

Specifications



Photo is representative



Eaton 169099

Eaton DA1 Variable frequency drive, 240 V AC, 3-phase, 26.4 A, NEMA Other, IP20, FS3, Radio interference, Brake chopper, Digital display

General specifications

PRODUCT NAME	Eaton DA1 Variable frequency drive
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CATALOG NUMBER	169099
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MODEL CODE	DA1-32024FB-A20C
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EAN	4015081655830
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PRODUCT LENGTH/DEPTH	204 mm
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PRODUCT HEIGHT	273 mm
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PRODUCT WIDTH	131 mm
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PRODUCT WEIGHT	3.5 kg
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CSA-C22.2 No. 14
IEC/EN61800-3
IEC/EN 61800-3
RoHS, ISO 9001
UL report applies to both US and Canada
CUL
EAC
UL
UL File No.: E172143
RCM
Specification for general requirements: IEC/EN 61800-2
CE
Certified by UL for use in Canada
IEC/EN61800-5
Safety: EN 61800-5-1: 2003

CERTIFICATIONS

UkrSEPRO
UL 508C
UL Category Control No.: NMMS, NMMS7

CATALOG NOTES

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

Apparent power

APPARENT POWER AT 230 V 9.56 kVA

APPARENT POWER AT 240 V 9.98 kVA

Climatic environmental conditions

ALTITUDE Max. 4000 m
Above 1000 m with 1 %
derating per 100 m
Max. 1000 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 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 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	300 m, unscreened, with motor choke, maximum permissible, Motor feeder C2 ≤ 5 m, Radio interference level, maximum motor cable length 150 m, unscreened, maximum permissible, Motor feeder 200 m, screened, with motor choke, maximum permissible, Motor feeder C3 ≤ 25 m, Radio interference level, maximum motor cable length 100 m, screened, maximum permissible, Motor feeder
COMMUNICATION INTERFACE	EtherCAT, optional SmartWire-DT, optional DeviceNet, optional PROFIBUS, optional Ethernet IP, optional Modbus RTU, built in PROFINET, optional OP-Bus (RS485), built in CANopen®, built in Modbus-TCP, 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:	Radio interference suppression filter PC connection Brake chopper Internal DC link IGBT inverter Breaking resistance Control unit 7-digital display assembly Additional PCB protection
FRAME SIZE	FS3
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	170.5 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	24 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	MODBUS PROFIBUS CAN PROFINET IO DeviceNet EtherNet/IP Other bus systems 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	96.9 % (η)
HEAT DISSIPATION AT CURRENT/SPEED	117 W at 25% current and 50% speed 125 W at 50% current and 0% speed 151 W at 50% current and 50% speed 171 W at 50% current and 90% speed 201 W at 100% current and 0% speed 229 W at 100% current and 50% speed 257 W at 100% current and 90% speed 94 W at 25% current and 0% speed
INPUT CURRENT ILN AT 150% OVERLOAD	26.4 A
LEAKAGE CURRENT AT GROUND IPE - MAX	0.93 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 Sensorless vector control (SLV) Optional: Vector control with feedback (CLV) Speed control with slip compensation
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	36 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	24 A
RATED OPERATIONAL POWER AT 220/230 V, 50 HZ, 1-PHASE	5.5 kW

Motor rating

ASSIGNED MOTOR CURRENT IM AT 220 - 240 V, 60 HZ, 150% OVERLOAD	22 A
ASSIGNED MOTOR CURRENT IM AT 230 V, 50 HZ, 150% OVERLOAD	19.6 A
ASSIGNED MOTOR POWER AT 230/240 V, 60 HZ, 1-PHASE	7.5 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	40 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 - 16 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-set-point-setting-ap040040-en-us.pdf](#)

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

[eaton-powerxl-da1-pid-controller-ap040025-en-us.pdf](#)

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

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

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

[eaton-powerxl-da1-motor-vf-curves-induction-motors-ap040018-en-us.pdf](#)

APPLICATION NOTES

[Electromagnetic compatibility \(EMC\)](#)

[eaton-powerxl-dx-com-stick-3-ap040190-en-us.pdf](#)

[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-vector-control-induction-motors-ap040028-en-us.pdf](#)

[eaton-powerxl-da1-master-slave-operation-ap040026-en-us.pdf](#)

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

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

	eaton-powerxl-da1-use-of-multiple-ramps-ap040031-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-dc1-de1-internal-motor-protection-ap040016-en-us.pdf Start, Stopp und Betrieb eaton-powerxl-da1-droop-function-ap040023-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-uk251145en.pdf eaton-variable-frequency-drive-declaration-of-conformity-eu250662en.pdf
DRAWINGS	eaton-frequency-inverter-dimensions-022.eps eaton-frequency-inverter-3d-drawing-013.eps
ECAD MODEL	DA-CE-ETN.DA1-32024FB-A20C
INSTALLATION INSTRUCTIONS	eaton-da1-variable-frequency-drive-il04020010z.pdf
INSTALLATION VIDEOS	PowerXL Variable Frequency Drives DC1 and DA1 - EN Video PowerXL DA1
MANUALS AND USER GUIDES	eaton-da1-variable-frequency-drive-mn040063-en-us.pdf MN040018_EN

	eaton-powerxl-da1-application-manual-mn04020006z-en-us.pdf eaton-powerxl-vfd-profinet-manual-mn040062en-us.pdf eaton-canopen-communication-manual-for-variable-frequency-drives-variable-speed-starters-da1-db1-dc1-de11-mn040019-en-us.pdf eaton-powerxl-da1-installation-manual-mn04020005z-en-us.pdf
MCAD MODEL	DA-CS-da1 fs3 ip20 eaton-general-purpose-drives-mcad-drawings-da1-fs3-ip20.dwg
MULTIMEDIA	System solutions based on EtherCAT Looking for variable frequency drives DC1 and DA1 which can be used in harsh environments?
PRODUCT NOTIFICATIONS	eaton-drives-ecodesign-directive-mz040046en-en.pdf
SOFTWARE, FIRMWARE, AND APPLICATIONS	eaton-powerxl-da1-ethercat-esi-v310.zip eaton-powerxl-da1-ethercat-esi-for-omron-v311.zip eaton-powerxl-da1-canopen-eds-v250.zip eaton-powerxl-da1-swd-codesys-v3-library.zip eaton-powerxl-pcsoftware-drivesconnect-v1501.zip eaton-powerxl-dx-comstick3-ble-drivers.zip eaton-powerxl-da1-devicenet-eds-v100.zip eaton-powerxl-da1-canopen-codesys-v3-library.zip

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

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[eaton-powerxl-dx-cbl-pc-3m0-usb-driver.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-da1-profinet-gsdml-v226.zip](#)

PROJECT NAME:

PROJECT NUMBER:

PREPARED BY:

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