

**Microprocessor Control System Documentation "MIKSTER MCM 020, 021, 022"**

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## **1. APPROPRIATION**

M.C.MIKSTER MCM 020 SERIES (MIKSTER MCM 020, 021, 022,) are devices applied to automatic control of industry devices needing program work and measuring of physical values as temperature, pressure, etc.

Particularly they have been dedicated to control the vacuum massage machines, the mixers, etc.

## **2. BASIC FUNCTIONS OF THE M.C. MIKSTER MCM 020**

The basic functions of the M.C. MIKSTER MCM 020 are:

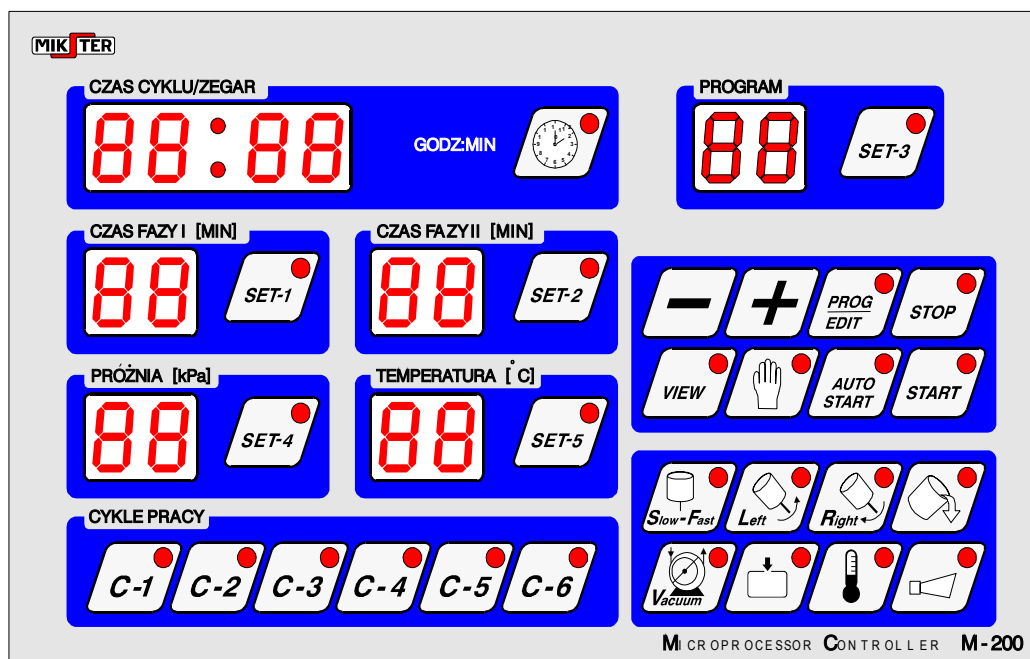
- automatic realisation of the technological program,
- 50 programmes,
- 6 cycles per program, (MIKSTER MCM 020, 021),
- 2 phases per cycle,
- temperature control and regulation, (MIKSTER MCM 020),
- vacuum (0-100 kPa) control and regulation, (MIKSTER MCM 020, 021),
- program control of the working devices (contactors, electrovalves, etc.),
- manual mode,
- AUTOSTART function,

## **3. CONTROL DESK OF THE M.C. MIKSTER MCM 020**

All operations involved with starting, programming, manual changes, etc., are performed on the control desk (picture 1).

The control desk consists of the following blocks:

- numeric displays                   -1-
- signalling diodes (LEDs)       -2-
- function keys                       -3-
- devices' status keys               -4-
- programmes cycles' keys         -5-



Picture 1.

All information on operating conditions of the M.C. MIKSTER MCM 020, as status, programmed and real-measured parameters' values, ON/OFF signalling, etc., are displayed by the numeric displays and LEDs.

Operating mode of any device or activity of any function is signalled with LED light. Blinking LED means wait state or actual value.

The M.C MIKSTER MCM 020 memory programming, data corrections, and activating MIKSTER'S functions is performed by pressing of the appropriate function keys, numerical keys and status keys.

#### 4. SECURITY CODE

The security code has been introduced for protection of the data written in the M.C. MIKSTER MCM 020 memory against unauthorised changes. The security code is requested when one wants to change the data for manufactory(technological) programmes (for detailed description see 5.1.)

The security code is written into the SET-UP memory.

## 5. **STARTING THE WORK WITH THE M.C. MIKSTER MCM 020**

After the power switch is turned ON, the clock displays the actual time.

Now you can start the following functions of the M.C. MIKSTER MCM 020:

- programming of the manufacturing processes,
- setting the SET-UP parameters (service only),
- manual control of the working devices,
- run one of the 50 M.C. MIKSTER MCM 020 technological programmes,
- AUTOSTART function.

### 5.1. **PROGRAMMING OF THE MANUFACTURING PROCESSES**

The user can program up to 50 (0-49) manufacturing programmes.

Each program consists of 6 cycles. Each cycle consists of 2 phases, (MIKSTER MCM 020, 021).

**ATTENTION !** MIKSTER MCM 022 has only 2 phases and no cycles.



Below are listed the parameters of each cycle:

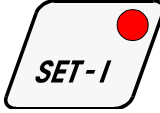
- the duration of the cycle - max. 99h:59m,
- the duration of the first phase,
- the vacuum value for the first phase, (MIKSTER MCM 020, 021),
- the temperature value for the first phase, (MIKSTER MCM 020),
- the work status for the working devices in the first phase,
- the duration of the second phase,
- the vacuum value for the second phase, (MIKSTER MCM 020, 021),
- the temperature value for the second phase, (MIKSTER MCM 020),
- the work status for the working devices in the second phase.

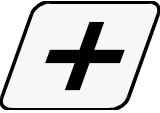

If you want to switch M.C. MIKSTER MCM 020 to the programming mode press the key

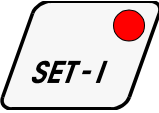
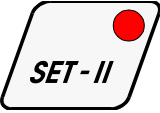



It activates the duration of the first phase LED (LED blinks) and makes the "CODE 00 00" appears on the display,

- press the key  and/or  up to the moment, the first digit of the security code is correct,

- press the key , this makes the LED of the active display blinks,



- press the keys  and/or , up to the moment the second digit of the security code is correct,

(Pressing the keys  and   
You can correct the security code).

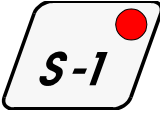
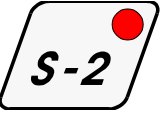
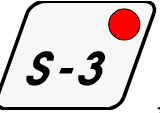

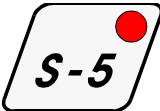
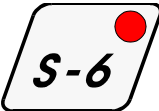
- if the code is correct, press the key 

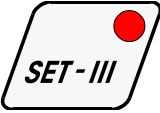

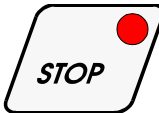
Now you can start programming.

On the displays you can see the parameters of the program, which number is displayed in the field PROGRAM. If the security code is not correct, M.C. MIKSTER MCM 020 returns to the beginning, i.e. the actual time is displayed. If the change of any parameter is needed, you must press the appropriate key (the active LED blinks) and then press the key

 and/or , up to the moment its value changes as needed.

If the change of a cycle number is needed, you must press the key of the cycle you want to change, i.e.:

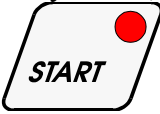
, , , ,  
, or .

If you want to start programming of the next program - press the key . You can finish the programming of the M.C. MIKSTER, pressing the key  or .



## 5.2. STARTING THE REALISATION OF THE MANUFACTURING PROGRAM WITH M.C. MIKSTER MCM 020

### 5.2.1. THE IMMEDIATE START OF THE TECHNOLOGICAL PROGRAM REALISATION


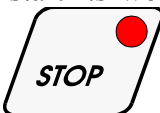
You can start the automatic mode of program realisation when the M.C. MIKSTER MCM 020 is in the standby mode, i.e. the actual time is displayed. Automatic mode is started

when you press the key .

It makes the program number display starts blinking.

Now you can set the program number pressing the keys  and/or .

When the program number is set to the wanted value, you can start its work pressing the key

, or you can stop starting the device pressing the key .

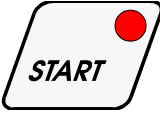
If you do that (STOP) - the M.C. MIKSTER MCM 020 returns to the standby mode and the actual time is displayed.



### 5.2.2. AUTO-START

The AUTO-START function starts the M.C. MIKSTER MCM 020 at the time you have earlier set.

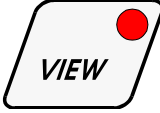
The AUTO-START function is activated by pressing the key .

Then you must fill the field PROGRAM with program number you need and the time (hh:mm) you want that program to start (field TIME STEP /CLOCK).

After you have pressed the key  the AUTO-START function is activated.

(LEDs placed on the keys  and  are blinking and the actual time and program number are displayed).


If you want to turn OFF the AUTO-START function, press the key: .

When the AUTO-START function is active you can display the time when the program will start by pressing the key .

### **5.3. MANUAL CHANGES OF THE MANUFACTURING PROCESS PARAMETERS DURING THE AUTOMATIC WORK OF THE M.C. MIKSTER MCM 020**

### **5.4. MANUAL CONTROL OF THE WORKING DEVICES**


During the automatic mode it is still possible to make manual corrections in the program.

To do that you must press the key: .

It causes all the programmed parameters of the actual cycle are displayed.

Now you can make all the needed changes (see 5.1.).

Pressing the keys in the field STEP(WORK CYCLES) makes that all the parameters of the next cycles are displayed. If the LED for chosen cycle blinks it means that this cycle is not realised actually.

Press the key  to finish manual changes.

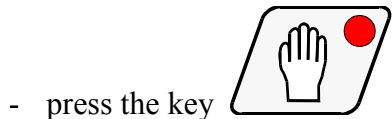


It makes your changes are written into the memory and the modified program will be realised.

If you have finished your changes when the M.C. MIKSTER MCM 020 cycle or phase is different from as a cycle/phase when you have been started your changes, the program realisation starts from the cycle or phase you have finished your manual modifications.

For manual control of the working devices follow the procedure:

*(The M.C. MIKSTER MCM 020 should be in the standby mode, i.e. the actual time is displayed.)*



- press the key
- exit this mode pressing the same key again.

## 6. **SIGNALLING OF BREAK-DOWNS**

In case of failure of the program realisation (e.g. power interrupt) the moment when the program has been broken is remembered. After the breakdown is stopped, the program realisation will be continued from the place it was stopped.

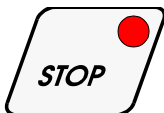
Then -error- is displayed on the TIME STEP/CLOCK and display PROGRAM displays the error number -40-.

Error signalization can be turned OFF by pressing the key

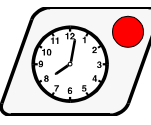


## 7. **BREAKING OF THE AUTOMATIC PROCESS**


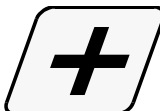
You can break the automatic realisation of the technological program by pressing the key




## 8. THE REAL TIME CLOCK PROGRAMMING

If you want to CHANGE the real time clock settings, press the key:  .

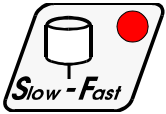
This makes the display of the real time clock starts blinking. Now press the key

 and/or  , up to the moment the clock settings are correct.

When the time settings are correct press the key  again.

## 9. MIXING DRUM AND VACUUM PUMP WORK MONITORING

When the massage machine state is standby and the real time is displayed, press the key

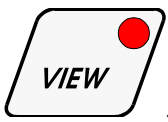


The TIME STEP/CLOCK displays how long the vacuum pump works (the number of hours).

The TIME PHASE I and TIME PHASE II displays how long the mixing drum works (the number of hours).

## 10. TECHNOLOGICAL PROGRAM PARAMETERS MONITORING

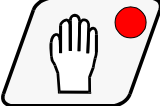
You can monitor all the technological program parameters

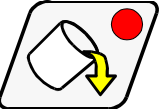
pressing the key  .

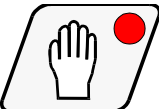
Monitoring is automatically turned off after the time set in the SET-UP function **F12**, or after pressing the same key again.

## 11. UNLOADING

Circumstances of unloading (speed and direction of rotation) are set by the manufacturer of the massage machine.

If unloading is needed, you must start the manual mode pressing the key  . Then

press the key  .

You must press the key  again, if you want to finish the unloading of the massage machine.