

**Variable frequency drive, 230 V AC, 3-phase, 18 A, 4 kW, IP66/NEMA 4X,
Radio interference suppression filter, OLED display**



Part no. DA1-32018FB-B66C

169359

EL Number

4137827

(Norway)

General specifications		
Product name		Eaton DA1 Variable frequency drive
Part no.		DA1-32018FB-B66C
EAN		4015081658077
Product Length/Depth		266.3 millimetre
Product height		310 millimetre
Product width		211 millimetre
Product weight		7.3 kilogram
Certifications		UL Category Control No.: NMMS, NMMS7 UkrSEPRO IEC/EN 61800-3 CE UL CSA-C22.2 No. 14 Certified by UL for use in Canada Specification for general requirements: IEC/EN 61800-2 RCM IEC/EN61800-5 UL 508C UL File No.: E172143 Safety: EN 61800-5-1: 2003 EAC UL report applies to both US and Canada IEC/EN61800-3 CUL RoHS, ISO 9001
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		C3 ≤ 25 m, Radio interference level, maximum motor cable length 300 m, unscreened, with motor choke, maximum permissible, Motor feeder C2 ≤ 5 m, Radio interference level, maximum motor cable length 100 m, screened, maximum permissible, Motor feeder 150 m, unscreened, maximum permissible, Motor feeder 200 m, screened, with motor choke, maximum permissible, Motor feeder
Communication interface		Ethernet IP, optional PROFIBUS, optional DeviceNet, optional Modbus RTU, built in OP-Bus (RS485), built in PROFINET, optional EtherCAT, optional CANopen®, built in Modbus-TCP, optional
Connection to SmartWire-DT		No
Degree of protection		NEMA 4X IP66
Electromagnetic compatibility		1st and 2nd environments (according to EN 61800-3)
Fitted with:		PC connection OLED display Control unit Breaking resistance Radio interference suppression filter Brake chopper Additional PCB protection Internal DC link IGBT inverter
Frame size		FS3
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		PROFIBUS DeviceNet CAN EtherNet/IP Other bus systems PROFINET IO MODBUS TCP/IP
Safety function/level		STO (Safe Torque Off, SIL2, PLc Cat 2)
Suitable for		Branch circuits, (UL/CSA)
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
Climatic environmental conditions		
Ambient operating temperature - min		-10 °C
Altitude		Max. 1000 m Above 1000 m with 1 % derating per 100 m Max. 4000 m
Ambient operating temperature - max		40 °C
Ambient operating temperature at 150% overload - min		-10 °C
Ambient operating temperature at 150% overload - max		40 °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 % (η)
Heat dissipation at current/speed		109 W at 50% current and 50% speed 122 W at 50% current and 90% speed 172 W at 100% current and 0% speed 175 W at 100% current and 50% speed 178 W at 100% current and 90% speed 75 W at 25% current and 0% speed 86 W at 25% current and 50% speed 91 W at 50% current and 0% speed
Input current ILN at 150% overload		20.9 A
Leakage current at ground IPE - max		0.93 mA
Mains switch-on frequency		Maximum of one time every 30 seconds
Mains voltage - min		200 V
Mains voltage - max		240 V
Operating mode		U/f control Sensorless vector control (SLV) Optional: Vector control with feedback (CLV) Speed control with slip compensation
Output frequency - min		0 Hz
Output frequency - max		500 Hz
Output voltage (U2)		240 V AC, 3-phase 230 V AC, 3-phase
Overload current IL at 150% overload		27 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) at 150% overload		18 A
Rated operational power at 220/230 V, 50 Hz, 1-phase		4 kW
Rated operational voltage		240 V AC, 3-phase 230 V AC, 3-phase
Resolution		0.1 Hz (Frequency resolution, setpoint value)
Short-circuit protection rating		30 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		16 kHz, 4 - 24 kHz adjustable (audible), fPWM, Power section, Main circuit

System configuration type		AC supply systems with earthed center point
Voltage rating - max		240 V AC
Motor rating		
Assigned motor current IM at 220 - 240 V, 60 Hz, 150% overload		15.2 A
Assigned motor current IM at 230 V, 50 Hz, 150% overload		14.8 A
Assigned motor power at 230/240 V, 60 Hz, 1-phase		5 HP
Apparent power		
Apparent power at 230 V		7.17 kV-A
Apparent power at 240 V		7.48 kV-A
Braking function		
Braking resistance		20 Ω
Braking torque		Max. 100 % of rated operational current I _e , variable, DC - Main circuit Max. 100 % of rated operational current I _e with external braking resistor - Main circuit Max. 30 % MN, Standard - Main circuit
Switch-on threshold for the braking transistor		390 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 (U _c)		24 V DC (external, max. 100 mA)
Design verification		
Equipment heat dissipation, current-dependent P _{vid}		160 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)		18 A
Static heat dissipation, non-current-dependent P _{vs}		0 W
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)

Mains voltage	V	200 - 240
Mains frequency		50/60 Hz
Number of phases input		3
Number of phases output		3
Max. output frequency	Hz	500
Max. output voltage	V	250
Nominal output current I2N	A	18
Max. output at quadratic load at rated output voltage	kW	4
Max. output at linear load at rated output voltage	kW	4
Power consumption	W	160
Relative symmetric net frequency tolerance	%	10
Relative symmetric net voltage tolerance	%	10
Number of analogue outputs		2
Number of analogue inputs		2
Number of digital outputs		2
Number of digital inputs		5
With control element		Yes
Application in industrial area permitted		Yes
Application in domestic- and commercial area permitted		Yes
Supporting protocol for TCP/IP		Yes
Supporting protocol for PROFIBUS		Yes
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		Yes
Supporting protocol for SUCONET		No
Supporting protocol for LON		No
Supporting protocol for PROFINET IO		Yes
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)			IP66
Degree of protection (NEMA)			4X
Height		mm	310
Width		mm	211
Depth		mm	266.3