre / s, and to integrate with the value below the PWIS we enter A_00, pre-set "**1**" and confirm by Enter button. "hotouo" will appear on display we press "ESC" button. Now we will continue and pre-set PWIS to "**00001.0**", confirm by ENTER button and "hotouo" will appear on display. We will return to the menu by pressing ESC button.
01	This function is used to **select type of input signal**. - user can choose from typical type of 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 / eg. setup current input: 2 - 12 mA DC/ - voltage input: 0 - 11 VDC / eg. setup voltage input: 0,5 - 4,9 VDC /
02	Setup **BEGINNING of SCALE** on display - on this adress we set value of scale beginning , that we want equal to zero value of analogue input - eg.: input signal is represented by height 0 - 100,0 l/s. On this adress we setup the value of scale beginning to 0,0 l/s.
03	Setup **END of SCALE** on display - on this adress we set value of scale end , that we want equal to max. value of anologue input - eg.: input signal is represented by height 0 - 100,0 l/s. On this adress we setup the value of scale end to 100,0 l/s .
05	**DECIMAL POINT setup (DP)** - the selection of position of decimal point is situated on adress A_05 - the measured value, limits, hysteresis have the same position of DP (from A_05) . - eg. input signal is represented by height 0 - 4,000 m. On this adress we setup the decimal point here: x x x**.** x x x
04	**SUMARIZATION CONSTANT (SC):** means **how many** unit(s) per (hours,mins,secs dependes on A_13) is equal to incremantation **SUM** by one. **ex.** we have flow rate **1 litre per second** (A_13 is **0**) and SC is **10** (A_04 is **1**). **SUM** is reseted and equal to zero. After **10** secconds the **SUM** will be incremented by 1 and will be **1.** After next 10 seconds will be **SUM** equal to **2** and so on. we have flow rate **100 litres per second** (A_13 is **0**), we want to sumarize with precision on 1st decimal place. On address A_12 will be **"xxxxx . x"** and SC (A_04) will be **4 (0.1)**. Now after one second will be **SUM** incremented by **1000** because of decimal point (A_12) will be **SUM** displayed as **100 . 0**. Precison on the 2nd decimal place A_12 **"xxxx . xx"** and SC (A_04) will be **5 (0.01)** . etc ...

ADDRESS	DESCRIPTION OF EACH ADDRESS FUNCTION
06	**show the NUMBER OF SUM OVERFLOW** - if the **SUM** is bigger than 999 999, OVERFLOW counter is incremented by 1 and **SUM** is decremented by 999 999 to provide correct displaying of **SUM** on the digits display. On this address we can view the numbers of OVERFLOWs.
07	**SUM and OVERFLOW reset:** On enter to this address "---" appears on the display. We press enter button and "ANO NE" appears on display. ANO = YES ; NE = NO . Choose ANO to reset or NE to exit w/out reset. If you choose ANO and press enter , message "hotouo" appears (ESC to confirm message). If you chose "NE" you will be returned to the menu.
08	Setup **FIRST POINT** of user defined input signal: - we convey input signal to the input terms and set the value shown on the display which is equal to this input signal - eg.: input signal 12 mA is equal to 2,000 m - if the input signal falls under 12 mA, device automatically calculate the value on display, it means that if the input signal will be 4 mA on the display will be shown value: 0,000 m / if you will setup 0 - 4,000 m equal to input signal 4 - 20 mA/
09	Setup **SECOND POINT** of user defined input signal: - we convey input signal to the input terms and set the value shown on the display which is equal to this input signal - eg.: input signal 18 mA is equal to 3,500 m - if the input signal rises over 18 mA, device automatically calculate the value on display, it means that if the input signal will be 20 mA on the display will be shown value: 4,000 m / if you will setup 0 - 4,000 m equal to input signal 4 - 20 mA/
10	On this adress we setup the **beginning of user defined analogue output** - it is necessary to set the value **3** on adress A_24 (switch to the user defined output) - we convey to the input terms signal which is equal to the beginning of analog. output - we connect multimeter to the output terms (AO) and on adress A_10 we setup the value of AO (by changing value on A_10) - eg. input signal will be 6mA and the output signal will be 2mA
11	On this adress we setup the **end of user defined analogue output** - it is necessary to set the value **3** on adress A_24 (switch to the user defined output) - we convey to the input terms signal which is equal to the end of analog. output - we connect multimeter to the output terms (AO) and on adress A_11 we setup the value of AO (by changing value on A_11) - eg. input signal will be 12mA and the output signal will be 20mA
12	Pre-set the **optical** decimal point for **SUM** . Notice that, **SUM** is not affected by this decimal point. It is only for optical adjustment of the decimal places.

ADDRESS	DESCRIPTION OF EACH ADDRESS FUNCTION
13	**Pre-set the time scale for sumarization of flow rate:** - units per second , units per minutes and units per hours .
14	**Assign of** limit **L1**: - this address provides user assign limit L1 to : input signal "**x**" or integrated signal "**y**" - notice: decimal point (DP) from address A_05 or A_12 is used for limits due to this address eg. if you assign L1 to "**y**" L1 will use DP from A_12 or to "**x**" L1 will use DP from A_05
15	First **limit** (L1) **numerical setting** - 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 (see in **EG.**) - **eg.** 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)
16	First limit **HYSTERESIS (dL1) numerical setting:** - this adress provides first limit **HYSTERESIS numerical setting** - the value of dL1 could be set in full range of scale (max. +/- 29 999) - the limit must be setuped according to the decimal point (see in **point 15**) - the value of dL1 is symetric in both direction (eg. L1=100 ; dL1=10 ; first point of L1 will be 90 and second point will be 110)
17	First limit **HYSTERESIS timing**: **dtL1** - this adress provides first limit **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 in **point 18**) after the time of dtL1 count down. (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. The dtL1 count down timing is reseted.
18	**Selection of function RE1** when the measured value reach limit **L1** : - 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/
NOTICE:	

ADDRESS	DESCRIPTION OF EACH ADDRESS FUNCTION
19	**Assign of** limit **L2**: - this address provides user assign limit L2 to : input signal "**x**" or integrated signal "**y**" - notice: decimal point (DP) from address A_05 or A_12 is used for limits due to this address eg. if you assign L1 to "**y**" L1 will use DP from A_12 or to "**x**" L1 will use DP from A_05
20	Second **limit** (L2) **numerical setting**: - when the measured value reach the L2,relay RE2 will open/close(depends on value on A_18) - 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 (see in **EG.**) - **eg.** 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 L1 as is written , you can)
21	Second limit **HYSTERESIS (dL2) numerical setting:** - this adress provides first limit **HYSTERESIS numerical setting** - the value of dL2 could be set in full range of scale (max. +/- 29 999) - the limit must be setuped according to the decimal point (see in **point 20**) - the value of dL2 is symetric in both direction (eg. L2=100 ; dL2=10 ; first point of L2 will be 90 and second point will be 110)
22	Second limit **HYSTERESIS timing**: **dtL2** - this adress provides first limit **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 in **point 23**) after the time of dtL2 count down. (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. The dtL2 count down timing is reseted.
23	**Selection of function RE2** when the measured value reach limit **L2** : - 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/
24	On this adress we can choose the type of output signal: - there are typical types of output signal: 0-20 mA, 4-20 mA, 0-10 VDC - and one type is user defined in range 0..22 mA & 0..11V DC **NOTICE: combination of standart input and user defined output is possible**
25	The way of reset - **SELECTION** - password protected from A_07 means that you have to access menu to reset SUM and OVERFLOW counter. - from main display - you scroll (*) in main display till "-----" appears. Then you press Enter to RESET SUM and OVERFLOW counter. No need to access menu,but not protected by pass.
NOTICE: (*) more in **chapter C** , button number one.	

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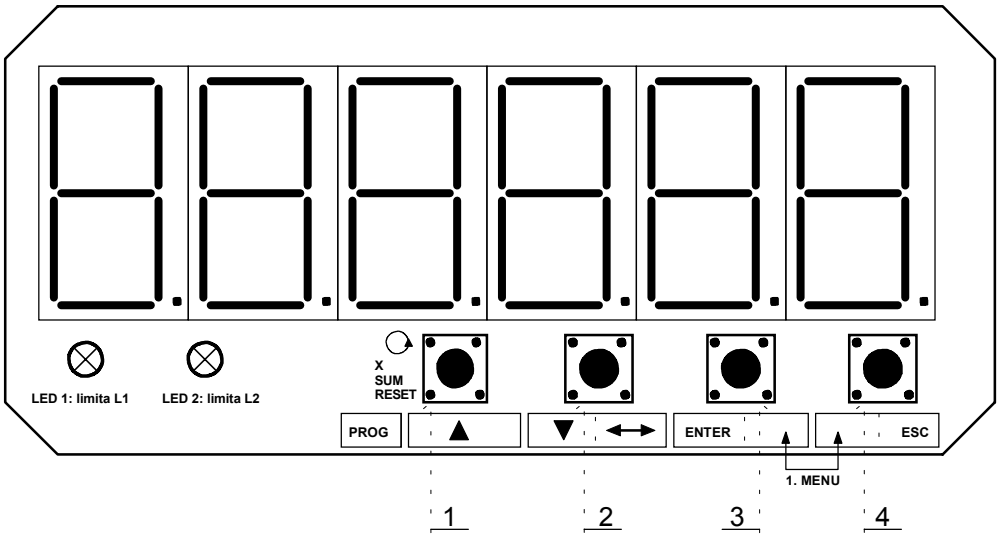

BUTTON	SYMBOL	DESCRIPTION OF EACH BUTTON FUNCTION
1	 **X** **SUMA** **RESET**	**1.function**: in measuring state this button provides cycle showing of **X**, **SUM**, **RESET**. When is button pressed the value on display is shown in this direction: - measured input value X :automaticaly shown by device power-on - SUM : sumarized value - RESET: appears " - - - - - - " and by buton no.3 "ENTER" will be RESET **SUM** and **OVERFLOW**. This item will not be displayed if the A_25 is 0 ! notice if RESET is displayed in main menu (A_25 is **1**) and you scroll to RESET "------" appears on display the devcie will automatically return to displayin measured value.
	▲	**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 butt. **^** increase value): - to setup numeral data in basic adresses : A_01 - A_25 (see **notice** bellow) - to setup the selection in SUB-ADDRESSES - to setup all numeral values (eg. L1, L2 etc...)
2	◄►	**1. function**: in programming state this button provides switching the highlighted (blinking) digit on display (eg. xxx**(x)**xx, <-> , xxxx**(x)**x , <-> , xxxxx**(x)** ,<-> **(x)**xxxxx) - valid only for setup in adresses where is the numeral value setuped. - not valid for setting SUB-ADDRESSES switches / "program switches" / (eg. A_00, A_25)
	▼	**2. function**: in menu this button provides decreasing numeral value of address A_01 - A_25 . (eg. A_15 button pressed A_14 , Butt Pressed , A_13) **notice:** if you press the button and the numeral value of address is 0 (A_00) the next value will be 25 (A_25) -> cycle

BUTTON	SYMBOL	DESCRIPTION OF EACH BUTTON FUNCTION
3 + 4	**ENTER + ESC**	**1. function**: **first double press** button "**ENTER**" and "**ESC**" provides entering to the password protected menu. - by pressing ENTER+ESC together, on display apears " 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 adress A_01 - A_24 ('user setup area') - with buttons **n.1** and **n.2** write the password and then confirm by pressing ENTER button. **notice:** the password cannot be change so be careful and hide the password from any unauthorized person.
3	**ENTER**	**1. function**: **ENTER** provides confirm and saving values - by confirm (pressing ENTER butt) adress (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**	**1. function**: **ESC** provides escaping the programing state , menu , etc... step by step to the measuring state. (eg. xxxx**(x)**x , **ESC** , A_15 , **ESC** , measuring state) **Confirm message "hotouo"**

NOTICE: