



Multi-function



MFRk-E12

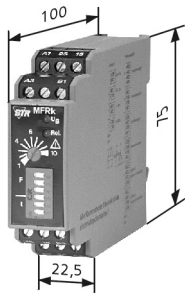
230 V AC / 24 V AC/DC -  
2 changeover contacts

- six selectable functional modes
- four selectable time ranges up to 10 h
- LED indication

Part Numbers

110 310 41 22 30	0.15 s ... 800 s
110 310 41 22 31	0.1 min... ... 10 h

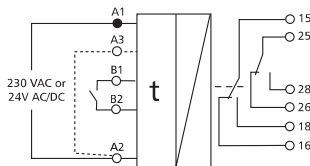
Housing Dimensions



Wiring

A1	25	15	A1 - A2 operating voltage 230 V AC
A3		B1	
	28	26	A3 - A2 operating voltage 24 V AC/DC
25	18	16	
15			B1 - B2 potential free control contact
B1	B2		15 - 16 - 18 25 - 26 - 28 output contacts 2 changeover contacts
A3	A2		
A1			Caution! Contacts B1 and B2 are not isolated.
16	18	B2	
26	28	A2	

Wiring Diagram



Description

Multi-functional timer relay with 6 selectable functional modes and 4 selectable time ranges. Functional modes and time ranges are programmed by selection switches on the front side.  
Time setting is done by means of a linear potentiometer on relative scales.

Technical Data

Input

nominal voltage $U_N$	230 V AC, 24 V AC/DC
power consumption	
at 230 V AC	8 VA
at 24 V AC	1.5 VA
at 24 V DC	0.8 W
operating voltage range	0.9 ... 1.1 x $U_N$
release voltage	$\geq 0.15 U_N$
frequency range	50 ... 60 Hz
duty cycle	100 %
response time $t_a$	about 20 ms
release time $t_r$	about 20 ms
recovery time $t_w$	$\geq 250$ ms
control contact	$\geq 20$ ms
minimum turn-on time	$\geq 0.2$ s
repeat accuracy	$\leq \pm 0.01$ %
voltage sensitivity	-
temperature sensitivity	$\leq \pm 0.1$ %/K
operating temperature range	-10 °C ... +55 °C
storage temperature range	-25 °C ... +70 °C

Output

output contact	2 changeover contacts
contact material	AgNi
switching voltage max.	250 V
continuous current max.	4 A
making/breaking capacity	230 V~ 4 A AC1, 230 V~ 1.5 A AC3, 230 V- 0.12 A, 60 V- 0.6 A 24 V- 3 A 12 V- 4 A
contact fuses	4 A
mechanical endurance	1x10 <sup>7</sup> switching cycles
electrical endurance	1x10 <sup>5</sup> switching cycles
permissible switching frequency	1200 switching cycles/h
isolation per VDE 0110	
rated voltage	250 V AC/DC
overvoltage category	II
pollution degree	2
test voltage coil/contact	2000 V, 50 Hz 1 min.
EMC test	emission per EN 50 081 T1 interference immunity per EN 50 082 T2

Housing

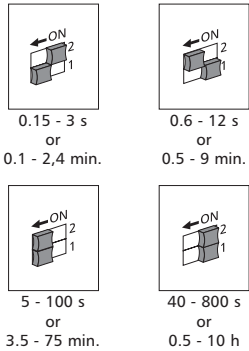
type of protection (EN 60529)	housing IP50, terminal blocks IP20
wire cross section	2.5 mm <sup>2</sup>
mounting position	any
colour	green
weight	150 g
housing dimensions WxHxL	22.5 x 75 x 100 mm
modular	without spacing



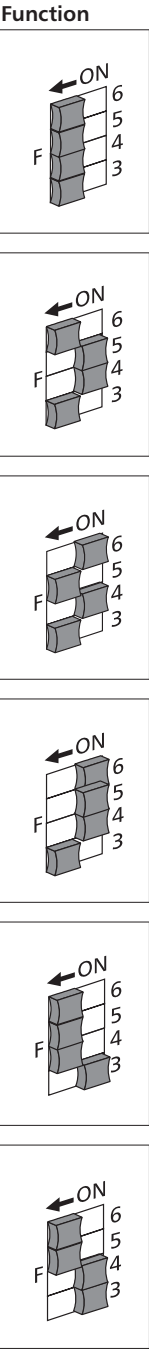
- six selectable functional modes
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Multi-function

Time range selection



Function selection



Functional Description

Delay on make

On application of power the selected delay time  $t_v$  starts and at its end the output relay pulls on. It only drops off when power is removed. If power is interrupted during the delay time run, the delay time starts anew after application of power and the recovery time cycle  $t_w$ .

Circuit closing, wiping

On application of power the output relay pulls on without delay and drops off after the wipe time cycle  $t_v$ . Power has to be applied at least for the wipe time period. If it is interrupted before the end of the wipe time the relay immediately drops off. This operation is only repeated when power is again applied and the recovery time  $t_w$  is over.

Delay on break

Power needs to be applied continuously. The output relay pulls on without delay when the potential free control contact is closed. After opening of the control contact the selected delay time  $t_v$  starts, at its end the relay drops off.

Circuit opening, wiping

Power needs to be applied without interruption. After closing of the potential free control contact the output relay stays in stored position. The selected wipe time only starts when the control contact opens. The relay drops off at the end of the wipe time. This operation is only repeated when power is turned on again and the recovery time  $t_w$  is over.

Flashing, interval start

On application of power the output relay stays in stored position for the selected interval time cycle  $t_p$  and then pulls on for the pulse time  $t_i$ . This operation is repeated until power is removed.

interval / pulse time ratio = 1 : 1

Flashing, pulse start

On application of power the output relay pulls on for the selected pulse time  $t_i$  and then drops out for the interval time  $t_p$ . This operation is repeated until power is removed.

pulse / interval time ratio = 1 : 1

Function Diagram

