SEW EURODRIVE

MOVIDRIVE® MD_60A

Edition

09/2001



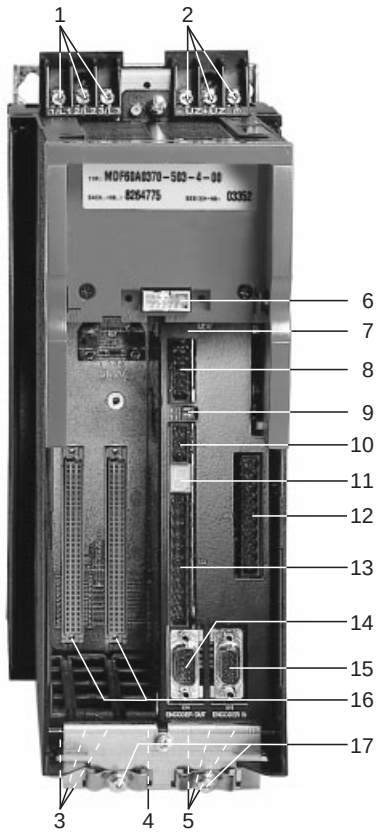
Operating Instructions

1053 2617 / EN

3.3 Unit design, size 2

MD_60A-5A3 (400/500 V units): 0055 – 0110

MD_60A-2A3 (230 V units): 0055 / 0075



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Fig. 5: Unit design, MOVIDRIVE® size 2

1. X1: Mains connection L1 (1) / L2 (2) / L3 (3)
2. X4: DC link connection $-U_Z$ / $+U_Z$ and PE connection
3. X2: Motor connection U (4) / V (5) / W (6) (not visible)
4. Connection for power shield clamp (not visible)
5. X3: Braking resistor connection R+ (8) / R- (9) and PE connection (not visible)
6. TERMINAL: Option slot for DBG11A keypad or USS21A serial interface
7. Control pcb on CONTROL option slot
8. X11: Electronics terminal strip (setpoint input AI1 and 10 V reference voltage)
9. Switch S11 (signal type AI1) and switch S12 (system bus terminating resistor)
10. X12: Electronics terminal strip system bus (SBus)
11. 7-segment display
12. X10: Electronics terminal strip binary outputs and TF/TH input
13. X13: Electronics terminal strip binary inputs and RS-485 interface
14. Only MDV/MDS, X14: Incremental encoder simulation or external encoder input (9-pin sub D plug)
15. Only MDV/MDS, X15: Motor encoder input (9-pin sub D socket)
16. OPTION1 and OPTION2: Option slots 1 and 2
17. Connection for electronics shield clamps

4.6 Assignment of braking resistors, chokes and filters

400/500 V units, sizes 1 and 2

MOVIDRIVE® MD_60A...-5A3			0015	0022	0030	0040	0055	0075	0110
Size			1				2		
Braking resistors	**Trip current**	**Part number**							
BW100-005	I_F = 0.8 A_{RMS}	826 269 1							
BW100-006	I_F = 1.8 A_{RMS}	821 701 7							
BW168	I_F = 2.5 A_{RMS}	820 604 X							
BW268	I_F = 3.4 A_{RMS}	820 715 1							
BW147	I_F = 3.5 A_{RMS}	820 713 5							
BW247	I_F = 4.9 A_{RMS}	820 714 3							
BW347	I_F = 7.8 A_{RMS}	820 798 4							
BW039-012	I_F = 4.2 A_{RMS}	821 689 4							
BW039-026	I_F = 7.8 A_{RMS}	821 690 8							
BW039-050	I_F = 11 A_{RMS}	821 691 6							
Line chokes		**Part numbers**							
ND020-013	ΣI_{system} = 20 A_{AC}	826 012 5							
ND045-013	ΣI_{system} = 45 A_{AC}	826 013 3							
Input filters		**Part number**							
NF009-503	V_{max} = 550 V_{AC}	827 412 6				A			
NF014-503		827 116 X				B		A	
NF018-503		827 413 4						B	
NF035-503		827 128 3							
Output chokes	**Inside diameter**	**Part number**							
HD001	d = 50 mm (1.97 in)	813 325 5	For cable cross sections 1.5 – 16 mm^2 (AWG 16 – 6)						
HD002	d = 23 mm (0.91 in)	813 557 6	For cable cross sections ≤ 1.5 mm^2 (AWG 16)						
HD003	d = 88 mm (4.46 in)	813 558 4	For cable cross sections > 16 mm^2 (AWG 6)						
Output filters (only in VFC mode)		**Part number**							
HF015-503		826 030 3	A						
HF022-503		826 031 1	B	A					
HF030-503		826 032 X		B	A				
HF040-503		826 311 6			B	A			
HF055-503		826 312 4				B	A		
HF075-503		826 313 2					B	A	
HF023-403		825 784 1						B	A
HF033-403		825 785 X							B

A In rated operation (100 %)

B With variable torque load in VFC mode (125 %)

5 Startup

5.1 General startup instructions



It is essential to comply with the safety notes during startup!

Requirements

Correct project planning of the drive is the pre-requisite for successful startup. Refer to the MOVIDRIVE® system manual for detailed project planning instructions and an explanation of the parameters (chapters 4 and 5).

VFC operating modes without speed control

MOVIDRIVE® MD_60A drive inverters are factory set for operation with the SEW motor (MD_60A...-5_3: 4-pole and rated voltage 3 × 400 V_{AC} / 50 Hz or MD_60A...-2_3: 4-pole and rated voltage 3 × 230 V_{AC} / 60 Hz) which has been adjusted to the correct power level. The motor can be connected and the drive started immediately in accordance with Sec. "Starting the motor" (→ page 277).

Inverter/motor combinations

The following tables indicate which inverter/motor combinations this applies to.

400/500 V units

MOVIDRIVE® MDF60A or MDV60A in VFC mode	SEW motor
0015-5A3-4	DT90L4
0022-5A3-4	DV100LS4
0030-5A3-4	DV100L4
0040-5A3-4	DV112M4
0055-5A3-4	DV132S4
0075-5A3-4	DV132M4
0110-5A3-4	DV160M4
0150-503-4	DV160L4
0220-503-4	DV180L4
0300-503-4	DV200L4
0370-503-4	DV225S4
0450-503-4	DV225M4
0550-503-4	D250M4
0750-503-4	D280S4

Size 2

MOVIDRIVE® MD_60A		0055-5A3-4-0_	0075-5A3-4-0_	0110-5A3-4-0_
INPUT				
Supply voltage	V_{in}	3 × 380 V_{AC}-10 % – 3 × 500 V_{AC}+10 %		
Supply frequency	f_{in}	50 Hz – 60 Hz ±5 %		
Rated system current[1] I_{in} (at V_{in} = 3 × 400 V_{AC})	**100 %** **125 %**	11.3 A_{AC} 14.1 A_{AC}	14.4 A_{AC} 18.0 A_{AC}	21.6 A_{AC} 27.0 A_{AC}
OUTPUT				
Output rated power[2] (at V_{in} = 3×380 – 500 V_{AC})	P_N	8.7 kVA	11.2 kVA	16.8 kVA
Output rated current[1] (at V_{in} = 3 × 400 V_{AC})	I_N	12.5 A_{AC}	16 A_{AC}	24 A_{AC}
Current limitation	I_{max}	Motor and regenerative 150 % I_N, duration depending on the capacity utilization		
Internal current limitation		I_{max} = 0 – 150 % can be set in menu (P303 / P313)		
Minimum permitted brake resistance value (4Q operation)	R_{BRmin}	47 Ω		22 Ω
Output voltage	V_{out}	max. V_{in}		
PWM frequency	f_{PWM}	Adjustable with VFC: 4/8/12/16 kHz (P860 / P861); with CFC/SERVO fixed at 8 kHz		
Speed range / resolution	n_A / Δn_A	-5000 – 0 – +5000 rpm / 0.2 rpm across the entire range		
GENERAL				
Power loss at P_N	P_{Vmax}	220 W	290 W	400 W
Cooling air consumption		80 m^3/h (48 ft^3/min)		
Weight		6.6 kg (14.55 lb)		
Dimensions	**W × H × D**	130 × 336 × 325 mm (5.12 × 13.23 × 12.80 in)		

1) The system and output currents must be reduced by 20 % from the nominal values for V_{in} = 3 × 500 V_{AC}.

2) MDF and MDV units in VFC operating modes: The performance data apply to f_{PWM} = 4 kHz (factory setting).

MDF60A standard type (VFC)	0055-5A3-4-00	0075-5A3-4-00	0110-5A3-4-00
Part number	826 468 6	826 470 8	826 472 4
MDF60A technology type (VFC)	**0055-5A3-4-0T**	**0075-5A3-4-0T**	**0110-5A3-4-0T**
Part number	827 326 X	827 327 8	827 328 6
Constant load Rec. motor power P_{Mot}	5.5 kW (7.5 HP)	7.5 kW (10 HP)	11 kW (15 HP)
Variable torque load or constant load without overload Rec. motor power P_{Mot}	7.5 kW (10 HP)	11 kW (15 HP)	15 kW (20 HP)
Continuous output current = 125 % I_N I_D (at V_{in} = 3 × 400 V_{AC} and f_{PWM} = 4 kHz)	15.6 A_{AC}	20.0 A_{AC}	30.0 A_{AC}

MDV60A standard type (VFC/CFC)	0055-5A3-4-00	0075-5A3-4-00	0110-5A3-4-00
Part number	826 485 6	826 487 2	826 489 9
MDV60A technology type (VFC/CFC)	**0055-5A3-4-0T**	**0075-5A3-4-0T**	**0110-5A3-4-0T**
Part number	827 340 5	827 341 3	827 342 1
VFC operating mode	Recommended motor power → MDF60A		
CFC operating mode Continuous output current = 100 % I_N I_D	12.5 A_{AC}	16 A_{AC}	24 A_{AC}
Recommended motor power	→ System Manual, Sec. Project Planning, CFC motor selection		

MDS60A standard type (SERVO)	0055-5A3-4-00	0075-5A3-4-00	0110-5A3-4-00
Part number	826 502 X	826 504 6	826 506 2
MDS60A technology type (SERVO)	**0055-5A3-4-0T**	**0075-5A3-4-0T**	**0110-5A3-4-0T**
Part number	827 354 5	827 355 3	827 356 1
Continuous output current = 100 % I_N I_D	12.5 A_{AC}	16 A_{AC}	24 A_{AC}
Recommended motor power	→ System Manual, Sec. Project Planning, SERVO motor selection		