DATASHEET - DC1-34014FB-A20CE1

Variable frequency drive, 400 V AC, 3-phase, 14 A, 5.5 kW, IP20/NEMA 0, Radio interference suppression filter, Brake chopper, FS3

Powering Business Worldwide™

Part no.	**DC1-34014FB-A20CE1**
	185758
EL Number (Norway)	**4137033**

General specifications

Product name	Eaton DC1 Variable frequency drive
Part no.	DC1-34014FB-A20CE1
EAN	4015081812578
Product Length/Depth	175 millimetre
Product height	273 millimetre
Product width	129 millimetre
Product weight	6 kilogram
Certifications	UL report applies to both US and Canada Certified by UL for use in Canada Specification for general requirements: IEC/EN 61800-2 CE RoHS, ISO 9001 IEC/EN61800-3 UL UkrSEPRO CUL UL File No.: E172143 UL Category Control No.: NMMS, NMMS7 Safety requirements: IEC/EN 61800-5-1 CSA-C22.2 No. 14 EAC IEC/EN 61800-3 UL 508C RCM IEC/EN61800-5
Product Tradename	DC1
Product Type	Variable frequency drive
Product Sub Type	None
Catalog Notes	Environmental class: 3C2, 3S2 Overload cycle for 60 s every 600 s

Features & Functions

Features	Parameterization: drivesConnect Parameterization: drivesConnect mobile (App) Parameterization: Fieldbus Parameterization: Keypad
Fitted with:	7-digital display assembly Radio interference suppression filter IGBT inverter Breaking resistance Control unit Internal DC link PC connection Brake chopper Additional PCB protection
Functions	4-quadrant operation possible

General information

Cable length	150 m, unscreened, maximum permissible, Motor feeder C2 ≤ 5 m, Radio interference level, maximum motor cable length 300 m, unscreened, with motor choke, maximum permissible, Motor feeder 100 m, screened, maximum permissible, Motor feeder 200 m, screened, with motor choke, maximum permissible, Motor feeder C3 ≤ 25 m, Radio interference level, maximum motor cable length
Communication interface	SmartWire-DT, optional OP-Bus (RS485), built in Modbus RTU, built in CANopen®, built in
Connection to SmartWire-DT	Yes In conjunction with DX-NET-SWD3 SmartWire DT module
Degree of protection	IP20 NEMA Other
Electromagnetic compatibility	1st and 2nd environments (according to EN 61800-3)
Frame size	FS3

Mounting position	Vertical
Product category	Variable frequency drives
Protection	Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)
Protocol	CAN MODBUS EtherNet/IP Other bus systems
Radio interference class	C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary. Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments
Suitable for	Branch circuits, (UL/CSA)

Climatic environmental conditions

Altitude	Max. 4000 m Above 1000 m with 1 % derating per 100 m
Ambient operating temperature - min	-10 °C
Ambient operating temperature - max	50 °C
Ambient operating temperature at 150% overload - min	-10 °C
Ambient operating temperature at 150% overload - max	50 °C
Ambient storage temperature - min	-40 °C
Ambient storage temperature - max	60 °C
Climatic proofing	< 95 average relative humidity (RH), no condensation, no corrosion

Main circuit

Efficiency	96.2 % (η)
Heat dissipation at current/speed	132 W at 100% current and 0% speed 146 W at 100% current and 50% speed 164 W at 100% current and 90% speed 55 W at 25% current and 0% speed 64 W at 25% current and 50% speed 75 W at 50% current and 0% speed 84 W at 50% current and 50% speed 86 W at 50% current and 90% speed
Input current ILN at 150% overload	17.2 A
Leakage current at ground IPE - max	12.7 mA
Mains switch-on frequency	Maximum of one time every 30 seconds
Mains voltage - min	380 V
Mains voltage - max	480 V
Operating mode	Speed control with slip compensation U/f control Sensorless vector control (SLV) BLDC motors PM motors Synchronous reluctance motors
Output frequency - min	0 Hz
Output frequency - max	500 Hz
Output voltage (U2)	480 V AC, 3-phase 400 V AC, 3-phase
Overload current IL at 150% overload	21 A
Rated control supply voltage	10 V DC (Us, max. 10 mA)
Rated frequency - min	48 Hz
Rated frequency - max	62 Hz
Rated operational current (Ie)	14 A at 150% overload (at an operating frequency of 16 kHz and an ambient air temperature of +50 °C)
Rated operational power at 380/400 V, 50 Hz, 3-phase	5.5 kW
Rated operational voltage	400 V AC, 3-phase 480 V AC, 3-phase
Resolution	0.1 Hz (Frequency resolution, setpoint value)
Short-circuit protection rating	20 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring
Starting current - max	175 %, IH, max. starting current (High Overload), For 2.5 seconds every 600 seconds, Power section
Supply frequency	50/60 Hz
Switching frequency	8 kHz, 4 - 24 kHz adjustable (audible), fPWM, Power section, Main circuit
System configuration type	AC supply systems with earthed center point

Voltage rating - max	480 V
Motor rating	
Assigned motor current IM at 110/120 V, 60 Hz, 150% overload	14 A
Assigned motor current IM at 115 V, 50 Hz, 150% overload	11.3 A
Assigned motor current IM at 220 - 240 V, 60 Hz, 150% overload	14 A
Assigned motor current IM at 230 V, 50 Hz, 150% overload	11.3 A
Assigned motor current IM at 400 V, 50 Hz, 150% overload	11.3 A
Assigned motor current IM at 440 - 480 V, 60 Hz, 150% overload	14 A
Assigned motor power at 115/120 V, 60 Hz, 1-phase	10 HP
Assigned motor power at 230/240 V, 60 Hz, 1-phase	10 HP
Assigned motor power at 460/480 V, 60 Hz	10 HP
Assigned motor power at 460/480 V, 60 Hz, 3-phase	10 HP
Apparent power	
Apparent power at 400 V	9.67 kV·A
Apparent power at 480 V	11.64 kV·A
Braking function	
Braking resistance	100 Ω
Braking torque	Max. 100 % of rated operational current Ie, variable, DC - Main circuit Max. 30 % MN, Standard - Main circuit Max. 100 % of rated operational current Ie with external braking resistor - Main circuit
Switch-on threshold for the braking transistor	780 V DC
Control circuit	
Number of inputs (analog)	2 (parameterizable, 0 - 10 V DC, 0/4 - 20 mA)
Number of inputs (digital)	4 (parameterizable, 10 - 30 V DC)
Number of outputs (analog)	1
Number of outputs (digital)	1
Number of relay outputs	1 (parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1))
Design verification	
Equipment heat dissipation, current-dependent Pvid	209 W
Heat dissipation capacity Pdiss	0 W
Heat dissipation per pole, current-dependent Pvid	0 W
Rated operational current for specified heat dissipation (In)	14 A
Static heat dissipation, non-current-dependent Pvs	0 W
Heat dissipation details	Operation (with 150 % overload)
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 Resist. of insul. mat. to abnormal heat/fire by internal elect. 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.
10.9.2 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 9.0

Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)		
Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency / Servo converter = < 1 kV (ecl@ss13-27-02-31-01 [AKE177019])		
Mains voltage	V	380 - 480
Mains frequency		50/60 Hz
Number of phases input		3
Number of phases output		3
Max. output frequency	Hz	500
Max. output voltage	V	500
Nominal output current I2N	A	14
Max. output at quadratic load at rated output voltage	kW	5.5
Max. output at linear load at rated output voltage	kW	5.5
Power consumption	W	209
Relative symmetric net frequency tolerance	%	10
Relative symmetric net voltage tolerance	%	10
Number of analogue outputs		1
Number of analogue inputs		2
Number of digital outputs		1
Number of digital inputs		4
With control element		Yes
Application in industrial area permitted		Yes
Application in domestic- and commercial area permitted		Yes
Supporting protocol for TCP/IP		No
Supporting protocol for PROFIBUS		No
Supporting protocol for CAN		Yes
Supporting protocol for INTERBUS		No
Supporting protocol for ASI		No
Supporting protocol for KNX		No
Supporting protocol for Modbus		Yes
Supporting protocol for Data-Highway		No
Supporting protocol for DeviceNet		No
Supporting protocol for SUCONET		No
Supporting protocol for LON		No
Supporting protocol for PROFINET IO		No
Supporting protocol for PROFINET CBA		No
Supporting protocol for SERCOS		No
Supporting protocol for Foundation Fieldbus		No
Supporting protocol for EtherNet/IP		Yes
Supporting protocol for AS-Interface Safety at Work		No
Supporting protocol for DeviceNet Safety		No
Supporting protocol for INTERBUS-Safety		No
Supporting protocol for PROFIsafe		No
Supporting protocol for SafetyBUS p		No
Supporting protocol for BACnet		No
Supporting protocol for other bus systems		Yes
Number of HW-interfaces industrial Ethernet		0
Number of interfaces PROFINET		0
Number of HW-interfaces RS-232		0
Number of HW-interfaces RS-422		0
Number of HW-interfaces RS-485		1
Number of HW-interfaces serial TTY		0

Number of HW-interfaces USB			0
Number of HW-interfaces parallel			0
Number of HW-interfaces other			0
With optical interface			No
With PC connection			Yes
Integrated breaking resistance			Yes
4-quadrant operation possible			Yes
Type of converter			U converter
Degree of protection (IP)			IP20
Degree of protection (NEMA)			Other
Height		mm	273
Width		mm	129
Depth		mm	175