

Fan Timer Relay



LTRk-E12

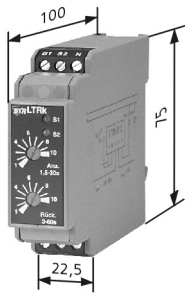
230 V AC / 24 V AC/DC

- selectable response delay up to 30 s
- selectable release delay up to 60 s
- interlocked output contacts
- LED indication for stage 1 and stage 2

Part Numbers

110 283 05 30	230 V AC
110 283 13	24 V AC/DC

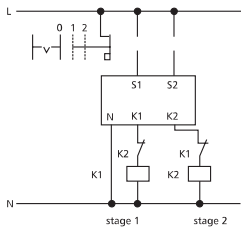
Housing Dimensions



Wiring

S1	S2	N
switching stage 1 230 V AC		
switching stage 2 230 V AC		
K1 contactor stage 1 230 V AC		
K2 contactor stage 2 230 V AC		
N neutral contactor		
K1	K2	

Wiring Diagram



Description

The fan timer relay LTRk-E12 is specifically designed to control two-stage fan motors. It is used to switch two stage fan motors in motor preserving way. Response and release delay are separately and infinitely adjustable.

Functional description

Control is effected by a two stage switch which is directly connected to the LTRK (S1 S2). The motor contactors are controlled by the two outputs (K1 K2). The LTRk performs the following functions:

1. If stage 2 is selected directly, stage 1 is initially engaged for the selected startup period allowing the fan to accelerate to rated speed. When this is reached the LTRk engages stage 2. The switch-over time between stage 1 "OFF" and stage 2 "ON" ist at least 50 ms. The two stages are interlocked.
2. When the fan is switched from stage 2 to stage 1 or "OFF" a delayed release is triggered, allowing the fan to run down before stage 1 takes effect again.
3. If the fan has already been running in stage 1 for at least the selected startup time, stage 2 can be engaged immediately. When switching from stage 1 to stage 2 the interruption should not exceed 250 ms. If this time is exceeded the instrument will operate as described under 1.

Commentary

The operation of two-stage fans may cause certain problems:

If stage 2 is immediately switched on, the fan would create a considerable load inrush current until it has reached its rated speed. To reduce this current peak it is advisable to start the fan running at stage 1 and then switch over to stage 2.

If the fan, running in stage 2, is switched directly to stage 1, the motor will be broken until it has reached the speed of stage 1. To prolong the life of the fan and the control contactors, however, it is preferable to allow the fan to run down before stage 1 is engaged.

Technical Data

Input

nominal voltage $U_N$ (S1, S2)	230 V AC, 24 V AC/DC
operating voltage range	0.9 ... 1.1 x $U_N$
power consumption	
230 V AC	18 VA
24 V AC	1.2 VA
24 V DC	1 W
frequency range	50 ... 60 Hz
duty cycle	100 %
minimum turn-on time stage 2	about 500 ms
release voltage	$\geq 0.15 U_N$
recovery time $t_w$	about 20 ms
repeat accuracy	$\pm 5 \%$

Output

output voltage	230 V AC, equivalent to $U_N$
output current max.	6 A AC1 / 1.5 A AC3
response time stage 1	0 ms
response time stage 2	about 30 ms
fuses	6 A
electrical endurance	$2 \times 10^5$ switching cycles
delay on switching	70 ms $\pm 25 \%$
switching interruption	max. 250 ms
isolation per VDE 0110	
rated voltage	250 V AC
overvoltage category	II
pollution degree	2
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