

Type: **DF51-322-025** Article No.: **289102**

Sales text """Frequency inverter DF51(0,25 kW; 230V



Ordering information			
Rated voltage	<i>U</i> e	V	1 AC 180264 V ± 0 % 3 AC 180264 V ± 0 %
Max. rated operational current	<i>l</i> e	Α	1.4
Rated power for motors			
at 230 V 3-phase AC	Р	kW	0.25
Rating range			0.25 – 2.2 kW at 230 V
Description			Single and three–phase connection

Notes concerning the table header

All rating data of the power section is based on a switching frequency of 5 kHz (default setting) and an ambient temperature of +40 °C, for operation of a four–pole three–phase asynchronous motor.

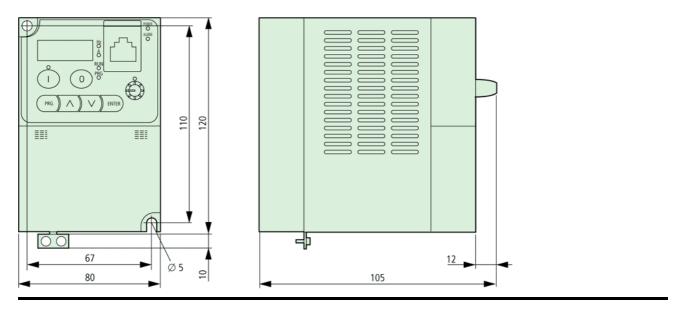
General		
Standards		EN 50178, IEC 61800-3
Ambient temperature		
Operating temperature	°C	-10 to $+40$ with rated current $I_{\rm e}$ at a clock frequency of 5 kHz; up to $+50$ °C at a reduced clock frequency of 2 kHz and reduced output current of 80 % $I_{\rm e}$
	°C	– 25+70

Max. duty factor (c.d.f.) with lowest impedance $R_{\rm B}$			
Shock resistance			Vibration and impact, max. 5.9 m/s ² (0.6 g) at 10 to 55 Hz
Pollution degree			VDE 0110 Part 2, pollution degree 2
Climatic proofing			Class 3K3 according to EN 50178 (non-condensing, average relative humidity 20 to 90 %)
Altitude		m	0 to 1000 a.s.l.
Mounting position			Vertically suspended
Free surrounding areas			100 mm above and below device
Emitted interference			IEC/EN 61800-3 (EN 55011 group 1 class B)
Interference immunity			IEC/EN 61800–3, industrial environment
Insulation resistance			Overvoltage category III according to VDE 0110
Discharge current to PE		mA	< 3.5 (to EN 50178)
Protection type			IP 20
Protection against direct contact			Finger and back-of-hand proof
Protective isolation against switching circuitry			Safe isolation from the mains. Double basic isolation (to EN 50178)
Protective measures			Overcurrent, earth fault, overvoltage, undervoltage, overload, overtemperature, electronic overload protection: l^2t monitoring and PTC input (thermistor or thermostat)
Heat dissipation with rated operational current $I_{\rm e}$		W	19
Dimensions (W \times H \times D)		mm	80 × 120 × 105
Weight		kg	0,8
Power section			
Rated operating voltage	U _e	V AC	230
Rated voltage	<i>U</i> e	V	1 AC 180264 V ± 0 % 3 AC 180264 V ± 0 %
Supply frequency		Hz	50/60 (4763 ± 0 %)
Mains current			
$U_i = 1$ -phase 230 V AC	1	Α	3,1

Alternative DC supply Modulation method Modulation method Modulation method Modulation method Modulation method Modulation method Sinusoidal pulse-width modulation (PWM), U/I characteristic control 5 kHz, can be selected between 2 and 14 kHz Output voltage V 3 AC U _e Output frequency Hz 0 to 50, max. 400 0.1, with digital setpoint values maximum frequency/1000 with analog setpoint values maximum frequency/1000 with analog setpoint values. Frequency resolution Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Max. rated operational current Frequency for digital reference values, ± 0.2 % of maximum frequency for analog reference values, ± 0.2 % of maximum frequency for digital reference values, ± 0.2 % of maximum frequency for analog reference values. Max. rated operational current I ₀ A 1,4 Permissible overcurrent 150 % for 60 s, every 600 s From 6 Hz 100 % or higher with torque boost activated with torque boost activated Apparent power at 240 V Standard operation at 150 % overload Assigned motor rating (4-pole ASM) 230 V kW 0,25 240 V HP 1/4 Control circuit 1 changeover contact, 230 V AC, 0.2 A inductive load, 2.5 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load; or 24 V DC, 0.7 A inductive	<i>U</i> _i = 3-phase 230 V AC	1	Α	1,8
Modulation method modulation (PWM), Wf characteristic control Switching frequency 5 kHz, can be selected between 2 and 14 kHz Output voltage V 3 AC U _e Output frequency Hz 0 to 50, max. 400 0.1, with digital setpoint values/maximum frequency/1000 with analog setpoint values maximum frequency/1000 with analog setpoint values. Frequency resolution Frequency resolution kHz Frequency resolution kHz but in the predict of the pr	Alternative DC supply	U_{DC}	V DC	260370 ± 0 %
Detween 2 and 14 kHz Output voltage Output frequency Hz Ot 50, max. 400 Output frequency Hz Ot 50, max. 400 Output frequency	Modulation method			modulation (PWM), <i>U/f</i>
Output frequency Frequency resolution Frequency resolution Frequency resolution Frequency resolution Frequency resolution Frequency resolution KHz O to 50, max. 400 O.1, with digital setpoint values, maximum frequency/1000 with analog setpoint values. Max. rated setpoint values Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency for digital reference values, ± 0.2 % of maximum frequency for digital reference values, ± 0.2 % of maximum frequency for analog reference values. Max. rated operational current Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency error limit at 20 C ± 10 K Frequency for analog setpoint values, maximum frequency for digital reference values, ± 0.2 % of maximum frequency for digital reference values, ± 0.2 % of maximum frequency for digital reference values, ± 0.2 % of maximum frequency for digital reference values, ± 0.2 % of maximum frequency for digital reference values, ± 0.2 % of maximum frequency for digital reference values, ± 0.2 % of maximum frequency for digital reference values, ± 0.2 % of maximum frequency for digital reference values, ± 0.2 % of maximum frequency for digital reference values, ± 0.01 % of maximum frequency for digital reference values, ± 0.01 % of maximum frequency for digital reference values, ± 0.01 % of maximum frequency for digital reference values, ± 0.01 % of maximum frequency for digital reference values, ± 0.01 % of maximum frequency for digital reference values, ± 0.01 % of maximum frequency for digital reference values, ±	Switching frequency			
Frequency resolution Hz O.1, with digital setpoint values/maximum frequency/1000 with analog setpoint values O.1 with digital setpoint values, and setpoint values, and setpoint values O.1 with digital setpoint values, and setpoint values maximum frequency/1000 with analog setpoint values ± 0.01 % of maximum frequency for digital reference values, ± 0.2 % of maximum frequency for analog reference values. Max. rated operational current Ie A 1,4 Permissible overcurrent 150 % for 60 s, every 600 s From 6 Hz 100 % or higher with torque boost activated Apparent power at 240 V Standard operation at 150 % overload Assigned motor rating (4-pole ASM) 230 V kW 0,25 240 V HP 1/4 Control circuit 1 changeover contact, 230 V AC, 0.2 A inductive load, 2.5 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load Serial interface Control voltage Output setpoint voltage V +10 DC, 10 mA Output control voltage V +24 DC, 30 mA 1 parameter set (online/offline parameterization), parameter	Output voltage		V	3 AC U _e
Frequency resolution Hz	Output frequency		Hz	0 to 50, max. 400
Frequency resolution KHz	Frequency resolution		Hz	values/maximum frequency/1000 with analog
Frequency error limit at 20 C ± 10 K frequency for digital reference values, ± 0.2 % of maximum frequency for analog reference values Max. rated operational current Max. rated operational current From 6 Hz 100 % or higher with torque boost activated Apparent power at 240 V Standard operation at 150 % overload Assigned motor rating (4–pole ASM) 230 V HP 1/4 Control circuit Control circuit 1 changeover contact, 230 V AC, 0.2 A inductive load, 2.5 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load Serial interface Control voltage Output setpoint voltage V +10 DC, 10 mA Output control voltage V +24 DC, 30 mA 1 parameter set (online/offline parameterization), parameter	Frequency resolution		kHz	maximum frequency/1000 with
Permissible overcurrent Torque during start Torque during start Apparent power at 240 V Standard operation at 150 % overload Assigned motor rating (4–pole ASM) 230 V 240 V HP 1/4 Control circuit 1 changeover contact, 230 V AC, 0.2 A inductive load, 2.5 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load Serial interface Control voltage Output setpoint voltage V 1 parameter set (online/offline Parameterization 1 parameterization 1 parameterization 1 parameterization	Frequency error limit at 20 C ± 10 K			frequency for digital reference values, ± 0.2 % of maximum frequency for analog reference
Torque during start Apparent power at 240 V Standard operation at 150 % overload Assigned motor rating (4–pole ASM) 230 V 240 V Control circuit 1 changeover contact, 230 V AC, 0.2 A inductive load, 2.5 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load Serial interface Control voltage Output setpoint voltage V +10 DC, 10 mA Output control voltage V +24 DC, 30 mA 1 parameter set (online/offline parameterization), parameter	Max. rated operational current	<i>I</i> e	Α	1,4
Apparent power at 240 V Standard operation at 150 % overload Assigned motor rating (4–pole ASM) 230 V 240 V HP 1/4 Control circuit 1 changeover contact, 230 V AC, 0.2 A inductive load, 2.5 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load Serial interface Control voltage Output setpoint voltage Output control voltage V +10 DC, 10 mA Output control voltage V +24 DC, 30 mA 1 parameter set (online/offline parameterization), parameter	Permissible overcurrent			150 % for 60 s, every 600 s
Standard operation at 150 % overload Assigned motor rating (4–pole ASM) 230 V	Torque during start			_
Assigned motor rating (4–pole ASM) 230 V	Apparent power at 240 V		kVA	0,5
240 V Control circuit 1 changeover contact, 230 V AC, 0.2 A inductive load, 2.5 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load Serial interface RS485 Control voltage Output setpoint voltage V +10 DC, 10 mA Output control voltage V +24 DC, 30 mA 1 parameter set (online/offline parameterization), parameter				
Control circuit 1 changeover contact, 230 V AC, 0.2 A inductive load, 2.5 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load Serial interface RS485 Control voltage Output setpoint voltage V +10 DC, 10 mA Output control voltage V +24 DC, 30 mA 1 parameter set (online/offline parameterization), parameter	230 V		kW	0,25
Relay 1 changeover contact, 230 V AC, 0.2 A inductive load, 2.5 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load Serial interface RS485 Control voltage Output setpoint voltage V +10 DC, 10 mA Output control voltage V +24 DC, 30 mA 1 parameter set (online/offline parameterization), parameter	240 V		HP	1/4
Relay AC, 0.2 A inductive load, 2.5 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A resistive load Serial interface RS485 Control voltage Output setpoint voltage V +10 DC, 10 mA Output control voltage V +24 DC, 30 mA 1 parameter set (online/offline parameterization), parameter	Control circuit			
Control voltage Output setpoint voltage V +10 DC, 10 mA Output control voltage V +24 DC, 30 mA 1 parameter set (online/offline parameterization), parameter	Relay			AC, 0.2 A inductive load, 2.5 A resistive load; or 24 V DC, 0.7 A inductive load, 3 A
Output setpoint voltage V +10 DC, 10 mA Output control voltage V +24 DC, 30 mA 1 parameter set (online/offline parameterization), parameter	Serial interface			RS485
Output control voltage V +24 DC, 30 mA 1 parameter set (online/offline parameterization), parameter	Control voltage			
Parameterization 1 parameter set (online/offline parameterization), parameter	Output setpoint voltage		V	+10 DC, 10 mA
Parameterization parameterization), parameter	Output control voltage		V	+24 DC, 30 mA
p. 110 3.10 1 (p. 13. 31111 140 10)	Parameterization			·
Inputs	Inputs			

digital (parameters can be defined)		$5 \times +24$ V DC, configurable
Analog	Number	2×0 to +10 V DC (input impedance 10 k&, 4 to 20 mA (load impedance 250 &), resolution 10 bit
Outputs		
Digital		2 × 24 V DC transistor (open–collector, configurable)
analog (parameters can be defined)		1×0 to +10 V DC, 1 mA (configurable), resolution 10 bit
Terminal capacities		
Cable lengths		
	mm ²	1.5
	AWG	16
Relay connection		
	mm ²	1,5
	AWG	6
Control circuit		
	mm ²	1.5
	AWG	6
Notes		

Dimensions



Notes

If the frequency inverter is to be installed in an enclosure, control panel or similar housing, the ambient temperature T_a is taken to be the temperature inside this enclosure or control panel.

All rating data of the power section is based on a switching frequency of 5 kHz (default setting) and an ambient temperature of +40 °C, for operation of a four–pole three–phase asynchronous motor.

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