

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

Adjustment factors for asynchronous motors



Application Note
105229_en_00

© PHOENIX CONTACT 2012-03-23

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.

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

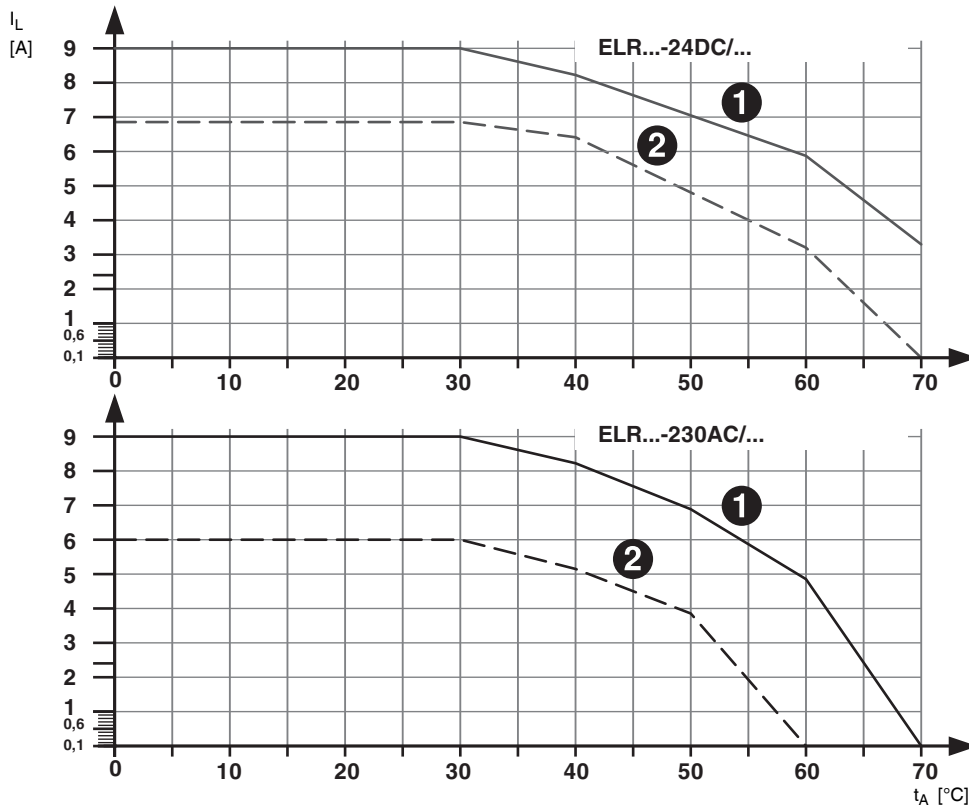


Figure 1 Derating curves for 100% operating time

I_L = Load current

t_A = Ambient temperature

I_A = Starting current

I_N = Rated current

① $\hat{=}$ Mounted in rows at a distance of 20 mm

② $\hat{=}$ Mounted in rows with zero spacing

3 Surge current factor

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

¹ Utilization category AC-51

² 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	$I_N = 3,2 \text{ A}$



SCATTERGOOD & JOHNSON LTD

ELECTRICAL ENGINEERING & FLUID CONTROL DISTRIBUTORS

Est.1899

At Scattergood & Johnson Ltd, we pride ourselves on being a technical distributor to specialist industries.

Working with a range of quality product suppliers across a number of specialist markets, we are not your average 'box shifter' - we are your technical and supply chain partner.

We fully support every product we sell - for free! Our internal team and external sales engineers can answer any product or application question, no matter the complexity.

Backing up this technical ability is a range of 50,000+ products available from stock for nationwide next day delivery (same day if required!), or you can collect what you need from any of our trade counters around the UK.

Select your specialist interest below to learn more about how we can help.



Online, In Branch and On the Road - Scattergood & Johnson Ltd, there when you need us.

www.scatts.co.uk