

MICROPROCESSOR-BASED WEIGHT METER OF MATERIALS

MS8307A

TECHNICAL DESCRIPTION AND INSTRUCTION FOR USAGE

PLOVDIV 2002

I. DESIGNATION

The microprocessor-based two-channel weight meter of materials MS8307A is designed for dosing of loose materials by controlling of oscillating conveyors or transport bands and joint operation with packing controller PACK11aCON. The weight meter has a possibility for memorization of ten sets of parameters for different materials for dosing, and the current set is program selectable. MS8307A supports automatic adaptation of the falling column and manual or automatic taring before each dosing.

II. TECHNICAL DATA

1. Inputs

- digital Start (active at 0)	0 ÷ 5 V
- digital Tare (active by falling front)	0 ÷ 5 V
- digital Start pouring (active by falling front)	0 ÷ 5 V
- digital Is1 (PNP)	0 ÷ 12 V
- digital Is2 (PNP)	0 ÷ 12 V
- analog Strain 1	strain bridge
- analog Strain 2	strain bridge

2. Outputs

- digital Ready dose – OK NPN	30 V / 50mA
- K1 (Vibrorail 1 rough) – SSR*	220 V / 1A
- K2 (Vibrorail 1 fine) – SSR*	220 V / 1A
- K3 (Vibrorail 2 rough) – SSR*	220 V / 1A
- K4 (Vibrorail 2 fine) – SSR*	220 V / 1A
- K5 (Valve / upender 1) – SSR	220 V / 1A
- K6 (Valve / upender 2) – SSR	220 V / 1A

4. Indicator

2x8 LCD

5. Keyboard

folio

6. Overall dimensions (WxHxL)

96x48x128 mm

7. Weight

max. 200 g

8. Power supplying voltage

220 V $\pm 10\%$

9. Frequency of the power supplying voltage

50 Hz (± 1 Hz)

10. Operating temperature

0 ÷ 50 °C

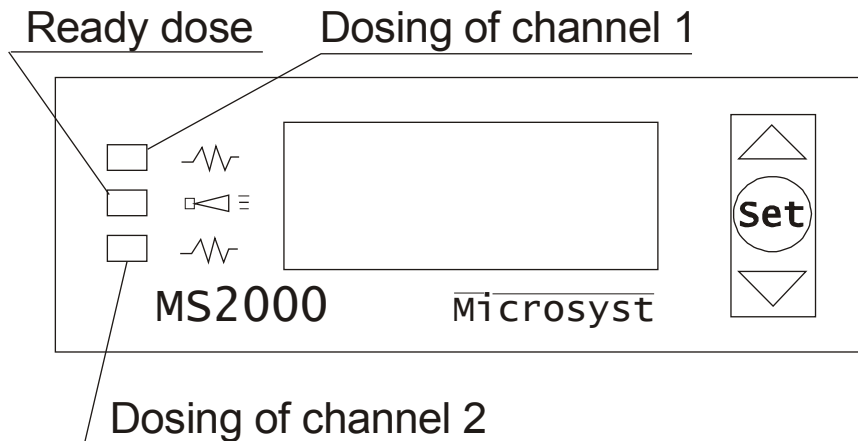
11. Operating relative humidity

0 ÷ 80% RH

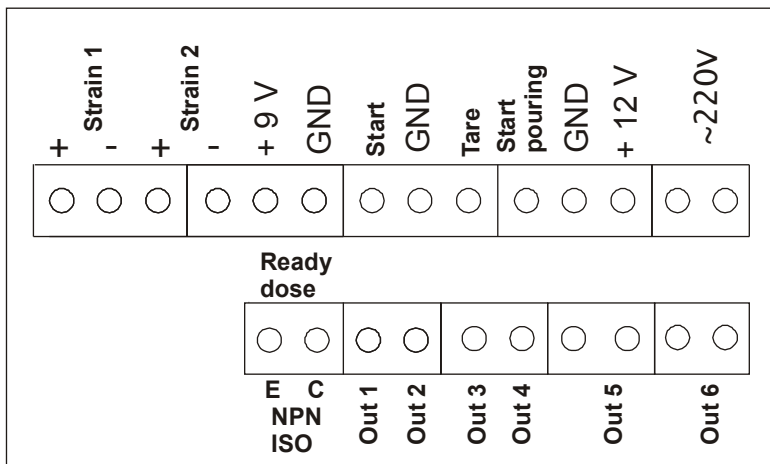
K1 and K3 can be realized as PWM outputs for control of outer drivers – at conveyors for product, operated by constant current motors 0 ÷ 100 % / 0 ÷ 5 V
K2 and K4 OK for TTL

III. GENERAL APPEARANCE AND SCHEME OF CONNECTION

1. Face panel.



2. Back panel.

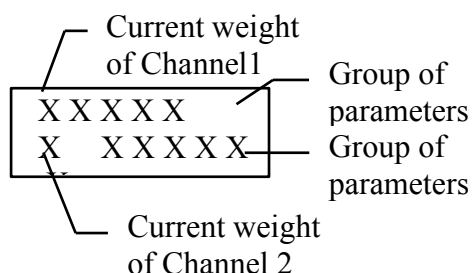


- | | |
|---------------|---|
| Strain 1 | - input for strain weight beam for channel 1 |
| Strain 2 | - input for strain weight beam for channel 2 |
| Start | - key Start |
| Ready dose | - output Ready dose |
| Tare | - button Tare |
| Start pouring | - input for starting of the pouring |
| Out 1 | - output PWM or rough dosing for channel 1 |
| Out 2 | - output "in process" or fine dosing of channel 1 |
| Out 3 | - output PWM or rough dosing for channel 2 |
| Out 4 | - output "in process" or fine dosing of channel 2 |
| Out 5 | - output valve / upender 1 |
| Out 6 | - output valve / upender 2 |
| +9V | - Tapping power supply +9V \ 50mA (according to GND) |
| +12V | - Tapping power supply +12V \ 50mA (according to GND) |
| GND | - Weight |

IV. INSTRUCTIONS FOR USAGE

1. Operation principle of the weight meter

At power supplying of the device the weight read by the two channels and the group of parameters for dosing appear on the display.



When switching on the key **Start**, the controller is waiting for programmed time for fixing and if the container is not empty from the previous dosing (the measured weight is over the minimum accessible for a new start **Min W**) “*Error! Weight*” appears on the display. If the weight is below the minimum accessible for a new start, the controller switches on the respective output for rough dosing of the respective channel.

When reaching a programmed level, the output for rough dosing switches off and the respective one for fine dosing switches on. When reaching the set-pointed dose the output for fine dosing switches off. After the end of the dosing for the channel, the device is waiting for a permission signal for emptying of the container. The two channels are independent and one permission signal permits the emptying of the container, which is full first or if the two of them are full container 1 empties. The conditions for dosing are determined by the group of parameters selected for every channel.

If when power supplying the signal start permission is active, the controller starts fine dosing at once, if the set-point is not reached, and if it is reached, the device is waiting for permission signal for emptying of the container.

When the device is realized with PWM outputs during dosing the output for the respective channel K2 or K4 is constantly switched on, and the outputs K1 or K3 are controlled by programmable coefficient of fulfilling – different for rough and fine dosing.

Power fault

In case of power fault the tuning and the selected group are memorized.

2. Taring

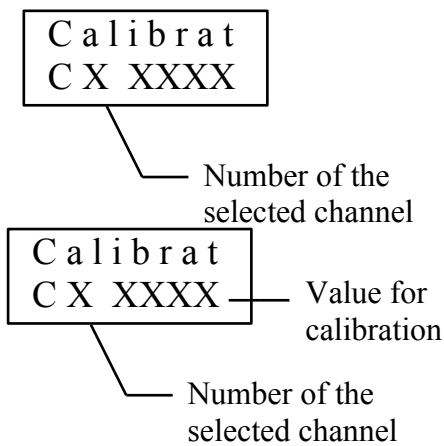
*! You can realize taring of the device only if the device is not in process of dosing, i.e. switched key **Start**.*

The taring of the device can be done by pressing of the button **Tare**. The read weight is accepted as weight of the tare and the display is reset. The device starts measuring every change of the weight according to the tare in positive (addition) or in negative (subtraction) direction.

3. Calibration

Conditions and algorithm of calibration:

1. The device must not be in mode for dosing (switched off key **Start**).
2. The device has to be tared in advance.
3. You have to put a standard weight (to the channel selected for calibration) and to wait for fixing of the indication of the device.
4. Enter mode for calibration by the following combination of buttons: **Up** and **Down**. The following display appears:



Select the channel for calibration by the buttons **Up** and **Down** and confirm the selection by the button **Set**.

By the buttons **Up** and **Down** you can correct the value for calibration according to the placed standard weight and confirm by the button **Set**.

4. Selection of group of parameters

The selection of group of operating parameters can be done at stopped process of dosing by pressing and holding of the button **Set** for more than 3 sec. Marker appears under the symbol for group of parameters of channel 1. By the buttons **Up** and **Down** you can change the group of parameters (from A to L), and by the button **Set** you can confirm the selection and pass to selection of group of parameters of channel 2 (marker under the symbol for group of channel 2). By the buttons **Up** and **Down** you can change the group of parameters (from A to L), and by the button **Set** you can confirm the selection and exit this mode.

5. Messages about errors

The controller shows the following messages about errors:

- A) **“Error! Eeprom”** – error at saving or reading from EEPROM.
- B) **“-----”** – error when measuring. The order of displaying determines which channel has an error, on the first line for the first channel, on the second line for the second channel. It is necessary to check the connection of the measuring beam with the device.
- C) **“Error! Weight”** – the weight of the tare together with the set-pointed value of the weight for dosing exceed the maximum weight measured by the sensor. The reasons for appearing of this inscription might be the following:
 - try for starting of a new dosing at remaining weight in the container after running out of the time for emptying bigger than the minimum accessible
 - big weight of the tare
 - incorrectly entered value of the set-point for dosing
 - decalibration of the device (it is necessary to make a calibration)

6. Tuning of parameters

*! The tuning of parameters is possible only if the device is not in process of dosing, i.e. switched off key **Start**.*

To enter the menu for tuning of parameters press and hold the button **Set**, press the button **Up** and release the two of them. The following display appears:



The marker “>” indicates which menu you have to enter.

By the buttons **“Up”** and **“Down”** you can change the position of the marker **“>”**, respectively the selection of parameters, which must be tuned and confirm by **Set**.

6.1 Change of group parameters.

At marker before Group and confirmation by SET you can select, by the buttons **Up** and **Down** the group of parameters that must be tuned (A to L). The selection of group can be confirmed by **Set** and the first group parameter appears. By the buttons **Up** and **Down** you can change the value of the parameter, and by the button **Set** you can pass to the next one.

Group parameters

Name	Description
“Dose”	Weight for dosing. Dimension and decimal point according to the maximum measured weight and resolution of the sensor.
“Fine %”	Weight of switching from rough to fine dosing. It must be set-pointed in percents from the weight for dosing.
“Min W”	Minimum accessible weight for new start (remaining weight in the container after its emptying).
“Correct”	Error , made by the weight meter because of remaining weight, entering the container after switching off of the fine dosing and because of hesitation of the system. Consider that, the so entered value for the error is added to the set-point for dosing, i.e. if the controller doses less than the set-point, this value must be increased and if doses more than the set-point – to be decreased.

6.2 Change of user parameters.

At marker before User and confirmation by SET the first user parameter appears. By the buttons **Up** and **Down** you can change the value of the parameter and by the button **Set** you can pass to the next one.

User parameters

Name	Description	Tuning
“FixOnStr”	Time for emptying of the container after finishing of the dosing of the channel. Till running out of this time a start of new dosing is not accessible. Dimension -> 0... 120 Sec.	
“AutoTara”	Option, which if there is a value 1, is permitted, and at every start the weight meter is tared automatically.	
“Dose R”	Parameter determining the number of redosings. At value 0 redosing is not realized. Redosing is realized when after waiting of the programmed time the measured weight is less than the set-pointed one. Dimension -> 0... 250	
“Time R”	Time for waiting before check for redosing. Dimension -> 0... 2. 50 Sec.	
“Time D”	Time, in which indications are not read at start of dosing, it is read after activation of the outputs for dosing. Dimension -> 0... 25.0 Sec.	
“Off Ch”	Option for switching off of a channel. 0 – The two channels work. 1 – The first channel is switched off . 2 –The second channel is switched off.	

"ID Sns"	Option for switching on of inductive sensors for reading of end of emptying of the containers. 0 – Switched off inductive sensors. 1 – Switched on inductive sensors (ignores parameter "FixOnStr")	
"Crute 1"*	Coefficient of fulfilling at rough dosing of channel 1 Dimension -> 0.0... 100.0 %	
"Fine 1"*	Coefficient of fulfilling at fine dosing of channel 1 Dimension -> 0.0... 100.0 %	
"Crute 2"*	Coefficient of fulfilling at rough dosing of channel 2 Dimension -> 0.0... 100.0 %	
"Fine 2"*	Coefficient of fulfilling at fine dosing of channel 2 Dimension -> 0.0... 100.0 %	

* These parameters are visible only if the device is designed for PWM control

7. Change of hidden user parameters.

Parameters, accessible when entering user parameters, if before that at power supplying the button **Down** has been pressed.

Hidden user parameters

Name	Description	Tuning
"ChannelX"	Display for the range of the channels. By the buttons Up and Down you can select the channel for supervision. The range is in percents from 0.0 to 100.0. For normal operation of the device at maximum loading of the sensor the indication must be less than 100 % and at minimum loading (empty container) – more than 0 %.	-----
"Param A"	Time for waiting at pressed start, during which the weight, which is measured, must be less than the minimum weight for start. Dimension -> 0... 2.55 Sec.	
"Param B"	Position of the decimal point – accessible values 128, 64, 32, 16, 8, 4, 2, 1, 0 for .0000000, .000000, .00000, .0000, 0.000, 0.00, 0.0, 0. and 0000. In practice only 0, 2, 4, 8, 16 are used.	
"Param C"	Coefficient of the filter of the display of channel 1. Dimension -> 0.00... 1.00	
"Param D"	Coefficient of the filter of the display of channel 2. Dimension -> 0.00... 1.00	
"Param E"	Jump of clearing of the filter of the display of channel 1. Dimension -> 0... 9999	
"Param F"	Jump of clearing of the filter of the display of channel 2. Dimension -> 0... 9999	
"Param G"	Jump of clearing of the filter for dosing in percents on the range – it is valid for the two channels. Dimension -> 0.0... 100.0 %	
"Param H"	Time for clearing of the filter. Dimension -> 0.00... 2.55sec.	
"Param I"	Filter for dosing. At 7 the filter is maximum deep. Dimension -> 0... 7	

The change of the values must be done with great attention.

Bulgaria, 4000 Plovdiv, 4 Murgash str.

Tel.: (+359 32) 430 019, 640 446 Fax: (+359 32) 640 446, 634 117

www.microsyst.net e-mail: info@microsyst.net