Soft starters DS and DM

Soft starters allow gentle starting of three-phase asynchronous motors through an infinitely variable control of the supply voltage during the starting phase. With the resulting torque increase, the motor output is adapted to the machine's load behaviour.

DS6

- two-phase-controlled soft starters with built-in bypass
- Simple adjustment through three switches (U_{Start}, t_{Start}, t_{Stop})
- Rating range 41…200 A, 18.5…110 kW (at 400 V)

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DS4

- two-phase-controlled soft starters
- Three frame sizes (45, 65 and 110 mm)
- Simple adjustment through three switches (U_{Start}, t_{Start}, t_{Stop})
- Three versions in combination (DOL starter/built-in bypass/ reversing starter)
- Rating range 6…31 A, 2.2…15 kW (at 400 V)

Page 14/5

DM4

- three-phase-controlled soft starters
- Parameterizable and with communication capability
- Selector switch with 10 standard applications
- Rating range 16…900 A, 7.5…900 kW (at 400 V)

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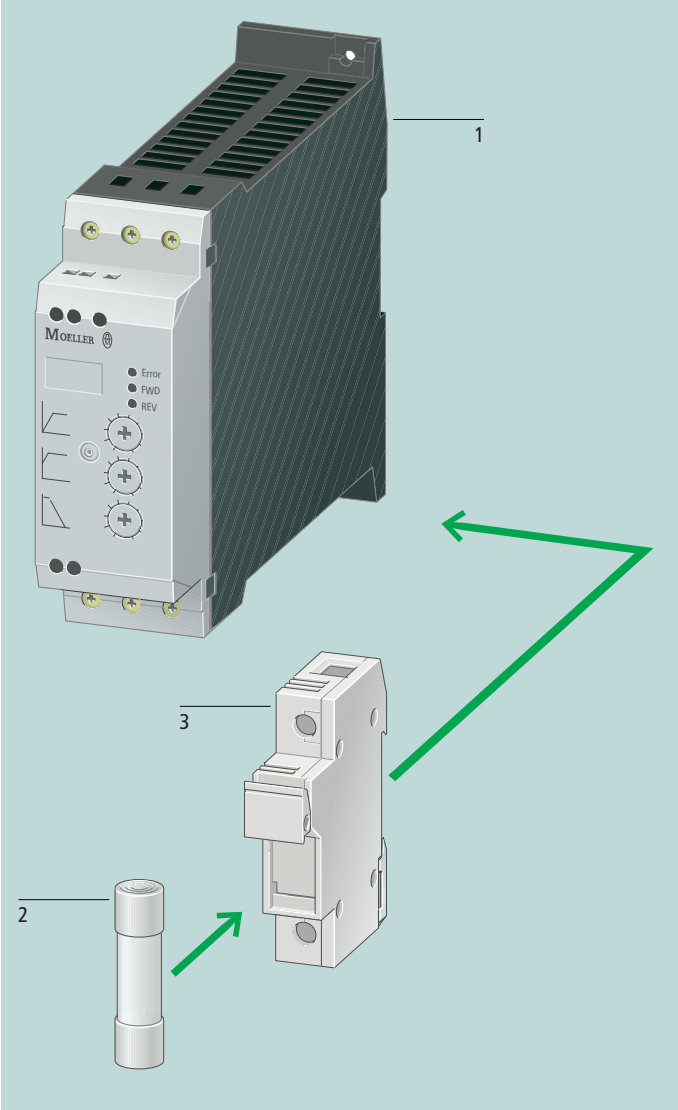
Soft starters DS4

Soft starters DS6

Soft starters DM4

Overview of Moeller soft starters

	DS4-340-M-DC	DS4-340-MR	DS4-340-MX	DS4-340-MXR	DS6-340-MX	DM4-340
Power section	Thyristors in two phases	Thyristors in two phases, built-in phase change for reversing function	Thyristors in two phases, internal bypass	Thyristors in two phases, internal phase reversal for reversing function, internal bypass	Thyristors in two phases, internal bypass	Thyristors in three phases
Mains supply voltage U_{LN} (45…65 Hz ± 0%)	110…500 V AC ± 10%				230…460 V AC ± 10%	
Control voltage	24 V DC	24 V DC 110/230 V AC			24 V DC	24 V DC 110/230 V AC
Rated operational current AC51	11 A	11 … 41 A				
AC53	6 A	6… 3 A	16 – 41 A	16…31 A	41…200 A	16…900 A
Assigned motor rating (at 400 V)	2.2 kW	2.2… 11 kW	7.5…15 kW	7.5 … 15 kW	18.5…110 kW	7.5 … 500 kW 11 … 900 kW
Overload cycle	600 switching operations/ h at 6 × I_N for 0.5 s 3000 switching operations/ h at 6 × I_N for 0.1 s 20 starts / h at 6 × I_N for 5 s		10 starts / h at 3 × I_N for 5 s			10 starts / h at 3.5 × I_N for 35 s
Internal bypass	–	–	•	•	•	–
Reversing contactor function	–	•	–	•	–	–
Product standard	IEC/EN 60 947-4-2 IEC/EN 60 947-4-3	IEC/EN 60 947-4-2	IEC/EN 60 947-4-2	IEC/EN 60 947-4-2	IEC/EN 60 947-4-2	IEC/EN 60 947-4-2
Degree of protection	IP20					
Changeover time for reversing contactors (change from 100 % FWD to 100 % REV)	–	> 300 ms (semiconductor contactor) > 1000 ms (soft start)	–	> 1000 ms (soft start)	–	–
Fields of application						
Three-phase resistive and inductive loads	•	•	–	–	•	•
Three-phase motors	•	•	•	•	•	•
Functions						
Fast, silent switching (semiconductor contactor)	•	•	–	–	–	–
Soft start/soft stop	•	•	•	•	•	•
Reversing contactor function	–	•	–	•	–	–
Suppression of DC components on motors	•	•	•	•	•	•
Potential isolation between power section and actuation	•	•	•	•	•	•
Approvals	UL, CSA CCC (2.2 kW)	UL, CSA CCC (2.2 kW)	UL, CSA CCC (≦ 11 kW)	UL, CSA CCC (≦ 11 kW)	UL, CSA (i. V.) CCC (i. V.)	UL, cUL
Storage temperature	–25…+55 °C					
Operating temperature	0…40 °C					
Altitude	Up to 1000 m a.s.l., over 1000 m with reduced current (2.5 %/100 m)					

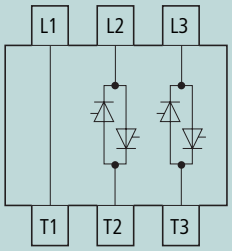


Basic devices

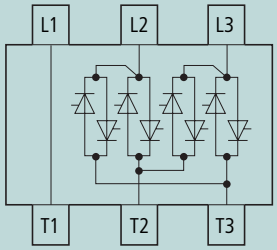
Soft starter DS4-340-M(R)	1
M = soft starters for three-phase AC motors	
(R) = with reversing operation	
DOL start method for reduced transients	
Soft starters for three-phase AC motors	
Rated power 2.2 to 11 kW at 400 V	
Rated voltage 110 … 500 V with and without built-in reversing contactor function	
Asymmetric trigger control for clearly improved true run behaviour (Patent: PCT/EPOO/12938)	
Selection data → Engineering allocated switching and protection devices Ordering data → page 14/5	
Soft starters DS4-340-MX(R)	1
MX = soft starters with built-in bypass for three-phase AC motors (R) = with reversing operation	
Rating 7.5 to 22 kW at 400 V	
Rated voltage 110 … 500 V with and without built-in reversing contactor function	
Asymmetric trigger control for clearly improved true run behaviour (Patent: PCT/EPOO/12938)	
Selection data → Engineering allocated switching and protection devices Ordering data → page 14/5	

Accessories

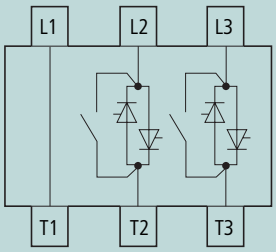
Superfast semiconductor fuses	2
Fuses for protecting the DS4 from short circuits or to achieve type "2" coordination for external surface mounting	
Selection data → Engineering allocated switching and protection devices Ordering data → page 14/5	
Fuse bases	3
Selection data → Engineering allocated switching and protection devices Ordering data → page 14/5	



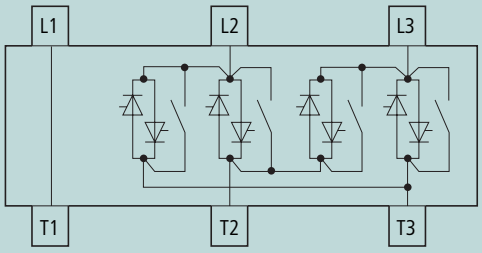
DS4-340-M



DS4-340-MR



DS4-340-MX



DS4-340-MXR

Part no. overview

Soft starter for three-phase motor:
- DS4-340-…-M(R)
- DS4-340-…-MX(R)

DS4-340-…-M(R)

Two-phase-controlled soft starters rated 2.2 to 11 kW for three-phase AC motors. Devices with type suffix "R" are equipped with an additional built-in reversing function.
Used as semiconductor contactor (DOL starter) the "DOL actuation" causes the motor to be switched on at the ideal point and suppresses closing transients that cause current and torque oscillations of up to 20 times the motor's rated current.

DS4-340-…-MX(R)

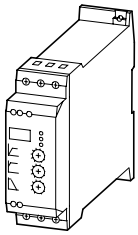
Two-phase controlled soft starter with internal bypass for three-phase motors 7.5 … 15 kW.
Devices with part no. suffix "R" have an additional built-in reversing function (7.5 … 15 kW). A special drive method suppresses the DC component that usually occurs in two-phase control systems. The DS4 can therefore be used to start applications which previously required three-phase soft starters. The DS4 versions MX(R) are laid out for normal duty cycle requirements.

Application examples

- Frequent and silent switching of motors including reversing
- Application examples
- Replacement of reversing contactor combinations
- Pump drives: Soft starting prevents sudden pressure surges. The mechanical load on the whole plant is reduced and its service life increases.
- Fan drives: Soft starting prevents drive belt slippage and premature wear. The plant's lifespan is increased.
- Conveyor belts: the belt starts smoothly and the transported goods do not fall over. The mechanical load on the whole system is reduced and its lifespan increases.

Documentation

You can download the documentation for the DS4 soft starters from the Internet:
http://www.moeller.net/support
AWA8250-1944
AWA8250-1920

		Rated operational voltage	Rated operational current		Rated power for motors with 3-phase AC 400 V	Part no. Article no.	Price see price list	Std. pack
			AC-51	AC-53				
		U_e V AC	I_e A	I_e A	P kW			
DS4 soft starters								
	Soft starters for three-phase motors	110 – 500	11	6	2.2	**DS4-340-2K2-M** 210990		1 off
		110 – 500	17	9	4	**DS4-340-4K0-M** 210991		
		110 – 500	22	12	5.5	**DS4-340-5K5-M** 210992		
		110 – 500	29	16	7.5	**DS4-340-7K5-M** 210993		
		110 – 500	41	23	11	**DS4-340-11K-M** 225125		
	for three-phase motors, fast control inputs, DC actuation only	110 – 500	11	6	2.2	**DS4-340-2K2-M-DC** 235293		
	Soft starter with reversing function for three-phase motors	110 – 500	–	6	2.2	**DS4-340-2K2-MR** 210998		
		110 – 500	–	9	4	**DS4-340-4K0-MR** 210999		
		110 – 500	–	12	5.5	**DS4-340-5K5-MR** 211000		
		110 – 500	–	16	7.5	**DS4-340-7K5-MR** 211001		
		110 – 500	–	23	11	**DS4-340-11K-MR** 225128		
	Soft starters with built-in bypass for three-phase motors	110 – 500	–	16	7.5	**DS4-340-7K5-MX** 231954		
		110 – 500	–	23	11	**DS4-340-11K-MX** 210994		
		110 – 500	–	31	15	**DS4-340-15K-MX** 210995		
	Soft starter with built-in bypass and reversing function for three-phase motors	110 – 500	–	16	7.5	**DS4-340-7K5-MXR** 211002		
		110 – 500	–	23	11	**DS4-340-11K-MXR** 231955		
		110 – 500	–	31	15	**DS4-340-15K-MXR** 211003		

	Rated device current	Maximum power loss	Size/inside caliper	For use with	Part no. Article no.	Price see price list	Std. pack
		P_v					
	A	W	mm				
Superfast semiconductor fuses							
For achieving coordination class 2 (type "2" coordination)							
Fuses for soft starters							
	50	15	22 × 58	DS4-340-2K2-M DS4-340-2K2-MR DS4-340-2K2-M-DC	**50.140.06-50** 232079		10 off
	63	16	22 × 58	DS4-340-4K0-M DS4-340-4K0-MR DS4-340-7K5-MX DS4-340-7K5-MXR	**50.140.06-63** 232080		
	80	18	22 × 58	DS4-340-5K5-M DS4-340-5K5-MR DS4-340-11K-MX DS4-340-11K-MXR	**50.140.06-80** 232081		
	125	26	80	DS4-340-7K5-M DS4-340-7K5-MR DS4-340-15K-MX DS4-340-15K-MXR	**20.282.20-125** 232087		
	160	32	80	DS4-340-11K-M DS4-340-11K-MR DS4-340-11K-	**20.282.20-160** 258244		
Fuse bases for semi conductor fuses							
	–	–	22 × 58	Semiconductor fuses 50.140.06-...	**51.060.04** 232084		
	–	–	S00/80	Semiconductor fuses 20.282.20-...	**21.189.01** 232064		

xStart **DS4** Moeller HPL0211-2007/2008 http://catalog.moeller.net

Part no.	Motor-rating at 400 V	Rated operational current[1]			Soft starter function		
		Device	Motor	Rating[2]	Line protection[4]	Mains contactor (optional)[5]	Overload relay[6]
	P kW	I A	I_e A	$I^{2)}$ A			
Soft starter for three-phase power supply, low operating frequency, (5 s, 3 × I_e, 10 starts/h)							
DS4-340-2K2-M(R)(-DC)	2.2	6	5	7	PKM0-6,3 (+ CL-PKZ0)	DILM7	ZB12-6
DS4-340-4K0-M(R)	4	9	8.5	10	PKM0-10 (+ CL-PKZ0)	DILM9	ZB12-10
DS4-340-5K5-M(R)	5.5	12	11.3	14	PKM0-12 (+ CL-PKZ0)	DILM12	ZB12-12
DS4-340-7K5-M(R)	7.5	16	15.2	18	PKM0-16 (+ CL-PKZ0)	DILM17	ZB32-16 (+ZB32-XEZ)
DS4-340-11K-M(R)	11	23	21.7	27	PKM0-25 (+ CL-PKZ0)	DILM25	ZB32-24 (+ZB32-XEZ)
DS4-340-7K5-MX(R)	7.5	16	15.2	18	PKM0-16 (+ CL-PKZ0)	DILM17	ZB32-16 (+ZB32-XEZ)
DS4-340-11K-MX(R)	1	23	21.7	27	PKM0-25 (+ CL-PKZ0)	DILM25	ZB32-24 (+ZB32-XEZ)
DS4-340-15K-MX(R)	15	31	29.3	37	PKM0-32 (+ CL-PKZ0)	DILM32	ZB32-32 (+ZB32-XEZ)
Soft starter for three-phase power supply, high operating frequency (5 s, 6 × I_e, 20 Starts/h), > Class 25							
DS4-340-2K2-M(R)(-DC)	2.2	6	5	9	PKM0-10 (+ CL-PKZ0)	DILM9	ZEV + ZEV-XSW-25
DS4-340-4K0-M(R)	4	9	8.5	14	PKM0-16 (+ CL-PKZ0)	DILM17	ZEV + ZEV-XSW-25
DS4-340-5K5-M(R)	5.5	12	11.3	19	PKM0-20 (+ CL-PKZ0)	DILM20	ZEV + ZEV-XSW-25
DS4-340-7K5-M(R)	7.5	16	15.2	25	PKM0-25 (+ CL-PKZ0)	DILM25	ZEV + ZEV-XSW-25
DS4-340-11K-M(R)	11	23	21.7	36	PKZM4-40 (+ CL-PKZ0)	DILM40	ZEV + ZEV-XSW-65
Semiconductor contactor for three-phase power supply, high operating frequency (0,5 s, 6 × I_e, 600 starts/h), > Class 25							
DS4-340-2K2-M(R)(-DC)	2.2	6	5	12	PKM0-10 (+ CL-PKZ0)	DILM12	ZEV + ZEV-XSW-25
DS4-340-4K0-M(R)	4	9	8.5	18	PKM0-20 (+ CL-PKZ0)	DILM25	ZEV + ZEV-XSW-25
DS4-340-5K5-M(R)	5.5	12	11.3	24	PKM0-25 (+ CL-PKZ0)	DILM25	ZEV + ZEV-XSW-25
DS4-340-7K5-M(R)	7.5	16	15.2	32	PKZM4-40 (+ CL-PKZ0)	DILM32	ZEV + ZEV-XSW-65
DS4-340-11K-M(R)	11	23	21.7	46	PKZM4-50 (+ CL-PKZ0)	DILM50	ZEV + ZEV-XSW-65
Semiconductor contactor for AC 51 applications (1 s, 1.5 × I_e, 600 starts/h, 600 switching operations/h)							
DS4-340-2K2-M(R)(-DC)		11			PKM0-12 (+ CL-PKZ0)	DILM7	
DS4-340-4K0-M(R)		17			PKM0-20 (+ CL-PKZ0)	DILM17	
DS4-340-5K5-M(R)		22			PKM0-25 (+ CL-PKZ0)	DILM17	
DS4-340-7K5-M(R)		29			PKM0-32 (+ CL-PKZ0)	DILM25	
DS4-340-11K-M(R)		41			PKZM4-50	DILM50	

Notes

1) Rated operational current relative to the specified load cycle.
2) Indicates the current for which the supply cable must be dimensioned at the specified switching duty and motor current. At different switching duty (operating frequency, overcurrent, overcurrent time, DF), this value changes and must then be adapted accordingly. The same applies for higher motor currents.
3) Semiconductor fuses are required only for type "2" coordination; max. short-circuit current 100 kA.
4) Max. short-circuit current as per technical specifications of used circuit-breaker.

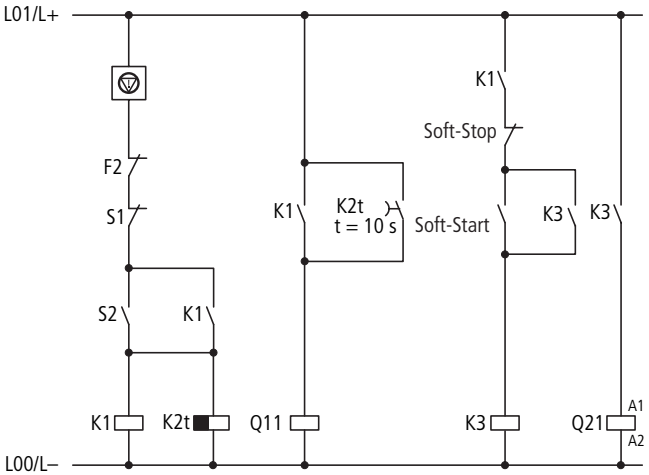
Semiconductor protection (optional, fuses required for type "2" coordination in addition to the protective elements for type "1" coordination)[3]		DC braking unit					
Fuses	Fuse holders	Hilger & Kern Frenomat/Frenostat					
Number × type	Number × type	Recommended type at 400 V mains voltage	Output contactor for soft starter[7]	Line protection	Mains reactor[8]	Braking contactor	Fuse for standstill monitoring[9]
3 × 50.140.06-50	3 × 51.060.04	Frenomat-6000.0309	DILM7	PKZM0-10 (+ CL-PKZ0)	External	DILM7	FAZ-B4/1-HI
3 × 50.140.06-63	3 × 51.060.04	Frenomat-6000.0185	DILM7	PKZM0-16 (+ CL-PKZ0)	External	DILM9	FAZ-B4/1-HI
3 × 50.140.06-80	3 × 51.060.04	Frenostat-6000.0304	DILM7	PKZM0-20 (+ CL-PKZ0)	External	Built-in	FAZ-B4/1-HI
3 × 20.282.20-125	3 × 21.313.02	Frenostat-6000.0316	DILM7	PKZM0-25 (+ CL-PKZ0)	External	DILM17	FAZ-B4/1-HI
3 × 20.282.20-160	3 × 21.313.02	Frenostat-6000.0316	DILM17	PKZM4-40 (+ CL-PKZ0)	External	DILM25	FAZ-B4/1-HI
3 × 50.140.06-63	3 × 51.060.04	Frenostat-6000.0316	DILM7	PKZM0-25 (+ CL-PKZ0)	External	DILM17	FAZ-B4/1-HI
3 × 50.140.06-80	3 × 51.060.04	Frenostat-6000.0316	DILM17	PKZM4-40 (+ CL-PKZ0)	External	DILM25	FAZ-B4/1-HI
3 × 20.282.20-125	3 × 21.313.02	Frenostat-6000.0247	DILM17	PKZM4-50 (+ CL-PKZ0)	Built-in	DILM32	FAZ-B4/1-HI
3 × 50.140.06-50	3 × 51.060.04	Frenomat-6000.0309	DILM7	PKZM0-10 (+ CL-PKZ0)	External	DILM7	FAZ-B4/1-HI
3 × 50.140.06-63	3 × 51.060.04	Frenomat-6000.0185	DILM7	PKZM0-16 (+ CL-PKZ0)	External	DILM9	FAZ-B4/1-HI
3 × 50.140.06-80	3 × 51.060.04	Frenostat-6000.0304	DILM17	PKZM0-20 (+ CL-PKZ0)	External	Built-in	FAZ-B4/1-HI
3 × 20.282.20-125	3 × 21.313.02	Frenostat-6000.0316	DILM17	PKZM0-25 (+ CL-PKZ0)	External	DILM17	FAZ-B4/1-HI
3 × 20.282.20-160	3 × 21.313.02	Frenostat-6000.0316	DILM25	PKZM4-40 (+ CL-PKZ0)	External	DILM25	FAZ-B4/1-HI
3 × 50.140.06-50	3 × 51.060.04						
3 × 50.140.06-63	3 × 51.060.04						
3 × 50.140.06-80	3 × 51.060.04						
3 × 20.282.20-125	3 × 21.313.02						
3 × 20.282.20-160	3 × 21.313.02						

5) If the control section is configured so that the control signal is inhibited before the mains contactor is disabled in the event of an Emergency-Stop, the contactors in the "Bypass contactor" column can also be used as mains contactors.
6) Alternatively, a motor-protective circuit-breaker with built-in overload protection can be used (e.g. PKZM0, NZM without the "-OBI" extension).
7) If a DC braking unit is used, the soft starter's output must be isolated with this contactor before braking.
8) If external, included as standard.
9) If a measuring line with a cross section F 1.5 mm² is used, the fuse can be omitted.

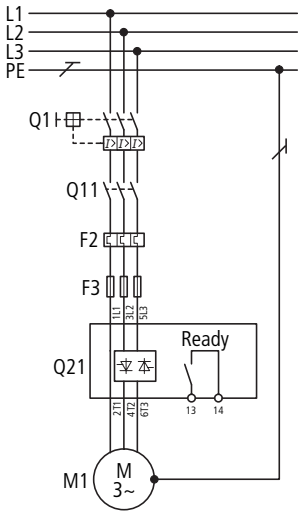
Soft starter DS4-340-M(X)(R)

Standard connection

Actuation without reversing function

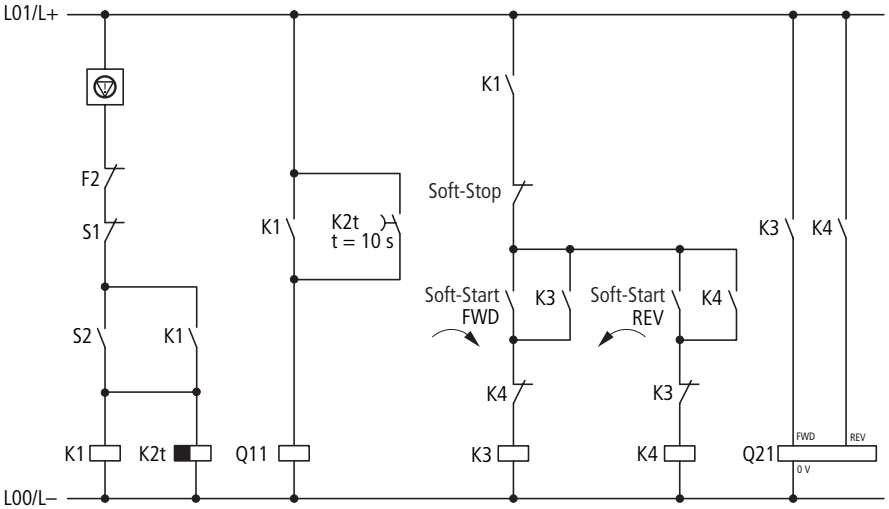


Power section

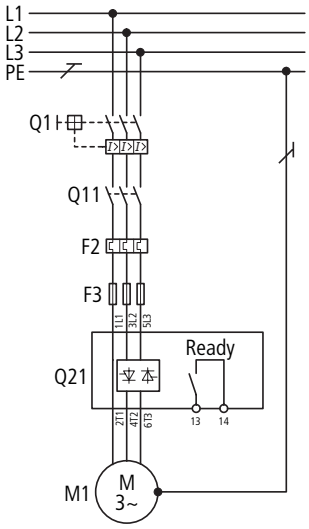


Standard connection

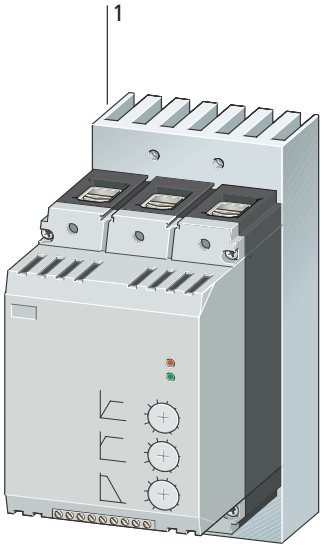
Actuation with reversing function

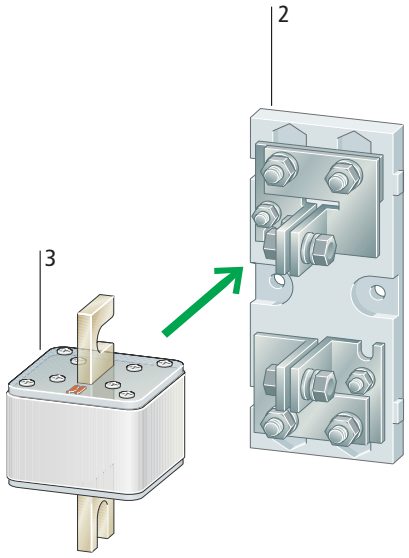


Power section



Q1 = line protection
Q11 = Mains contactor (optional)
F2 = overload relay
F3 = Semiconductor fuse for type "2" coordination, in addition to Q1 (optional)
Q21 = Soft starter
S1 = Off
S2 = On
⊛ = EMERGENCY STOP





Basic devices

Soft starters DS6 1

Soft starters for three-phase AC motors

Motor rating from 18.5 to 110 kW

Selection data → Engineering allocated switching and protection devices

Ordering data → page 14/11

Add-on functions

Fuse base 2

For external surface mounting of the superfast semiconductor fuse

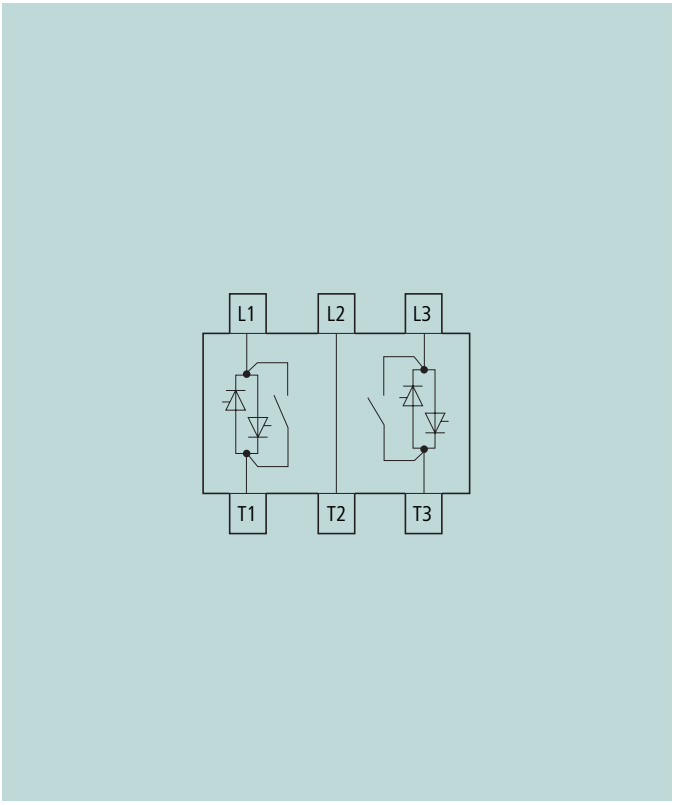
Ordering information → page 14/12

Superfast semiconductor fuses 3

Fuses for the protection of semiconductors of the DS6 for external surface mounting

Selection data → Engineering allocated switching and protection devices

Ordering data → page 14/12



Application

The DS6 series soft starters (3~) are intended for applications with normal operating frequency and a rating range of 22 to 110 kW.
All three versions allow a significant reduction of the inrush current for three-phase lamps and heaters (with an unearthed star point) by setting a short soft start ramp time (at least 1 s).
The special actuation method (asymmetrical trigger phase control) for the soft starter function avoids the DC components that would normally occur in two-phase-controlled soft starters. This suppresses the generation of an elliptical rotating field, which would cause uneven motor starting and increase the motor's startup time.
The true run behaviour of the DS6 is therefore comparable with that of a three-phase-controlled soft starter.

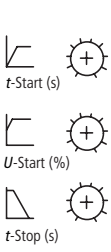
Features

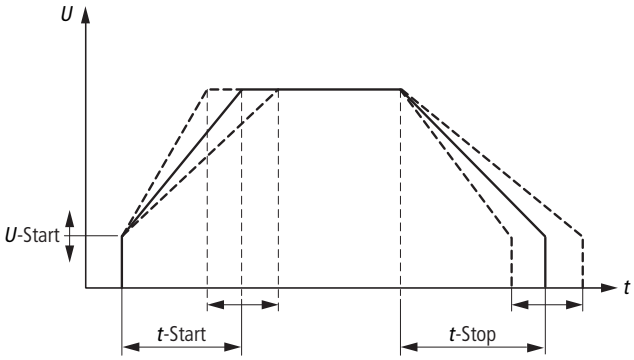
Soft starter DS6-340-MX is available for ratings from 22 to 110 kW. Starting transients and DC components during startup are effectively suppressed and guarantee even motor starting.

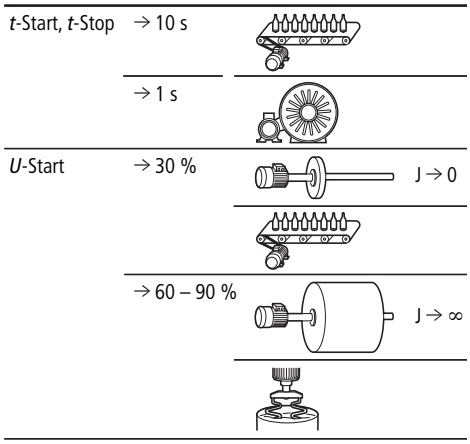
The ramp times and the startup voltage are adjustable via potentiometers. The time can be adjusted between 1 and 30 s (start) and between 0 and 30 s (stop); the starting voltage (i.e. the starting torque) from 30 to 100 % mains voltage.
The DS6-340-MX models feature built-in bypass contacts that close automatically at TOR (top-of-ramp) and bypass the built-in thyristors. This function provides radio interference level "B" in continuous operation without additional measures.

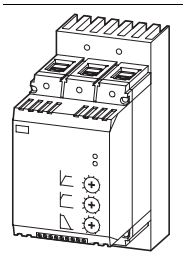
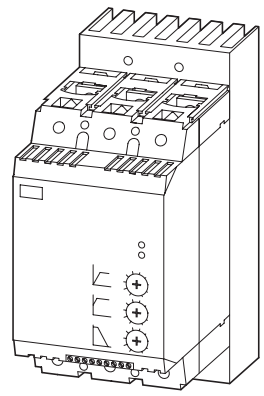
Typical applications as soft starter

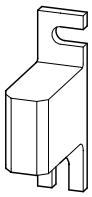
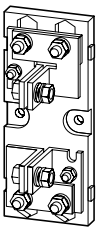
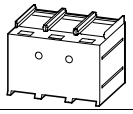
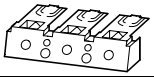
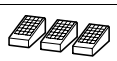
- Pump drives: Soft starting prevents sudden pressure surges. The mechanical load on the whole plant is reduced and its service life increases.
- Fan drives: Soft starting prevents drive belt slippage and premature wear. This reduces operating costs and extends service life.
- Conveyors: The conveyor belt starts up gently instead of with a jerk. The conveyed goods do not fall over, the mechanical stress on the conveyor is reduced and its lifespan increased.







	Mains supply voltage (50/60 Hz)	Rated operational current	Rating for motors at - phase 400 V AC	**Part no.** Article no.	**Price** see price list	Std. pack
	U_{LN}	I_e	P			
	V	A	kW			
DS6 soft starter						
	230…480 AC	41	22	**DS6-340-22K-MX** 103086		1 off
		55	30	**DS6-340-30K-MX** 103087		
		68	37	**DS6-340-37K-MX** 103088		
		81	45	**DS6-340-45K-MX** 103089		
		99	55	**DS6-340-55K-MX** 103150		
	230…480 AC	134	75	**DS6-340-75K-MX** 103151		
		161	90	**DS6-340-90K-MX** 103152		
		196	110	**DS6-340-110K-MX** 103153		

		Rated device current	Maximum power loss P_v	Size/inside caliper	For use with	**Part no.** Article no.	**Price** see price list	Std. pack
		A	W	mm				
Accessories								
Fuse cartridges								
		100	–	80	DS6-340-22K-MX	**20.189.20-100** 106473		1 off
		125	–	80	DS6-340-30K-MX	**20.189.20-125** 106474		1 off
		200	–	80	DS6-340-37K-MX DS6-340-45K-MX DS6-340-55K-MX	**20.610.32-200** 106475		1 off
		350	61	80	DS6-340-75K-MX	**20.610.32-350** 221161		1 off
		400	70	80	DS6-340-90K-MX	**20.610.32-400** 106476		1 off
		500	72	80	DS6-340-110K-MX	**20.610.32-500** 221163		1 off
Fuse bases								
	Fuse base for externally surface-mounted semiconductor fuses 20.282.20-…			S00/80	–	**21.189.01** 232064		1 off
	Fuse base for externally surface-mounted semiconductor fuses 20.6xx.32-…			80	–	**21.313.02** 232076		1 off
Terminal cover, knockout, no UL/CSA approval								
For box terminal[1]								
		–	–		NZM1, PN1, N1 DS6-340-22K... 55K-MX	**NZM1-XKSFA** 100780		1 off
Cover[2]								
		–	–		NZM2, PN2, NS2 DS6-340-75K...110K	**NZM2-XKSA** 260038		1 off
Terminal cover, knockout[1]								
		–	–		NZM2, PN2, N(S)2 DS6-340-75K...110K	**NZM2-XKSFA** 104640		1 off
IP2X protection against contact with a finger								
For box terminal[3]								
		–	–		NZM2, PN2, N(S)2 DS6-340-75K...110K	**NZM2-XIPK** 266773		1 off
For cover NZM2-XKSA or NZM2 or NZM2…(C)NA and N(S)2…NA[4]								
		–	–		NZM2, PN2, N(S)2 DS6-340-75K...110K	**NZM2-XIPA** 266777		1 off

Note

[1] Type contains parts for a terminal located at top or bottom for3 or 4 pole circuit-breakers.
Enhancement of the protection against direct contact (simple finger protection).

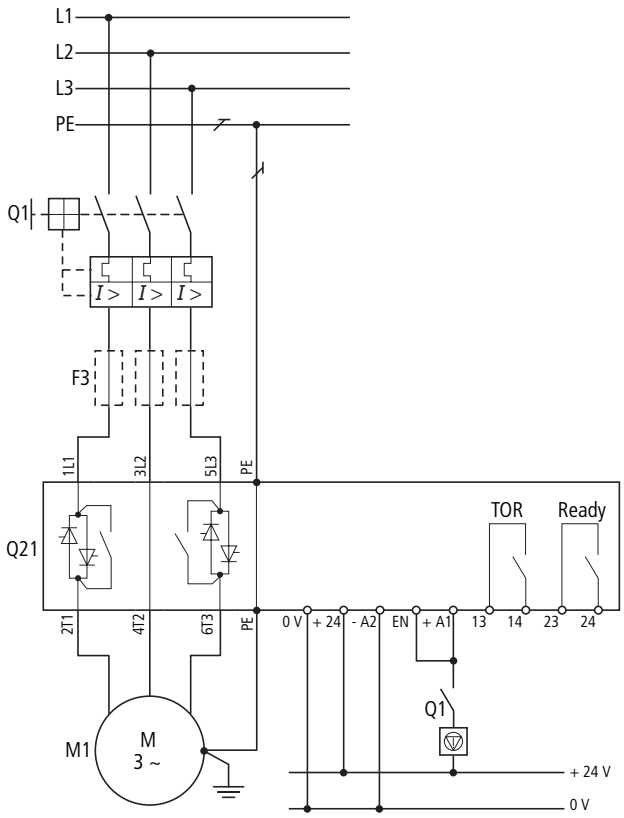
[2] Type contains parts for a terminal located at top or bottom for3 or 4 pole circuit-breakers.
Protection against direct contact wherecable lugs, busbars or tunnel terminals are used
When using insulated conductor material to IP1X.

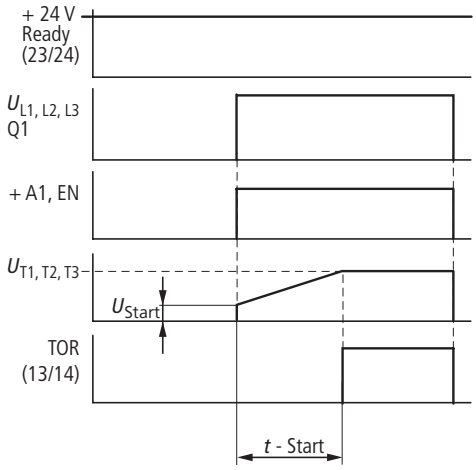
[3] Type contains parts for a terminal located at top or bottom for3 or 4 pole circuit-breakers.
Enhancement of the protection against direct contact to IP2X.
Protection when reaching into the cable connection area with the connection of cables in the box terminal.
With 2 conductors maximum cross-section 25 mm² or AWG4.
Cannot be combined with NZM-XSTK control circuit terminal.

[4] Type contains parts for a terminal located at top or bottom for3 or 4 pole circuit-breakers.
Enhancement of the protection against direct contact to IP2X.
When mounting NZM2-..-(C)NA or NZM…-NA the following applies:
With 2 conductors maximum cross-section 25 mm² or AWG4.

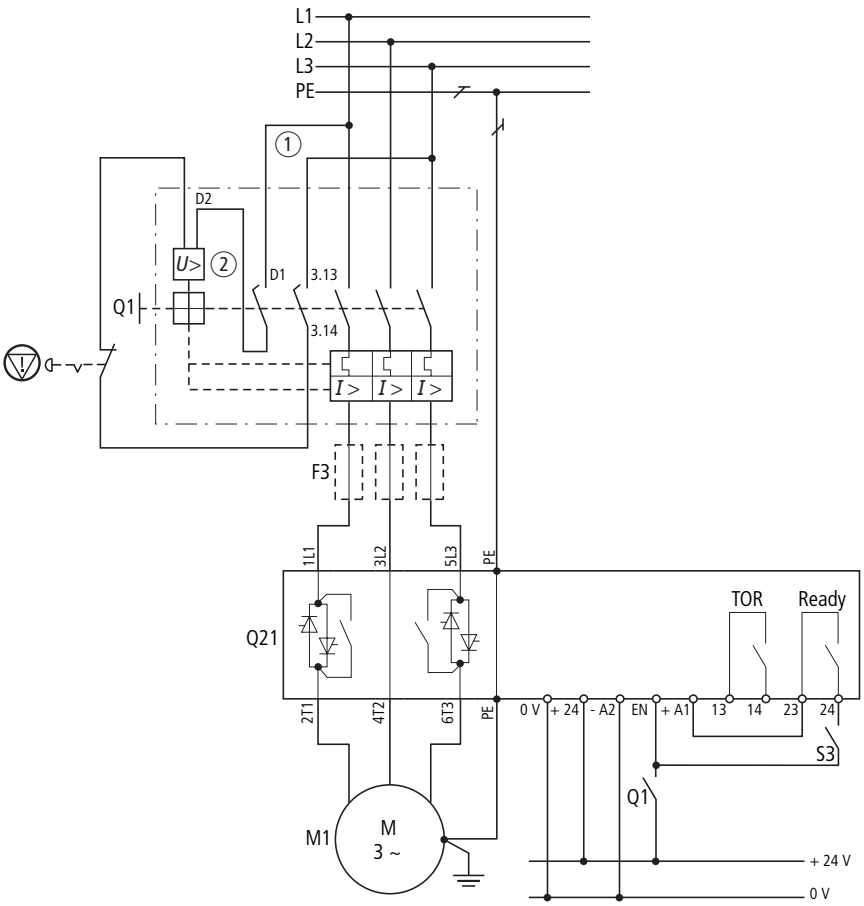
Standard connection

Direct soft start





Soft starters and main switches with EMERGENCY STOP function according to IEC/EN 60204-1



Q1: NZM1, NZM2

① Control circuit terminal

② Undervoltage release with early-make auxiliary contact

3 AC, 230 V	NZM1-XUHIV208-240AC
	NZM2/3-XUHIV208-240AC
3 AC, 400 V	NZM1-XUHIV380-440AC
	NZM2/3-XUHIV380-440AC

EMERGENCY STOP

xStart **DS6** Moeller HPL0211-2007/2008 http://catalog.moeller.net

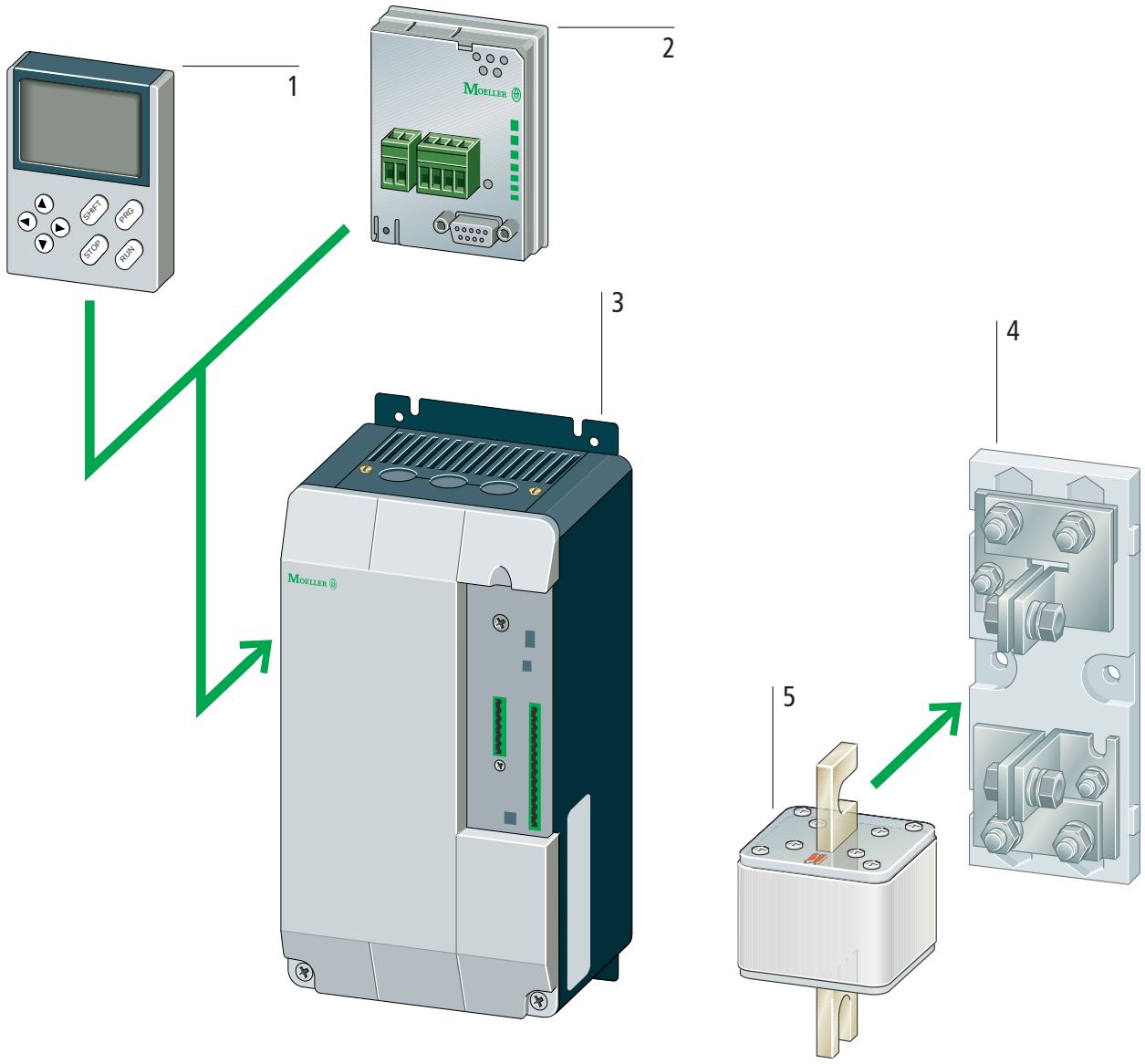
Part no.	Assigned motor rating		Rated operational current[1]		**Soft starter function**		
			Device	Motor	Line protection[2]	Mains contactor (optional)[3]	Overload relay[4]
	400 V	460 V		I_e	Type "1" coordination		
	[kW]	[HP]	[A]	[A]			
Soft starters for three-phase power supply, low operating frequency, (5 s, 3 × I_e, 10 starts/h)							
DS6-340-22K-MX	18.5	25	41	36	NZMN1-M40 / PKZM4-40	DILM40	ZB65-40+ZB65-XEZ
DS6-340-22K-MX	22	30	41	41	NZMN1-M50 / PKZM4-50	DILM50	ZB65-40+ZB65-XEZ
DS6-340-30K-MX	30	40	55	55	NZMN1-M63 / PKZM4-58	DILM65	ZB65-57+ZB65-XEZ
DS6-340-37K-MX	37	50	68	68	NZMN1-M80	DIL3M80	Z5-70/KK3
DS6-340-45K-MX	45	60	81	81	NZMN1-M100	DIL 3M85	Z5-100/KK3
DS6-340-55K-MX	55	75	99	99	NZMN1-M100	DIL4M115	Z5-100/KK4
DS6-340-75K-MX	75	100	135	134	NZMN2-M160	DIL4AM115	Z5-100/KK4
DS6-340-90K-MX	90	125	160	160	NZMN2-M200	DILM185	Z5-160/FF250
DS6-340-110K-MX	110	150	200	196	NZMN2-M200	DILM225	Z5-160/FF250

Notes

1) Rated operational current relative to the specified load cycle.
2) Indicates the required circuit-breaker for the specified load cycle. At different switching duty (operating frequency, overcurrent, overcurrent time, DF), this value changes and must then be adapted accordingly. The same applies for higher motor currents.
3) A mains contactor is not required. VDE-conformant isolating properties can be ensured only with the specified circuit-breaker.
4) An external overload relay is required if a controlled soft stop is required in the event of an overload instead of an opening of the main contacts.
5) The superfast semiconductor fuses protect the soft starter from short-circuits on the motor side. They can not prevent damage caused by voltage peaks, such as those caused by lightning.
6) If a DC braking unit is used, the soft starter's output must be isolated with this contactor before braking.
7) If external, included as standard.
8) If a measuring line with a cross section F 1.5 mm² is used, the fuse can be omitted.

http://catalog.moeller.net Moeller HPL0211-2007/2008 **DS6** xStart

Semiconductor protection (optional, fuses required for type "2" coordination in addition to line protectionfor type "1" coordination) [5]		**DC braking unit (optional)**					
Fuses	Fuse holders	Hilger & Kern Frenomat/Frenostat					
Number × type	Number × type	Recommended type at 400 V mains voltage	Output contactor for soft starter[6]	Line protection	Mains reactor[7]	Braking contactor	Fuse for standstill monitoring[8]
2 × 20.282.20-100	3 × 21.189.01	Frenostat-6000.0248	DILM25	PKZM4-63 (+ CL-PKZ0)	Built-in	DILM50	FAZ-B4HI
3 × 20.282.20-100	3 × 21.189.01	Frenostat-6000.0248	DILM25	PKZM4-63 (+ CL-PKZ0)	Built-in	DILM50	FAZ-B4HI
3 × 20.282.20-125	3 × 21.189.01	Frenostat-6000.0249	DILM40	NZMN1-M80	Built-in	DILM65	FAZ-B4HI
3 × 20.610.32-200	3 × 21.313.02	Frenostat-6000.0173	DILM65	NZMN1-M100	External	DIL3M80	FAZ-B4HI
3 × 20.610.32-200	3 × 21.313.02	Frenostat-6000.0173	DILM65	NZMN2-M125	External	DIL3AM85	FAZ-B4HI
3 × 20.610.32-200	3 × 21.313.02	Frenostat-6000.0177	DIL3M80	NZMN2-M160	External	DIL4M115	FAZ-B4HI
3 × 20.610.32-350	3 × 21.313.02	Frenostat-6000.0181	DIL4M115	NZMN2-M200	External	DIL4AM145	FAZ-B4HI
3 × 20.610.32-400	3 × 21.313.02	Frenostat-6000.0169	DIL4M115	NZMN3-ME220	External	DILM185	FAZ-B4HI
3 × 20.610.32-500	3 × 21.313.02	Frenostat-6000.0169	DILM185	NZMN3-ME350	External	DILM225	FAZ-B4HI



Basic devices

Soft starters DM4	3
Motor rating • from 7.5 to 500 kW at in-line connection (before load, default) • 11 to 900 kW for in-delta connection (root-3 circuit)	
Ten programmed standard applications allow direct operation; parameter set selection through rotary switch	
Integrator time adjustable from 1 to 255 s	
Energy-saving function optimizes efficiency and power factor	
Adjustable current limitation prevents high starting current	
Regulator operation for 3-phase resistive and inductive loads from 16 to 900 A (400 V)	
Selection data → Engineering, dedicated switching and protection units	
Ordering information → page 14/20	

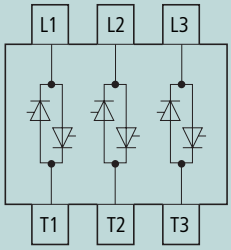
Add-on functions

LCD keypad DE4-KEY-2	1
Pluggable to DM4 soft starters, with 8 function keys and plain text display; language can be selected (D/GB)	
Ordering information → page 14/21	

Communication cards	2
DE4-COM-2X	
RS 232/RS 485 serial interface	
DE4-NET-DP2	
PROFIBUS-DP interface	
Ordering information → page 14/21	

Fuse base	4
For external surface mounting of the superfast semiconductor fuse	
Ordering information → page 14/12	

Superfast semiconductor fuses	5
Fuses for the protection of semiconductors, optionally for direct installation in DM4 soft starters or for external surface mounting.	
Selection data → Engineering, dedicated switching and protection units	
Ordering information → page 14/21	



Soft starters/three-phase regulators DM4: product features

The DM4 series devices round off Moeller's soft starter programme. With a rating range from 7.5 kW, the DM4 soft starters are ideal for demanding automation tasks. The series' main features are:

- Current limitation
- High overload withstand capability
- Large rating range up to 500 kW (or 900 kW in delta connection)
- Predefined parameter sets can be selected for standard applications
- All parameters also individually adjustable
- Keypad with plain text display (optional)
- Programmable relay and analog outputs
- Networkable
- Voltage regulator function (generalized phase control) can be implemented for each software changeover.

Operation as 3-phase soft starter

The DM4 series devices are soft starters for standard three-phase asynchronous motors.
The connection method determines the rating range:

- Inline connection (upstream of load, standard): 7.5 kW to 500 kW at 400 V
- Delta connection: 11 kW to 900 kW at 400 V, each phase of the soft starter being connected in series with the individual motor windings (6 lines required, motor delta-connected only).

Typical applications as soft starter

- Pump drives: pressure surges are prevented through soft starting. The mechanical load on the whole plant is reduced and the plant components' service life increases.
- Fan drives and compressors: The soft start prevents belt slippage and premature wear. This reduces operating costs and extends service life.
- Conveyors: The conveyor belt starts up gently instead of with a jerk and the transported goods do not fall over. The mechanical stress on the conveyor is reduced and its lifespan increased.
- Circular and ribbon saws: The current limitation at startup prevents current peaks. This saves energy supply costs and peak load tariffs.
- Agitators, mixers: as above.
- Mills, breakers: as above.

Operation as three-phase regulator

The DM4 devices can be changed over with the software to three-phase regulator operation. The performance range is 16 to 900 A at 400 V (standard connection only, in-line connection possible).
They can be operated in pure regulator mode or with a closed-loop control circuit. The units each have two analog inputs for setpoint/actual values and an additional built-in current feedback loop.
A keypad or the serial interface and PC software are required to configure regulator operation.

Typical applications as three-phase regulator

- Heater loads: Continuous temperature regulation reduces thermal and mechanical load on heating elements to increase their lifespan.
- Lighting control systems: Gentle switching on of lamps reduce current consumption in cold state. Utilization of the lamps' ideal operating point reduces their current consumption at the same light emission and extends their lifespan. This saves energy supply costs and peak load tariffs.
- Ozone generators: Regulation of high-voltage transformers.

Documentation

You can download the documentation for the DM4 soft starters and the DE4-KEY-2 keypad from our website:
http://www.moeller.net/support

AWB8250-1341	Hardware and commissioning
AWB8250-1346	Design of soft starters

	Mounting Instructions
AWA8250-1704	7.5…37 kW
AWA8250-1751	45…75 kW
AWA8250-1752	90…200 kW
AWA8250-1783	250…500 kW

LCD keypad DE4-KEY-2

The DM4 soft starters are factory-preset for the most common applications. For various standard applications, parameter sets can be selected via an application selector switch. There is no longer a need for manual setting for different applications and its associated risk of errors.
The preset application parameter sets can also be selected via an optional keypad with plain text display. With the keypad, all parameters can be viewed, edited and adapted for specific applications.
The keypad is also required for reprogramming the soft starter's digital and analog inputs and outputs. Interface modules can be used as an alternative to the keypad. The soft starters can be interfaced with a PLC via Suconet K, PROFIBUS-DP or INTERBUS. Assigning parameters via the PLC offers the same range of functions as are possible via the keypad.

Documentation

For a detailed description, see the documentation: AWB8240-1344.
The documentation is available on the Internet at www.moeller.net/support.

Part no. overview

DE4-COM-2X
RS 485 and RS 422 serial interface

Application

The DE4-COM-2X plug-in communication module contains RS 232C and RS 485 serial interfaces for direct connection to a PC (point-to-point connection).
For use with the following devices:
- Soft starters DM4

Function

The DE4-COM-2X module can be plugged in and removed during operation. It provides direct access to all parameters. The drive can be controlled and monitored from the PC. Status and alarm messages are also displayed.

Comments

The PS416-ZBK-210 serial interface cable for connecting the serial interface with a PC must be ordered separately.

Features

The DE4-COM-2X module receives its power from the basic unit through the AIF slot or through two plug-in screw terminals from an external DC supply (+24 V, max. 80 mA).
RS 232 interface
- 9-pole SUB-D plug
- Pin 2 (RxD), pin 3 (TxD), pin 5 (GND)
- Point-to-point connection
- Max. cable length 15 m
- Max. baud rate 19200 bit/s

RS 485 interface
- 4-pole plug-in screw terminals
- Network topology: inline
- Max. cable length 1200 m
- Max. baud rate 19200 bit/s

Documentation

For a detailed description, see manual AWB823-1279D/GB/F.
This documentation is not supplied with the device. You can download it from our website:
- http://www.moeller.net/support

Part no. overview

DE4-NET-DP2
PROFIBUS DP fieldbus module

Application

The plug-in DE4-NET-DP2 communication module is used for direct connection to the PROFIBUS DP fieldbus (DIN 19245 Part 1 and 3).
For use with the following devices:

- Soft starters DM4

Function

The DE4-NET-DP2 module can be plugged in and removed during operation. It provides direct access to all parameters. The drive (slave) can be controlled and monitored via the PLC (master). Status and alarm messages are also displayed.

Features

The DE4-NET-DP2 module receives its power from the basic unit or through two plug-in screw terminals from an external DC supply (+24 V, max. 60 mA).
Version:

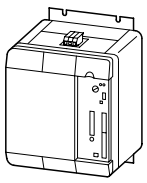
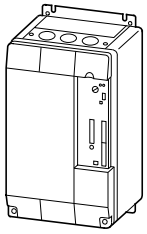
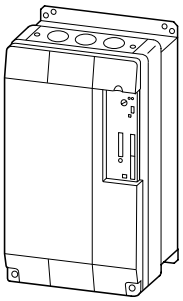
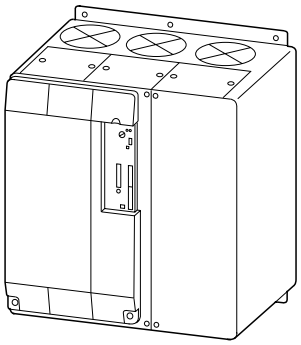
- 9-pole SUB-D plug
- DRIVECOM profile drive control technology 20
- Network topology: PROFIBUS DP line
- Max. cable length: 1200 m up to 93.7 Kbaud, 25 m at 12000 Kbaud

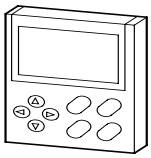
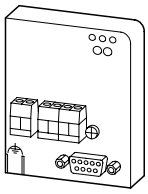
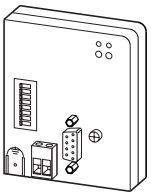
Documentation

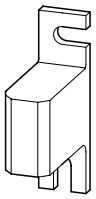
For a detailed description, see the documentation:
AWB8240-1398D (German)
This documentation is not supplied with the device. You can download it from our website:

- http://www.moeller.net/support

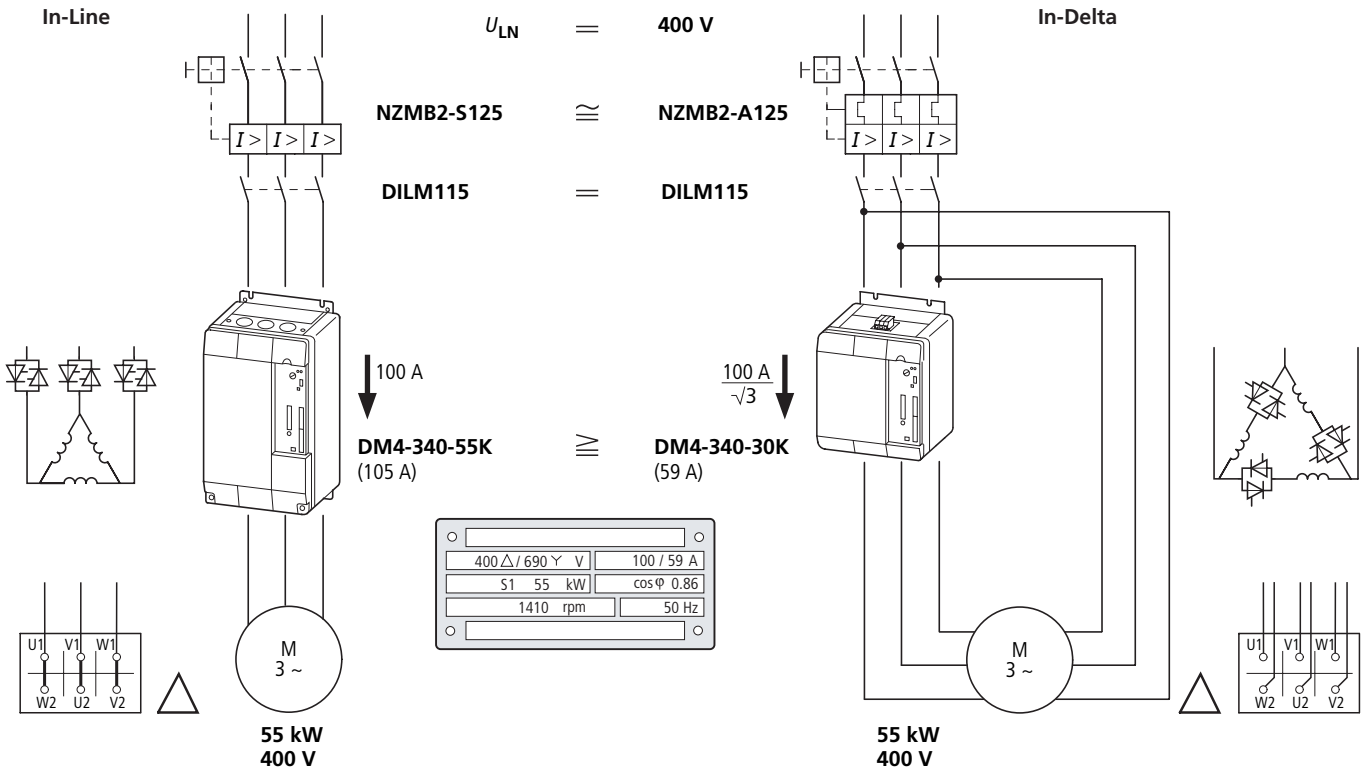
xStart **DM4** Moeller HPL0211-2007/2008 http://catalog.moeller.net

	Supply voltage	Rated operational current	Rated power for three-phase motors at 400 V	**Part no.** Article no.	**Price** see price list	Std. pack	**Notes**
	U_L	I_e	P				
	V AC	A	kW				
Soft starters up to 37/55 kW at 400 V							
	190 – 520 V AC ± 0 %	16	7.5/11	**DM4-340-7K5** 207897		1 off	Assigned motor ratings data applies for in-line/ in-delta connection type, tripping class 10.
	190 – 520 V AC ± 0 %	23	11/15	**DM4-340-11K** 207898			
	190 – 520 V AC ± 0 %	30	15/22	**DM4-340-15K** 207899			
	190 – 520 V AC ± 0 %	44	22/37	**DM4-340-22K** 207900			
	190 – 520 V AC ± 0 %	59	30/55	**DM4-340-30K** 207901			
	190 – 520 V AC ± 0 %	72	37/–	**DM4-340-37K** 207902			
Soft starters up to 75/132 kW at 400 V							
	190 – 520 V AC ± 0 %	85	45/75	**DM4-340-45K** 207903		1 off	Assigned motor ratings data applies for in-line/ in-delta connection type, tripping class 10.
	190 – 520 V AC ± 0 %	105	55/90	**DM4-340-55K** 207904			
	190 – 520 V AC ± 0 %	146	75/132	**DM4-340-75K** 207905			
Soft starters up to 200/315 kW at 400 V							
	190 – 520 V AC ± 0 %	174	90/160	**DM4-340-90K** 207906		1 off	Assigned motor ratings data applies for in-line/ in-delta connection type, tripping class 10.
	190 – 520 V AC ± 0 %	202	110/–	**DM4-340-110K** 207907			
	190 – 520 V AC ± 0 %	242	132/200	**DM4-340-132K** 207908			
	190 – 520 V AC ± 0 %	300	160/250	**DM4-340-160K** 207909			
	190 – 520 V AC ± 0 %	370	200/315	**DM4-340-200K** 207910			
Soft starters up to 500/900 kW at 400 V							
	190 – 520 V AC ± 0 %	500	250/400	**DM4-340-250K** 207911		1 off	Assigned motor ratings data applies for in-line/ in-delta connection type, tripping class 10.
	190 – 520 V AC ± 0 %	600	315/560	**DM4-340-315K** 207912			
	190 – 520 V AC ± 0 %	750	400/750	**DM4-340-400K** 207913			
	190 – 520 V AC ± 0 %	900	500/900	**DM4-340-500K** 207914			

	For use with	Description	Part no. Article no.	Price see price list	Std. pack
Keypad					
	–	• Allows matching of all of the soft starter's parameters for any application and drive control through the keypad. • Connection to soft starter DM4 through simple snap-on/pull-off connection, even during operation. • With non-volatile memory for parameters; parameter sets can be transferred between soft starters for series applications. • Two-line plain text display. • Notification of operating states through status symbols.	**DE4-KEY-2** 211291		1 off
RS 232C/RS 485 serial interface					
Module with RS 232C and RS 485 serial interfaces, for direct connection to a PLC or a PC					
		• RS 232C: 9-pin SUB-D plug • RS 485: plug-in screw terminals • PS416-ZBK-210 serial interface cable required	**DE4-COM-2X** 085028		1 off
	PS416-CPU-...	For connecting the programming PC to the CPU card through the RS 232C interface	**PS416-ZBK-210** 051751		1 off
PROFIBUS DP communication module					
Module for direct connection to the PROFIBUS-DP fieldbus					
		• All parameters can be addressed and transferred. • Connection through 9-pin SUB-D plug	**DE4-NET-DP2** 230240		1 off

	Rated device current	Maximum power loss P_v	Frame size/ critical dimension	For use with	Part no. Article no.	Price see price list	Std. pack	Notes
	A	W	mm					
Superfast semiconductor fuses								
Fuse cartridges								
	40	10	80	DM4-340-7K5	**20.282.20-40** 232085		6 off	
	80	18	80	DM4-340-11K DM4-340-15K	**20.282.20-80** 232086			
	125	26	80	DM4-340-22K DM4-340-30K	**20.282.20-125** 232087			
	200	37	80	DM4-340-37K DM4-340-45K	**20.189.20-200** 232088			
	350	61	80	DM4-340-55K DM4-340-75K	**20.610.32-350** 221161			
	450	70	80	DM4-340-90K DM4-340-110K	**20.610.32-450** 221162			Mounted internally
	500	72	80	DM4-340-132K DM4-340-160K	**20.610.32-500** 221163			
	630	80	80	DM4-340-200K	**20.610.32-630** 221164			
	900	120	80	DM4-340-250K DM4-340-315K	**20.630.32-900** 221165			
	1250	147	80	DM4-340-400K DM4-340-500K	**20.630.32-1250** 221166			
Fuse base for externally mounted semiconductor fuses								
			80	20.282.20-… 20.189.20-…	**21.189.01** 232064		5 off	
			80	20.6xx.32-…	**21.313.02** 232076		2 off	For semiconductor fuses 20.6xx.32-...

In-line/in-delta

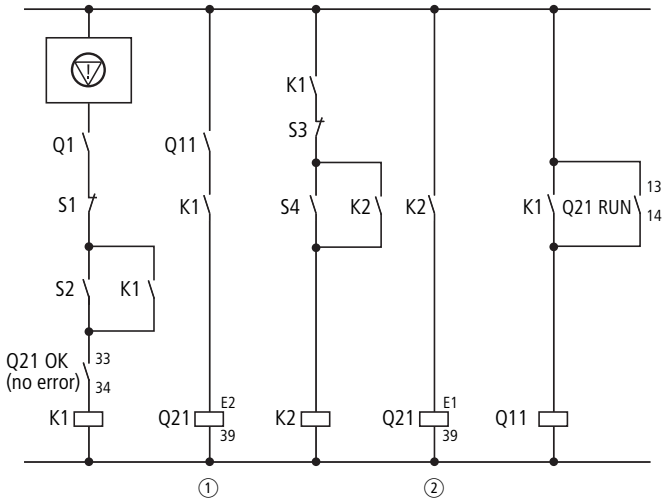


As a rule, soft starters are connected directly in series with the motor (in line). The DM4 soft starters also allow operation in delta configuration.
Advantage:
- This circuit is cheaper because the soft starter has to be laid out for only 58 % of the motor full load current.

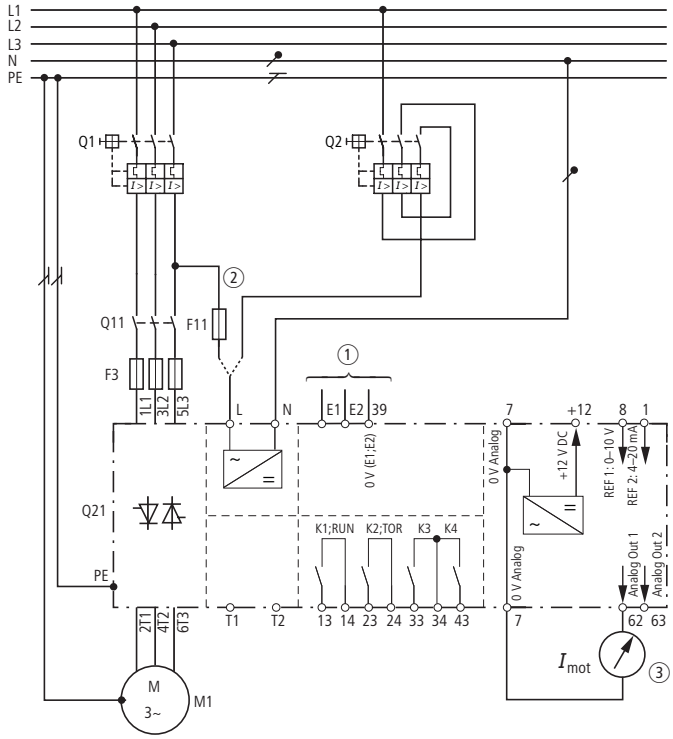
Disadvantages over in-line connection:
- The motor must be connected with six conductors, similar to the star-delta connection.
- The DM4's overload protection is active only in one line. An additional motor protection must be installed in the parallel line or in the incomer.

Soft starter with separate mains contactor

Actuation



EMERGENCY STOP
S1: Off (unguided deceleration)
S2: On
S3: Soft start
S4: Soft stop (deceleration ramp)
① Enable
② Soft start/soft stop



① See actuation
② Control voltage through Q1 and F11 or through Q2
③ Motor current indication
E1: Start/stop
E2: Enable
T1: + Thermistor
T3: … Thermistor

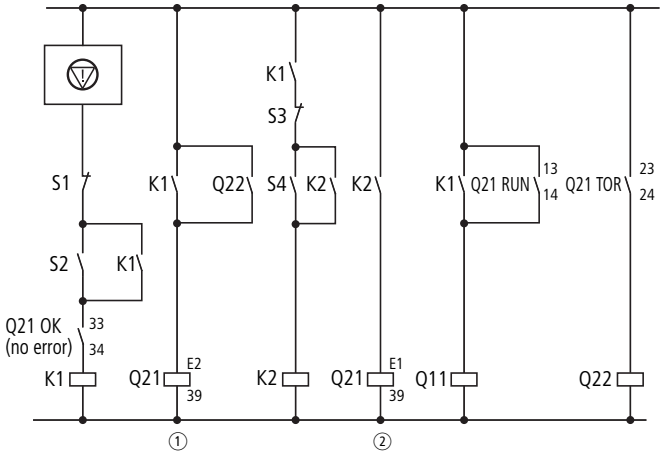
Bypass circuit

After completion of the acceleration phase (full mains voltage reached), the soft starter M4 actuates the bypass contactor. This connects the motor directly with the mains.

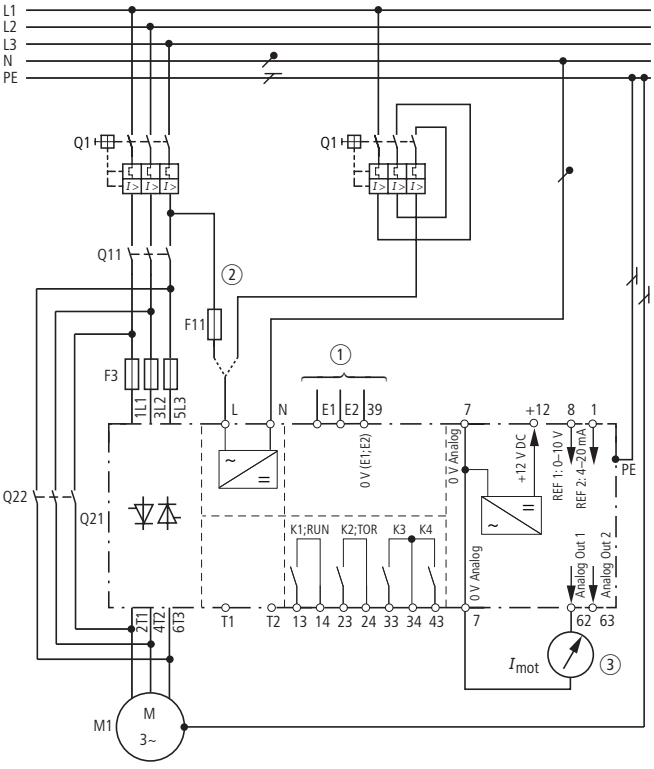
Advantage:
- The soft starter's heat dissipation is reduced to the heat dissipation at idle.
- The limit values of radio interference class "B" are maintained.

The bypass contactor is now switched into a zero-current state and can therefore be laid out to AC-1.
If an EMERGENCY STOP requires an immediate isolation, the bypass contactor has to also switch the motor load and must therefore be laid out according to AC-3.

Actuation



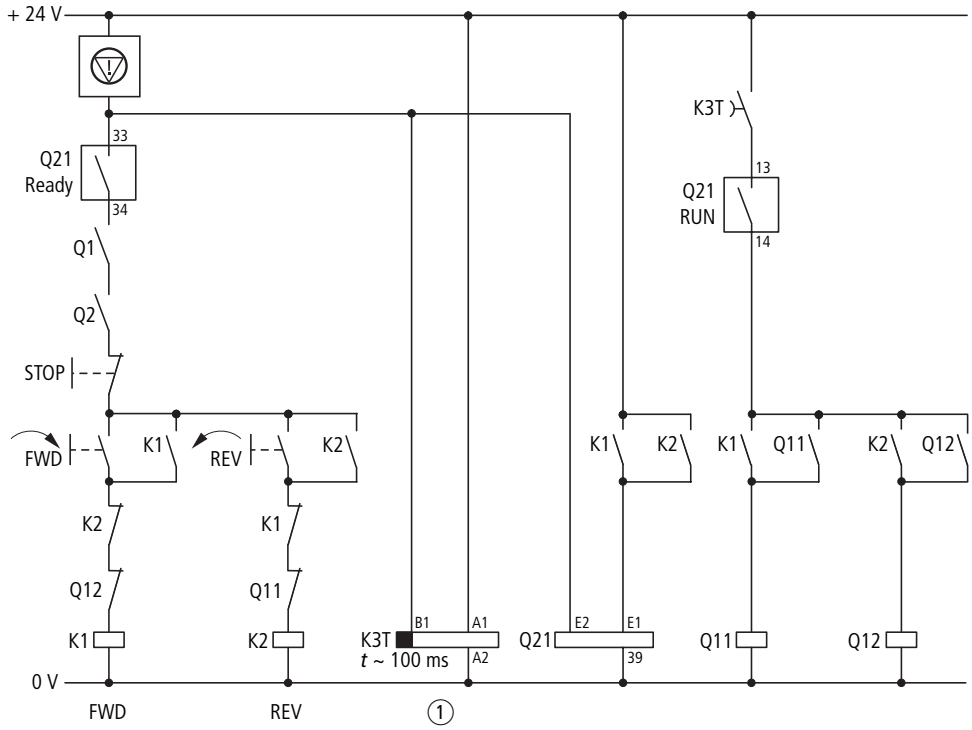
EMERGENCY STOP
S1: Off (unguided deceleration)
S2: On
① Enable
② Soft start/soft stop



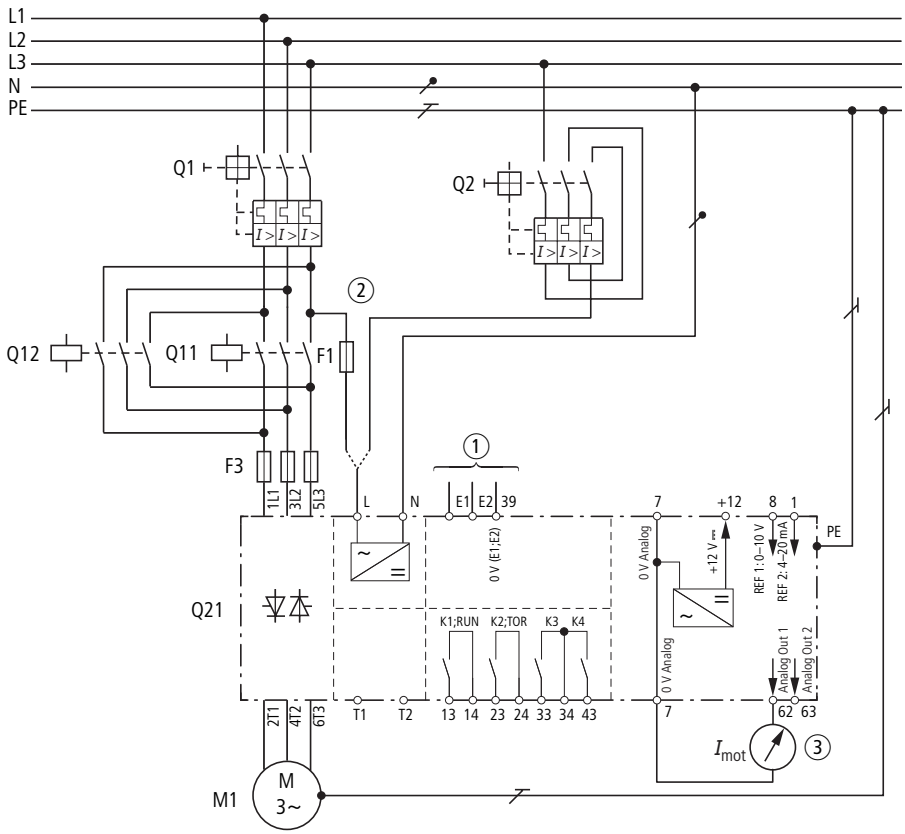
① See actuation
② Control voltage through Q1 and F11 or through Q2
③ Motor current indication
E1: Start/stop
E2: Enable
T1: + Thermistor
T2: … Thermistor

Soft starters with reversing circuit

Actuation



EMERGENCY STOP
S1: Off (unguided deceleration)
S2: On
1 Enable
2 Soft start/soft stop



1 See actuation
2 Control voltage through Q1 and F11 or through Q2
3 Motor current indication
E1: Start/stop
E2: Enable

xStart **DM4** Moeller HPL0211-2007/2008 http://catalog.moeller.net

Part no.[1]	Motor-rating at 400 V	Rated operational current[2]			Soft starter function			Bypass contactor (optional)[13]
		Device	Motor	Rating[3]	Line protection[4]	Mains contactor (optional)[4]	Overload relay[5][7]	
	P kW	*I* A	I_e A	2) A				
Soft starter for three-phase power supply, short start-up time, tripping class 10 (15 s, 3.5 I_e)								
In-line connection (before the load, standard)								
DM4-340-7K5	7,5	16	15,2	16	PKM0-16 (+ CL-PKZ0)	DILM17	ZB32-16 (+ZB32-XEZ)	DILM7
DM4-340-11K	11	22	21,7	23	PKM0-25 (+ CL-PKZ0)	DILM25	ZB32-24 (+ZB32-XEZ)	DILM7
DM4-340-15K	15	30	29,3	30	PKM0-32 (+ CL-PKZ0)	DILM32	ZB32-32 (+ZB32-XEZ)	DILM17
DM4-340-22K	22	44	41	44	PKZM4-50 (+ CL-PKZ0)	DILM50	ZB65-57 (+ZB65-XEZ)	DILM25
DM4-340-30K	30	59	55	59	PKZM4-63 (+ CL-PKZ0)	DILM65	ZB65-65 (+ZB65-XEZ)	DILM40
DM4-340-37K	37	72	68	72	NZMN1-S80	DILM80(…)	ZB150-100/KK	DILM65
DM4-340-45K	45	85	81	85	NZMN1-S100	DILM95	ZB150-100/KK	DILM65
DM4-340-55K	55	105	99	105	NZMN2-S125	DILM115	ZB150-125/KK	DILM95
DM4-340-75K	75	146	134	146	NZMN2-S160	DILM150	ZB150-150/KK	DILM150
DM4-340-90K	90	174	161	174	NZMN2-S200	DILM185	Z5-220/FF6	DILM150
DM4-340-110K	110	202	196	202	NZMN2-ME220	DILM225	Z5-220/FF6	DILM185
DM4-340-132K	132	242	231	242	NZMN3-ME350[6]	DILM250	ZW7-290	DILM185
DM4-340-160K	160	300	279	300	NZMN3-ME350[6]	DILM300	ZW7-400	DILM185
DM4-340-200K	200	370	349	370	NZMN3-ME350/...-ME450[6]	DILM400	ZW7-400	DILM225
DM4-340-250K	250	500	437	500	NZMN3-ME450/...-ME550[6]	DILM500	ZW7-540	DILM400
DM4-340-315K	315	600	544	600	NZMN3-ME550/...-ME875[6]	DILM580/750[12]	ZW7-630	DILM400
DM4-340-400K	400	750	683	750	NZMN3-ME875	DILM750	ZEV (+ZEV-XSW-820)	DILM500
DM4-340-500K	500	900	860	900	NZMN3-ME875/...-ME1400[12]	DILM1000	–	DILM580
Delta connection (in series with each motor winding)								
DM4-340-7K5	11	16	21,7	21,7	PKM0-25 (+ CL-PKZ0)	DILM25	ZB32-16 (+EZ00)	DILM7
DM4-340-11K	15	22	29,3	29,3	PKM0-32 (+ CL-PKZ0)	DILM32	ZB32-24 (+EZ00)	DILM7
DM4-340-15K	22	30	41	41	PKM0-50 (+ CL-PKZ0)	DILM50	ZB32-32 (+EZ1)	DILM17
DM4-340-22K	30	44	55	55	PKM0-58 (+ CL-PKZ0)	DILM65	ZB65-57 (+EZ1)	DILM25
	37	44	68	68	NZMN1-S80	DILM80(…)	ZB65-57 (+EZ1)	DILM25
DM4-340-30K	45	59	81	81	NZMN1-S100	DILM95	ZB65-65 (+EZ1)	DILM40
	55	59	99	99	NZMN1-S100	DILM115	ZB65-65 (+EZ1)	DILM40
DM4-340-45K	75	85	134	134	NZMN2-S160	DILM150	ZB150-100/KK	DILM65
DM4-340-55K	90	105	161	161	NZMN2-S200[6]	DILM185	ZB150-125/KK	DILM95
DM4-340-75K	110	146	196	196	NZMN2-ME220[6]	DILM225	ZB150-150/KK	DILM150
	132	146	231	231	NZMN3-ME350[6]	DILM250	ZB150-150/KK	DILM150
DM4-340-90K	160	174	279	279	NZMN3-ME350[6]	DILM300	Z5-220/FF6	DILM150
DM4-340-132K	200	242	349	349	NZMN3-ME350[6]	DILM400	ZW7-290	DILM185
DM4-340-160K	250	300	437	437	NZMN3-ME450[6]	DILM500	ZW7-400	DILM185
DM4-340-200K	315	370	544	544	NZMN3-ME550[6]	DILM580	ZW7-400	DILM225
DM4-340-250K	400	500	683	683	NZMN4-ME875[6]	DILM750	ZW7-540	DILM400
DM4-340-315K	500	600	860	860	NZMN4-ME875[6]	DILM1000	ZW7-630	DILM400
	560	600	960	960	NZMN4-ME1400[6]	DILM1000	ZW7-630	DILM400
DM4-340-400K	750	750	1280	1280	NZMN4-ME1400(+NZM4-XR...)[6]		ZEV (+ZEV-XSW-820)	DILM500
DM4-340-500K	900	900	1540	1540	IZMB2-U2000[11]		–	DILM580

Notes

1) At a different operating cycle, the r.m.s. current changes so that a higher-rated device may have to be used. The switching and protective elements are always dimensioned for the following operating cycles (no bypass for any operating cycle):
- Devices DM4-340-7K5 to DM4-340-90K each 10 switching operations per hour, continuous operation
- Devices DM4-340-110K and DM4-340-132K: each 10 switching operations per hour with at least 3 minutes no-load pause before eachstart
- Devices from DM4-340-160K each 3 operations per hour with at least 8 minutes no-load pause before each start.

For all other switching cycles or when a bypass is used, the effective rating changes and a different device is therefore required. The device's rated operational current must be greater than the motor current (in-line operation) or motor current $\sqrt{3}$ (delta operation) indicated on the motor's nameplate.

2) Rated operational current relative to the specified load cycle.

3) Indicates the current for which the supply cable must be dimensioned at the specified switching duty and motor current. At higher motor currents and different switching duty (operating frequency, overcurrent, overcurrent time, DF), the current value changes and must then be adapted accordingly.

Circuit breaker controller supply	Semiconductor protection (optional, fuses required for type "2" coordination in addition to the protective elements for type "1" coordination)		DC braking unit				
	Fuse	Fuse switch	Hilger & Kern Frenostat				
	Number ×	×		8)	Line protection	Line reactor[9]	Braking contactor	Fuse – Standstill monitoring[10]
PKZM0-0,16	3 x 20.282.20-40	3 21.189.01	Frenostat-6000.0316	DILM7	PKZM0-25 (+ CL-PKZ0)	External	DILM17	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.282.20-80	3 21.189.01	Frenostat-6000.0316	DILM7	PKZM0-40 (+ CL-PKZ0)	External	DILM25	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.282.20-80	3 21.189.01	Frenostat-6000.0247	DILM17	PKZM0-50 (+ CL-PKZ0)	Built-in	DILM32	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.282.20-125	3 21.189.01	Frenostat-6000.0248	DILM25	PKZM0-63 (+ CL-PKZ0)	Built-in	DILM50	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.282.20-125	3 21.189.01	Frenostat-6000.0249	DILM40	NZMN1-M80	Built-in	DILM65	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.189.20-200	3 21.189.01	Frenostat-6000.0173	DILM65	NZMN1-M100	External	DILM80(…)	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.189.20-200	3 21.189.01	Frenostat-6000.0173	DILM65	NZMN2-M125	External	DILM95	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.610.32-350	3 21.313.02	Frenostat-6000.0177	DILM95	NZMN2-M160	External	DILM150	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.610.32-350	3 21.313.02	Frenostat-6000.0181	DILM150	NZMN2-M200	External	DILM150	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.610.32-450	3 21.313.02	Frenostat-6000.0169	DILM150	NZMN3-ME220	External	DILM185	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.610.32-450	3 21.313.02	Frenostat-6000.0169	DILM185	NZMN3-ME350	External	DILM225	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.610.32-500	3 21.313.02	Frenostat-6000.0307	DILM185	NZMN3-ME350	External	DILM250	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.610.32-500	3 21.313.02	Frenostat-6000.0307	DILM185	NZMN4-ME450	External	DILM300	FAZ-B4/1-HI
PKZM0-0,16	3 x 20.610.32-630	3 21.313.02	Frenostat-6000.0308	DILM225	NZMN4-ME550	External	DILM400	FAZ-B4/1-HI
PKZM0-1,6	3 x 20.630.32-900	3 21.313.02	Frenostat-6000.0308	DILM400	NZMN4-ME875	External	DILM500	FAZ-B4/1-HI
PKZM0-1,6	3 x 20.630.32-900	3 21.313.02	Frenostat-6000.0171	DILM400	NZMN4-ME875	External	DILM580/750	FAZ-B4/1-HI
PKZM0-1,6	3 x 20.630.32-1250	3 21.313.02	Frenostat-6000.0171	DILM500	NZMN4-ME1400	External	DILM750	FAZ-B4/1-HI
PKZM0-1,6	3 x 20.630.32-1250	3 21.313.02						

4) Foir motors with the same rating but a higher current than specified, a higher-rated switch/contactor may have to be used. The decisive factor is the motor current.

5) If the soft starter remains continually live, it can also act as overload relay.
In delta connection, set the overload relay to the value motor current/ $\sqrt{3}$.

6) Setting of overload trip block to $t_r = \infty$

7) In delta connection, the overload rlay is connected in series with the motor winding (set to value motor current/ $\sqrt{3}$.)

8) If a DC braking unit is used, the soft starter's output must be isolated with this contactor before braking. In delta connection, both the input and the output must be isolated. In this case, two contactors are required.

9) On external surface mounting included as standard

10) If a measuring line with a cross section F 1.5 mm² is used, the fuse can be omitted.

11) To use IZM as "contactor", accessories are required I see IZM catalogue. In that case, the recommended circuits may not apply since different contacts may have to be assigned depending on the selected accessories.

12) If the device's rated current is fully utilized, use the larger switch or contactor.

13) The bypass is laid out to AC1. If it must be opened in an Emergency-Stop, it must be laid out to AC3. The contactors of the mains contactor column must then be used.

xStart **DM4**

Part no.[1]	Motor-rating at 400 V	Rated operational current[2]			Line protection	Mains contactor (optional)[4]	Overload relays[5][7]		Fuse		Fuse-disconnector		Hilger & Kern Frenostat					
		Device	Motor	Rating[3]					Number	type	Number	type	Recommended type at 400 V mains voltage	Output contactor[8]	Line protection	Line reactor[9]	Braking contactor	Fuse – Standstill monitoring[10]
	kW	A	I_e A	$I_{2)}$ A														
tripping class 20 (40 s, 3.5 × I)																		
In-line connection (before the load, standard)																		
DM4-340-11K	7,5	22	15.2	21	PKM0-25 (+ CL-PKZ0)	DILM17	ZB32-16 (+ZB32-XEZ)	DILM7	PKZM0-0,16	3 20.282.20-80	3 21.189.01		Frenostat-6000.0316	DILM7	PKZM0-25 (+ CL-PKZ0)	Built-in	DILM17	FAZ-B4/1-HI
DM4-340-15K	11	30	21.7	31	PKM0-32 (+ CL-PKZ0)	DILM25	ZB32-24 (+ZB32-XEZ)	DILM17	PKZM0-0,16	3 20.282.20-80	3 21.189.01		Frenostat-6000.0316	DILM17	PKZM4-40 (+ CL-PKZ0)	Built-in	DILM25	FAZ-B4/1-HI
DM4-340-22K	15	44	29.3	41	PKZM4-58 (+ CL-PKZ0)	DILM32	ZB32-32 (+ZB32-XEZ)	DILM25	PKZM0-0,16	3 20.282.20-125	3 21.189.01		Frenostat-6000.0247	DILM17	PKZM4-50 (+ CL-PKZ0)	Built-in	DILM32	FAZ-B4/1-HI
DM4-340-30K	22	59	41	58	PKZM4-58 (+ CL-PKZ0)	DILM50	ZB65-57 (+ZB65-XEZ)	DILM40	PKZM0-0,16	3 20.282.20-125	3 21.189.01		Frenostat-6000.0248	DILM40	PKZM4-63 (+ CL-PKZ0)	Built-in	DILM50	FAZ-B4/1-HI
DM4-340-37K	30	72	55	78	NZMN1-ME90[6]	DILM65	ZB65-65 (+ZB65-XEZ)	DILM65	PKZM0-0,16	3 20.189.20-200	3 21.189.01		Frenostat-6000.0249	DILM65	NZMN1-M80	Built-in	DILM65	FAZ-B4/1-HI
DM4-340-45K	37	85	68	96	NZMN1-ME90[6]	DILM80	ZEV + ZEV-XSW-145	DILM65	PKZM0-0,16	3 20.189.20-200	3 21.189.01		Frenostat-6000.0173	DILM80	NZMN1-M100	External	DILM80(…)	FAZ-B4/1-HI
DM4-340-55K	45	105	81	114	NZMN1-ME90[6]	DILM95	ZEV + ZEV-XSW-145	DILM95	PKZM0-0,16	3 20.610.32-350	3 21.313.02		Frenostat-6000.0173	DILM80	NZMN2-M125	External	DILM95	FAZ-B4/1-HI
DM4-340-75K	55	146	99	140	NZMN2-ME140[6]	DILM115	ZEV + ZEV-XSW-145	DILM115	PKZM0-0,16	3 20.610.32-350	3 21.313.02		Frenostat-6000.0177	DILM80	NZMN2-M160	External	DILM115	FAZ-B4/1-HI
DM4-340-90K	75	174	134	189	NZMN2-ME140[6]	DILM150	ZEV + ZEV-XSW-145	DILM150	PKZM0-0,16	3 20.610.32-450	3 21.313.02		Frenostat-6000.0181	DILM115	NZMN2-M200	External	DILM150	FAZ-B4/1-HI
DM4-340-110K	90	202	161	227	NZMN2-ME220[6]	DILM185	ZEV + ZEV-XSW-820	DILM185	PKZM0-0,16	3 20.610.32-450	3 21.313.02		Frenostat-6000.0169	DILM185	NZMN3-ME220	External	DILM185	FAZ-B4/1-HI
DM4-340-132K	110	242	196	276	NZMN2-ME220[6]	DILM225	ZEV + ZEV-XSW-820	DILM185	PKZM0-0,16	3 20.610.32-500	3 21.313.02		Frenostat-6000.0169	DILM185	NZMN3-ME350	External	DILM225	FAZ-B4/1-HI
DM4-340-160K	132	300	231	326	NZMN3-ME350[6]	DILM250	ZEV + ZEV-XSW-820	DILM185	PKZM0-0,16	3 20.610.32-500	3 21.313.02		Frenostat-6000.0307	DILM185	NZMN3-ME350	External	DILM250	FAZ-B4/1-HI
DM4-340-200K	160	370	279	393	NZMN3-ME350[6]	DILM300	ZEV + ZEV-XSW-820	DILM225	PKZM0-0,16	3 20.610.32-630	3 21.313.02		Frenostat-6000.0307	DILM225	NZMN4-ME450	External	DILM300	FAZ-B4/1-HI
DM4-340-250K	200	500	349	492	NZMN3-ME350[6]	DILM400	ZEV + ZEV-XSW-820	DILM400	PKZM0-1,6	3 20.630.32-900	3 21.313.02		Frenostat-6000.0308	DILM400	NZMN4-ME550	External	DILM400	FAZ-B4/1-HI
DM4-340-315K	250	600	437	616	NZMN3-ME450[6]	DILM500	ZEV + ZEV-XSW-820	DILM400	PKZM0-1,6	3 20.630.32-900	3 21.313.02		Frenostat-6000.0308	DILM400	NZMN4-ME875	External	DILM500	FAZ-B4/1-HI
DM4-340-400K	315	750	544	767	NZMN3-ME550[6]	DILM580	ZEV + ZEV-XSW-820	DILM500	PKZM0-1,6	3 20.630.32-1250	3 21.313.02		Frenostat-6000.0171	DILM500	NZMN4-ME875	External	DILM580	FAZ-B4/1-HI
DM4-340-500K	400	900	683	963	NZMN3-ME875[6]	DILM750	ZEV + ZEV-XSW-820	DILM580	PKZM0-1,6	3 20.630.32-1250	3 21.313.02		Frenostat-6000.0171	DILM580	NZMN4-ME1400	External	DILM750	FAZ-B4/1-HI
Delta connection (in series with each motor winding)																		
DM4-340-7K5	11	16	21.7	31	PKM0-32 (+ CL-PKZ0)	DILM25	ZEV + ZEV-XSW-25	DILM7	PKZM0-0,16	3 20.282.20-40	3 21.189.01		Frenostat-6000.0316	DILM17	PKZM4-40 (+ CL-PKZ0)	Built-in	DILM25	FAZ-B4/1-HI
DM4-340-15K	15	30	29.3	41	PKZM4-58 (+ CL-PKZ0)	DILM32	ZEV + ZEV-XSW-65	DILM17	PKZM0-0,16	3 20.282.20-80	3 21.189.01		Frenostat-6000.0247	DILM17	PKZM4-50 (+ CL-PKZ0)	Built-in	DILM32	FAZ-B4/1-HI
DM4-340-22K	22	44	41	58	PKZM4-58 (+ CL-PKZ0)	DILM50	ZEV + ZEV-XSW-65	DILM25	PKZM0-0,16	3 20.282.20-125	3 21.189.01		Frenostat-6000.0248	DILM40	PKZM4-63 (+ CL-PKZ0)	Built-in	DILM50	FAZ-B4/1-HI
DM4-340-30K	30	59	55	78	NZMN1-ME90[6]	DILM65	ZEV + ZEV-XSW-65	DILM40	PKZM0-0,16	3 20.282.20-125	3 21.189.01		Frenostat-6000.0249	DILM65	NZMN1-M80	Built-in	DILM65	FAZ-B4/1-HI
	37	59	68	96	NZMN1-ME90[6]	DILM80	ZEV + ZEV-XSW-145	DILM40	PKZM0-0,16	3 20.282.20-125	3 21.189.01		Frenostat-6000.0173	DILM80	NZMN1-M100	External	DILM80(…)	FAZ-B4/1-HI
DM4-340-37K	45	72	81	114	NZMN1-ME90[6]	DILM95	ZEV + ZEV-XSW-145	DILM65	PKZM0-0,16	3 20.189.20-200	3 21.189.01		Frenostat-6000.0173	DILM95	NZMN2-M125	External	DILM95	FAZ-B4/1-HI
DM4-340-45K	55	85	99	140	NZMN2-ME140[6]	DILM115	ZEV + ZEV-XSW-145	DILM65	PKZM0-0,16	3 20.189.20-200	3 21.189.01		Frenostat-6000.0177	DILM115	NZMN2-M160	External	DILM115	FAZ-B4/1-HI
DM4-340-55K	75	105	134	189	NZMN2-ME140[6]	DILM150	ZEV + ZEV-XSW-145	DILM95	PKZM0-0,16	3 20.610.32-350	3 21.313.02		Frenostat-6000.0181	DILM150	NZMN2-M200	External	DILM150	FAZ-B4/1-HI
DM4-340-75K	90	146	161	227	NZMN2-ME220[6]	DILM185	ZEV + ZEV-XSW-820	DILM150	PKZM0-0,16	3 20.610.32-350	3 21.313.02		Frenostat-6000.0169	DILM185	NZMN3-ME220	External	DILM185	FAZ-B4/1-HI
DM4-340-90K	110	174	196	276	NZMN2-ME220[6]	DILM225	ZEV + ZEV-XSW-820	DILM150	PKZM0-0,16	3 20.610.32-450	3 21.313.02		Frenostat-6000.0169	DILM185	NZMN3-ME350	External	DILM225	FAZ-B4/1-HI
	132	174	231	326	NZMN3-ME350[6]	DILM250	ZEV + ZEV-XSW-820	DILM150	PKZM0-0,16	3 20.610.32-450	3 21.313.02		Frenostat-6000.0307	DILM185	NZMN3-ME350	External	DILM250	FAZ-B4/1-HI
DM4-340-110K	160	202	279	393	NZMN3-ME350[6]	DILM300	ZEV + ZEV-XSW-820	DILM185	PKZM0-0,16	3 20.610.32-450	3 21.313.02		Frenostat-6000.0307	DILM225	NZMN4-ME450	External	DILM300	FAZ-B4/1-HI
DM4-340-160K	200	300	349	492	NZMN3-ME350[6]	DILM400	ZEV + ZEV-XSW-820	DILM185	PKZM0-0,16	3 20.610.32-500	3 21.313.02		Frenostat-6000.0308	DILM400	NZMN4-ME550	External	DILM400	FAZ-B4/1-HI
DM4-340-200K	250	370	437	616	NZMN3-ME450[6]	DILM500	ZEV + ZEV-XSW-820	DILM225	PKZM0-0,16	3 20.610.32-630	3 21.313.02		Frenostat-6000.0308	DILM400	NZMN4-ME875	External	DILM500	FAZ-B4/1-HI
DM4-340-250K	315	500	544	767	NZMN3-ME550[6]	DILM580	ZEV + ZEV-XSW-820	DILM400	PKZM0-1,6	3 20.630.32-900	3 21.313.02		Frenostat-6000.0171	DILM500	NZMN4-ME875	External	DILM580	FAZ-B4/1-HI
DM4-340-315K	400	600	683	963	NZMN3-ME875[6]	DILM750	ZEV + ZEV-XSW-820	DILM400	PKZM0-1,6	3 20.630.32-900	3 21.313.02		Frenostat-6000.0171	DILM580	NZMN4-ME1400	External	DILM750	FAZ-B4/1-HI
DM4-340-400K	500	750	860	1213	NZMN3-ME875[6]	DILM1000	ZEV + ZEV-XSW-820	DILM500	PKZM0-1,6	3 20.630.32-1250	3 21.313.02							
DM4-340-500K	560	900	960	1354	NZMN4-ME1400[6]	DILM1000	ZEV + ZEV-XSW-820	DILM580	PKZM0-1,6	3 20.630.32-1250	3 21.313.02							

Notes

- Devices DM4-340-7K5 to DM4-340-90K each 10 switching operations per hour, continuous operation.
- Devices DM4-340-110K and DM4-340-132K: each 10 switching operations per hour with at least 3 minutes no-load pause before eachstart
- Devices from DM4-340-160K each 3 operations per hour with at least 8 minutes no-load pause before each start.
  For all other switching cycles or when a bypass is used, the effective rating changes and a different device is therefore required.
  The device's rated operational current must be greater than the motor current (in-line operation) or motor current $\sqrt{\ }$ (delta operation) indicated on the motor's nameplate.

$\sqrt{\ }$

(OBI)

7) In delta connection, the overload rlay is connected in series with the motor winding (set to value motor current/ $\sqrt{\ }$.)
8) If a DC braking unit is used, the soft starter's output must be isolated with this contactor before braking. In delta connection, both the input and the output must be isolated. In this case, two contactors are required.
9) On external surface mounting included as standard
10) If a measuring line with a cross section F 1.5 mm² is used, the fuse can be omitted.
11) The bypass is laid out to AC1. If it must be opened in an Emergency-Stop, it must be laid out to AC3. The contactors of the mains contactor column must then be used.

			DS4-340-2K2-M(R)	DS4-340-2K2-M(R)-DC
General				
Standards			IEC/EN 60947-4-2 (-M(R)) IEC/EN 60947-4-3 (-M)	
Approvals			UL/CSA	UL/CSA
Climatic proofing			Damp heat, constant according to IEC 60068-2-78; damp heat, cyclical, according to IEC 60068-2-10	
Ambient temperature		°C	0 – 40	0 – 40
Ambient temperature, storage		°C	25…55	25…55
Altitude		m	0 – 1000	0 – 1000
Mounting position			vertical	vertical
Degree of protection (Power connection)			IP21	IP21
Protection against direct contact			Finger and back-of-hand proof	
Overvoltage category/pollution degree			II/2	II/2
Shock resistance			8 g/11 ms	8 g/11 ms
Vibration resistance to EN 60721-3-2		g	2M2	2M2
Power loss at rated operational current e		W	–	–
Dimensions (W H D)		mm	45 149 189.5	45 149 189.5
Weight		kg	0.8	0.8
Radio interference level			„A“	„A“
Main conducting paths				
Rated operating voltage	U_e	V AC	110…500	110…500
Supply frequency		Hz	50/60	50/60
Control section power supply		V AC	internal via power connection	
Rated operational current				
AC-–51	I_e	A	11	11
AC-53 (inductive load)	I_e	A	6	6
Assigned motor rating (standard connection)				
230 V		kW	1.1	1.1
400 V		kW	2.2	2.2
460 V		HP	3	3
500 V		kW	3	3
Overload cycle to IEC/EN 60947-4-2				
AC-51 (only for M types)			11A: AC-51: 1.5 – 1: 99 – 600	11A: AC-51: 1.5 – 1: 99 – 600
AC-53a (without bypass)			6A: AC-53a: 6 – 0.5: 99 – 600 6A: AC-53a: 6 – 5: 99 – 20	6A: AC-53a: 6 – 0.5: 99 – 600 6A: AC-53a: 6 – 5: 99 – 20
Terminal capacities				
Cable lengths				
Solid		mm^2	1 (1.5 – 6) 2 (1.5 – 4)	1 (1.5 – 6) 2 (1.5 – 4)
Flexible with ferrule		mm^2	1 (1.5 – 6) 2 (1.5 – 2.5)	1 (1.5 – 6) 2 (1.5 – 2.5)
Stranded		mm^2	1 (1.5 – 6) 2 (1.5 – 4)	1 (1.5 – 6) 2 (1.5 – 4)
Solid or stranded		AWG	1 (16 – 8) 2 (16 – 12)	1 (16 – 8) 2 (16 – 12)
Tightening torque		Nm	1.7	1.7
Screwdriver (PZ: Pozidriv)		mm	PZ2 or 1 6 mm	PZ2 or 1 6 mm
Control cables				
Solid		mm^2	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)
Flexible with ferrule		mm^2	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)
Stranded		mm^2	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)
Solid or stranded		AWG	1 (18 – 12) 2 (18 – 16)	1 (18 – 12) 2 (18 – 16)
Tightening torque		Nm	0.8	0.8
Screwdriver (PZ: Pozidriv)		mm	0.5 3.5	0.5 3.5

Notes

Rated impulse withstand voltage:
- 1.2 µs/50 µs (rise time/fall time of the pulse to IEC/EN 60947-2 or -3)
- Applies for control circuit/power section/enclosure

	DS4-340-4K0-M(R)	DS4-340-5K5-M(R)	DS4-340-7K5-M(R)	DS4-340-11K-M(R)
General				
Standards	IEC/EN 60947-4-2 (-M(R)) IEC/EN 60947-4-3 (-M)			
Approvals	UL/CSA	UL/CSA	UL/CSA	UL/CSA
Climatic proofing	Damp heat, constant according to IEC 60068-2-78; damp heat, cyclical, according to IEC 60068-2-10			
Ambient temperature	0 – 40	0 – 40	0 – 40	0 – 40
Ambient temperature, storage	25…55	25…55	25…55	25…55
Altitude	0 – 1000	0 – 1000	0 – 1000	0 – 1000
Mounting position	vertical	vertical	vertical	vertical
Degree of protection (Power connection)	IP 20 (IP 00)	IP 20 (IP 00)	IP 20 (IP 00)	IP 20 (IP 00)
Protection against direct contact	Finger and back-of-hand proof			
Overvoltage category/pollution degree	II/2	II/2	II/2	II/2
Shock resistance	8 g/11 ms	8 g/11 ms	8 g/11 ms	8 g/11 ms
Vibration resistance to EN 60721-3-2	2M2	2M2	2M2	2M2
Power loss at rated operational current e	–	–	–	–
Dimensions (W H D)	65 149 189.5	65 149 189.5	110 149 189.5	110 149 189.5
Weight	1.0	1.0	1.7	1.7
Radio interference level	„A“	„A“	„A“	„A“
Main conducting paths				
Rated operating voltage	110…500	110…500	110…500	110…500
Supply frequency	50/60	50/60	50/60	50/60
Control section power supply	internal via power connection			
Rated operational current				
AC-–51	17	22	29	41
AC-53 (inductive load)	9	12	16	23
Assigned motor rating (standard connection)				
230 V	2.2	3	4	5.5
400 V	4	5.5	7.5	11
460 V	5	7	10	15
500 V	5.5	5.5	7.5	11
Overload cycle to IEC/EN 60947-4-2				
AC-51 (only for M types)	17A: AC-51: 1.5 – 1: 99 – 600	22A: AC-51: 1.5 – 1: 99 – 600	29A: AC-51: 1.5 – 1: 99 – 600	41A: AC-51: 1.5 – 1: 99 – 600
AC-53a (without bypass)	9A: AC-53a: 6 – 0.5: 99 – 600 9A: AC-53a: 6 – 5: 99 – 20	12A: AC-53a: 6 – 0.5: 99 – 600 12A: AC-53a: 6 – 5: 99 – 20	16A: AC-53a: 6 – 0.5: 99 – 600 16A: AC-53a: 6 – 5: 99 – 20	23A: AC-53a: 6 – 0.5: 99 – 600 23A: AC-53a: 6 – 5: 99 – 20 41A: AC-53b:3 – 5:360 (-M only)
Terminal capacities				
Cable lengths				
Solid	1 (1.5 – 35) 2 (1.5 – 10)	1 (1.5 – 35) 2 (1.5 – 10)	1 (2.5 – 50) 2 (2.5 – 16)	2 (2.5 – 50) 3 (2.5 – 16)
Flexible with ferrule	1 (1.5 – 25) 2 (1.5 – 6)	1 (1.5 – 25) 2 (1.5 – 6)	1 (2.5 – 35) 2 (2.5 – 10)	2 (2.5 – 35) 3 (2.5 – 10)
Stranded	1 (1.5 – 35) 2 (1.5 – 10)	1 (1.5 – 35) 2 (1.5 – 10)	1 (2.5 – 50) 2 (2.5 – 16)	2 (2.5 – 50) 3 (2.5 – 16)
Solid or stranded	1 (16 – 4) 2 (16 – 10)	1 (16 – 4) 2 (16 – 10)	1 (14 – 2) 2 (14 – 8)	2 (14 – 2) 3 (14 – 8)
Tightening torque	3	3	3.5	3.5
Screwdriver (PZ: Pozidriv)	PZ2 or 1 6 mm	PZ2 or 1 6 mm	PZ2 or 1 6 mm	PZ2 or 1 6 mm
Control cables				
Solid	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)
Flexible with ferrule	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)
Stranded	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)	1 (0.75 – 2.5) 2 (0.75 – 1.5)
Solid or stranded	1 (18 – 12) 2 (18 – 16)	1 (18 – 12) 2 (18 – 16)	1 (18 – 12) 2 (18 – 16)	1 (18 – 12) 2 (18 – 16)
Tightening torque	0.8	0.8	0.8	0.8
Screwdriver (PZ: Pozidriv)	0.5 3.5	0.5 3.5	0.5 3.5	0.5 3.5

			DS4-340-2K2-M(R)	DS4-340-2K2-M(R)-DC
Power section				
Rated impulse withstand voltage	U_{imp}	kV	6	6
Rated insulation voltage	U_i	V AC	500	500
Short-circuit rating				
Type "1" coordination				
For AC-51:1.5-1:600-99			PKM0-16 (+ CL-PKZ0)	PKM0-16 (+ CL-PKZ0)
For AC-53a: 3-5: 10-99 and AC-53b: 3-5 : 360			PKM0-6,3 (+ CL-PKZ0) + Z00-6 (+ EZ00)	PKM0-6,3 (+ CL-PKZ0) + Z00-6 (+ EZ00)
For AC-53a:6-0.5:600-99			PKM0-10 (+ CL-PKZ0) + ZEV + ZEV-XSW-25	PKM0-10 (+ CL-PKZ0) + ZEV + ZEV-XSW-25
Type „2" coordination short-circuit rating (additional with the fuses for coordination type „1")			3 × 50.140.06-50	3 × 50.140.06-50
Fuse base			3 × 51.060.04	3 × 51.060.04
Control circuit				
Current consumption				
Minimum control voltage		V AC / DC	110 / 24	24
Digital inputs				
24V DC		mA	14	14
230 V AC		mA	14	14
Control section power supply		V AC	internal via power connection	
Control voltage				
DC-operated		V DC	+24 ±15%	+24 ±15%
AC operated		V AC	110 – 240 ±15%	
Pick-up voltage				
DC-operated		V DC	15…27	15…27
AC operated		V AC	79 – 264	
Drop-out voltage				
DC operated		V DC	0…3	0…3
AC operated		V AC	0 – 22	
Pick-up time				
DC operated		ms	95	45
AC operated		ms	115	–
Drop-out time				
DC operated		ms	165	45
AC operated		ms	165	–
Programmable relay output				
Number			1	1
Voltage range		V AC	250	250
AC-1 current range		A	3	3
Soft start function				
Ramp times				
Acceleration		s	0…10	0…10
Deceleration		s	0…10	0…10
Start voltage (= turn-off voltage)		%	30…92	30…92
Voltage reduction at stop		%	8	8
Torque free time for rotation direction reversal		ms	60	60

Notes

Rated impulse withstand voltage:
- 1.2 µs/50 µs (rise time/fall time of the pulse to IEC/EN 60947-2 or -3)
- Applies for control circuit/power section/enclosure

DS4-340-4K0-M(R)	DS4-340-5K5-M(R)	DS4-340-7K5-M(R)	DS4-340-11K-M(R)
6	6	6	6
500	500	500	500
PKM0-20 (+ CL-PKZ0)	PKM0-25 (+ CL-PKZ0)	PKM4-32	PKM4-50
PKM0-10 (+ CL-PKZ0) + Z00-10 (+ EZ00)	PKM0-16 (+ CL-PKZ0) + Z00-16 (+ EZ00)	PKM0-16 (+ CL-PKZ0) + Z00-16 (+ EZ00)	PKM0-25 (+ CL-PKZ0) + Z00-24 (+ EZ00)
PKM0-20 (+ CL-PKZ0) + ZEV + ZEV-XSW-25	PKM0-25 (+ CL-PKZ0) + ZEV + ZEV-XSW-25	PKZM4-40 (+ CL-PKZ0) + ZEV + ZEV-XSW-65	PKZM4-50 (+ CL-PKZ0) + ZEV + ZEV-XSW-65
3 × 50.140.06-63	3 × 50.140.06-80	3 × 50.140.06-125	3 × 50.140.06-160
3 × 51.060.04	3 × 51.060.04	3 × 21.189.01	3 × 21.189.01
110 / 24	110 / 24	110 / 24	110 / 24
14	14	14	14
14	14	14	14
internal via power connection			
+24 ±15%	+24 ±15%	+24 ±15%	+24 ±15%
110 – 240 ±15%	110 – 240 ±15%	110 – 240 ±15%	110 – 240 ±15%
15…27	15…27	15…27	15…27
79 – 264	79 – 264	79 – 264	79 – 264
0…3	0…3	0…3	0…3
0 – 22	0 – 22	0 – 22	0 – 22
95	95	95	95
115	115	115	115
165	165	165	165
165	165	165	165
1	1	1	1
250	250	250	250
3	3	3	3
0…10	0…10	0…10	0…10
0…10	0…10	0…10	0…10
30…92	30…92	30…92	30…92
8	8	8	8
60	60	60	60

			DS4-340-7K5-MX(R)	DS4-340-11K-MX(R)	DS4-340-15K-MX(R)
General					
Standards			IEC/EN 60947-4-2		
Approvals			UL/CSA	UL/CSA	UL/CSA
Climatic proofing			Damp heat, constant according to IEC 60068-2-78; damp heat, cyclical, according to IEC 60068-2-10		
Ambient temperature		°C	0 – 40	0 – 40	0 – 40
Ambient temperature, storage		°C	25…55	25…55	25…55
Altitude		m	0 – 1000	0 – 1000	0 – 1000
Mounting position			vertical	vertical	vertical
Degree of protection (Power connection)			IP21	IP21	IP21
Protection against direct contact			Finger and back-of-hand proof		
Overvoltage category/pollution degree			II/2	II/2	II/2
Shock resistance			8 g/11 ms	8 g/11 ms	8 g/11 ms
Dimensions (W × H × D)		mm	45 × 149 × 189.5	45 × 149 × 189.5	45 × 149 × 189.5
Weight		kg	0.8	0.8	1.6
Radio interference level			„A"	„A"	„A"
Vibration resistance to EN 60721-3-2			2M2	2M2	2M2
Average heat dissipation at rated load cycle		W	11.2	11.9	12.7
Main conducting paths					
Rated operating voltage	U_e	V AC	110 – 500	110 – 500	110 – 500
Supply frequency		Hz	50/60	50/60	50/60
Control section power supply		V AC	internal via power connection		
Rated operational current					
AC-53 (inductive load)	I_e	A	16	23	31
Assigned motor rating (standard connection)					
230 V		kW	4	5.5	7.5
400 V		kW	7.5	11	15
460 V		HP	10	15	20
500 V		kW	7.5	11	18.5
Overload cycle to IEC/EN 60947-4-2					
AC-53b (with bypass)			16A: AC-53b: 3 – 5; 360	23A: AC-53b: 3 – 5; 360	31A: AC-53b: 3 – 5; 360
Terminal capacities					
Cable lengths					
Solid		mm^2	1 × (1.5 – 6) 2 × (1.5 – 4)	1 × (1.5 – 6) 2 × (1.5 – 4)	1 × (2.5 – 50) 2 × (2.5 – 16)
Flexible with ferrule		mm^2	1 × (1.5 – 6) 2 × (1.5 – 2.5)	1 × (1.5 – 6) 2 × (1.5 – 2.5)	1 × (2.5 – 35) 2 × (2.5 – 10)
Stranded		mm^2	1 × (1.5 – 6) 2 × (1.5 – 4)	1 × (1.5 – 6) 2 × (1.5 – 4)	1 × (2.5 – 50) 2 × (2.5 – 16)
Solid or stranded		AWG	1 × (16 – 8) 2 × (16 – 12)	1 × (16 – 8) 2 × (16 – 12)	1 × (14 – 2) 2 × (14 – 8)
flat conductor					
Tightening torque		Nm	1.7	1.7	3.5
Screwdriver (PZ: Pozidriv)		mm	PZ2 or 1 × 6 mm	PZ2 or 1 × 6 mm	PZ2 or 1 × 6 mm
Control cables					
Solid		mm^2	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)
Flexible with ferrule		mm^2	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)
Stranded		mm^2	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)
Solid or stranded		AWG	1 × (18 – 12) 2 × (18 – 16)	1 × (18 – 12) 2 × (18 – 16)	1 × (18 – 12) 2 × (18 – 16)
flat conductor					
Tightening torque		Nm	0.8	0.8	0.8
Screwdriver (PZ: Pozidriv)		mm	0.5 × 3.5	0.5 × 3.5	0.5 × 3.5

Notes

Rated impulse withstand voltage:
- 1.2 µs/50 µs (rise time/fall time of the pulse to IEC/EN 60947-2 or -3)
- Applies for control circuit/power section/enclosure

			DS4-340-7K5-MX(R)	DS4-340-11K-MX(R)	DS4-340-15K-MX(R)
Power section					
Rated impulse withstand voltage	U_{imp}	kV	6	6	6
Rated insulation voltage	U_i	V AC	500	500	500
Short-circuit rating					
Type "1" coordination					
with AC-53a:3-5:10-99 and AC-53b:3-5:360			PKM0-16 (+ CL-PKZ0) + Z00-16 (+ EZ00)	PKM0-25 (+ CL-PKZ0) + Z00-24 (+ EZ00)	PKZ2+M-32-PKZ2 (+ CL-PKZ2) + Z1-40 (+ EZ1)
Type „2" coordination short-circuit rating (additional with the fuses for coordination type "1")			3 × 50.140.06-63	3 × 50.140.06-80	3 × 20.282.20-125
Fuse base			3 × 50.060.04	3 × 50.060.04	3 × 21.189.01
Control circuit					
Current consumption					
Minimum control voltage		V AC / DC	110 / 24	110 / 24	110 / 24
Digital inputs					
24V DC		mA	14	14	14
230 V AC		mA	14	14	14
Control section power supply		V AC	internal via power connection		
Control voltage					
DC-operated		V DC	+24 ±15%	+24 ±15%	+24 ±15%
AC operated		V AC	110 – 240 ±15%	110 – 240 ±15%	110 – 240 ±15%
Pick-up voltage					
DC-operated		V DC	15…27	15…27	15…27
AC operated		V AC	79 – 264	79…264	79…264
Drop-out voltage					
DC operated		V DC	0…3	0…3	0…3
AC operated		V AC	0…22	0…22	0…22
Pick-up time					
DC operated		ms	95	95	95
AC operated		ms	115	115	115
Drop-out time					
DC operated		ms	165	165	165
AC operated		ms	165	165	165
Programmable relay output					
Number			1	1	1
Voltage range		V AC	250	250	250
AC-1 current range		A	3	3	3
Soft start function					
Ramp times					
Acceleration		s	0.5…10	0.5…10	0.5…10
Deceleration		s	0…10	0…10	0…10
Start voltage (= turn-off voltage)		%	30…92	30…92	30…92
Voltage reduction at stop		%	8	8	8
Torque free time for rotation direction reversal		ms	60	60	60

Notes

Rated impulse withstand voltage:
- 1.2 µs/50 µs (rise time/fall time of the pulse to IEC/EN 60947-2 or -3)
- Applies for control circuit/power section/enclosure

			DS6-340-22K-MX	DS6-340-30K-MX	DS6-340-37K-MX	DS6-340-45K-MX
General						
Standards			IEC/EN 60947-4-2	IEC/EN 60947-4-2	IEC/EN 60947-4-2	IEC/EN 60947-4-2
Approvals						
Climatic proofing			Damp heat, constant according to IEC 60068-2-78; damp heat, cyclical, according to IEC 60068-2-10			
Ambient temperature		°C	0…40, up to 60 at 1 % derating per Kelvin temperature rise			
Ambient temperature, storage		°C	–25…55	–25…55	–25…55	–25…55
Altitude		m	0…1000, above that 1 % derating per 100 m , up to 2000 m			
Mounting position			vertical	vertical	vertical	vertical
Degree of protection (Power connection)			IP20	IP20	IP20	IP20
Protection against direct contact			Finger and back-of-hand proof			
Overvoltage category/pollution degree			II/2	II/2	II/2	II/2
Shock resistance			8 g/11 ms	8 g/11 ms	8 g/11 ms	8 g/11 ms
Vibration resistance to EN 60721-3-2		g	2M2	2M2	2M2	2M2
Average heat dissipation at rated load cycle		W	7	10	13	18
Dimensions (W × H × D)		mm				
Radio interference level			"A1"	"A1"	"A1"	"A1"
Weight		kg	1.8	1.8	1.8	1.8
Main conducting paths						
Rated operating voltage	U_e	V AC	230 – 460	230 – 460	230 – 460	230 – 460
Supply frequency		Hz	50/60	50/60	50/60	50/60
Rated operational current						
AC-51 (resistive loads)	I_e	A	41	55	68	81
AC-53 (motor loads)	I_e	A	41	55	68	81
Assigned motor rating (standard connection)						
230 V		kW	11	15	15	22
400 V		kW	22	30	37	45
460 V		HP	30	40	50	60
Overload cycle to IEC/EN 60947-4-2						
AC-51 (built-in bypass)			41 A: AC-53a: 3…5; 75…10	55 A: AC-53a: 3…5; 75…10	68 A: AC-53a: 3…5; 75…10	81 A: AC-53a: 3…5; 75…10
Terminal capacities						
Cable lengths						
Solid		mm²	1 × (25 – 70) 2 × (6 – 25)	1 × (25 – 70) 2 × (6 – 25)	1 × (25 – 70) 2 × (6 – 25)	1 × (25 – 70) 2 × (6 – 25)
Flexible with ferrule		mm²				
Stranded		mm²	1 × (25 – 70) 2 × (6 – 25)	1 × (25 – 70) 2 × (6 – 25)	1 × (25 – 70) 2 × (6 – 25)	1 × (25 – 70) 2 × (6 – 25)
Solid or stranded		AWG	1 × (12 – 2/0)	1 × (12 – 2/0)	1 × (12 – 2/0)	1 × (12 – 2/0)
Band	min.	mm	2 × 9 × 0.8	2 × 9 × 0.8	2 × 9 × 0.8	2 × 9 × 0.8
	max.	mm	9 × 9 × 0.9	9 × 9 × 0.9	9 × 9 × 0.9	9 × 9 × 0.9
Tightening torque		Nm				
Control cables						
Solid		mm²	1 × (0.5 – 2.5) 2 × (0.5 – 1.0)	1 × (0.5 – 2.5) 2 × (0.5 – 1.0)	1 × (0.5 – 2.5) 2 × (0.5 – 1.0)	1 × (0.5 – 2.5) 2 × (0.5 – 1.0)
Flexible with ferrule		mm²	1 × (0.5 – 1.5) 2 × (0.5 – 0.75)	1 × (0.5 – 1.5) 2 × (0.5 – 0.75)	1 × (0.5 – 1.5) 2 × (0.5 – 0.75)	1 × (0.5 – 1.5) 2 × (0.5 – 0.75)
Stranded		mm²	1 × (0.5 – 1.5) 2 × (0.5 – 1.0)	1 × (0.5 – 1.5) 2 × (0.5 – 1.0)	1 × (0.5 – 1.5) 2 × (0.5 – 1.0)	1 × (0.5 – 1.5) 2 × (0.5 – 1.0)
Solid or stranded		AWG	1 × (21 – 14) 2 × (21 – 18)	1 × (21 – 14) 2 × (21 – 18)	1 × (21 – 14) 2 × (21 – 18)	1 × (21 – 14) 2 × (21 – 18)
flat conductor						
Tightening torque		Nm	0.4	0.4	0.4	0.4
Screwdriver (PZ: Pozidriv)		mm	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5

Notes

Rated impulse withstand voltage:
- 1.2 µs/50 µs (rise time/fall time of the pulse to IEC/EN 60947-2 or -3)
- Applies for control circuit/power section/enclosure

DS6-340-55K-MX	DS6-340-75K-MX	DS6-340-90K-MX	DS6-340-110K-MX
IEC/EN 60947-4-2	IEC/EN 60947-4-2	IEC/EN 60947-4-2	IEC/EN 60947-4-2
Damp heat, constant according to IEC 60068-2-78; damp heat, cyclical, according to IEC 60068-2-10			
0…40, up to 60 at 1 % derating per Kelvin temperature rise			
–25…55	–25…55	–25…55	–25…55
0…1000, above that 1 % derating per 100 m , up to 2000 m			
vertical	vertical	vertical	vertical
IP20	IP20	IP20	IP20
Finger and back-of-hand proof			
II/2	II/2	II/2	II/2
8 g/11 ms	8 g/11 ms	8 g/11 ms	8 g/11 ms
2M2	2M2	2M2	2M2
25	24	30	42
"A1"	"A1"	"A1"	"A1"
1.8	3.7	3.7	3.7
230 – 460	230 – 460	230 – 460	230 – 460
50/60	50/60	50/60	50/60
99	135	160	200
99	135	160	200
30	30	45	55
55	75	90	110
75	100	125	150
99 A: AC-53a: 3…5; 75…10 99 A: AC-53a: 3…5; 75…10	135 A: AC-53a: 3…5; 75…10 135 A: AC-53a: 3…5; 75…10	160 A: AC-53a: 3…5; 75…10 160 A: AC-53a: 3…5; 75…10	200 A: AC-53a: 3…5; 75…10 200 A: AC-53a: 3…5; 75…10
1 × (25 – 70) 2 × (6 – 25)	1 × (4 – 185) 2 × (4 – 70)	1 × (4 – 185) 2 × (4 – 70)	1 × (4 – 185) 2 × (4 – 70)
1 × (25 – 70) 2 × (6 – 25)	1 × (4 – 185) 2 × (4 – 70)	1 × (4 – 185) 2 × (4 – 70)	1 × (4 – 185) 2 × (4 – 70)
1 × (12 – 2/0)	1 × (12…350 kcmil) 2 × (12 – 00)	1 × (12…350 kcmil) 2 × (12 – 00)	1 × (12…350 kcmil) 2 × (12 – 00)
2 × 9 × 0.8	2 × 9 × 0.8	2 × 9 × 0.8	2 × 9 × 0.8
9 × 9 × 0.9	10 × 16 × 0.8	10 × 16 × 0.8	10 × 16 × 0.8
1 × (0.5 – 2.5) 2 × (0.5 – 1.0)	1 × (0.5 – 2.5) 2 × (0.5 – 1.0)	1 × (0.5 – 2.5) 2 × (0.5 – 1.0)	1 × (0.5 – 2.5) 2 × (0.5 – 1.0)
1 × (0.5 – 1.5) 2 × (0.5 – 0.75)	1 × (0.5 – 1.5) 2 × (0.5 – 0.75)	1 × (0.5 – 1.5) 2 × (0.5 – 0.75)	1 × (0.5 – 1.5) 2 × (0.5 – 0.75)
1 × (0.5 – 1.5) 2 × (0.5 – 1.0)	1 × (0.5 – 1.5) 2 × (0.5 – 1.0)	1 × (0.5 – 1.5) 2 × (0.5 – 1.0)	1 × (0.5 – 1.5) 2 × (0.5 – 1.0)
1 × (21 – 14) 2 × (21 – 18)	1 × (21 – 14) 2 × (21 – 18)	1 × (21 – 14) 2 × (21 – 18)	1 × (21 – 14) 2 × (21 – 18)
0.4	0.4	0.4	0.4
0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5

			DS6-340-22K-MX	DS6-340-30K-MX	DS6-340-37K-MX	DS6-340-45K-MX
Power section						
Rated impulse withstand voltage	U_{imp}	kV	4	4	4	4
Rated insulation voltage	U_i	V AC	500	500	500	500
Short-circuit rating						
Type "1" coordination						
at AC-53a: 3…5 : 75…10			NZMN1-M50/ PKZM4-50	NZMN1-M63/PKZM4-58	NZMN1-M80	NZMN1-M100
Type "2" coordination short-circuit rating (additional with the fuses for coordination type "1")			3 × 20.282.20-100	3 × 20.282.20-125	3 × 20.610.32-200	3 × 20.610.32-200
Fuse holders			3 × 21.189.01	3 × 21.189.01	3 × 21.313.02	3 × 21.313.02
Control circuit						
Regulator supply voltage						
Voltage		V	+24 DC +10%/-15%	+24 DC +10%/-15%	+24 DC +10%/-15%	+24 DC +10%/-15%
Current consumption						
Current consumption at 24 V DC		mA	35	35	35	35
Current consumption in operation at 24 V DC		mA	65	65	65	65
Current consumption at peak performance (close bypass) at 24 V DC			600/50 ms	600/50 ms	600/50 ms	600/50 ms
Control voltage						
DC-operated		V DC	+24 +10%/-15%	+24 +10%/-15%	+24 +10%/-15%	+24 +10%/-15%
Current consumption at 24 V DC		mA	14	14	14	14
Pick-up voltage						
DC-operated		V DC	+17.3…27	+17.3…27	+17.3…27	+17.3…27
Drop-out voltage						
DC operated		V DC	0…3	0…3	0…3	0…3
Pick-up time						
DC operated		ms	250	250	250	250
Drop-out time						
DC operated		ms	190	190	190	190
Relay outputs						
number (top of ramp)			2 (TOR, Ready)	2 (TOR, Ready)	2 (TOR, Ready)	2 (TOR, Ready)
Voltage range		V AC	250	250	250	250
AC-1 current range		A	3	3	3	3
Soft start function						
Ramp times						
Acceleration		s	1…30	1…30	1…30	1…30
Deceleration		s	0…30	0…30	0…30	0…30
Start voltage (= turn-off voltage)		%	30…92	30…92	30…92	30…92
Voltage reduction at stop		%	8	8	8	8
Torque free time for rotation direction reversal		ms	–	–	–	–

Notes

Rated impulse withstand voltage:
- 1.2 µs/50 µs (rise time/fall time of the pulse to IEC/EN 60947-2 or -3)
- Applies for control circuit/power section/enclosure

DS6-340-55K-MX	DS6-340-75K-MX	DS6-340-90K-MX	DS6-340-110K-MX
4	4	4	4
500	500	500	500
NZMN1-M100	NZMN2-M160	NZMN2-M200	NZMN2-M200
3 × 20.610.32-200	3 × 20.610.32-350	3 × 20.610.32-400	3 × 20.610.20-500
3 × 21.313.02	3 × 21.313.02	3 × 21.313.02	3 × 21.313.02
+24 DC +10%/-15%	+24 DC +10%/-15%	+24 DC +10%/-15%	+24 DC +10%/-15%
35	35	35	35
65	65	65	65
600/50 ms	600/50 ms	600/50 ms	600/50 ms
+24 +10%/-15%	+24 +10%/-15%	+24 +10%/-15%	+24 +10%/-15%
14	14	14	14
+17.3…27	+17.3…27	+17.3…27	+17.3…27
0…3	0…3	0…3	0…3
250	250	250	250
190	190	190	190
2 (TOR, Ready)	2 (TOR, Ready)	2 (TOR, Ready)	2 (TOR, Ready)
250	250	250	250
3	3	3	3
1…30	1…30	1…30	1…30
0…30	0…30	0…30	0…30
30…92	30…92	30…92	30…92
8	8	8	8
–	–	–	–

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			DM4-340-7K5	DM4-340-11K	DM4-340-15K	DM4-340-22K
General						
Standards			IEC/EN 60947-4-2			
Approvals			UL, cUL	UL, cUL	UL, cUL	UL, cUL
Climatic proofing			Damp heat, constant according to IEC 60068-2-78; damp heat, cyclical, according to IEC 60068-2-30			
Ambient temperature		°C	0 – 40, up to 60 °C with a current reduction of 2% per °C			
Ambient temperature, storage		°C	-25…55	-25…55	-25…55	-25…55
Altitude		m	0 -1000, up to 2000 m with a current reduction of 1 % per 100 m			
Mounting position			Vertical			
Protection type			IP 20	IP 20	IP 20	IP 20
Protection against direct contact			Finger and back-of-hand proof			
Pollution degree			2	2	2	2
Heat dissipation with rated operational current I_e		W	50	63	91	120
Dimensions (W × H × D)		mm	222 × 290 × 195	222 × 290 × 195	222 × 290 × 195	222 × 290 × 195
Weight		kg	6.7	6.7	6.7	6.7
Main conducting paths						
Rated operating voltage	U_e	V AC	230 – 460	230 – 460	230 – 460	230 – 460
Rated insulation voltage	U_i	V AC	460	460	460	460
Supply frequency		Hz	50/60	50/60	50/60	50/60
Control section power supply		V AC	110/230	110/230	110/230	110/230
Rated operational current						
AC-53a 400 V	I_e	A	16	23	30	44
Assigned motor rating (standard connection)						
230 V		kW	4	5.5	7.5	11
400 V		kW	7.5	11	15	22
460 V		HP	10	15	20	30
Phase current						
in-delta connection		A	27	39	51	76
Assigned motor rating (delta connection)						
230 V		kW	7.5	11	15	22
400 V		kW	11	15	22	37
460 V		HP	20	25	30	50
Overload cycle to IEC/EN 60947-4-2						
AC-53a (without bypass)			16 A : AC-53a : 3 – 35 : 99–10	23 A : AC-53a : 3–35 : 99–10	30 A : AC-53a : 3–35 : 99–10	44 A: AC-53a: 3–35: 99–10
AC-53b (with bypass)			16 A : AC-53b : 3 – 35 : 120	23 A : AC-53b : 3–35 : 120	30 A: AC-53b: 3…35: 120	44 A: AC-53b: 3–35: 120
Short-circuit rating						
Type "1" coordination			PKZM0-16	PKZM0-25	PKZ2/ZM-32	NZM7-63N
Additional type "2" coordination			20.282.20-40	20.282.20-80	20.282.20-80	20.282.20-125

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			DM4-340-30K	DM4-340-37K	DM4-340-45K	DM4-340-55K	DM4-340-75K	DM4-340-90K
General								
Standards			IEC/EN 60947-4-2					
Approvals			UL, cUL	UL, cUL	UL, cUL	UL, cUL	UL, cUL	UL, cUL
Climatic proofing			Damp heat, constant according to IEC 60068-2-78; damp heat, cyclical, according to IEC 60068-2-30					
Ambient temperature		°C	0 – 40, up to 60 °C with a current reduction of 2% per °C					
Ambient temperature, storage		°C	-25…55	-25…55	-25…55	-25…55	-25…55	-25…55
Altitude		m	0 -1000, up to 2000 m with a current reduction of 1 % per 100 m					
Mounting position			Vertical					
Protection type			IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Protection against direct contact			Finger and back-of-hand proof					
Pollution degree			2	2	2	2	2	2
Heat dissipation with rated operational current I_e		W	152	190	227	276	380	452
Dimensions (W × H × D)		mm	222 × 290 × 195	222 × 290 × 195	222 × 420 × 195	222 × 420 × 195	222 × 420 × 195	520 × 338 × 248
Weight		kg	6.7	6.7	15	15	15	15.7
Main conducting paths								
Rated operating voltage	U_e	V AC	230 – 460	230 – 460	230 – 460	230 – 460	230 – 460	230 – 460
Rated insulation voltage	U_i	V AC	460	460	460	460	460	460
Supply frequency		Hz	50/60	50/60	50/60	50/60	50/60	50/60
Control section power supply		V AC	110/230	110/230	110/230	110/230	110/230	110/230
Rated operational current								
AC-53a 400 V	I_e	A	59	72	85	105	146	174
Assigned motor rating (standard connection)								
230 V		kW	15	18.5	22	30	37	45
400 V		kW	30	37	45	55	75	90
460 V		HP	40	50	60	75	100	125
Phase current								
in-delta connection		A	102	124	147	181	252	301
Assigned motor rating (delta connection)								
230 V		kW	30	37	45	55	75	90
400 V		kW	55	55	75	90	132	160
460 V		HP	75	100	100	150	200	250
Overload cycle to IEC/EN 60947-4-2								
AC-53a (without bypass)			59 A: AC-53a: 3–35: 99–10	72 A: AC-53a: 3–35: 99–10	85 A: AC-53a: 3–35: 99–10	105 A: AC-53a: 3–35: 99–10	146 A: AC-53a: 3–35: 99–10	174 A: AC-53a: 3…35: 99…10
AC-53b (with bypass)			59 A: AC-53b: 3–35: 120	72 A: AC-53b: 3…35: 120	85 A: AC-53b: 3…35: 120	105 A : AC-53b: 3–35 :120	146 A: AC-53b: 3–35: 120	174 A: AC-53b: 3…35: 120
Short-circuit rating								
Type "1" coordination			NZM7-63N	NZM7-80N	NZM7-100N	NZM7-100N	NZM7-160N	NZM7-200N
Additional type "2" coordination			20.282.20-125	20.189.20-200	20.189.20-200	20.610.32-350	20.610.32-350	20.610.32-450

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			DM4-340-7K5	DM4-340-11K	DM4-340-15K	DM4-340-22K	DM4-340-30K	DM4-340-37K	DM4-340-45K	DM4-340-55K	DM4-340-75K	DM4-340-90K
Terminal capacities												
Cable lengths												
Connection									M8 screws for cable lug			
Solid	mm²		1 × (1.5 – 16) 2 × (1 – 4)	1 × (1.5 – 16) 2 × (1 – 4)	1 × (1.5 – 16) 2 × (1 – 4)	1 × (1.5 – 16) 2 × (1 – 4)	1 × (4 – 35) 2 × (4 – 10)	1 × (4 – 35) 2 × (4 – 10)				
Flexible with ferrule	mm²		1 × (1 – 16) 2 × (1 – 4)	1 × (1 – 16) 2 × (1 – 4)	1 × (1 – 16) 2 × (1 – 4)	1 × (1 – 16) 2 × (1 – 4)	1 × (6 – 35) 2 × (6 – 10)	1 × (6 – 35) 2 × (6 – 10)				
Flexible with cable lug	mm²								35 … 95	35 … 95	35 … 95	35 … 95
Stranded	mm²		1 × (2.5 – 25) 2 × (2.5 – 4)	1 × (2.5 – 25) 2 × (2.5 – 4)	1 × (2.5 – 25) 2 × (2.5 – 4)	1 × (2.5 – 25) 2 × (2.5 – 4)	1 × (10 – 50) 2 × 10	1 × (10 – 50) 2 × 10				
Stranded with cable lug	mm²								50 … 120	50 … 120	50 … 120	50 … 120
Solid or stranded	AWG		12 … 4	12 … 4	12 … 4	12 … 4	10 … 1	10 … 1	1 … 0 250 MCM	1 … 0 250 MCM	1 … 0 250 MCM	1 … 0 250 MCM
Flat conductor Number of segments × width × thickness	mm								6 × 16 × 0.8	6 × 16 × 0.8	6 × 16 × 0.8	6 × 16 × 0.8
Busbar Width	mm											2 × (20 × 6)
Tightening torque	Nm		1.2	1.2	1.2	1.2	3	3	0.5	0.5	0.5	0.5
Screwdriver (PZ: Pozidriv)	mm		0.8 × 4	0.8 × 4	0.8 × 4	0.8 × 4	1.2 × 6.5	1.2 × 6.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5
Control cables												
Solid	mm²		1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)
Flexible with ferrule	mm²		1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)
Stranded	mm²		1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)
Solid or stranded	AWG		22 … 12	22 … 12	22 … 12	22 … 12	22 … 12	22 … 12	22 … 12	22 … 12	22 … 12	22 … 12
Tightening torque	Nm		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Screwdriver (PZ: Pozidriv)	mm		0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5
Control circuit												
Current consumption												
Digital inputs												
24V DC	mA		0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
230 V AC	mA		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Analog inputs												
10 V	mA		1	1	1	1	1	1	1	1	1	1
Pick-up voltage												
DC-operated	V DC		24…230	24…230	24…230	24…230	24…230	24…230	24…230	24…230	24…230	24…230
AC operated	V AC		24 – 230	24 – 230	24 – 230	24 – 230	24 – 230	24 – 230	24 – 230	24 – 230	24 – 230	24 – 230
Drop-out voltage												
DC operated	V DC		0…3	0…3	0…3	0…3	0…3	0…3	0…3	0…3	0…3	0…3
AC operated	V AC		0 – 3	0 – 3	0 – 3	0 – 3	0 – 3	0 – 3	0 – 3	0 – 3	0 – 3	0 – 3
Programmable relay outputs												
Number			4	4	4	4	4	4	4	4	4	4
Max. voltage	V AC		250	250	250	250	250	250	250	250	250	250
Max. current AC-11	A		3	3	3	3	3	3	3	3	3	3
with back-up fuse												
Number			2	2	2	2	2	2	2	2	2	2
Voltage range	V DC		0 – 10	0 – 10	0 – 10	0 – 10	0 – 10	0 – 10	0 – 10	0 – 10	0 – 10	0 – 10
Current carrying capacity	mA		10	10	10	10	10	10	10	10	10	10
Programmable analog inputs												
Ref 1	V DC		0 … 10	0 … 10	0 … 10	0 … 10	0 … 10	0 … 10	0 … 10	0 … 10	0 … 10	0 … 10
Ref 2	mA		4 … 20	4 … 20	4 … 20	4 … 20	4 … 20	4 … 20	4 … 20	4 … 20	4 … 20	4 … 20
Soft start function												
Ramp times												
Acceleration	s		1…255	1…255	1…255	1…255	1…255	1…255	1…255	1…255	1…255	1…255
Deceleration	s		0…255	0…255	0…255	0…255	0…255	0…255	0…255	0…255	0…255	0…255
Start pedestal	%		10…60	10…60	10…60	10…60	10…60	10…60	10…60	10…60	10…60	10…60
Voltage reduction at stop	%		0 – 100	0 – 100	0 – 100	0 – 100	0 – 100	0 – 100	0 – 100	0 – 100	0 – 100	0 – 100
Kickstart												
Voltage	%		60 – 90	60 – 90	60 – 90	60 – 90	60 – 90	60 – 90	60 – 90	60 – 90	60 – 90	60 – 90
Duration												
50 Hz	ms		100 – 400	100 – 400	100 – 400	100 – 400	100 – 400	100 – 400	100 – 400	100 – 400	100 – 400	100 – 400
60 Hz	ms		166 – 664	166 – 664	166 – 664	166 – 664	166 – 664	166 – 664	166 – 664	166 – 664	166 – 664	166 – 664
Current limitation			0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e

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			DM4-340-110K	DM4-340-132K	DM4-340-160K
General					
Standards			IEC/EN 60947-4-2		
Approvals			UL, cUL	UL, cUL	UL, cUL
Climatic proofing			Damp heat, constant according to IEC 60068-2-78; damp heat, cyclical, according to IEC 60068-2-30		
Ambient temperature		°C	0 – 40, up to 60 °C with a current reduction of 2% per °C		
Ambient temperature, storage		°C	-25…55	-25…55	-25…55
Altitude		m	0 -1000, up to 2000 m with a current reduction of 1 % per 100 m		
Mounting position			Vertical	Vertical	Vertical
Protection type			IP 20	IP 20	IP 20
Protection against direct contact			Finger and back-of-hand proof		
Pollution degree			2	2	2
Heat dissipation with rated operational current I_e		W	545	662	795
Dimensions (W × H × D)		mm	338 × 520 × 248	338 × 520 × 248	338 × 520 × 248
Weight		kg	15.7	22	22
Main conducting paths					
Rated operating voltage	U_e	V AC	230 – 460	230 – 460	230 – 460
Rated insulation voltage	U_i	V AC	460	460	460
Supply frequency		Hz	50/60	50/60	50/60
Control section power supply		V AC	110/230	110/230	110/230
Rated operational current					
AC-53a 400 V	I_e	A	202	242	300
Assigned motor rating (standard connection)					
230 V		kW	55	75	90
400 V		kW	110	132	160
460 V		HP	150	200	250
Phase current					
in-delta connection		A	349	419	519
Assigned motor rating (delta connection)					
230 V		kW	110	132	160
400 V		kW	160	200	250
460 V		HP	250	350	400
Overload cycle to IEC/EN 60947-4-2					
AC-53a (without bypass)			202 A : AC-53a : 3–35 : 60–10	242 A: AC-53a: 3–35: 60–10	300 A : AC-53a : 3–35 : 60–3
AC-53b (with bypass)			202 A: AC-53b: 3–35: 360	242 A: AC-53b: 3–35: 360	300 A: AC-53b: 3…35: 360
Short-circuit rating					
Type "1" coordination			NZM7-200N	NZM7-250N	NZM10-400N/ZM-400
Additional type "2" coordination			20.610.32-450	20.610.32-500	20.610.32-500

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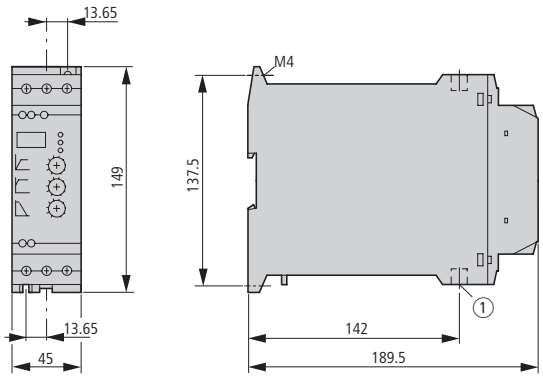
DM4-340-200K	DM4-340-250K	DM4-340-315K	DM4-340-400K	DM4-340-500K
IEC/EN 60947-4-2	IEC/EN 60947-4-2	IEC/EN 60947-4-2	IEC/EN 60947-4-2	IEC/EN 60947-4-2
UL, cUL	UL, cUL	UL, cUL	UL, cUL	UL, cUL
Damp heat, constant according to IEC 60068-2-78; damp heat, cyclical, according to IEC 60068-2-30				
0 – 40, up to 60 °C with a current reduction of 2% per °C				
-25…55	-25…55	-25…55	-25…55	-25…55
0 -1000, up to 2000 m with a current reduction of 1 % per 100 m				
Vertical	Vertical	Vertical	Vertical	Vertical
IP 20	IP 20	IP 20	IP 20	IP 20
Finger and back-of-hand proof				
2	2	2	2	2
925	1371	1705	2106	2775
338 × 520 × 248	640 × 610 × 375	640 × 610 × 375	640 × 610 × 375	640 × 610 × 375
22	56	65	72	72
230 – 460	230 – 460	230 – 460	230 – 460	230 – 460
460	460	460	460	460
50/60	50/60	50/60	50/60	50/60
110/230	110/230	110/230	110/230	110/230
370	500	600	750	900
110	132	160	200	250
200	250	315	400	500
300	400	500	600	750
640	866	1039	1299	1558
200	250	315	400	500
315	400	560	750	900
500	600	850	1100	1300
370 A : AC-53a : 3–35 : 60–3	500 A : AC-53a : 3–35 : 60–3	600 A : AC-53a : 3–35 : 60–3	750 A : AC-53a : 3–35 : 60–3	900 A : AC-53a : 3–35 : 60–3
370 A : AC-53b: 3–35 :360	500 A: AC-53b: 3…35: 360	600 A: AC-53b: 3–35: 360	750 A: AC-53b: 3–35: 360	900 A: AC-53b: 3…35: 360
NZM10-400N/ZM-400	NZM10-630N/ZM-630	NZM10-630N/ZM-630	NZM14-800S	NZM14-1000S
20.610.32-630	20.610.32-900	20.610.32-900	20.610.32-1250	20.610.32-1250

				DM4-340-110K	DM4-340-132K	DM4-340-160K
Terminal capacities						
Cable lengths						
Connection				M8 screws for cable lug	M8 screws for cable lug	M8 screws for cable lug
Flexible with cable lug			mm²	2 × (35 – 95)	2 × (35 – 95)	2 × (35 – 95)
Stranded with cable lug			mm²	2 × (50 – 120)	2 × (50 – 120)	2 × (50 – 120)
Solid or stranded			AWG	2 × 1/0 2 × 250 MCM	2 × 1/0 2 × 250 MCM	2 × 1/0 2 × 250 MCM
Flat conductor	Number of segments × width × thickness		mm	2 × (6 × 16 × 0.8)	2 × (6 × 16 × 0.8)	2 × (6 × 16 × 0.8)
Busbar		Width	mm	2 × (20 × 6)	2 × (20 × 6)	2 × (20 × 6)
Tightening torque			Nm	0.5	0.5	0.5
Screwdriver (PZ: Pozidriv)			mm	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5
Control cables						
Solid			mm²	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)
Flexible with ferrule			mm²	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)
Stranded			mm²	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)
Solid or stranded			AWG	22 … 12	22 … 12	22 … 12
Tightening torque			Nm	0.5	0.5	0.5
Screwdriver (PZ: Pozidriv)			mm	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5
Control circuit						
Current consumption						
Digital inputs						
	24V DC		mA	0.45	0.45	0.45
	230 V AC		mA	4.5	4.5	4.5
Analog inputs						
	10 V		mA	1	1	1
Pick-up voltage						
DC-operated			V DC	24…230	24…230	24…230
AC operated			V AC	24 – 230	24 – 230	24 – 230
Drop-out voltage						
DC operated			V DC	0…3	0…3	0…3
AC operated			V AC	0 – 3	0 – 3	0 – 3
Programmable relay outputs						
Number				4	4	4
Max. voltage			V AC	250	250	250
Max. current AC-11			A	3	3	3
with back-up fuse						
Number				2	2	2
Voltage range			V DC	0 – 10	0 – 10	0 – 10
Current carrying capacity			mA	10	10	10
Programmable analog inputs						
Ref 1			V DC	0 … 10	0 … 10	0 … 10
Ref 2			mA	4 … 20	4 … 20	4 … 20
Soft start function						
Ramp times						
Acceleration			s	1…255	1…255	1…255
Deceleration			s	0…255	0…255	0…255
Start pedestal			%	10…60	10…60	10…60
Voltage reduction at stop			%	0 – 100	0 – 100	0 – 100
Kickstart						
Voltage			%	60 – 90	60 – 90	60 – 90
Duration						
	50 Hz		ms	100 – 400	100 – 400	100 – 400
	60 Hz		ms	166 – 664	166 – 664	166 – 664
Current limitation				0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e

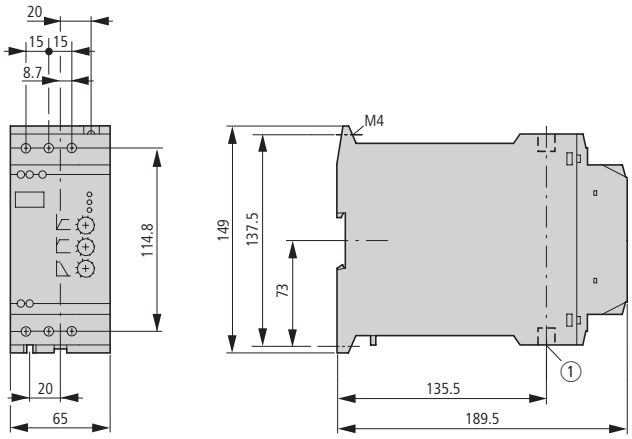
DM4-340-200K	DM4-340-250K	DM4-340-315K	DM4-340-400K	DM4-340-500K
M8 screws for cable lug	2 x M12 screws for cable lug	2 x M12 screws for cable lug	2 x M12 screws for rail connection	2 x M12 screws for rail connection
2 × (35 – 95)	2 × (50 – 240)	2 × (50 – 240)		
2 × (50 – 120)	2 × (70 – 240)	2 × (70 – 240)		
2 × 1/0 2 × 250 MCM	2 × 2/0 2 × 500 MCM	2 × 2/0 2 × 500 MCM		
2 × (6 × 16 × 0.8)	2 × (10 × 21 × 1)	2 × (10 × 21 × 1)		
2 × (20 × 6)	21 × 20	21 × 20	45 × 20 60 × 10 80 × 10	45 × 20 60 × 10 80 × 10
0.5	0.5	0.5	0.5	0.5
0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5
1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)
1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)
1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)	1 × (0.75 – 2.5)
22 … 12	22 … 12	22 … 12	22 … 12	22 … 12
0.5	0.5	0.5	0.5	0.5
0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5
0.45	0.45	0.45	0.45	0.45
4.5	4.5	4.5	4.5	4.5
1	1	1	1	1
24…230	24…230	24…230	24…230	24…230
24 – 230	24 – 230	24 – 230	24 – 230	24 – 230
0…3	0…3	0…3	0…3	0…3
0 – 3	0 – 3	0 – 3	0 – 3	0 – 3
4	4	4	4	4
250	250	250	250	250
3	3	3	3	3
2	2	2	2	2
0 – 10	0 – 10	0 – 10	0 – 10	0 – 10
10	10	10	10	10
0 … 10	0 … 10	0 … 10	0 … 10	0 … 10
4 … 20	4 … 20	4 … 20	4 … 20	4 … 20
1…255	1…255	1…255	1…255	1…255
0…255	0…255	0…255	0…255	0…255
10…60	10…60	10…60	10…60	10…60
0 – 100	0 – 100	0 – 100	0 – 100	0 – 100
60 – 90	60 – 90	60 – 90	60 – 90	60 – 90
100 – 400	100 – 400	100 – 400	100 – 400	100 – 400
166 – 664	166 – 664	166 – 664	166 – 664	166 – 664
0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e	0.5 … 8 × I_e

DS4-340-2K2-M
DS4-340-2K2-MR
DS4-340-2K2-M-DC
DS4-340-7K5-MX
DS4-340-7K5-MXR
DS4-340-11K-MX
DS4-340-11K-MXR



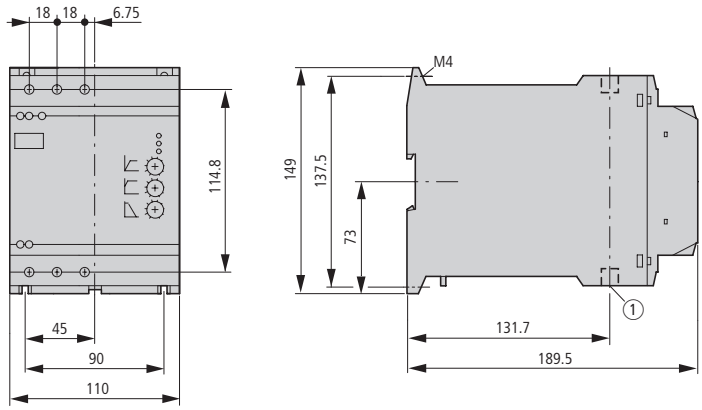
① 1L1, 3L2, 5L3
2T1, 4T2, 6T3

DS4-340-4K0-M
DS4-340-4K0-MR
DS4-340-5K5-M
DS4-340-5K5-MR



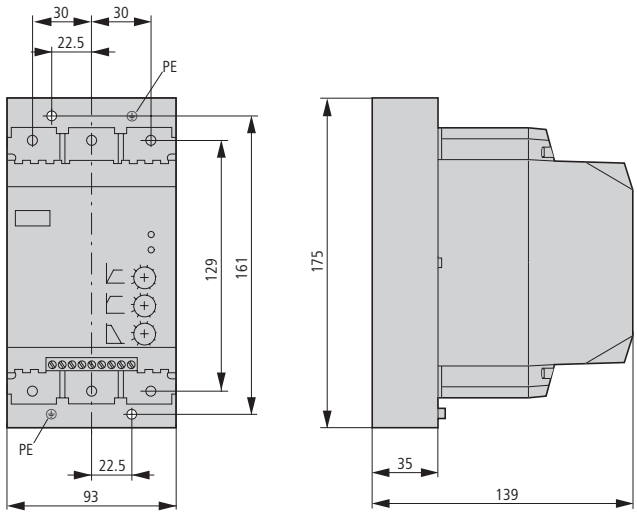
① 1L1, 3L2, 5L3
2T1, 4T2, 6T3

DS4-340-7K5-M
DS4-340-7K5-MR
DS4-340-11K-M
DS4-340-11K-MR
DS4-340-15K-MX
DS4-340-15K-MXR

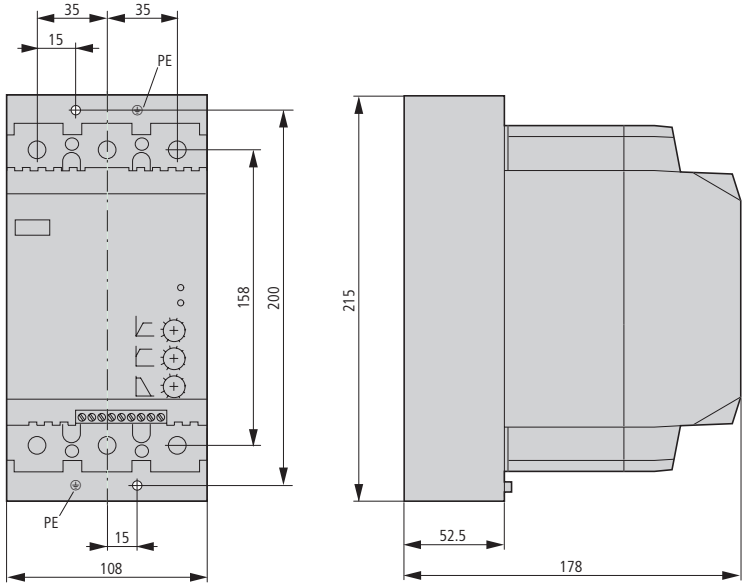


① 1L1, 3L2, 5L3
2T1, 4T2, 6T3

DS6-340-22K-MX
DS6-340-30K-MX
DS6-340-37K-MX
DS6-340-45K-MX
DS6-340-55K-MX

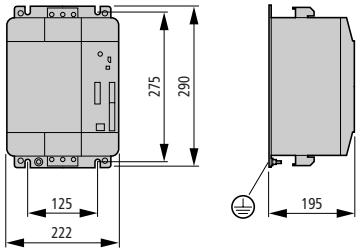


DS6-340-75K-MX
DS6-340-90K-MX
DS6-340-110K-MX

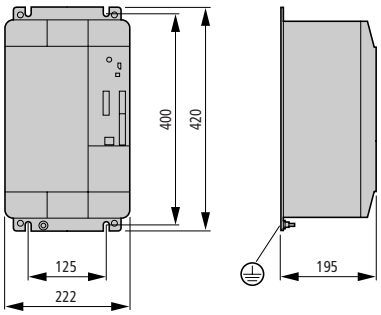


Soft starters

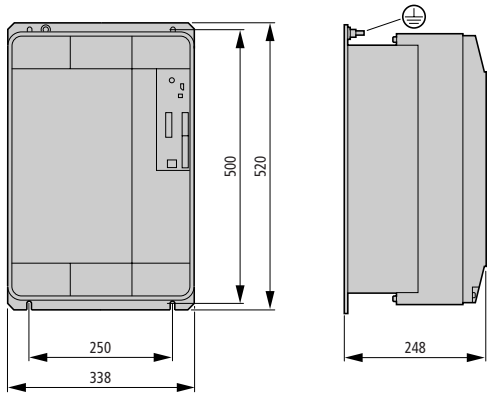
DM4-340-7K5
DM4-340-11K
DM4-340-15K
DM4-340-22K
DM4-340-30K
DM4-340-37K



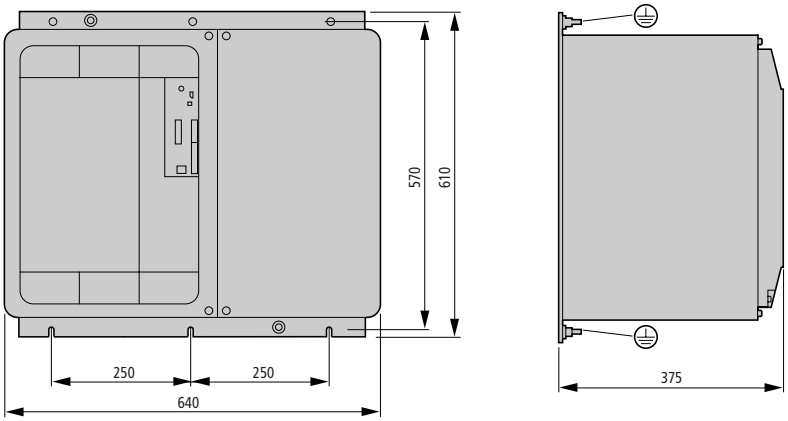
DM4-340-45K
DM4-340-55K
DM4-340-75K



DM4-340-90K
DM4-340-110K
DM4-340-132K
DM4-340-160K
DM4-340-200K

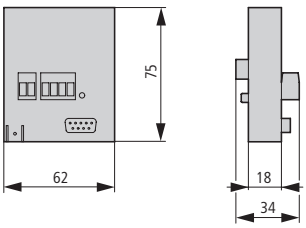


DM4-340-90K
DM4-340-110K
DM4-340-400K
DM4-340-500K



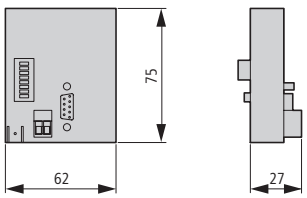
RS 232 and RS 485erial interface

DE4-COM-2X



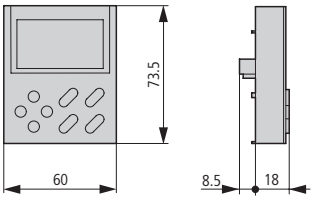
PROFIBUS-DP fieldbus module

DE4-NET-DP2



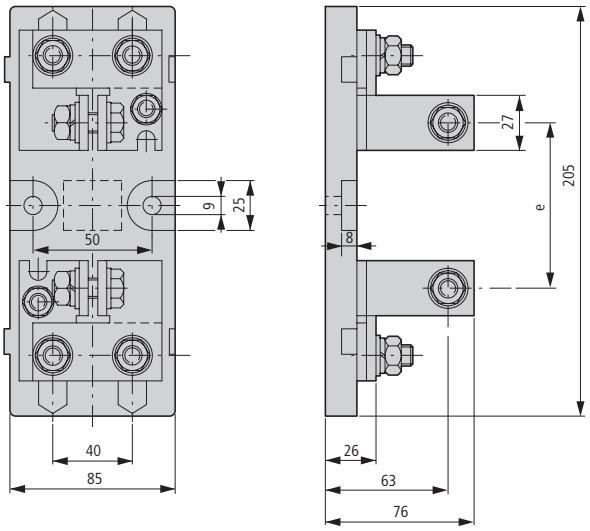
Operating unit for DM4

DE4-KEY-2

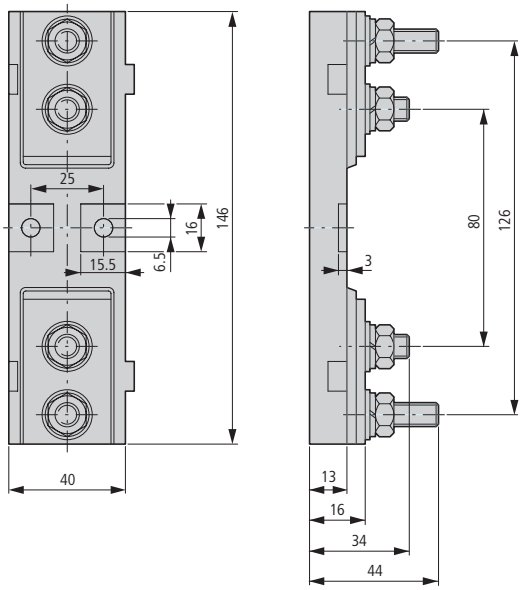


Fuse bases

21.313.02

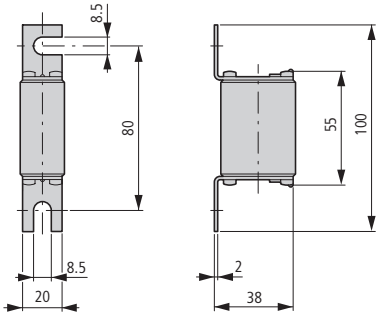


21.189.01



Fuses

20.282.20-...



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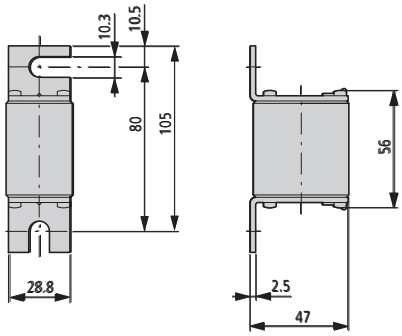

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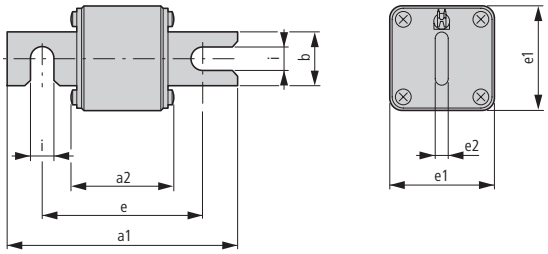

Part no.	a1	a2	b	e	e1	e2	i
20.610.32-200	109	47,5	26	76	51	6	11
20.610.32-350	109	47,5	26	76	51	6	11
20.610.32-450	109	47,5	26	76	51	6	11
20.610.32-500	109	47,5	26	76	51	6	11
20.610.32-630	109	47,5	26	76	51	6	11
20.610.32-900	109	49	35	76	73	6	11
20.610.32-1250	109	49	35	76	73	6	11

51.060.04