DATASHEET - DC1-S24D3NN-A20N



Variable Frequency Drive, 1-/1- 230 V, 4.3 A, 0.37 kW

DC1-S24D3NN-A20N Part no. Catalog No. 169512

Eaton Catalog No. DC1-S24D3NN-A20N



			This item will continue to be available for a limited time only and is being replaced by the following item: 186079, DC1-S24D3NN-A20CE1
uct range			Variable frequency drives
group reference (e.g. DIL)			DC1
d operational voltage	U _e		230 V AC, 1-phase 240 V AC, single-phase
ut voltage with $\mathrm{V_e}$	U ₂		230 V AC, single-phase 240 V AC, single-phase
s voltage (50/60Hz)	U_{LN}	V	200 (-10%) - 240 (+10%)
ed operational current			
at 150% overload	I _e	Α	4.3
lote			Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50 $^{\circ}\text{C}$
lote			Overload cycle for 60 s every 600 s
igned motor rating			
lote			For AC motors with internal and external ventilation with 50/60 Hz without additional start capacitor
lote			Overload cycle for 60 s every 600 s
lote			at 230 V, 50 Hz
50 % Overload	P	kW	0.37
50 % Overload	I _M	Α	4.3
lote			at 220 - 240 V, 60 Hz
50 % Overload	P	HP	0.5
50 % Overload	I _M	Α	4.3
ee of Protection			IP20/NEMA 0
face/field bus (built-in)			OP-Bus (RS485)/Modbus RTU, CANopen®
bus connection (optional)			SmartWire-DT
d with			7-digital display assembly
e size			FS1
nection to SmartWire-DT			with SmartWire-DT module DX-NET-SWD3

Technical data General

Standards			Specification for general requirements: IEC/EN 61800-2 EMC requirements: IEC/EN 61800-3 Safety requirements: IEC/EN 61800-5-1
Certifications			CE, UL, cUL, RCM, UkrSEPRO, EAC
Production quality			RoHS, ISO 9001
Climatic proofing	ρ_{W}	%	< 95%, average relative humidity (RH), non-condensing, non-corrosive
Ambient temperature			
operation (150 % overload)	9	°C	-10 - +50
Storage	8	°C	-40 - +60
Mounting position			Vertical
Altitude		m	0 - 1000 m above sea level Above 1000 m: 1% derating for every 100 m max. 4000 m
Degree of Protection			IP20/NEMA 0
Protection against direct contact			BGV A3 (VBG4, finger- and back-of-hand proof)

Main circuit

Main circuit			
Supply			
Rated operational voltage	U _e		230 V AC, 1-phase 240 V AC, single-phase
Mains voltage (50/60Hz)	U _{LN}	V	200 (-10%) - 240 (+10%)
Input current (150% overload)	I _{LN}	Α	7.5
System configuration			AC supply systems with earthed center point
Supply frequency	f _{LN}	Hz	50/60
Frequency range	f _{LN}	Hz	48 - 62
Mains switch-on frequency			Maximum of one time every 30 seconds
Power section			
Function			Frequency inverter with internal DC link and IGBT inverter
Overload current (150% overload)	IL	Α	6.45
max. starting current (High Overload)	I _H	%	175
Note about max. starting current			for 2 seconds every 20 seconds
Output voltage with V _e	U ₂		230 V AC, single-phase 240 V AC, single-phase
Output Frequency	f ₂	Hz	0 - 50/60 (max. 120)
Switching frequency	f _{PWM}	kHz	16
			adjustable 4 - 32 (audible)
Operation Mode			U/f control Speed control with slip compensation
Frequency resolution (setpoint value)	Δf	Hz	0.1
Rated operational current			
At 150% overload	I _e	Α	4.3
Note			Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50 $^{\circ}\text{C}$
Power loss			
Heat dissipation at rated operational current I $_{\text{e}}$ =150 $\%$	P_V	W	18.5
Efficiency	η	%	95
Maximum leakage current to ground (PE) without motor	I _{PE}	mA	<1
Fitted with			7-digital display assembly
Frame size			FS1
Motor feeder			
Note			For AC motors with internal and external ventilation with 50/60 Hz without additional start capacitor
Note			Overload cycle for 60 s every 600 s
Note			at 230 V, 50 Hz
150 % Overload	P	kW	0.37
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	0.5
maximum permissible cable length	l	m	screened: 50 screened, with motor choke: 100 unscreened: 75 unscreened, with motor choke: 150
Apparent power			
Apparent power at rated operation 230 V	S	kVA	0.99
Apparent power at rated operation 240 V	S	kVA	1.03
Braking function			
DC braking torque			adjustable to 100 %
Control section		V	10 V DC /mov. 10 mA)
Reference voltage	U _s	V	10 V DC (max. 10 mA)
Analog inputs			2, parameterizable, 0 - 10 V DC, 0/4 - 20 mA
Analog outputs			1, parameterizable, 0 - 10 V
Digital inputs			4, parameterizable, max. 30 V DC
Digital outputs			1, parameterizable, 24 V DC
Relay outputs			1, parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1)
Interface/field bus (built-in)			OP-Bus (RS485)/Modbus RTU, CANopen®

Assigned switching and protective elements

Power Wiring			
IEC (Type B, gG), 150 %			FAZ-B10/1N
UL (Class CC or J)	,	A	10
150 % overload (CT/I _H , at 50 °C)			DX-LN1-009

Design verification as per IEC/EN 61439

Design vernication as per 120/211 01-33			
Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	4.3
Heat dissipation per pole, current-dependent	P _{vid}	W	0
Equipment heat dissipation, current-dependent	P_{vid}	W	18.5
Static heat dissipation, non-current-dependent	P_{vs}	W	0
Heat dissipation capacity	P _{diss}	W	0
Operating ambient temperature max.		°C	-10
Operating ambient temperature max.		°C	50
IEC/EN 61439 design verification			
10.2 Strength of materials and parts			
10.2.2 Corrosion resistance			Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures			Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat			Meets the product standard's requirements.
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects			Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation			Meets the product standard's requirements.
10.2.5 Lifting			Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact			Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions			Meets the product standard's requirements.
10.3 Degree of protection of ASSEMBLIES			Does not apply, since the entire switchgear needs to be evaluated.
10.4 Clearances and creepage distances			Meets the product standard's requirements.
10.5 Protection against electric shock			Does not apply, since the entire switchgear needs to be evaluated.
10.6 Incorporation of switching devices and components			Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections			Is the panel builder's responsibility.
10.8 Connections for external conductors			Is the panel builder's responsibility.
10.9 Insulation properties			
10.9.2 Power-frequency electric strength			Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage			Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material			Is the panel builder's responsibility.
10.10 Temperature rise			The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating			Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.12 Electromagnetic compatibility			Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 Mechanical function			The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

Technical data ETIM 6.0

Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)				
Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency converter = < 1 kv (ecl@ss8.1-27-02-31-01 [AKE177011])				
Mains voltage	V	200 - 240		
Mains frequency		50/60 Hz		
Number of phases input		1		
Number of phases output		1		
Max. output frequency	Hz	500		
Max. output voltage	V	230		
Rated output current I2N	А	4.3		
Max. output at quadratic load at rated output voltage	kW	0.37		
Max. output at linear load at rated output voltage	kW	0.37		

Application in industrial area permitted	With control unit		Yes
Application in domestic and commercial area parmitted Yes Supporting protocol for TCP/IP No Supporting protocol for CANI Yes Supporting protocol for INTERIUS No Supporting protocol for INTERIUS No Supporting protocol for INTERIUS No Supporting protocol for KMC No Supporting protocol for KMC No Supporting protocol for KMC No Supporting protocol for CDavidyke No Supporting protocol for CDavidyke No Supporting protocol for DeviceNet No Supporting protocol for CDA No Supporting protocol for PDGPIRET Eth No Supporting protocol for PDGPIRET Eth No Supporting protocol for FREROIS No Supporting protocol for PDGPIRET No Supporting protocol for PDGPIRET No <			
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Degree of protection (IP) Height Midth Depth Relative symmetric net frequency tolerance IP20 IP20 IP30 IP4 IP4 IP20 IP30 IP4 IP4 IP50 I	4-quadrant operation possible		No
Height mm 184 Width mm 81 Depth mm 124 Relative symmetric net frequency tolerance % 10	Type of converter		U converter
Widthmm81Depthmm124Relative symmetric net frequency tolerance%10	Degree of protection (IP)		IP20
Depth mm 124 Relative symmetric net frequency tolerance % 10	Height	mm	184
Relative symmetric net frequency tolerance % 10	Width	mm	81
	Depth	mm	124
Relative symmetric net current tolerance	Relative symmetric net frequency tolerance	%	10
	Relative symmetric net current tolerance	%	10

Approvals

rippi o taio	
Product Standards	UL 508C; CSA-C22.2 No. 14; IEC/EN61800-3; IEC/EN61800-5; CE marking
UL File No.	E172143
UL Category Control No.	NMMS, NMMS7
CSA File No.	UL report applies to both US and Canada
North America Certification	UL listed, certified by UL for use in Canada
Specially designed for North America	No
Suitable for	Branch circuits
Max. Voltage Rating	1~ 240 V AC IEC: TN-S UL/CSA: "Y" (Solidly Grounded Wey)

Dimensions



