microsyst

COMPETENCE IN
MEASUREMENT

CE

TWO-CHANNEL TIMER

MS8326

v3.11

USER MANUAL

PLOVDIV 2010

Document revision 2010/11/12

I. TECHNICAL DATA

Digital inputs		4
Start1, Start2		Active level GND ISO
Reset1, Reset2		Active level GND ISO
Delay in perception at external input - Start and Reset		16 ms max.
Outputs		Up to 6
K1,K2,K3,K4,K5,K6		Relay 250 V / 5,10 A
Options	Triak 250 V / 2 A;	
	NPN OC uniso 100 mA (the main internal power supply of the device is used, e.g. for control on SSR 250V / 10,20,40 A);	
	NPN OC iso 500 mA 70V (for loads with external power supply)	
Indication and keypad		
Display		2 x 3 digits LED 10 mm
Display range		0 … 999
Resolution		Up to 0.01s
Keypad		XXX min; s; $s.10^{-1}$; $s.10^{-2}$
Display		membrane
Power supply		
Power supply voltage		230V / max 20mA 50 Hz (± 1 Hz)
Operating conditions		
Operating temperature		0 … 50 °C
Operating relative humidity		0 … 80 % RH
Dimensions		
Overall dimensions (WxHxL)		96 x 48 x 128 mm
Mounting		Panel cutout 90 x 44 mm
Weight		max 300 g
Protection class		IP40
Storage		
Storage temperature		-10 … 70 °C
Storage relative humidity		0 … 95 % RH

Model Up to XI.2010 the device **MS8326** is manufactured under the name **MS8203U2-6.**
From version V3.11 there is start by level.

II. FRONT and BACK PANEL. WIRING INSTRUCTIONS

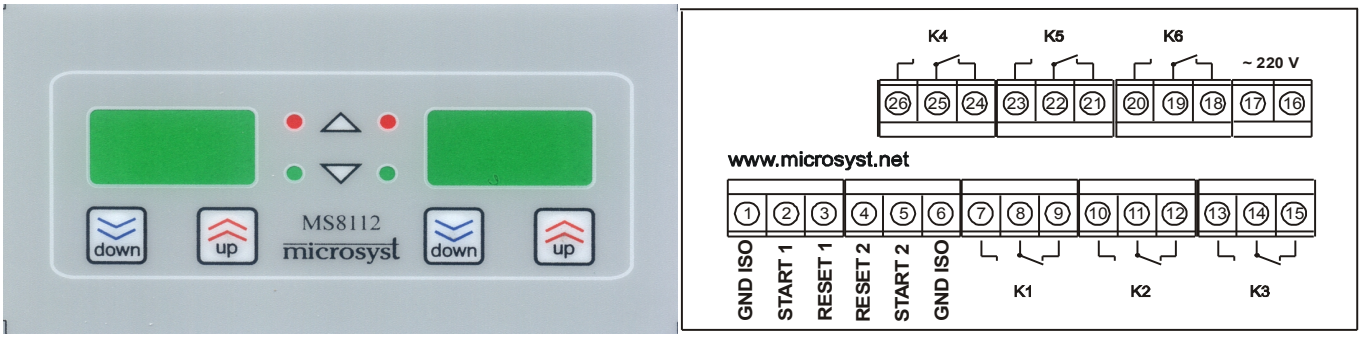


Fig.2.1 Front and back panel

Fig.2.2. Inputs Wiring diagram

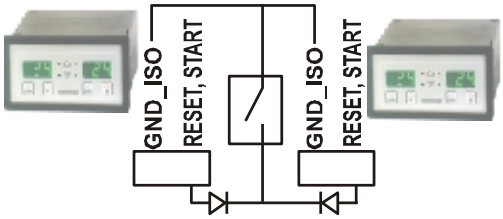


Fig.2.3. Connect inputs from different devices to a single signal source.

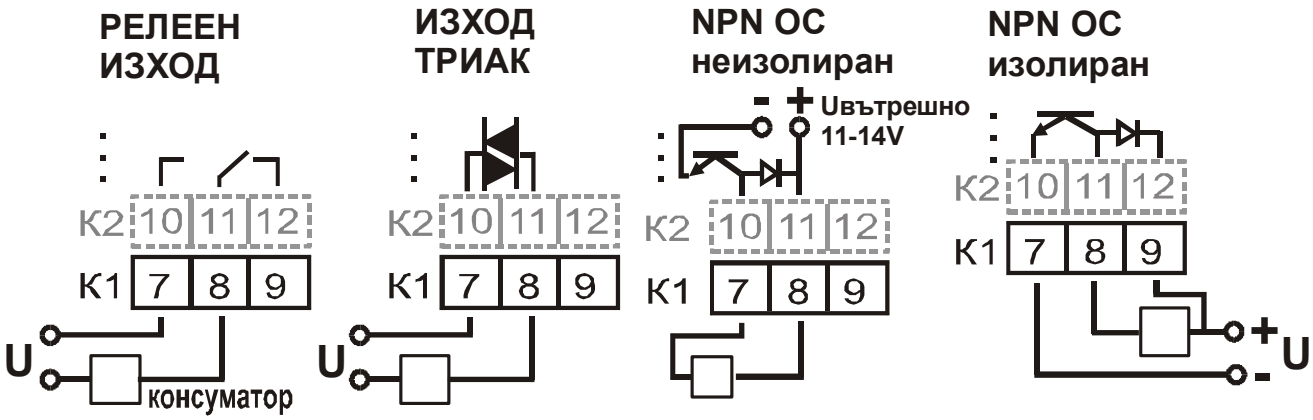


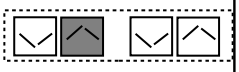
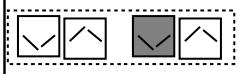
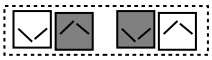
Fig.2.4 Outputs Wiring diagram

III. DESIGNATION

The MS8326 device is organized as two timer blocks, operating independently or interconnected. Both timers can work in the modes:999 min; 999 s; 999 s.10^{-1} ;999 s.10^{-2}. Each timer counts two times - time **tLo**, and time **tHi**, and for each of them the user sets a group of outputs to be active.When an output is connected to both timer modules, **"OR"** logic is valid. Timers can be started from an external input, from a key on the keyboard or from the other timer. It is provided to remember the current state in case of power failure and the possibility for automatic or non continuation of the execution. Independent RESET inputs are taken out for each timer, as well as common for both RESET modules from the keyboard.

IV. OPERATING GUIDE

When the supply voltage is applied, the timers are ready for operation, and the current values before the power supply is stopped are displayed. In case these are unfinished jobs, the corresponding LED on the front panel flashes, and if the timer was not active when the power supply fails, the display shows the setting tLo, the LEDs for this timer are off. There are **two** ways to start the timer:

<table>
<tr><td>  </td><td>Hold down the button for the left TIMER 1</td><td rowspan="2">1. Starts the timer from the value shown on the display. This completes the job if it did not complete when the power was turned off. Otherwise, holding down any of these buttons starts the corresponding timer from the beginning. This way of starting can be programmatically disabled (Chapter V).</td></tr>
<tr><td>  </td><td>for the right TIMER2</td></tr>
<tr><td>  </td><td colspan="2">If necessary, the RESET key combination can be selected before starting - the times tLo for both timers are loaded. A separate RESET is possible via the corresponding external inputs.</td></tr>
<tr><td colspan="3">2. When an active level is applied to one of the Start inputs, the corresponding timer loads time tLo and is activated.</td></tr>
</table>

After starting, the timer starts to decrease its current value until it reaches 0. During time **tLo** the associated group of outputs is active. After its expiration, the time **tHi** is charged and its corresponding group of outputs is activated. When tHi is over, tLo is charged and, depending on the operating mode, it is switched to start or restart. The current timer status is indicated by two LEDs on the front panel.

The timer is not active. The **tLo** setpoint is loaded - **not lit.**
Time **tLo** is running out - **the green LED is lit.**
Time **tHi** is running out - **the red LED is lit.**
Pause after power on in stage **tLo - green LED flashes**
Pause after power on in stage **tHi - red LED flashes**

The status of the outputs is indicated by the six dots on the display - a flashing dot means an active output; off point - inactive.

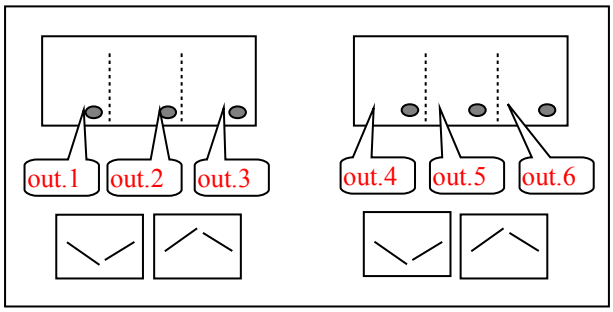


Fig.4.1 Indication of the status of the outputs

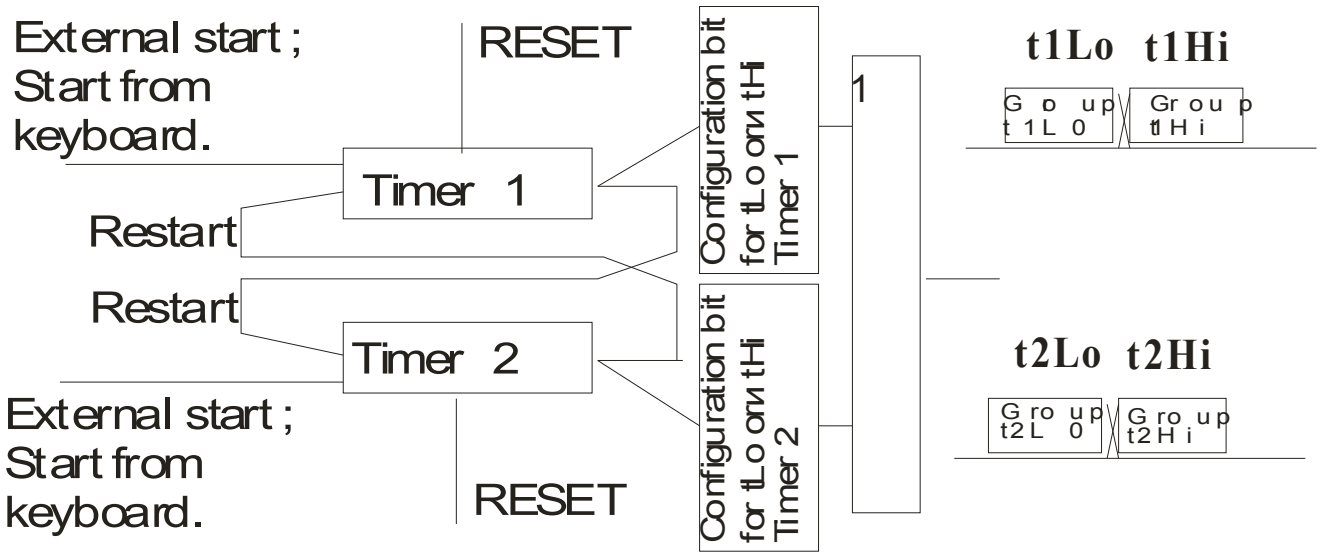
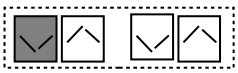
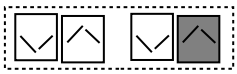


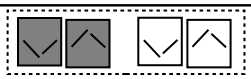
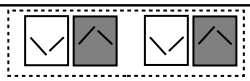
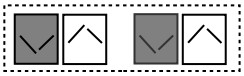
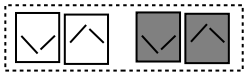
Fig.4.2 Block diagram

REVIEW AND EDITING OF SETPOINTS (SP)

Setpoints of timers can be viewed by pressing and holding the buttons as shown:

tLo	**tHi**
	

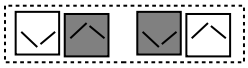
The button combinations shown in the table are used to change the SP:

SP of timers	**tLo** (the buttons are pressed with priority on the left)	**tHi** (tHi>0) (the buttons are pressed with priority on the right)
Timer 1		
Timer 2		

The value of the selected **SP** is displayed (flashing). With the buttons below the flashing number, it is edited. Five seconds after the last button is pressed, the new **SP** is saved and exits the edit mode

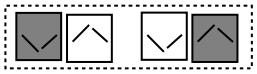
The currently active task is updated when it is reloaded. (Example: While time tLo is running on timer 1, this setpoint is corrected. There is no immediate change, only after a restart the new setpoint tLo is loaded.)

RESET ON BOTH TIMERS FROM THE KEYBOARD

RESET can be applied to both timers by pressing buttons simultaneously: 
On display: **[- - -] [- - -]**

V. EDIT OF SETTINGS

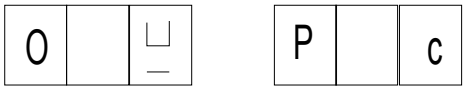
In this mode, the timer operation mode, start mode and internal restart permission are set.

Entering this mode is done by pressing and holding for more than 5 seconds simultaneously on the buttons 

The following symbols appear on the display:

By button below the symbol 'A' enters the setting of Timer 1 parameters .
By button below the symbol 'B' enters the setting of Timer 2parameters .
By button below the symbol 'c' exits the setting mode.
By button below the symbol '≡' enters the menu for configuring the outputs.

When one of the two timers is selected, the following symbols appear on the display:



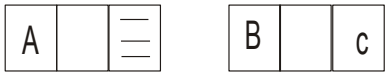
By button below the symbol **O** the output type of the respective timer is set.
By button below the symbol ⌴ the start mode for the respective timer is set.
By button below the symbol **P** the reporting format of the respective timer is set.
By button below the symbol **c** exits to the above mode.

When editing the corresponding values, the display shows the following:

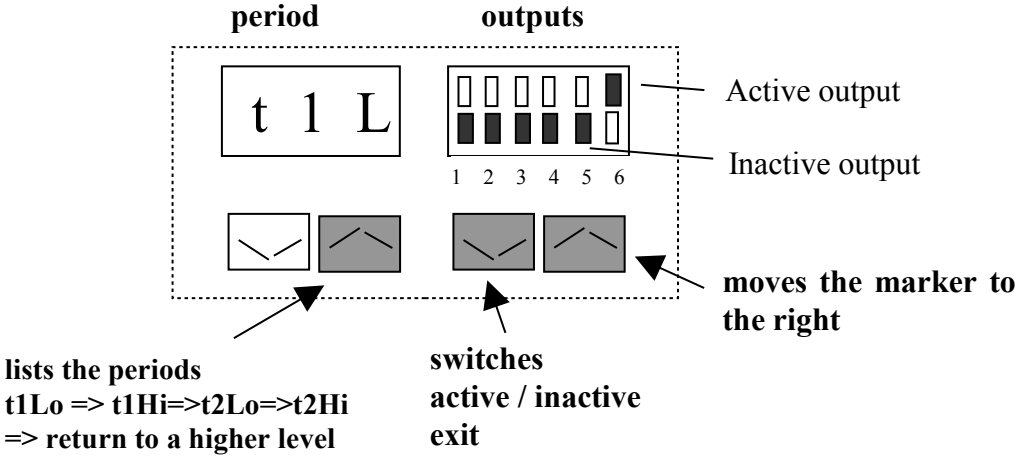
where XXX is the value to be edited with the buttons below the left display.

By button below the symbol **o** the entered value is confirmed and exits to a higher level of the menu.

<table>
<tr><th>Para-meters</th><th>Description</th><th>Value</th></tr>
<tr><td rowspan="2">O</td><td rowspan="2">Timer output type</td><td>0 – without restarting the other timer</td></tr>
<tr><td>1 - restart the other timer after the end of tHi.</td></tr>
<tr><td rowspan="6">⎵
—</td><td colspan="2"><table>
<tr><th>Start mode, behavior after POWER ON</th><th>Without automatic completion of the job after power supply</th><th>Automatically complete the job after power is applied</th></tr>
<tr><td>Start by front.</td><td>1 (9*)</td><td>5 (13*)</td></tr>
<tr><td>Start by front. Restart if after the end of the cycle the Start input is active.</td><td>2 (10*)</td><td>6 (14*)</td></tr>
<tr><td>Start by front, restart with each subsequent pulse</td><td>3 (11*)</td><td>7 (15*)</td></tr>
<tr><td>Start by level. Reboots if the Start input is active after the end of the cycle. In case of Reset failure and active input Start - also starts.</td><td>18 (26*)
Finishes if Start input is active</td><td>22 (30*)
Finishes even if the Start input is not active</td></tr>
<tr><td colspan="3">(*) Allowed start from the keyboard. The option is common to both timers. To activate, both timers must be configured with the values in parentheses. Otherwise - forbidden to start from the keyboard.</td></tr>
</table></td></tr>
<tr><td rowspan="4">P</td><td rowspan="4">Timer operation mode</td><td>0 - 999 . 10 $^{-2}$ seconds</td></tr>
<tr><td>1 - 999 . 10 $^{-1}$ seconds</td></tr>
<tr><td>2 - 999 seconds</td></tr>
<tr><td>3 - 999 minutes</td></tr>
</table>

The choice of ≡ from the menu 

activates menu for output configuration



Each configuration becomes valid immediately after the transition to the next period, but the recording in non-volatile memory is performed when exiting the main menu for setting parameters.

VI. RECOMMENDATION AGAINST EMI (Electromagnetic Interference)

Recommendations for use of connecting wires

✔ For longer distances for lines subjected to electromagnetic interference, it is desirable to use a twisted pair wire.

✔ For better noise protection, a shielded cable may be used, which must be grounded at only one end.

✔ Wires that carry a similar type of signals can be packed together, but if the signals are different, the wires must be separated to prevent electromagnetic interaction.

✔ When there have to be crossed wires with different signal types this must be done at an angle of 90 degrees and a long distance.

✔ Wires, which carry weak signals and wires connecting the sensors to the controller must not be near contactors, motors, generators, radios and wires, which carry large currents**.**

WARRANTY CARD

Warranty card №:.....

Warranty term:..... months

Factory number:.....

The items were purchased from :.....

Invoice number:...../..... 20..... year .

GUARANTEE CONDITIONS

The guaranty consists in free repairs of all the factory defects which can occur during the guarantee period. **The repair is performed as in the repair base is being presented the current guarantee card with which the device is bought.** The warranty does notrefer to issue caused by a bad transport, bad conservation, wrong exploitation, naturedisasters, not following the instructions and the cases when there is an attempt to fix anydefects by other people. In those cases the issue is being fixed only against payment.

The maintenance during the guarantee period and doing the claims happens according to the valid legislation.

PERFORMED REPAIRS IN THE SERVICE

Service	Date of receipt	Order number	Type of repairs done	Date of transmission	Carried out the repair

Seller:..... **Buyer:.....**

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