mcc10 controller

operating instructions ver.4.1

Features of mcc10:

- taking water to the level or time;
- the possibility of using both cold and hot water;
- the possibility of alternating use of alkaline and acidic detergents;
- possibility of powering detergent dispensers from any AC / DC voltage;
- necessity to use a safety switch (milking block);
- the possibility of remote turning on the cooling;
- delayed start cooling;
- review of the temperatures of the last cooling, washing and cooling time;
- safe copy of device operation parameters;
- touch keyboard without mechanical components.

mcc10 is a two-function controller designed for cooling the milk, and after acceptance to conduct a full program of the washing tank. After power on controller is in standby mode. It is ready to work. Display shows OFF, LEDs and relays are inactive. The device all the time is 230VAC powered.

The controller provides three modes: cooling, continuous mixing and washing. Selecting any one always takes place from the OFF and not automatically. Cooling and washing will not start if the safety switch is in the wrong state. Thus in the tank does not come into contact with milk cleansing agents.

Description of the keyboard.

Activate all keys takes place from the **OFF** state.

 key starts and ends with cooling, in programming mode increases the value

 key starts for **A1** time or stop continuous stirring, in the programming mode reduces the value.

 key starts washing; longer hold ends washing, starts draining for **ux4** time and returns to the OFF state, pressing the button interrupts the action; in programming mode allows to enter the group of parameters to be changed or selecting **End** leave this area.

 key short press starts overview of the parameters of the last cooling **C0** and washing **C1** , longer hold key allows to enter the service mode.

Pressing the wrong key is signaled by flashing display or the appearance of error **E5**.

Description of the LED indicators.

In the cooling mode: After pressing  accompanying LED indicates the selection of the cooling process. LED at the key  indicates the work of agitator .

In cyclic mode: LED at the key  points operation of agitator.

In continuous-mixing LED flashing confirms the work of agitotor.

The cleaning mode: LED at the key  indicates choice of the cleaning process.

LEDs 1,2,3,4,5 by steady light indicate subsequent washing steps.

LED ⇥ signals the end of washing.

Service mode (programming and testing)

In the **OFF** mode holding down the key [i] allows to enter into the option of programming the controller. Will appear in succession (each time you press [i]) symbols serve sections:

ccc – cooling parameters

uuu – wash parameters

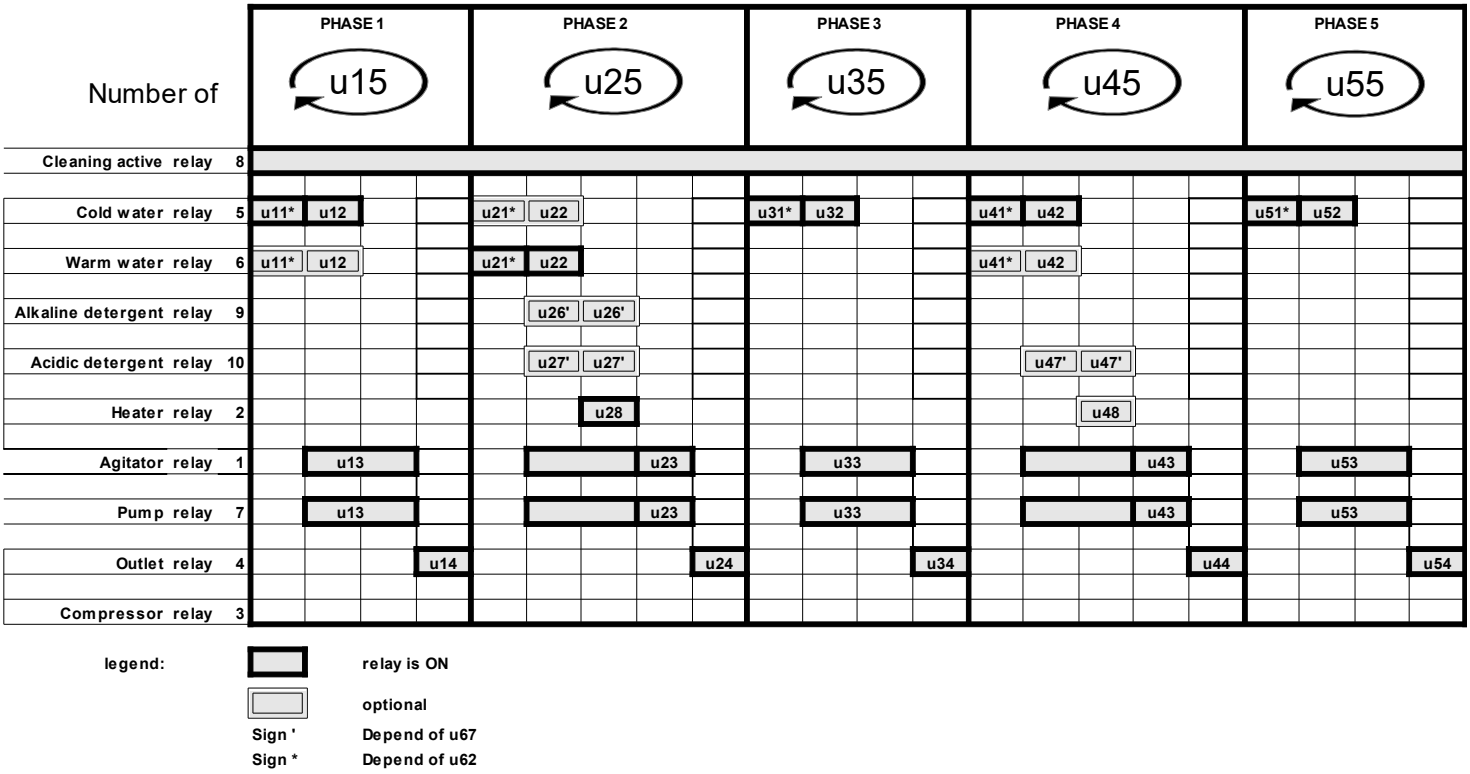
ooo – outputs test

iii – inputs test

AAA - extended parameters

Selecting sections - press [/T\] key. Overview and change press [❄] , [🍽] keys.

Washing programme diagram



Washing mode

Cleaning is possible when the safety switch is closed. The washing process consists of up to five phases that can be passed (UX5 = 0) or multiple (UX5 = 1,2 ... 10). The wash cycle is based on a method for detecting the level of taken water. The necessary amount of wash is determined by a level sensor or duration of the filling. The duration of the various phases and multiple repeat them are hidden in the parameters **uuu**.

Description of washing parameters (section **uuu**)

u0 - allows to choose how to display the parameters as they are set.
0-parameters appear in succession, according to their numbers

u11, … u15, u21, … u28, u31, … u35, …..... , u73

1-see the same parameter appearing in subsequent phases washing

u11,u21,..u51, u12,..u52, u13,..u53,... , u73

Parameter	Value min.	Value max.	Step	Default value	Unit	Description of the parameter
u11	0	600	5	30	s	Water intake time in phase 1(u61=1)
u12	0	600	5	20	s	Additional water intake time in phase 1
u13	0	300	5	30	s	Circulation time in phase 1
u14	0	300	5	60	s	Drain time (outlet valve open) in phase 1
u15	0	10	1	1		Number of phase 1 repeats
u21	0	600	5	30	s	Water intake time in phase 2(u61=1)
u22	0	600	5	20	s	Additional water intake time in phase 2
u23	0	600	5	30	s	Circulation time in phase 2
u24	0	300	5	60	s	Drain time (outlet valve open) in phase 2
u25	0	10	1	1		The number of repetitions Phase 2; If u25 = 0, the phase 2 will be ignored. If (u25=1 and u45=0)the acid and alkaline detergent will be used alternately. If u25> 1 phase 2 with an alkaline detergent will be appropriately repeated
u26	0	600	5	30	s	Alkaic detergent intake time in phase 2
u27	0	600	5	30	s	Acidic detergent intake time in phase 2
u28	0	1	1	1		Heating in phase 2 (0=No, 1=Yes)
u31	0	600	5	40	s	Water intake time in phase 3(u61=1)
u32	0	300	5	20	s	Additional water intake time in phase 3
u33	0	300	5	30	s	Circulation time in phase 3
u34	0	600	5	90	s	Drain time (outlet valve open) in phase 3
u35	0	10	1	1		Number of phase 3 repeats
u41	0	600	5	40	s	Water intake time in phase 4(u61=1)
u42	0	300	5	20	s	Additional water intake time in phase 4
u43	0	300	5	30	s	Circulation time in phase 4
u44	0	600	5	90	s	Drain time (outlet valve open) in phase 4
u45	0	10	1	1		Number of phase 4 repeats,
u47	0	600	5	30	s	Acidic detergent intake time in phase 4
u48	0	1	1	1		Heating in phase 4 (0=No, 1=Yes)
u51	0	600	5	120	s	Water intake time in phase 5(u61=1)
u52	0	600	5	0	s	Additional water intake time in phase 5
u53	0	600	5	60	s	Circulation time in phase 5
u54	0	600	5	120	s	Drain time (outlet valve open) in phase 5
u55	0	10	1	1		Number of phase 5 repeats
u60	0	1	1	1		**!! NOT USED !!**
u61	0	1	1	0		Water intake by level or time (0=level)
u62	0	60	1	10	min.	Max water intake time if u61=0 ,(0=not monitored)
u63	0	4	1	0		The choice of water temperaturew in phase 1: 0=cold, 1=warm, 2=mixed, 3=subsequently cold-warm, 4= subsequently warm-cold, (u63>2 makes sense if u15>1)
u64	0	2	1	1		The choice of water temperaturew in phase 2: 0=cold, 1=warm, 2=mixed

Parameter	Value min.	Value max.	Step	Default value	Unit	Description of the parameter
u65	0	2	1	0		The choice of water temperaturew in phase 4: 0=cold, 1=warm, 2=mixed
u66	1	3	1	1		**!! NOT USED !!**
u67	0	1	1	0		Detergent dispensing moment: 0=during water iniection, 1=after water iniection
u68	1	10	1	3	min.	Time required for heater operation
u69	15	60	5	60	min.	Max heating time
u70	0	70	1	53	°C	Heating temperature in phase 2
u71	0	70	1	45	°C	Heating temperature in phase 4
u72	0	600	5	150	s	Drainage time for the manual washing interruption
u73	1	5	1	1		Start washing from the indicated phase (service mode)

Output test (section **ooo**):

A setting of 1 enables, 0 disables the relay. Once out of this section, the relays will be automatically turned off.

Parameter	Value min.	Value max.	Step	Default Value	Unit	Parameter description
o 1	0	1	1	0		PK1 - agitator
o 2	0	1	1	0		PK2 - heater
o 3	0	1	1	0		PK3 - compressor
o 4	0	1	1	0		PK4 - drain
o 5	0	1	1	0		PK5 – cold water
o 6	0	1	1	0		PK6 – hot water
o 7	0	1	1	0		PK7 - pump
o 8	0	1	1	0		PK8 – washing indicator
o 9	0	1	1	0		PK9 – alkaline detergent
o10	0	1	1	0		PK10- acidic detergent

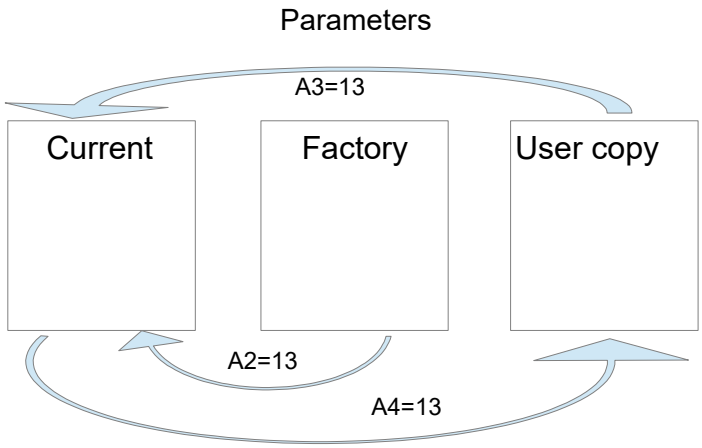
Input test (section **iii**):

A value of 1 means that the input is shorted (active) - not applicable **i** 5

Parameter	Value min.	Value max.	Step	Default Value	Unit	Parameter description
i 1	0	1				Safety switch
i 2	0	1				External start cooling
i 3	0	1				The additional input (not used)
i 4	0	1				Level
i 5	0	1023				The ADC temperature sensor

Extended parameters: (section **AAA**):

Parameter	Value min.	Value max.	Step	Default Value	Unit	Parameter description
A 1	0	60	1	2	min	Time stirrer after pressing (in OFF mode)
A 2	0	20	1	0		If A2=0, the settings are compatible with the factory settings If A2=1, the settings are changed. A setting A2=13 will restore default settings, then A2=0.
A 3	0	20	1	0		If A3=0, the settings are consistent with the user copy settings. If A3=1, the settings are changed. A setting A3=13 causes the user to restore backup settings, and A3=0.
A 4	0	20	1	0		If A4=0 settings match the settings user copy. If A4=1, the settings are changed. A setting A4=13 saves the current settings to a user copy, and A4=0.
A 5	0	20	1	0		A setting A5=13 switches sequentially PK, after 3s off all, then A5=0. **Note. Only for service purposes when the tank is empty.**



A2, A3, A4 - copying or restoring the parameters

Detected and signaled errors.

E 1 - sensor error
E 2 - exceeded operating time of the compressor
E 3 - Error lack of water
E 4 – too low heating temperature
E 5 - safety switch error before washing
E 6 - safety switch error during washing

Cooling mode.
Cooling is possible when the safety switch is open.

Description of cooling parameters (section **ccc**)

Parameter	Value min.	Value max.	Step	Default value	Unit	Description of the parameter
c 1	2.0	25.0	0.1	4.3	°C	Cooling temperature
c 2	0.3	1.0	0.1	0.3	°C	Hysteresis switching the compressor
c 3	-4.0	4.0	0.1	0.0	°C	Sensor calibration
c 4	0	60	5	0	min	Delay first milking
c 5	15	30	15	30	min	Mix cycle
c 6	30	240	5	OFF	min	Cooling time, c6>240 – OFF (not monitored)

Description of the cooling.

In the OFF mode, press the key  . Accompanying LED indicates the choice of cooling. On the display the target temperature **c1** will blink for 3 seconds. The process of cooling can occur immediately or with a delay adjustable parameter **c4**. If the cooling delay **c4** is equal to 0, compressor and agitator relays will turn on the and LED at the key  lights.

If **c4** is different from 0, the coolers activation will take place after the set time that will be displayed. The passing of time confirms the flashing dot at the figure on the display. Delay referring to the first cooling can be interrupted by pressing twice cooling  , the second press must continue until the switching on of the compressor.

The controller measures and displays the temperature of the milk. Cooling takes place to a **c1** temperature. Compressor work takes place according to the set temperature hysteresis **c2**. The mixer after cooling the milk runs for two minutes.

Next switching mixer will take place according to the set mixing cycle **c5**.
During this cycle, at any time, it is possible to switch on the stirrer to the request for two minutes.

Cooling can be interrupted by pressing 

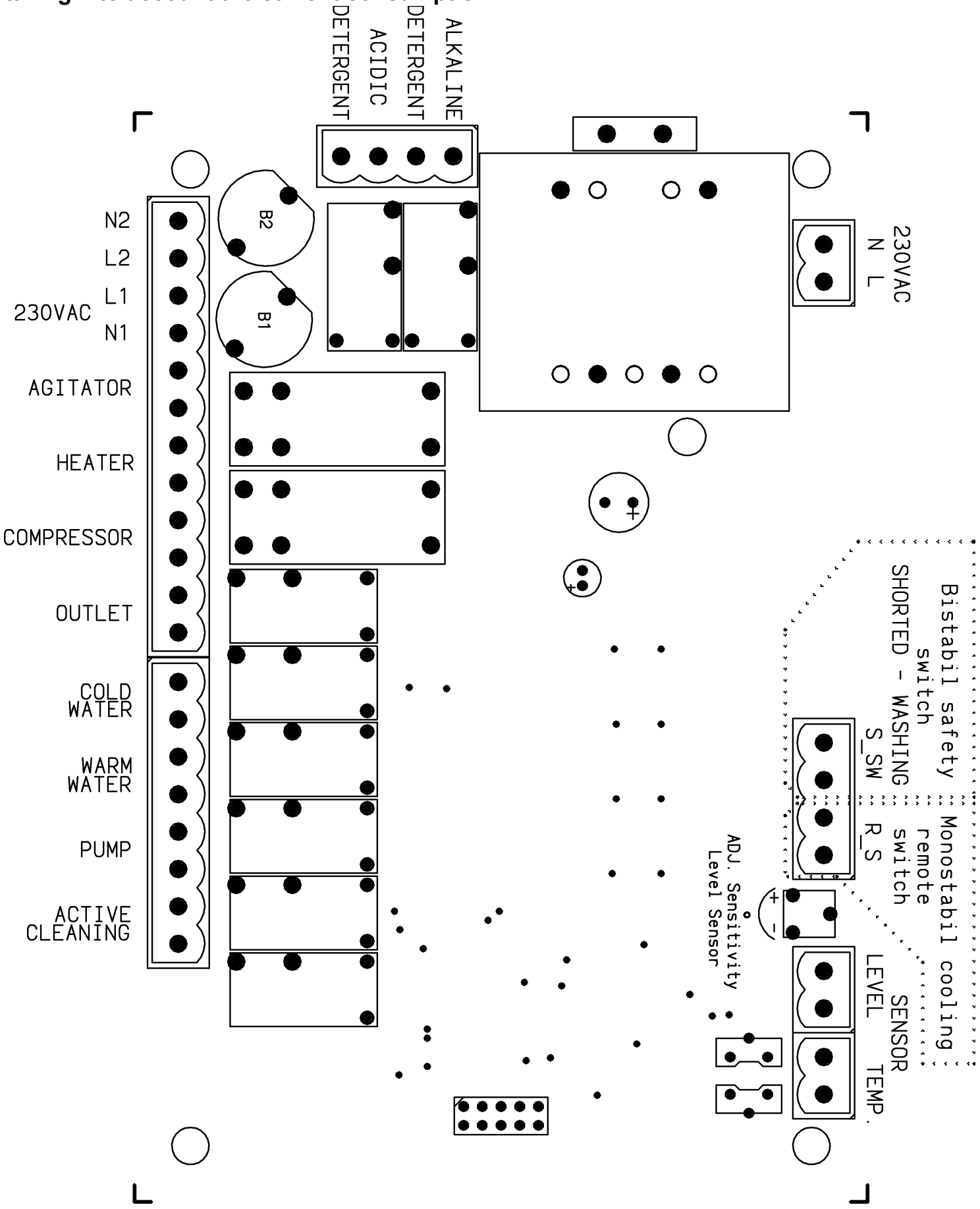
Continuous mixing mode.

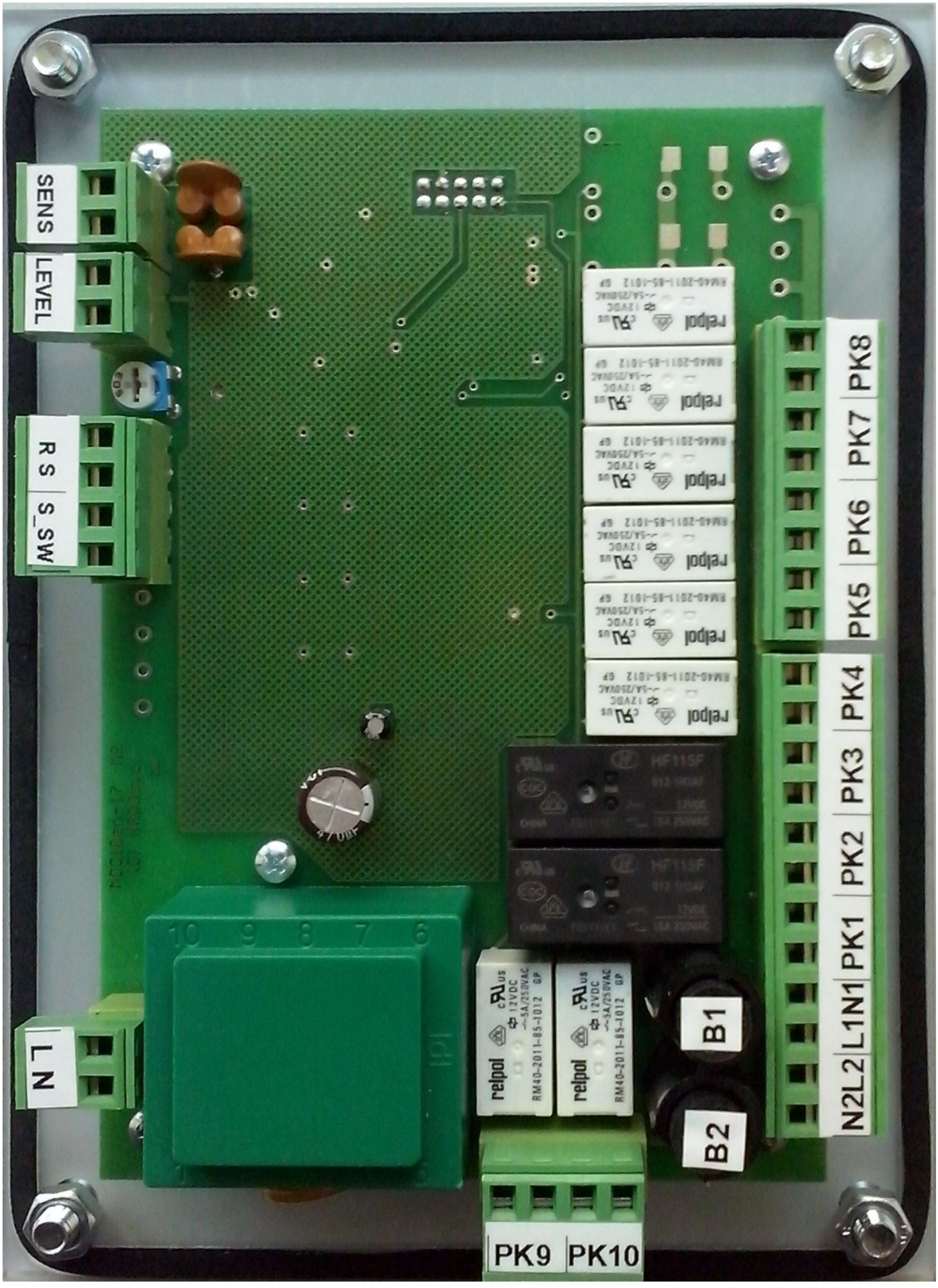
Press in OFF mode  key. For a moment, shows the selected mixing time.
The agitator is working by the time **A1** (section **AAA**).
Pressing again interrupts mixing.

Electrical connection

L-N: mcc10 supply, L1-N1: loades supply, L2-N2: dispensers supply.

WARNING: The fuse B1 protects receivers in the network L1-N1 and B2 in network L2-N2. Their values must be chosen according to specific components of the electrical system taking into account the current consumption.




SENS
LEVEL
R S
S_SW
L N
PK9
PK10
B1
B2
N2
L2
L1
N1
PK1
PK2
PK3
PK4
PK5
PK6
PK7
PK8
relpol
RM40-2011-85-1012
HF115F

Mounting holes