

# TeSys contactors

## For rotor circuits of slip-ring motors

### Applications

These contactors are used to eliminate starting resistance in the rotor circuit of slip-ring motors.

The most common application is for starters without inching and without rotor speed adjustment: pumps, fans, conveyors, compressors, ...

In the case of control by means of a manually operated master controller, the use of contactors with magnetic blow-out is recommended. Please consult your Regional Sales Office.

For hoisting applications, contactor selection must take into account the type of motor duty, the operating rate, the rotor voltage and current, the type of connection, the ambient temperature, etc.  
Please consult your Regional Sales Office.

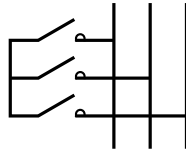
### Operation

The rotor circuit contactors are interlocked with the stator contactor and therefore do not open until after the stator contactor has opened, when the rotor voltage has disappeared, or virtually disappeared.

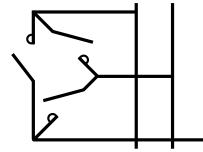
They make the current corresponding to the normal starting peak (1.5 to 2.5 times the rated rotor current) and open the circuit under no-load. Making and breaking are easy.

### Different types of rotor connection

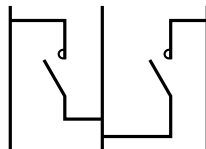
Star connection



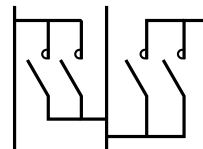
Delta connection



'V' connection



'W' connection



## Contactor selection according to the type of connection

### Rotor current and voltage coefficients

Coefficients to be applied to the operational current values shown in the table below.

Type of connection	Rotor I coefficient	3-phase rotor U <sub>e</sub> (1)			
		Maximum		With counter-current	
	Operational I	LC1 F	LC1 B	LC1 F	LC1 B
Star	1	2000 V	2000 V	1000 V	1000 V
Delta	1.4	1700 V	1700 V	850 V	850 V
In V	1	1700 V	1700 V	850 V	850 V
In W	1.6	1700 V	1700 V	850 V	850 V

## Selection according to the operational current

The selection examples below take into account:

- a ratio of 2 between the maximum operational rotor voltage (U<sub>er</sub>) and the rated stator operational voltage (U<sub>es</sub>). This ratio is given in standard IEC 60947-4,
- a guarantee of occasional duty (making and breaking capacities) specified in the above standards.

Time current flowing	Contactor rating											
	LC1 D150	LC1 F185	LC1 F265	LC1 F400	LC1 F500	LC1 F630	LC1 F780	LC1 BL	LC1 BM	LC1 BP	LC1 BR	
<b>Intermediate contactor: with number of operating cycles ≤ 30/h</b>												
10 s	450 A	550 A	800 A	1100 A	1500 A	2000 A	2500 A	2000 A	2400 A	3750 A	5000 A	
30 s	280 A	400 A	550 A	730 A	1000 A	1500 A	2000 A	1200 A	1800 A	2600 A	3600 A	
60 s	220 A	300 A	400 A	550 A	750 A	1200 A	1500 A	1000 A	1500 A	2200 A	3000 A	
<b>Intermediate contactor: with number of operating cycles ≤ 60/h</b>												
5 s	450 A	550 A	800 A	1100 A	1500 A	2000 A	2500 A	2000 A	2400 A	3750 A	5000 A	
10 s	330 A	450 A	620 A	860 A	1250 A	1800 A	2300 A	1600 A	2200 A	3400 A	4500 A	
30 s	220 A	300 A	400 A	550 A	750 A	1200 A	1500 A	1000 A	1500 A	2200 A	3000 A	
<b>Intermediate contactor: with number of operating cycles ≤ 150/h for LC1 F and 120/h for LC1 B</b>												
5 s	300 A	420 A	580 A	820 A	1150 A	1650 A	2200 A	1500 A	2100 A	3200 A	4200 A	
10 s	250 A	350 A	430 A	600 A	850 A	1300 A	1600 A	1100 A	1600 A	2300 A	3200 A	
<b>Rotor short-circuit contactor and intermediate contactor: with number of operating cycles &gt; 150/h for LC1 F and 120/h for LC1 B</b>												
–	200 A	270 A	350 A	500 A	700 A	1000 A	1600 A	800 A	1250 A	2000 A	2750 A	

## Electrical durability

For automatic starting, the electrical durability is in the region of 1 million operating cycles.

(1) For use up to 3000 V, please consult your Regional Sales Office.