MCB-200 MULTIFUNCTION DIGITAL TIME RELAY
With 1 CO contact
Operating Manual

A6698 / Rev.2

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Precautions for Installation and Safe Use
If below precautions are not properly observed and carried out, it may result in cases with injury or death.
· Disconnect power before working on the device.
· When device is connected to the network, do not remove the front panel.
· Do not clean the device with solvent or similar items. Only clean with dry cloth.
· Verify correct terminal connections before energizing the device.
· Install the device on the electrical panel.
· Contact your authorized reseller in case problems occur with your device.

⚠ **•No responsibility is assured by the manufacturer or any of its subsidiaries for any consequences rising out of not following above precautions.**

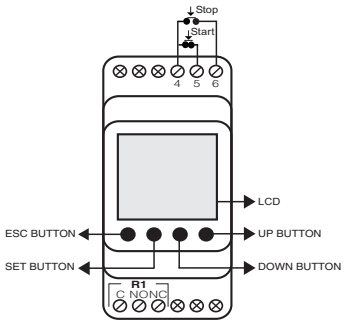
1. INTRODUCTION

MCB-200 is a multifunction digital timer with 1 CO contact. It offers wide time adjustment range between 0.2-9999 seconds and 0.1-9999 minutes.

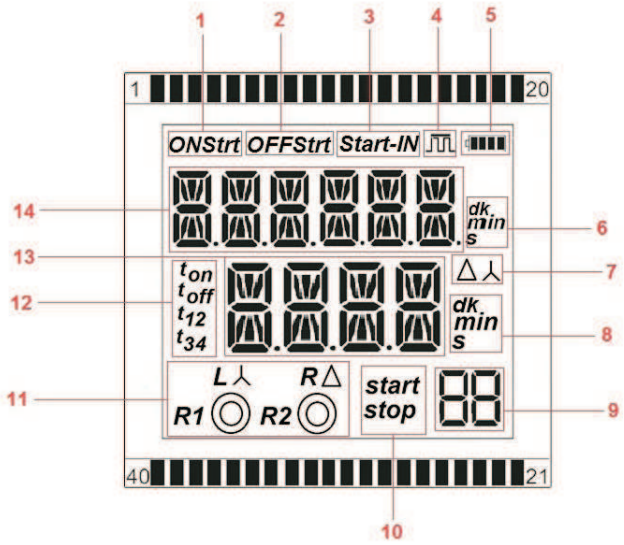
MCB-200 has 15 different functions with wide adjustable time ranges. The main application area is the industrial and automation control systems. Wide supply voltage range and one output relay with C/O contacts offer the highest flexibility for many applications.
MCB-200 has two dry contacts for START and STOP inputs

1.1 Product Features
MCB-200 has the following features:
· Lithium battery
· 15 different functions
· 0.2-9999 seconds/0.1-9999 minutes time range
· 1 relay output
· Start-Stop dry contact inputs
· Custom design LCD with green backlight
· SET, ESC, UP, DOWN buttons are located on front panel for easy programming
· Degree of protection for enclosure IP 40, for terminals IP 20
· PK25 DIN Rail mounting

1.2 Hardware Features
To operate functions with external triggering, MCB-200 has the necessary START and STOP dry contacts.



1.2.1. Display



1. **ONSrt :** Indicates that the relay will start as closed.
2. **OFFSrt:** Indicates that the relay will start as open.
3. **Srt-Input Icon:** Indicates that the function is started with external input.
4. Indicates whether function trigger is Level or Edge.
5. Battery

6 and 8. min sec : Indicates whether timing unit is minute or second

7. Time setting indicator for Star-Delta function
9. Numeric Two Digits: Show function number.
10. **Stop:** Indicates that stop input is active. **Start:** Indicates that stop input is active.
11. When R1 or R2 relays are activated, the center of the circles are turned on. **R** and **L** letters are used to indicate left or right direction when inverser relay function is selected. **Star-Delta:** Indicate the output relay state in Star-Delta function.
12. Indicates the time type of functions.
13. In the main menu, it shows the elapsed time.
14. In the main menu, it shows the entered time. In the settings menu, it shows the function names.

1.2.2 Button functionality

SET, ESC, UP and DOWN buttons help to select functions and set their times.

UP button goes to previous menu item in Settings Menu and increase selected parameter value.
DOWN button goes to next menu item in Setting Menu and decrease selected parameter value.
SET button is for entering data. When pressed at least 3 seconds, Setting Menu is selected.
ESC button exits from a menu.

1.2.3 Output

MCB-200 has one changeover relay output. According to VDE 0110 and IEC 60947-1 standards; switching capacity of relay output is 8A, 2000VA, 250 V. and maximum electrical life time is 1x 10^6.

1.2.4 Inputs

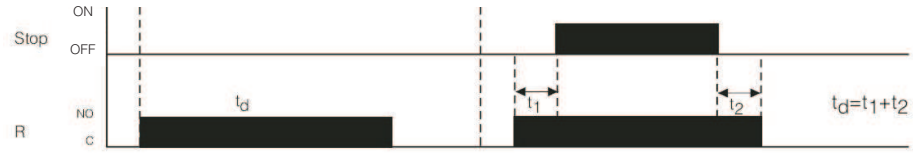
1.2.4.1 Start Input and Stop Input:

These inputs are voltage-free dry inputs.

Start Input: For some of the functions, output depends on the state of the start input or input pulses from start input. When user shorts two terminals of this input, start input activates.

Stop Input: When stop input applies, the timing pauses with stop input's leading edge. When stop input is removed, the timing continues to count from it's last value with stop input's trailling edge. Stop input affects all functions as the same without any exception. When user shorts two terminals

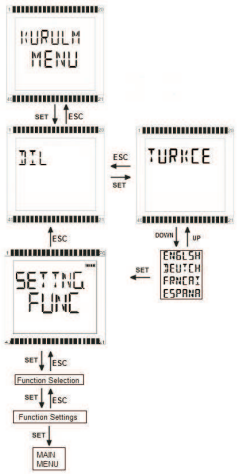
An Example: This function needs td delay time to release relay. When stop input is applied, it stops counting and saves the time t1. With stop input's trailing edge, counting continues from the saved time t1 until delay time td (Here td=t1 + t2). While stop input is active, the relay doesn't change its position.



Stop : Stop Input
R : R1 Relay
td : Delay Time
t1 : Time elapsed until Stop Input is activated (t1<td)
t2 : Time elapsed after Stop Input is deactivated (td=t1+t2)

2. OPERATING INSTRUCTIONS

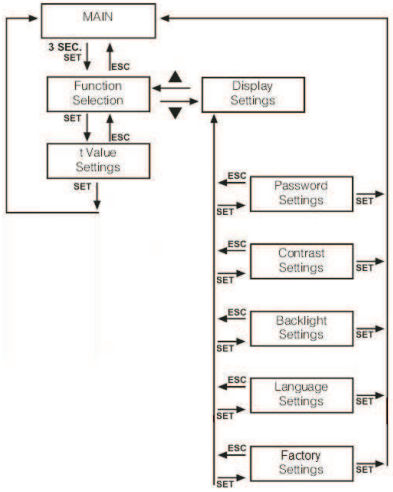
When the device is taken out of the box, an installation menu will be displayed. Language and function settings are done in this menu as seen in the figure below. Afterwards, device returnss to main menu and starts operating.



Basic settings map is shown below. There are two main submenus as function selection and display settings.

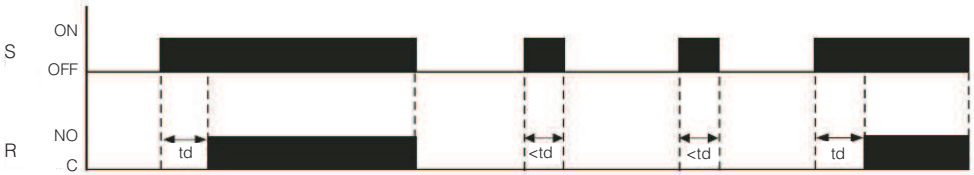
Function Selection Submenu: A new function is set from function selection menu. In this submenu, user chooses a function, sets t parameter/parameters for selected function; assigns relay output.

Display Configurations Submenu: Changing password, adjusting contrast, activating backlight or changing language is done from this submenu.



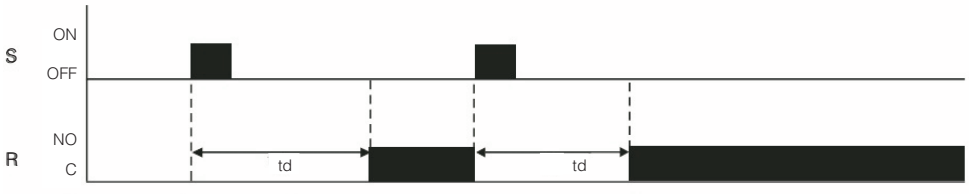
1. On Delay / Start by external trigger leading edge

This funcition is controlled by start input. Time counting starts with the leading edge of the start pulse; at the end of time **"td"** the output relay is activated and remain activated while start input pulse is ON

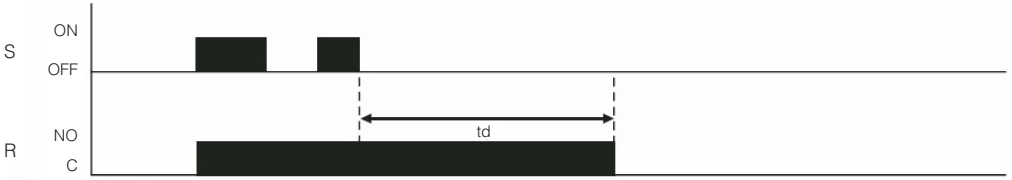


S : Start Input
R : R1 Relay
td : Delay Time

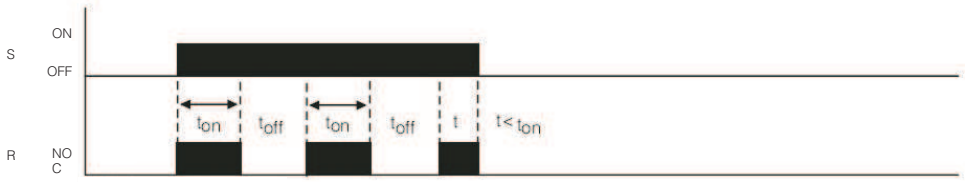
2. On Delay / Start by external edge re-trigger
This funcition is controlled by start input. Time counting starts with the leading edge of the start pulse; at the end of time **“td”** the output relay is activated and remain activated until next start pulse is applied.



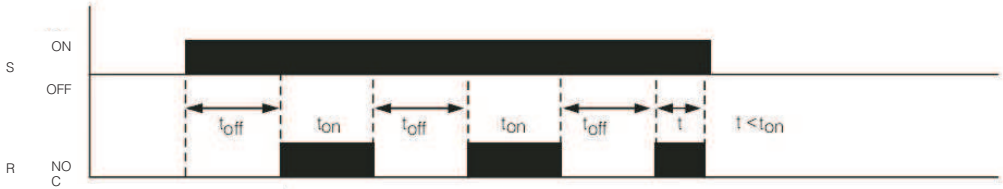
3. Off Delay / Start by external trigger trailing edge
This function is controlled by start input. Output Relay is activated when start pulse is applied and remain on; time counting starts with the trailing edge and output relay is deactivated at the end of delay time **“td”**
If trigger pulse occur during time counting period, elapsed time is reset.



4. Symmetric Flasher / Start by external trigger leading edge / Relay ON start
This function is controlled by start input. With the leading edge, output relay is activated and remain on during **"ton".** After that, it is deactivated and **" toff "** starts. This cycle is repeated while start pulse is on (high).

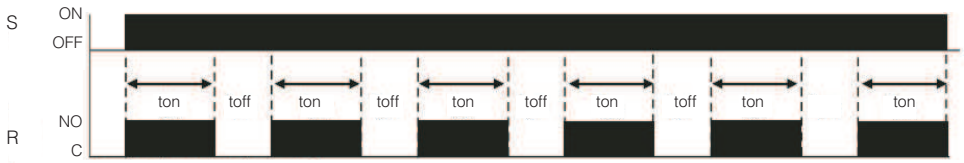


5. Symmetric Flasher / Start by external trigger leading edge / Relay OFF start
Function is similar to the ON Start version (function 4) with the exception that the output relay start as passive.



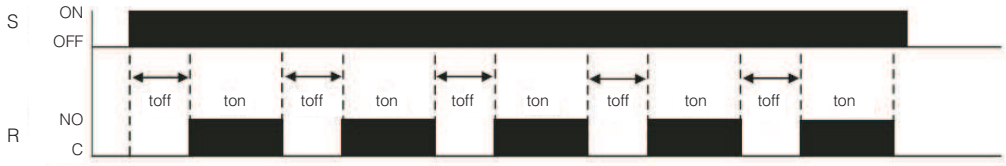
6. Asymmetric Flasher / Start by external trigger leading edge / Relay ON start

This function is controlled by start input. With the leading edge, output relay is activated and remain on during **"ton".** After that, it is deactivated and **" toff "** starts. This cycle is repeated while start pulse is on (high).



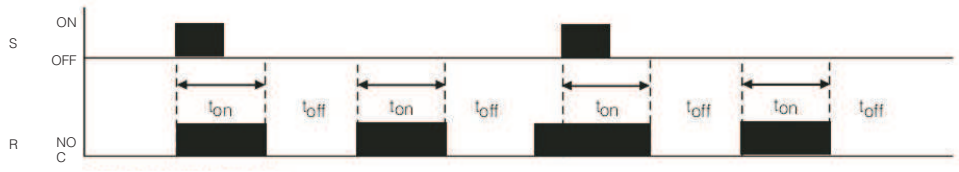
7. Asymmetric Flasher / Start by external trigger leading edge / Relay ON start

Function is similar to the ON Start version (function 6) with the exception that the output relay start as passive.



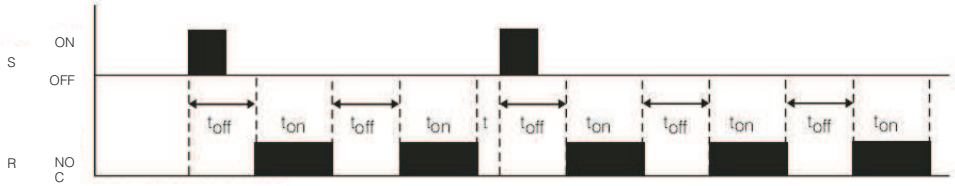
8. Symmetric Flasher / Start by external edge - retrigger / Relay ON start

This function is controlled by start input. With the leading edge, output relay is activated and remain on during **“ton”.** After that, it is deactivated and **”toff”** starts. This cycle is repeated until the next edge-retrigger pulse. If a trigger pulse occur during “ton”, time counting is reset and **”ton”** time counting is restarted.

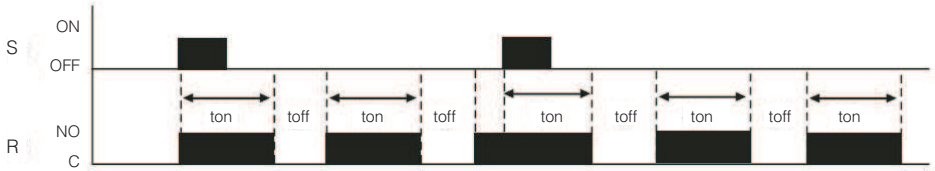


9. Symmetric Flasher / Start by external edge - retrigger / Relay OFF start

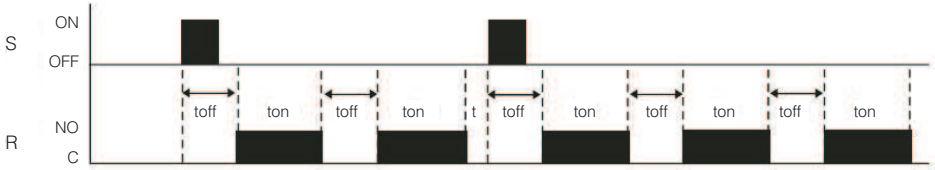
Function is similar to the ON Start version (function 8) with the exception that the output relay start as passive.



10. Asymmetric Flasher / Start by external edge - retrigger / Relay ON start
Function is similar to the Symmetric version (function 8) with the exception that **“ton”** and **“toff”** times can be set differently.

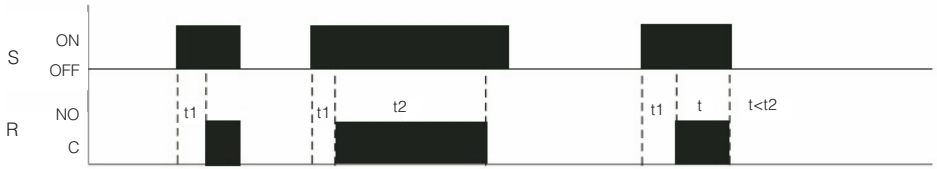


11. Asymmetric Flasher / Start by external edge - retrigger / Relay OFF start
Function is similar to the Symmetric version (function 9) with the exception that **“ton”** and **“toff”** times can be set differently.



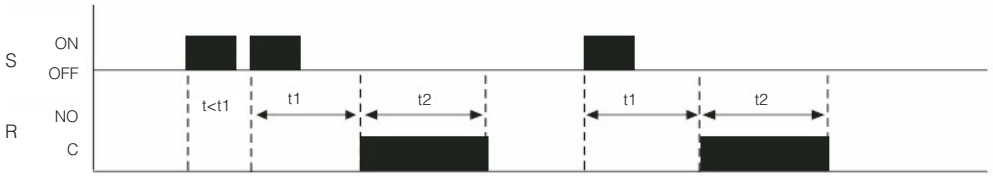
12. Adjustable ON Delay by external trigger leading edge

This function is controlled by start input. The cycle starts with adjustable **“toff”** delay time. At the end of delay time, output relay is activated and remain activated during **“ton”.** If the Start input is deactivated and activated, function will be reset.

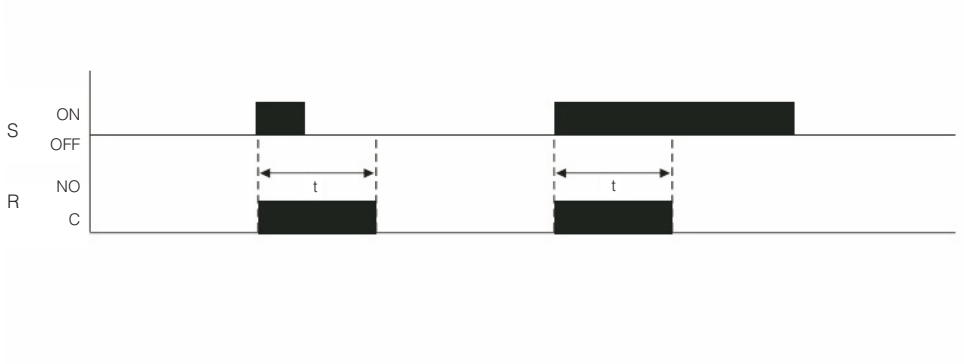


13.Adjustable and Resettable ON Delay Pulse by external trigger leading edge

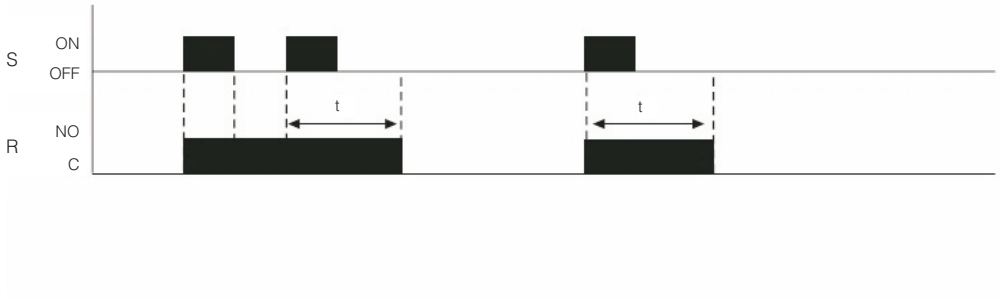
This function is controlled by start input. The cycle starts with adjustable **“toff”** delay time after a pulse is created at the Start input. At the end of delay time, output relay is activated and remain activated during **“ton”**. If a re-trigger pulse occurs during **“toff”,** elapsed time is reset and **“toff”** counting is restarted.



14. Adjustable OFF Delay Pulse by External Trigger Leading Edge
This function is controlled by start input. With the leading edge of the external trigger, output relay is activated and remain on during **“td”**.



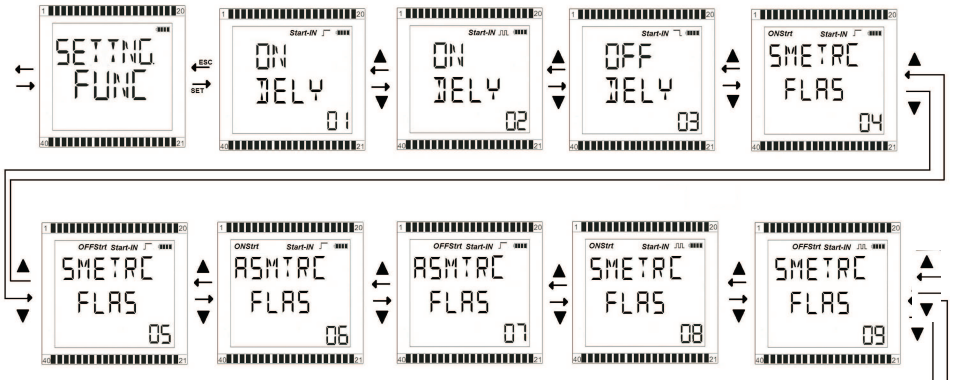
15. Adjustable OFF Delay Pulse by External Trigger Leading Edge Re-trigger
This funcition is controlled by start input. The cycle starts with adjustable **“td”** delay time and output relay is activated. It remains activated during this period. If a re-trigger pulse occurs during **“td”** period, elapsed time is resett and **“td”** counting is restarted.

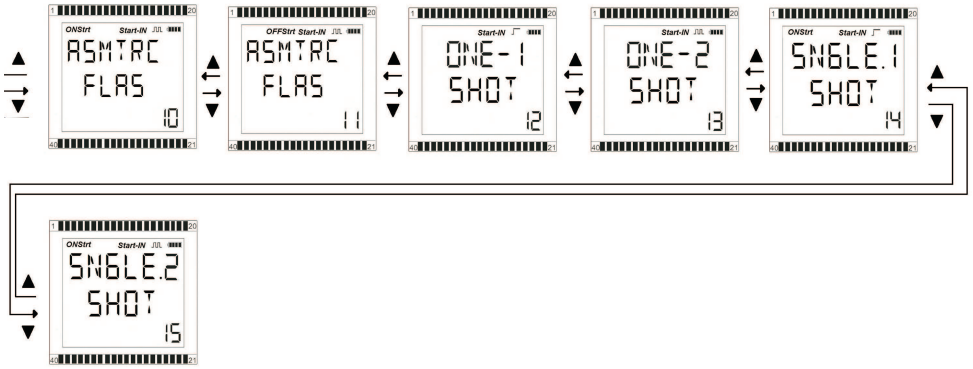


2.2 Settings

2.2.1 Function Selection:

Function sub-menu is reached by pressing SET button in Settings menu. The functions that the device offers can be browsed with UP or DOWN buttons. The user selects the desired function enters its adjustment menu by pressing SET button.

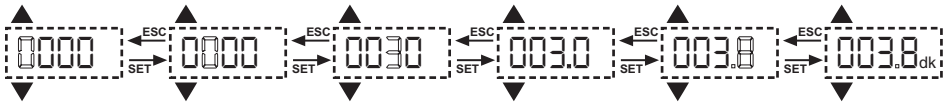




2.2.2 Time Setting :

After selecting the function, user sets t value/values according to the application need. Time range for **"t"** is between 0.1 seconds-9999 seconds and 0.1 minutes-9999 minutes. Setting starts from left digit towards right digit. User uses UP button to increase value of the digit and DOWN button to decrease. The user presses SET button to move to the next digit on the right and the ESC button to move back to a previous digit. After entering a number, user selects unit (minutes or seconds) by pressing UP or DOWN. Finally, the selected values are stored by pressing SET button.

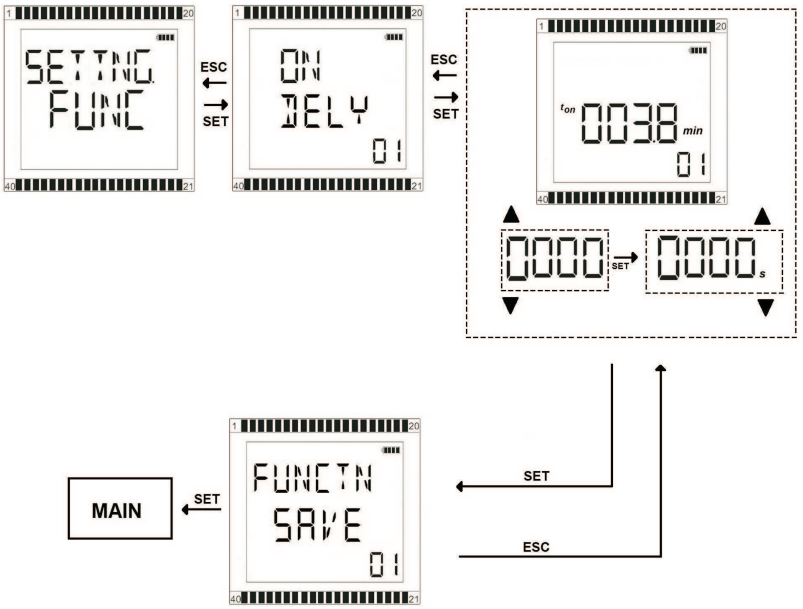
Example Interval (0.1 - 9.9) :



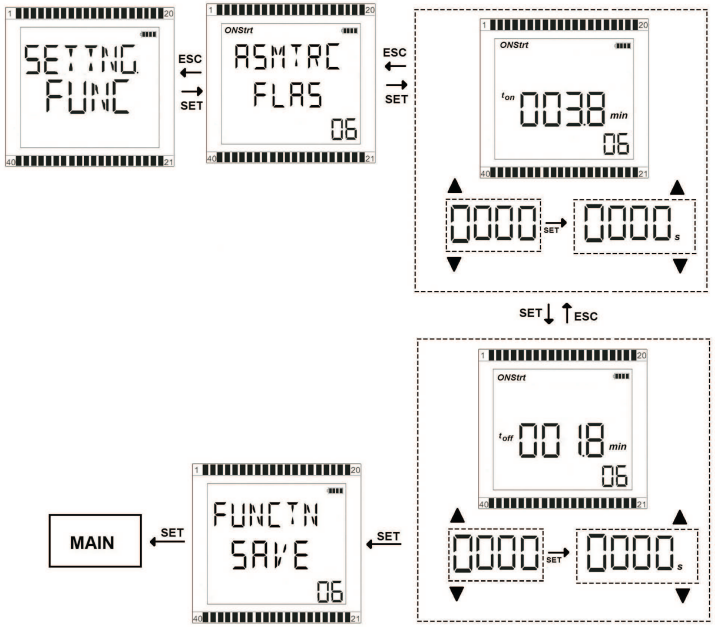
Example Interval (10 - 9999) :

FUNCTION SETTINGS

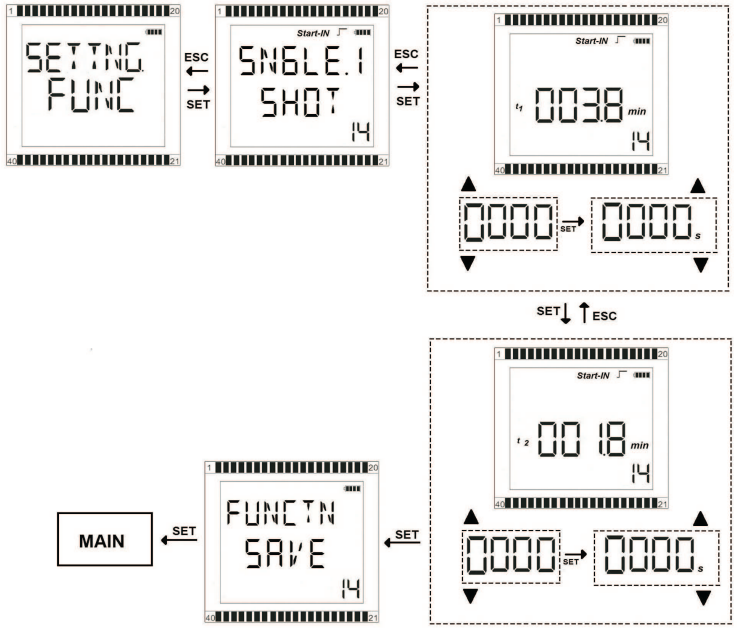
ON Delay



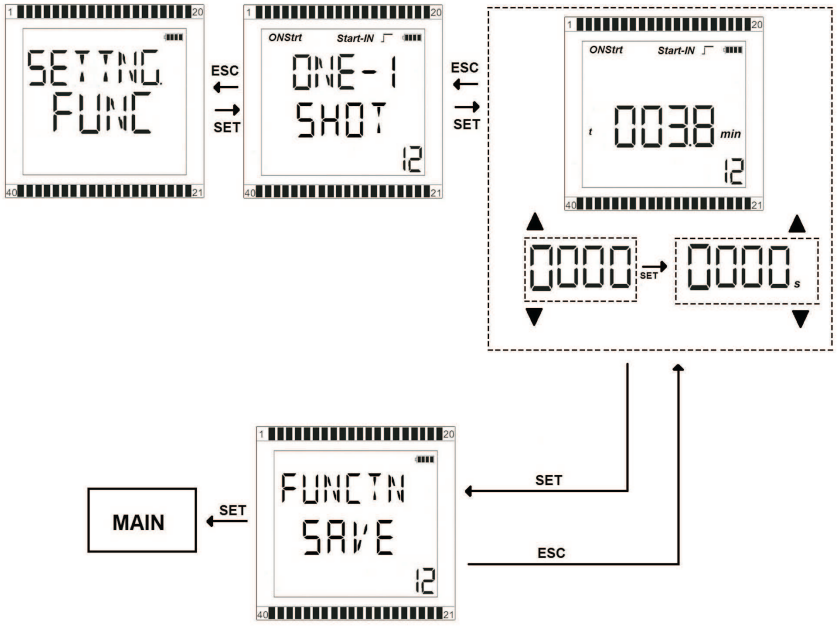
Flasher :



Single Shot

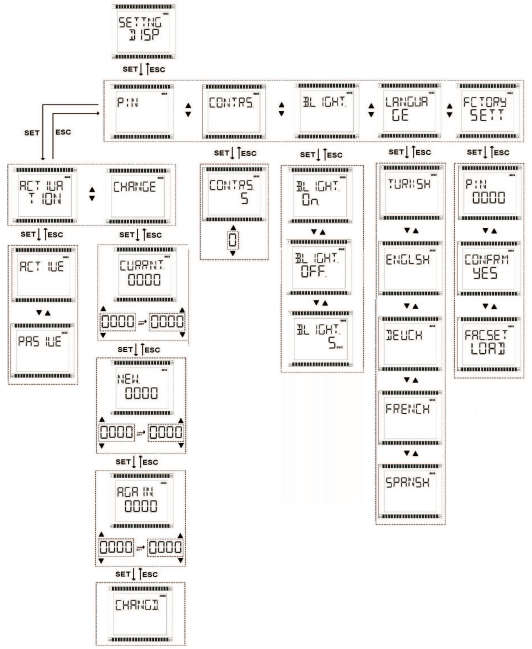


One Shot :



2.2.3 Display Settings :

In this submenu; user can set password, contrast, backlight, language and return to factory settings. In password submenu, user can activate or deactivate the password. To change password, user enters current password first, then new password twice. User can change contrast level from 1 to 5. Also user can choose the backlight operation as on, off, on for 5 seconds. Five languages as Turkish, English, German, French, Spanish can be selected.

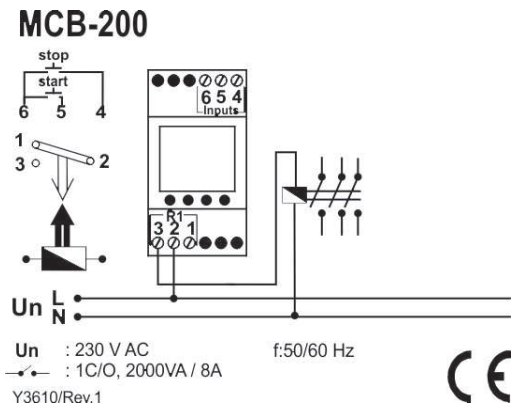


3 MAIN DISPLAY

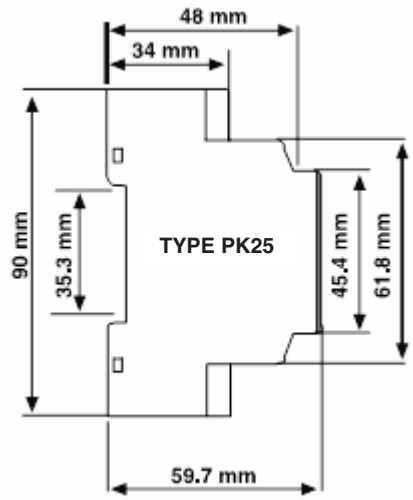
This is an example to explain main screen use.
- Top line displays the function. In this case; Onstrt (ON start), Strt- Input (Start Input) and Edge Trigger is selected.
- First line displays the set time value; min. icon indicates the time scale.
- Second line displays the elapsed time value; min. icon indicates the time scale
- “start” icon indicates that “Strt-Input” is active.
- The number 01 indicate that 1st function is selected.
- ◉icon is turned on and indicate that R1 relay is activated.

When UP or DOWN button is pressed while on the main menu, the name of the selected function is displayed. By pressing the ESC button, main display is accessed again.

Connection Diagram :



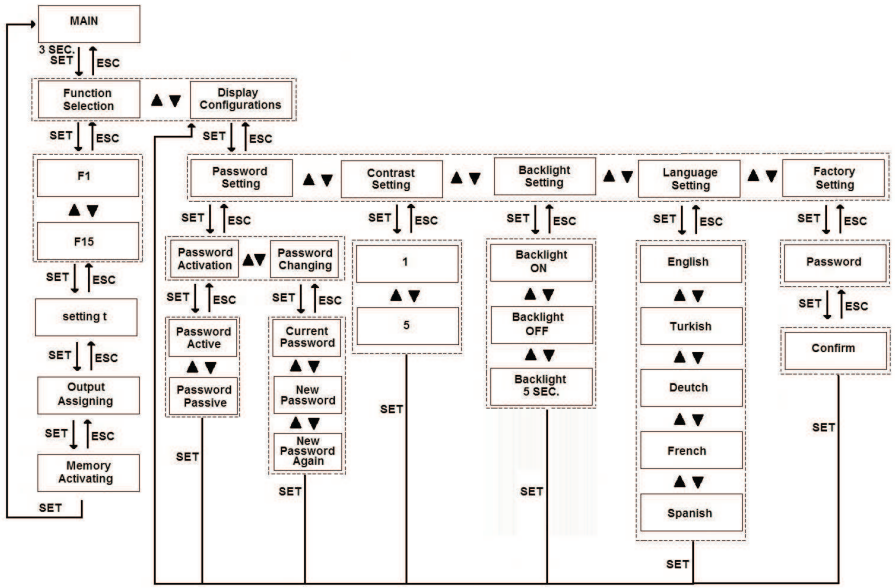
Dimensions :



Technical Features

Input Circuits	
Battery	2 pcs. Lithium Battery
Battery Life	10 years or 1 million relay operations
Input Contacts	2 dry contacts (Start, Stop)
Time Setting	
Time Range	Selectabale 0.2 . 9999 seconds 0.1 . 9999 minutes
Reset Time	< 100 ms
Repetition Error	±0.2% of the set time
Time Setting Error	< 0.5 %
Output Circuits	
Output Contact	1 C/O Contact
Switching Capacity	8 A , 2000VA
Voltage according to VDE 0110, IEC 60947-1	250 V
Maximum Electrical Life	1x 10^6
General Features	
Dimensions	Width 36.0 mm Length 90.0 mm Depth 59.7 mm

Cable Selection	2,5mm^2 stranded 4,0mm2 solid
Weight	0.25 kg
Installation	Ray Montaj
Enclosure and Terminal Protection Class	IP40 / IP20
Operating Temperature	+5...+50 °C
Standards	
Product Standard	IEC 61812-1 10.1996, EN 61812-1 + A11/8.1999, DIN VDE 0435 part 2021
EMC Directives	2004/108/EC
Electromagnetic Compliance	IEC 61000-6-2, EN 61000-6-4
ESD	IEC 61000-4-2, EN 61000-4-2 (level 3 6 kV / 8 kV)
HF Radiation Resistance	IEC 61000-4-3, EN 61000-4-3 (level 3 10 V/m)
Burst	IEC 61000-4-4, EN 61000-4-4 (level 3 2 kV / 5 kHz)
Surge	IEC 1000-4-5, EN 61000-4-5 (level 4 2 kV L-L)
HF Line Emission	IEC 1000-4-6, EN 61000-4-6 (level 2 10 V)
Low Voltage Directive	2006/95/EC
RoHs Directive	2002/95/EC
Isolation Data	
Rated impulse withstand voltage between all isolated circuits	VDE 0110, IEC 664 (4 kV / 1.2-50 ?s)
Test voltage between all isolated circuits	2.5 kV, 50 Hz, 1 min.
Pollution Category	IEC/EN 60664-1, VDE 0110, UL 508 (3)
Overvoltage Category	IEC/EN 60664-1, VDE 0110, UL 508 (III)


MAIN
3 SEC.
SET
ESC
Function Selection
Display Configurations
F1
F15
setting t
Output Assigning
Memory Activating
Password Setting
Contrast Setting
Backlight Setting
Language Setting
Factory Setting
Password Activation
Password Changing
Password Active
Password Passive
Current Password
New Password
New Password Again
1
5
Backlight ON
Backlight OFF
Backlight 5 SEC.
English
Turkish
Deutch
French
Spanish
Password
Confirm