2.2 General technical data

The following table lists the technical data applicable to all MOVIDRIVE® MDX60/61B drive inverters, regardless of their type, design, size, and power rating.

MOVIDRIVE® MDX60B/61B	All sizes
Interference immunity	Meets EN 61800-3
Interference emission with EMC compliant installation	Sizes 0 to 7 meet EN 61800-3 Sizes 0 to 5: According to limit value class C1 to EN 61800-3 with a corresponding line filter Sizes 0, 1, 2S, and 2 in accordance with limit value class C2 to EN 61800-3 without additional measures Size 6 and 7 in accordance with limit value class C2 to EN 61800-3 with corresponding line filter
Ambient temperature ϑ_{amb}	0 °C – +50 °C at I_D = 100% I_N and f_{PWM} = 4 kHz / size 7: 2.5 kHz 0 °C – +40 °C at I_D = 125% I_N and f_{PWM} = 4 kHz / size 7: 2.5 kHz 0 °C – +40 °C at I_D = 100% I_N and f_{PWM} = 8 kHz (size 0 – 6) 0 °C – +40 °C at I_D = 100% I_N and f_{PWM} = 4 kHz (size 7)
I_N reduction Ambient temperature	2.5% I_N per K at 40 °C to 50 °C 3% I_N per K at 50 °C to 60 °C
Climate class	EN 60721-3-3 class 3K3
Storage temperature[1] ϑ_L	-25 °C – +70 °C (EN 60721-3-3, class 3K3) DBG keypad: -20 °C – +60 °C
Cooling type (DIN 41751)	Forced cooling (temperature-controlled fan, response threshold 45 °C)
Degree of protection EN 60529 (NEMA1)	
Sizes 0 to 2	IP20
Size 3	• IP10 without touch guard • IP20 (power connections) with connected cable and installed heat shrink tubing (not included in the delivery) or with the delivered protection caps
Sizes 4 to 5	IP00 (power connections) IP10 (power connections) with • fitted Plexiglas cover supplied as standard and • fitted heat shrink tubing (not included in scope of delivery) IP20 (power connections) with • Mounted option DLB11B
Size 6	IP00 (power connections) IP10 (power connections) with • fitted Plexiglas cover supplied as standard and • fitted heat shrink tubing (not included in scope of delivery)
Size 7	IP00 (power connections) IP20 (power connections) with • installed DLB21B touch guard
Operating mode	Continuous duty with 50% overload capacity (size 0: 100%)
Overvoltage category	III according to IEC 60664-1 (VDE 0110-1)
Pollution class	2 according to IEC 60664-1 (VDE 0110-1)
Protection against mechanically active substances	3S1 DIN EN 60721-3-3 / IEC 721-3-3
Protection against chemically active substances	3C2 DIN EN 60721-3-3 / IEC 721-3-3

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MOVIDRIVE® MDX60B/61B	All sizes
Installation altitude h	Up to h ≤ 1000 m without restrictions. The following restrictions apply at h ≥ 1000 m: • From 1,000 m to max. 4,000 m: – I_N reduction by 1% per 100 m • From 2,000 m to max. 4,000 m: – The safe disconnection of power and electronics connections can no longer be assured above 2000 m. This requires external measures (IEC 60664-1/EN 61800-5-1) – You have to connect an overvoltage protection device in order to reduce the overvoltages from category III to category II.

1) In case of extended storage, connect the device to the power supply for at least 5 minutes every two years, otherwise the device's service life may be reduced.

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2.3.3 MOVIDRIVE® MDX61B0055/0075/0110 size 2S, 2 (AC 400/500 V devices)

MOVIDRIVE® MDX61B		0055-5A3-4-0_	0075-5A3-4-0_	0110-5A3-4-0_
Size		2S		2
INPUT				
Nominal supply voltage (to EN 50160)	V_{line}	3 × AC 380 V – 500 V		
Line frequency	f_{line}	50 Hz – 60 Hz ±5%		
Nominal line current[1] I_{line}	100%	AC 11.3 A	AC 14.4 A	AC 21.6 A
(at V_{line} = 3 × AC 400 V)	125%	AC 14.1 A	AC 18.0 A	AC 27.0 A
OUTPUT				
Apparent output power[2] (at V_{line} = 3 × AC 380 – 500 V)	S_N	8.7 kVA	11.2 kVA	16.8 kVA
Nominal output current[1] (at V_{line} = 3 × AC 400 V)	I_N	AC 12.5 A	AC 16 A	AC 24 A
Continuous output current (= 125% I_N) (at V_{line} = 3 × AC 400 V with f_{PWM} = 4 kHz)	I_D	AC 15.6 A	AC 20 A	AC 30 A
Continuous output current (= 100% I_N) (at V_{line} = 3 × AC 400 V with f_{PWM} = 8 kHz)	I_D	AC 12.5 A	AC 16 A	AC 24 A
Max. output frequency	f_{max}	599 Hz		
Current limiting	I_{max}	Motor and generator mode 150% I_N, duration depending on the capacity utilization		
Internal current limit		I_{max} = 0 – 150% adjustable		
Permitted minimum braking resistance value (4Q operation)	R_{BWmin}	47 Ω		22 Ω
Output voltage	V_O	Max. V_{line}		
PWM frequency	f_{PWM}	Adjustable: 4/8/12/16 kHz		
Speed range/resolution	n_R / Δn_R	-6000 – 0 – +6000 min^{-1} / 0.2 min^{-1} over the entire range		
GENERAL				
Power loss at S_N[2]	P_{Vmax}	180 W	230 W	400 W
Cooling air consumption		80 m^3/h		
Mass		6.6 kg		
Dimensions	W × H × D	105 mm × 335 mm × 294 mm		130 mm × 315 mm × 285 mm
Cross section of device terminals X1, X2, X3, X4		Terminal strips 4 mm^2 conductor end sleeve DIN 46228		M4 screw and washer assembly with terminal clip 4 mm^2 conductor end sleeve DIN 46228 6 mm^2 crimp cable lug DIN 46234
Tightening torque		0.6 Nm		1.5 Nm

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

2) The performance data applies to f PWM = 4 kHz.

MDX61B standard design		0055-5A3-4-00	0075-5A3-4-00	0110-5A3-4-00
Design with coated printed circuit boards		0055-5A3-4-00/L	0075-5A3-4-00/L	0110-5A3-4-00/L
Part number		08279616	08279624	08279632
		18400175	18400183	18400191
MDX61B application version		0055-5A3-4-0T	0075-5A3-4-0T	0110-5A3-4-0T
Design with coated printed circuit boards		0055-5A3-4-0T/L	0075-5A3-4-0T/L	0110-5A3-4-0T/L
Part number		08279799	08279802	08279810
		18400353	18400361	18400388
Recommended motor power				
 Constant load	P_{Mot}	5.5 kW	7.5 kW	11 kW
 Variable torque load or constant load without overload	P_{Mot}	7.5 kW	11 kW	15 kW
Recommended motor power		→ MOVIDRIVE® B system manual or catalog, chapter "Basic recommendations for motor selection" (→ 🗎 348)		

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2.5 MOVIDRIVE® MDX60/61B electronics data

MOVIDRIVE® MDX60/61B		General electronics data			
Voltage supply X11:1 For setpoint input X11:5		REF1: DC +10 V +5%/-0%, I_{max} = DC 3 mA REF2: DC -10 V +0%/-5%, I_{max} = DC 3 mA		Reference voltages for setpoint potentiometer	
Setpoint input n1	X11:2/X11:3	AI11/AI12: Voltage or current input, can be set with S11 and P11_, sampling cycle 1 ms			
(differential input)		Voltage input:		Current input:	
Operating mode AI11/AI12		n1 = DC 0 – +10 V or DC -10 V – 0 – +10 V		n1 = DC 0 – 20 mA or DC 4 – 20 mA	
Resolution		12-bit		11-bit	
Accuracy		±0.2% (40 mV)		±0.2% (40 mV)	
Internal resistance		R_i 40 kΩ (external voltage supply) R_i = 20 kΩ (supply of REF1/REF2)		R_i = 250 Ω	
Internal setpoints		Parameter set 1: n11/n12/n13 = -6000 – 0 – +6000 min^{-1} Parameter set 2: n21/n22/n23 = -6000 – 0 – +6000 min^{-1}			
Time ranges of the speed ramps with Δn = 3000 min^{-1}		1. Ramp	t11/t21	Up: 0 – 2000 s	Down: 0 – 2000 s
		2. Ramp	t12/t22	Up = Down: 0 – 2000 s	
		Stop ramp	t13/t23	Down: 0 – 20 s	
		Emergency stop ramp	t14/t24	Down: 0 – 20 s	
		Motor potentiometer	t3	Up: 0.2 – 50 s	Down: 0.2 – 50 s
Auxiliary voltage output[1] X13:8/X10:8		VO24: V_{OUT} = DC 24 V, maximum current carrying capacity I_{max} = DC 400 mA			
External voltage supply[1] X10:9		VI24: V = DC 24 V -15%/+20% to EN 61131-2 With size 7, connect 24 V backup voltage via the DC power supply unit. No connection at the control unit			
Digital inputs		Isolated (optocoupler), PLC-compatible (EN 61131 type 2), sampling cycle 1 ms			
X13:1 – X13:6 and X16:1/X16:2		DIØØ – DIØ5 and DIØ6/DIØ7			
Internal resistance		R_i ≈ 3 kΩ, IE ≈ DC 10 mA			
Signal level		DC +13 V – +30 V = "1" = contact closed DC -3 V – +5 V = "0" = contact open		According to EN 61131	
Function	X13:1	DIØØ: With fixed assignment "/Controller inhibit"			
X13:2 – X13:6, X16:1/X16:2		DIØ1 – DIØ5, DIØ6/DIØ7: Selection option → Parameter menu P60_			
Digital output[1]		PLC-compatible (EN 61131-2), response time 1 ms			
X10:3/X10:7 and X16:3 – X16:5		DBØØ/DOØ2 and DOØ3 – DOØ5			
Signal level		"0" = DC 0 V "1" = DC +24 V **Important**: Do not apply external voltage!			
Function	X10:3	DBØØ: With fixed assignment "/Brake", I_{max} = DC 150 mA, short-circuit proof, protected against external voltage to DC 30 V			
		DOØ2, DOØ3 – DOØ5: Selection option → Parameter menu P62_,			
X10:7, X16:3 – X16:5		I_{max} = DC 50 mA, short-circuit proof, protected against external voltage to DC 30 V			
Relay output	X10:4 – X10:6	DOØ1: Current-carrying capacity of the relay contacts V_{max} = DC 30 V, I_{max} = DC 800 mA			
Function	X10:4	DOØ1-C: Shared relay contact		Selection option → Parameter menu P62_	
	X10:5	DOØ1-NO: NO contact			
	X10:6	DOØ1-NC: NC contact			
System bus (SBus)	X12:1	DGND: Reference potential	CAN bus to CAN specification 2.0, parts A and B, transmission technology to ISO 11898, max. 64 participants, terminating resistor (120 Ω) can be activated using DIP switches		
	X12:2	SC11: SBus high			
	X12:3	SC12: SBus low			
RS485 interface	X13:10	ST11: RS485 +	EIA standard, 9.6 kBaud, max. 32 stations Max. cable length 200 m Dynamic terminating resistor with fixed installation		
	X13:11	ST12: RS485 -			
TF/TH/KTY/PK input	X10:1	TF1: Response threshold at R_{TF} ≥ 2.9 kΩ ±10%			

1) The device provides a current of Imax = DC 400 mA for the DC+24 V outputs (VO24, digital outputs). If this value is insufficient, a DC 24 V voltage supply must be connected to X10:9 (VI24).

MOVIDRIVE® MDX60/61B		General electronics data
Reference terminals	X11:4	AGND: Reference potential for analog signals and terminals X11:1 and X11:5 (REF1/REF2)
X12:1/X13:9/X16:6/X10:2/X10:10		DGND: Reference potential for binary signals, system bus, RS485 interface and TF/TH

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MOVIDRIVE® MDX60/61B		General electronics data	
	X13:7	DCOM: Reference potential of digital inputs X13:1 – X13:6 and X16:1/X16:2 (DIØØ – DIØ5 and DIØ6/DIØ7)	
Permitted cable cross section		One core per terminal:	0.20 – 2.5 mm² (AWG 24 – 12)
		Two cores per terminal:	0.25 – 1 mm² (AWG 22 – 17)
		Tightening torque:	0.6 Nm
Safety contact	X17:1	DGND: Reference potential for X17:2	
Input capacitance	X17:2	VO24: V_{OUT} = DC 24 V, only to supply X17:4 of the same device plus maximally 1 BST; **must not be used** to supply other devices	
	X17:3	SOV24: Reference potential for DC +24 V "STO" input (safety contact)	
	X17:4	SVI24: DC+24 V "STO" input (safety contact)	
Permitted cable cross section		One core per terminal:	0.08 – 1.5 mm² (AWG28 – 16)
		Two cores per terminal:	0.25 – 1.0 mm² (AWG23 – 17)
Power consumption	X17:4	Size 0: 3 W	
		Size 1: 5 W	
		Size 2, 2S: 6 W	
		Size 3: 7.5 W	
		Size 4: 8 W	
		Size 5: 10 W	
		Size 6: 6 W	
		Size 7: 6 W	
Input capacitance	X17:4	Size 0: 27 µF	
		Sizes 1 – 7: 270 µF	
Time for restart		t_A = 200 ms	
Time to inhibit output stage		t_S ≤ 100 ms	