

# ELR .../500AC-9...

## Adjustment factors for asynchronous motors



Application Note  
105229\_en\_00

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### 1 Description

The adjustment factors refer to hybrid motor starters with a maximum load current of 9 A. You can determine the maximum permissible rated current of the motor using the load current, the surge current factor (see data sheet of the respective motor) and the 9 A derating curve (see packing slip of the relevant device).



Make sure you always use the latest documentation.  
It can be downloaded at [www.phoenixcontact.net/catalog](http://www.phoenixcontact.net/catalog).

This document applies to the following products:

### Products

Description	Type	Order No.	Pcs. / Pkt.
"4 in 1" hybrid motor starter for reversing 3~ AC motors up to 550 V AC, with 24 V DC input, 9 A output current, emergency stop function, and adjustable overload shutdown.	ELR H5-IES-SC- 24DC/500AC-9	2900421	1
"4 in 1" hybrid motor starter for reversing 3~ AC motors up to 550 V AC, with 230 V AC input, 9 A output current, emergency stop function, and adjustable overload shutdown.	ELR H5-IES-SC-230AC/500AC-9	2900422	1
Hybrid "3 in 1" motor starter for starting 3~ AC motors with up to 550 V AC, with 24 V DC input, 9 A output current and adjustable overload disconnection.	ELR H3-IES-SC- 24DC/500AC-9	2900569	1
Hybrid "3 in 1" motor starter for starting 3~ AC motors with up to 550 V AC, with 230 V AC input, 9 A output current and adjustable overload disconnection.	ELR H3-IES-SC-230AC/500AC-9	2900570	1
"3 in 1" hybrid motor starter for reversing 3~ AC motors up to 550 V AC, with 24 V DC input, 9 A output current, and emergency stop function.	ELR H5-ES-SC- 24DC/500AC-9	2900561	1
"3 in 1" hybrid motor starter for reversing 3~ AC motors up to 550 V AC, with 230 V AC input, 9 A output current, and emergency stop function.	ELR H5-ES-SC-230AC/500AC-9	2900562	1
"2 in 1" hybrid motor starter for starting 3~ AC motors up to 550 V AC, with 24 V DC input, 9 A output current, and emergency stop function.	ELR H3-ES-SC- 24DC/500AC-9	2900554	1
"2 in 1" hybrid motor starter for starting 3~ AC motors up to 550 V AC, with 230 V AC input, 9 A output current, and emergency stop function.	ELR H3-ES-SC-230AC/500AC-9	2900555	1
"4 in 1" three-phase solid-state reversing contactor with 24 V DC input, 9 A output current and adjustable overload switching	ELR W3- 24DC/500AC- 9I	2297057	1
"4 in 1" three-phase solid-state reversing contactor with 230 V AC input, 9 A output current and adjustable overload switching	ELR W3-230AC/500AC- 9I	2297060	1

## 2 Derating Curves

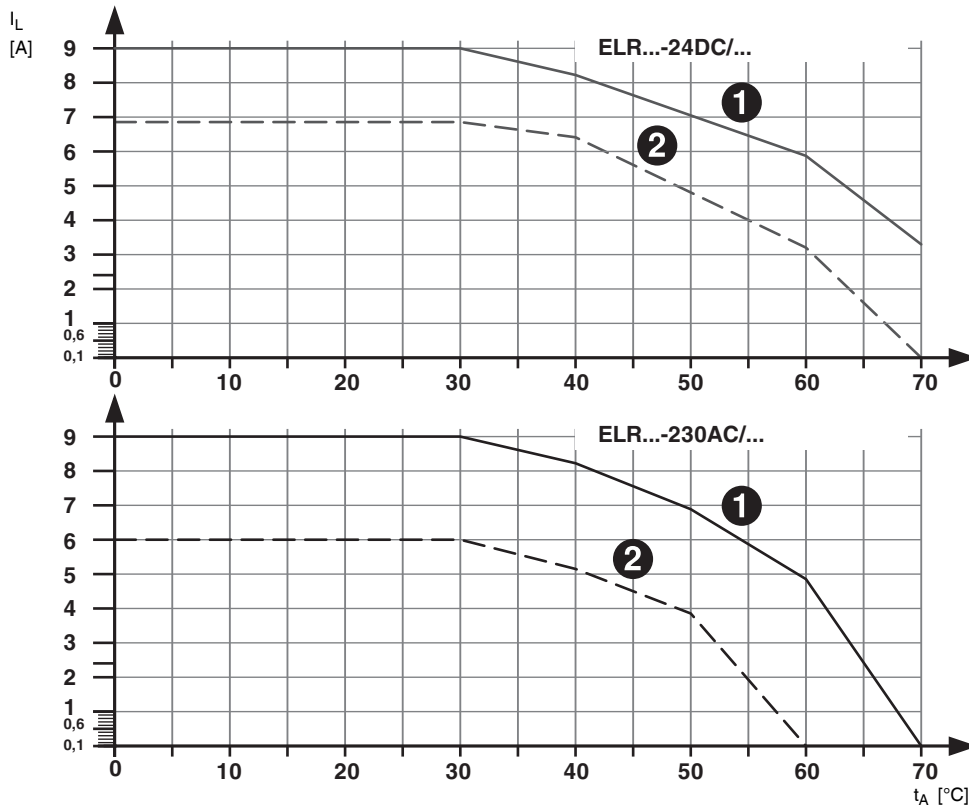


Figure 1 Derating curves for 100% operating time

$I_L$  = Load current

$t_A$  = Ambient temperature

$I_A$  = Starting current

$I_N$  = Rated current

① ≙ Mounted in rows at a distance of 20 mm

② ≙ Mounted in rows with zero spacing

### 3 Surge current factor

Surge current factor $I_A/I_N$	1 <sup>1</sup>	2	3	4	5	6	7	8 <sup>2</sup>	9	10
Adjustment factor K	1	1	1	1	1	0,96	0,83	0,72	0,64	0,58

<sup>1</sup> Utilization category AC-51

<sup>2</sup> Utilization category AC-53a

Example 1	
Motor with surge current factor (acc. to data sheet of the respective motor)	$I_A/I_N = 8$
Adjustment factor (acc. to above table)	$K = 0,72$
Max. allowable load current at 30 °C, mounted in rows with zero spacing (acc. to derating curve, ELR...-24DC/...)	$I_N = 9 \text{ A}$
Max. permissible rated current of the motor	$I_N = 6,5 \text{ A}$

Example 2	
Motor with surge current factor (acc. to data sheet of the respective motor)	$I_A/I_N = 5$
Adjustment factor (acc. to above table)	$K = 1$
Max. allowable load current 60 °C, mounted in rows at a distance of 20 mm (acc. to derating curve, ELR...-24DC/...)	$I_N = 3,2 \text{ A}$
Max. permissible rated current of the motor	$I_N = 3,2 \text{ A}$



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