



**Variable frequency drive, 400 V AC, 3-phase, 24 A, 11 kW, IP20/NEMA 0,
Radio interference suppression filter, Brake chopper, FS3**



Part no. DC1-34024FB-A20CE1

185764

**EL Number
(Norway)**

4137035

General specifications	
Product name	Eaton DC1 Variable frequency drive
Part no.	DC1-34024FB-A20CE1
EAN	4015081812639
Product Length/Depth	175 millimetre
Product height	273 millimetre
Product width	129 millimetre
Product weight	6 kilogram
Certifications	Safety requirements: IEC/EN 61800-5-1 UL report applies to both US and Canada UkrSEPRO UL 508C UL Category Control No.: NMMS, NMMS7 RoHS, ISO 9001 IEC/EN61800-5 UL File No.: E172143 CUL RCM CSA-C22.2 No. 14 IEC/EN 61800-3 IEC/EN61800-3 CE UL Certified by UL for use in Canada Specification for general requirements: IEC/EN 61800-2 EAC
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:	Brake chopper Internal DC link 7-digital display assembly Radio interference suppression filter IGBT inverter PC connection Breaking resistance Control unit Additional PCB protection
Functions	4-quadrant operation possible
General information	
Cable length	150 m, unscreened, maximum permissible, Motor feeder 300 m, unscreened, with motor choke, maximum permissible, Motor feeder C2 ≤ 5 m, Radio interference level, maximum motor cable length C3 ≤ 25 m, Radio interference level, maximum motor cable length 100 m, screened, maximum permissible, Motor feeder 200 m, screened, with motor choke, maximum permissible, Motor feeder
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		Other bus systems EtherNet/IP MODBUS CAN
Radio interference class		Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary.
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		97.3 % (η)
Heat dissipation at current/speed		117 W at 25% current and 0% speed 133 W at 25% current and 50% speed 133 W at 50% current and 0% speed 140 W at 50% current and 50% speed 146 W at 50% current and 90% speed 233 W at 100% current and 0% speed 289 W at 100% current and 50% speed 322 W at 100% current and 90% speed
Input current ILN at 150% overload		27.5 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		Sensorless vector control (SLV) U/f control Speed control with slip compensation BLDC motors PM motors Synchronous reluctance motors
Output frequency - min		0 Hz
Output frequency - max		500 Hz
Output voltage (U2)		400 V AC, 3-phase 480 V AC, 3-phase
Overload current IL at 150% overload		36 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)		24 A at 150% overload At a switching frequency of 8 kHz and an ambient air temperature of +50 °C
Rated operational power at 380/400 V, 50 Hz, 3-phase		11 kW
Rated operational voltage		480 V AC, 3-phase 400 V AC, 3-phase
Resolution		0.1 Hz (Frequency resolution, setpoint value)
Short-circuit protection rating		35 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		21 A
Assigned motor current IM at 115 V, 50 Hz, 150% overload		21.7 A
Assigned motor current IM at 220 - 240 V, 60 Hz, 150% overload		21 A
Assigned motor current IM at 230 V, 50 Hz, 150% overload		21.7 A
Assigned motor current IM at 400 V, 50 Hz, 150% overload		21.7 A
Assigned motor current IM at 440 - 480 V, 60 Hz, 150% overload		21 A
Assigned motor power at 115/120 V, 60 Hz, 1-phase		15 HP
Assigned motor power at 230/240 V, 60 Hz, 1-phase		15 HP
Assigned motor power at 460/480 V, 60 Hz		15 HP
Assigned motor power at 460/480 V, 60 Hz, 3-phase		15 HP
Apparent power		
Apparent power at 400 V		16.63 kV-A
Apparent power at 480 V		19.95 kV-A
Braking function		
Braking resistance		50 Ω
Braking torque		Max. 100 % of rated operational current I _e with external braking resistor - Main circuit Max. 100 % of rated operational current I _e , variable, DC - Main circuit Max. 30 % MN, Standard - 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 P _{vid}		297 W
Heat dissipation capacity P _{diss}		0 W
Heat dissipation per pole, current-dependent P _{vid}		0 W
Rated operational current for specified heat dissipation (I _n)		24 A
Static heat dissipation, non-current-dependent P _{vs}		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	24
Max. output at quadratic load at rated output voltage	kW	11
Max. output at linear load at rated output voltage	kW	11
Power consumption	W	297
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