

Specifications



Photo is representative



Eaton 169087

Eaton DA1 Variable frequency drive, 240 V AC, 3-phase, 5.7 A, NEMA Other, IP20, FS2, Radio interference, Brake chopper, Digital display

General specifications

PRODUCT NAME	Eaton DA1 Variable frequency drive
CATALOG NUMBER	169087
MODEL CODE	DA1-324D3FB-A20C
EAN	4015081655731
PRODUCT LENGTH/DEPTH	186 mm
PRODUCT HEIGHT	231 mm
PRODUCT WIDTH	107 mm
PRODUCT WEIGHT	1.8 kg

UL report applies to both
US and Canada

CSA-C22.2 No. 14

UL

IEC/EN61800-5

CUL

UL Category Control No.:

NMMS, NMMS7

IEC/EN 61800-3

UL 508C

Certified by UL for use in
Canada

RCM

UL File No.: E172143

EAC

IEC/EN61800-3

RoHS, ISO 9001

Safety: EN 61800-5-1: 2003

CERTIFICATIONS

CE

Specification for general
requirements: IEC/EN
61800-2

UkrSEPRO

CATALOG NOTES

The brake resistors are
assigned based on the
maximum rated power of
the variable frequency
drive. Additional brake



Powering Business Worldwide

Apparent power	
APPARENT POWER AT 230 V	1.71 kVA
APPARENT POWER AT 240 V	1.79 kVA

Climatic environmental conditions	
ALTITUDE	Max. 1000 m Max. 4000 m Above 1000 m with 1 % derating per 100 m
AMBIENT OPERATING TEMPERATURE - MAX	50 °C
AMBIENT STORAGE TEMPERATURE - MAX	60 °C
AMBIENT OPERATING TEMPERATURE - MIN	-10 °C
AMBIENT OPERATING TEMPERATURE AT 150% OVERLOAD - MAX	50 °C
AMBIENT OPERATING TEMPERATURE AT 150% OVERLOAD - MIN	-10 °C
AMBIENT STORAGE TEMPERATURE - MIN	-40 °C
CLIMATIC PROOFING	< 95 average relative humidity (RH), no condensation, no corrosion

resistors and designs (e.g. different duty cycles) are available upon request.
--

Braking function	
BRAKING RESISTANCE	100 Ω
BRAKING TORQUE	Max. 30 % MN, Standard - Main circuit 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
SWITCH-ON THRESHOLD FOR THE BRAKING TRANSISTOR	390 VDC

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

10.10 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.

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

Does not apply, since the

General information

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
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

COMMUNICATION INTERFACE

OP-Bus (RS485), built in PROFIBUS, optional SmartWire-DT, optional Modbus RTU, built in CANopen®, built in EtherCAT, optional DeviceNet, optional Ethernet IP, optional Modbus-TCP, optional PROFINET, optional

CONNECTION TO SMARTWIRE-DT

In conjunction with DX-NET-SWD1 SmartWire DT module
Yes

DEGREE OF PROTECTION

IP20
NEMA Other

ELECTROMAGNETIC COMPATIBILITY

1st and 2nd environments (according to EN 61800-3)

FITTED WITH:

Brake chopper
Radio interference suppression filter
7-digital display assembly
Breaking resistance
IGBT inverter
Additional PCB protection
Control unit
PC connection
Internal DC link

FRAME SIZE

FS2

FUNCTIONS

4-quadrant operation possible

MOUNTING POSITION

Vertical

PRODUCT CATEGORY

Variable frequency drives

AGAINST ELECTRIC SHOCK	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.
EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID	39.75 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	4.3 A
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	0 W

PROTECTION	Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)
PROTOCOL	PROFIBUS CAN Other bus systems PROFINET IO EtherNet/IP MODBUS DeviceNet TCP/IP
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
SAFETY FUNCTION/LEVEL	STO (Safe Torque Off, SIL2, PLc Cat 2)
SUITABLE FOR	Branch circuits, (UL/CSA)

Main circuit

EFFICIENCY	94.7 % (η)
HEAT DISSIPATION AT CURRENT/SPEED	32 W at 25% current and 0% speed 33 W at 25% current and 50% speed 36 W at 50% current and 0% speed 40 W at 50% current and 50% speed 42 W at 50% current and 90% speed 50 W at 100% current and 50% speed 51 W at 100% current and 0% speed 59 W at 100% current and 90% speed
INPUT CURRENT ILN AT 150% OVERLOAD	5.7 A
LEAKAGE CURRENT AT GROUND IPE - MAX	1.73 mA
MAINS SWITCH-ON FREQUENCY	Maximum of one time every 30 seconds
MAINS VOLTAGE - MAX	240 V
MAINS VOLTAGE - MIN	200 V
OPERATING MODE	U/f control Speed control with slip compensation Sensorless vector control (SLV) Optional: Vector control with feedback (CLV)
OUTPUT FREQUENCY - MAX	500 Hz
OUTPUT FREQUENCY - MIN	0 Hz
OUTPUT VOLTAGE (U2)	230 V AC, 3-phase 240 V AC, 3-phase
OVERLOAD CURRENT IL AT 150% OVERLOAD	6.45 A
RATED CONTROL SUPPLY VOLTAGE	10 V DC (Us, max. 10 mA)
RATED FREQUENCY - MAX	62 Hz
RATED FREQUENCY - MIN	48 Hz
RATED OPERATIONAL CURRENT (IE) AT 150% OVERLOAD	4.3 A
RATED OPERATIONAL POWER AT 220/230 V, 50 HZ, 1-PHASE	0.75 kW

Motor rating

ASSIGNED MOTOR
CURRENT IM AT 220 - 240 V, 60 HZ, 150% OVERLOAD 4.2 A

ASSIGNED MOTOR
CURRENT IM AT 230 V, 50 HZ, 150% OVERLOAD 3.2 A

ASSIGNED MOTOR
POWER AT 230/240 V, 60 HZ, 1-PHASE 1 HP

RATED OPERATIONAL VOLTAGE	230 V AC, 3-phase 240 V AC, 3-phase
RESOLUTION	0.1 Hz (Frequency resolution, setpoint value)
SHORT-CIRCUIT PROTECTION RATING	10 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 - 32 kHz adjustable (audible), fPWM, Power section, Main circuit
SYSTEM CONFIGURATION TYPE	AC supply systems with earthed center point
VOLTAGE RATING - MAX	240 VAC

Resources

[eaton-powerxl-da1-dc1-db1-de1-rapidlink5-firmware-update-ap040214-en-us.pdf](#)

[eaton-powerxl-da1-dc1-de1-system-bus-ap040022-en-us.pdf](#)

[eaton-powerxl-da1-dc1-de1-internal-motor-protection-ap040016-en-us.pdf](#)

[Start, Stopp und Betrieb](#)

[eaton-powerxl-da1-derating-ap040039-en-us.pdf](#)

[eaton-powerxl-da1-dc1-de1-conformal-coating-ap040182-en-us.pdf](#)

[eaton-powerxl-da1-i-o-configuration-ap040034-en-us.pdf](#)

APPLICATION NOTES

[eaton-powerxl-da1-use-of-multiple-ramps-ap040031-en-us.pdf](#)

[eaton-powerxl-da1-hoist-applications-ap040032-en-us.pdf](#)

[eaton-powerxl-vfd-dual-rating-ap040114-en-us.pdf](#)

[eaton-powerxl-da1-starting-stopping-operation-ap040030-en-us.pdf](#)

[eaton-powerxl-da1-droop-function-ap040023-en-us.pdf](#)

[eaton-powerxl-da1-operating-pm-bldc-motors-ap040051-en-us.pdf](#)

[eaton-powerxl-da1-pointer-to-parameter-ap040133-en-us.pdf](#)

[eaton-powerxl-da1-set-point-setting-ap040040-en-us.pdf](#)

	eaton-powerxl-da1-pid-controller-ap040025-en-us.pdf eaton-powerxl-da1-vector-control-induction-motors-ap040028-en-us.pdf Electromagnetic compatibility (EMC) eaton-powerxl-da1-master-slave-operation-ap040026-en-us.pdf eaton-powerxl-da1-motor-vf-curves-induction-motors-ap040018-en-us.pdf eaton-powerxl-dx-com-stick-3-ap040190-en-us.pdf
BROCHURES	eaton-powerxl-variable-frequency-drives-dc1-da1-brochure-br040001en-en-us.pdf
CATALOGUES	eaton-drives-soft-starter-catalog-ca04020001zen-us.pdf
DECLARATIONS OF CONFORMITY	eaton-variable-frequency-drive-declaration-of-conformity-eu250662en.pdf eaton-variable-frequency-drive-declaration-of-conformity-uk251145en.pdf
DRAWINGS	eaton-frequency-inverter-dimensions-027.eps eaton-frequency-inverter-3d-drawing-012.eps
ECAD MODEL	DA-CE-ETN.DA1-324D3FB-A20C
INSTALLATION INSTRUCTIONS	eaton-da1-variable-frequency-drive-il04020010z.pdf
INSTALLATION VIDEOS	Video PowerXL DA1 PowerXL Variable Frequency Drives DC1 and DA1 - EN
MANUALS AND USER GUIDES	eaton-powerxl-da1-installation-manual-mn04020005z-en-us.pdf

	eaton-canopen-communication-manual-for-variable-frequency-drives-variable-speed-starters-da1-db1-dc1-de11-mn040019-en-us.pdf eaton-da1-variable-frequency-drive-mn040063-en-us.pdf eaton-powerxl-vfd-profinet-manual-mn040062en-us.pdf MN040018_EN eaton-powerxl-da1-application-manual-mn04020006z-en-us.pdf
MCAD MODEL	DA-CS-da1_fs2_ip20 eaton-general-purpose-drives-mcad-drawings-da1-fs2-ip20.dwg
MULTIMEDIA	Looking for variable frequency drives DC1 and DA1 which can be used in harsh environments? System solutions based on EtherCAT
PRODUCT NOTIFICATIONS	eaton-drives-ecodesign-directive-mz040046en-en.pdf
SOFTWARE, FIRMWARE, AND APPLICATIONS	eaton-powerxl-da1-profinet-gsdml-v226.zip eaton-powerxl-da1-ethercat-esi-for-omron-v311.zip eaton-powerxl-da1-profinet-tia-v12-library.zip eaton-powerxl-da1-profibus-gsd-v216.zip eaton-powerxl-dx-cbl-pc-1m5-usb-driver.zip eaton-powerxl-dx-cbl-pc-3m0-usb-driver.zip eaton-powerxl-dx-comstick3-ble-drivers.zip eaton-powerxl-da1-canopen-eds-v250.zip

[eaton-powerxl-da1-swd-
codesys-v3-library.zip](#)

[eaton-powerxl-da1-
ethercat-esi-v310.zip](#)

[eaton-powerxl-
pcsoftware-drivesconnect-
v1501.zip](#)

[eaton-powerxl-da1-
firmware-release-note-
mz040041en-us.pdf](#)

[eaton-powerxl-da1-
ethernetip-eds-v150.zip](#)

[eaton-powerxl-da1-
devicenet-eds-v100.zip](#)

[eaton-powerxl-da1-
canopen-codesys-v3-
library.zip](#)

PROJECT NAME:

PROJECT NUMBER:

PREPARED BY:

DATE:



Eaton Corporation plc Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com

© 2026 Eaton. All Rights Reserved.

Follow us on social media to get the latest product and support information.

