Frequency inverter, 400 V AC, 3-phase, 39 A, 18.5 kW, IP20/NEMA 0, Radio interference suppression filter, Additional PCB protection, FS4



Part no. DA1-34039FB-B20C 197494

General specifications	
Product name	Eaton DA1 Variable frequency drive
Part no.	DA1-34039FB-B20C
EAN	4015081940691
Product Length/Depth	241 millimetre
Product height	419 millimetre
Product width	173 millimetre
Product weight	9.2 kilogram
Certifications	RCM UL CE UL Category Control No.: NMMS, NMMS7 RoHS, ISO 9001 Safety: EN 61800-5-1: 2003 IEC/EN 61800-2 UL report applies to both US and Canada UkrSEPRO CUL UL 508C IEC/EN61800-5 IEC/EN61800-3 EAC Certified by UL for use in Canada IEC/EN 61800-3 UL File No.: E172143
Product Tradename	DA1
Product Type	Variable frequency drive
Product Sub Type	None
Catalog Notes	The brake resistors are assigned based on the maximum rated power of the variable frequency drive. Additional brake resistors and designs (e.g. different duty cycles) are available upon request.
General information	
Cable length	200 m, unscreened, with motor choke, maximum permissible cable length C2 ≤ 5 m, maximum motor cable length 100 m, screened, maximum permissible cable length C3 ≤ 25 m, maximum motor cable length 150 m, unscreened, maximum permissible cable length 200 m, screened, with motor choke, maximum permissible cable length
Communication interface	EtherCAT, optional Ethernet IP, optional Modbus RTU PROFIBUS, optional PROFINET, optional SmartWire-DT, optional OP-Bus (RS485) CANopen® Modbus-TCP, optional DeviceNet, optional
Connection to SmartWire-DT	Yes In conjunction with DX-NET-SWD1 SmartWire DT module
Degree of protection	IP20 NEMA Other
Electromagnetic compatibility	1st and 2nd environments (according to EN 61800-3)
Fitted with:	Breaking resistance OLED display Control unit IGBT inverter Radio interference suppression filter PC connection Internal DC link Brake chopper Additional PCB protection
Frame size	FS4
Functions	4-quadrant operation possible
Mounting position	Vertical

Product Category	Variable frequency drives
Protection	Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)
Protocol	TCP/IP MODBUS PROFINET IO EtherNet/IP Other bus systems CAN PROFIBUS DeviceNet
Safety function/level	STO (Safe Torque Off, SIL2, PLc Cat 2)
Suitable for	Branch circuits, (UL/CSA)
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.
Climatic environmental conditions	
Ambient operating temperature - min	-10 °C
Altitude	Max. 1000 m Max. 4000 m Above 1000 m with 1 % derating per 100 m
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	97.5 % (ŋ)
Heat dissipation at current/speed	181 W at 25% current and 0% speed 202 W at 25% current and 50% speed 230 W at 50% current and 0% speed 258 W at 50% current and 50% speed 301 W at 50% current and 90% speed 386 W at 100% current and 0% speed 461 W at 100% current and 50% speed 536 W at 100% current and 90% speed
Input current ILN at 150% overload	47 A
Leakage current at ground IPE - max	2.47 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) Speed control with slip compensation Optional: Vector control with feedback (CLV) U/f control
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	58.5 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 (le) at 150% overload	39 A
Rated operational power at 380/400 V, 50 Hz, 3-phase	18.5 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	60 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring
Starting current - max	200 %, IH, max. starting current (High Overload), for 4 seconds every 40 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 AC
Motor rating	
Assigned motor current IM at 400 V, 50 Hz, 150% overload	39 A
Assigned motor current IM at 440 - 480 V, 60 Hz, 150% overload	34 A
Assigned motor power at 460/480 V, 60 Hz, 3-phase	25 HP
Apparent power	
Apparent power at 400 V	27.02 kV·A
Apparent power at 480 V	32.42 kV·A
Braking function	
Braking resistance	22 0
Braking torque	Adjustable to 100 % (DC) Max. 100 % of rated operational current le with external braking resistor - 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
Number of inputs (digital)	5
Number of outputs (analog)	2
Number of outputs (digital)	2
Number of relay outputs	2 (parameterizable, 1 N/O and 1 changeover contact, 6 A (250 V, AC-1) / 5 A (30 V, DC-1))
Rated control voltage (Uc)	24 V DC (external, max. 100 mA)
Design verification	
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 / Static frequency / Servo converter = < 1 kv (eci@ss15-27-02-31-01 [Ake177019])		
Mains voltage	V	380 - 480
Mains frequency		50/60 Hz
Number of phases input		3
Number of phases output		3

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Degree of protection (NEMA) Other	Type of converter		
	Degree of protection (IP)		
Height mm 419	Degree of protection (NEMA)		
	Height	mm	419

Width	mm	173
Depth	mm	241