

Specifications



Photo is representative



Eaton 177041

Eaton DA1 Variable frequency drive, 600 V AC, 3-phase, 26 A, IP20, NEMA Other, FS3, Brake chopper, Digital display

General specifications

PRODUCT NAME	Eaton DA1 Variable frequency drive
---------------------	------------------------------------

CATALOG NUMBER	177041
-----------------------	--------

MODEL CODE	DA1-35022NB-A20C
-------------------	------------------

EAN	4015081714841
------------	---------------

PRODUCT LENGTH/DEPTH	204 mm
-----------------------------	--------

PRODUCT HEIGHT	273 mm
-----------------------	--------

PRODUCT WIDTH	131 mm
----------------------	--------

PRODUCT WEIGHT	3.5 kg
-----------------------	--------

UL report applies to both US and Canada
Safety: EN 61800-5-1: 2003

UL File No.: E172143
EAC
CE
IEC/EN61800-3
UL Category Control No.: NMMS, NMMS7
CUL
UL 508C
UkrSEPRO
RCM
CSA-C22.2 No. 14
RoHS, ISO 9001
Certified by UL for use in Canada
IEC/EN61800-5
UL
Specification for general requirements: IEC/EN 61800-2
IEC/EN 61800-3

CERTIFICATIONS

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.



Powering Business Worldwide

Apparent power

APPARENT POWER AT 600 V	22.86 kVA
--------------------------------	-----------

Climatic environmental conditions

ALTITUDE	Above 1000 m with 1 % derating per 100 m Max. 4000 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
--------------------------	---

different duty cycles) are
available upon request.

Braking function

BRAKING RESISTANCE	33 Ω
---------------------------	------

BRAKING TORQUE	Max. 100 % of rated operational current I_e , variable, DC - Main circuit Max. 30 % MN, Standard - Main circuit Max. 100 % of rated operational current I_e with external braking resistor - Main circuit
-----------------------	---

SWITCH-ON THRESHOLD FOR THE BRAKING TRANSISTOR	975 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

100 m, screened, maximum permissible, Motor feeder
300 m, unscreened, with motor choke, maximum permissible, Motor feeder
200 m, screened, with motor choke, maximum permissible, Motor feeder
150 m, unscreened, maximum permissible, Motor feeder

COMMUNICATION INTERFACE

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

CONNECTION TO SMARTWIRE-DT

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

DEGREE OF PROTECTION

IP20
NEMA Other

FITTED WITH:

Brake chopper
PC connection
Breaking resistance
IGBT inverter
Internal DC link
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

PROTECTION

Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)

PROTOCOL

PROFIBUS
MODBUS
PROFINET IO
EtherNet/IP
DeviceNet
CAN
Other bus systems
TCP/IP

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	450 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION DETAILS	Operation (with 150 % overload)
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	22 A
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	0 W

SAFETY FUNCTION/LEVEL	STO (Safe Torque Off, SIL2, PLc Cat 2)
SUITABLE FOR	Branch circuits, (UL/CSA)

Main circuit

EFFICIENCY	97 % (η)
HEAT DISSIPATION AT CURRENT/SPEED	205 W at 25% current and 0% speed 215 W at 25% current and 50% speed 243 W at 50% current and 0% speed 262 W at 50% current and 50% speed 282 W at 50% current and 90% speed 354 W at 100% current and 0% speed 386 W at 100% current and 50% speed 449 W at 100% current and 90% speed
INPUT CURRENT ILN AT 150% OVERLOAD	26 A
LEAKAGE CURRENT AT GROUND IPE - MAX	22 mA
MAINS SWITCH-ON FREQUENCY	Maximum of one time every 30 seconds
MAINS VOLTAGE - MAX	600 V
MAINS VOLTAGE - MIN	500 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)	500 V AC, 3-phase 600 V AC, 3-phase
OVERLOAD CURRENT IL AT 150% OVERLOAD	33 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	22 A
RATED OPERATIONAL POWER AT 500 V, 50 HZ, 3-PHASE	15 kW

Motor rating

ASSIGNED MOTOR CURRENT IM AT 500 V, 50 HZ, 150% OVERLOAD	22 A
ASSIGNED MOTOR CURRENT IM AT 525 V, 50 HZ, 150% OVERLOAD	22 A
ASSIGNED MOTOR CURRENT IM AT 550 - 600 V, 60 HZ, 150% OVERLOAD	22 A
ASSIGNED MOTOR POWER AT 575/600 V, 60 HZ, 3-PHASE	20 HP

RATED OPERATIONAL POWER AT 525 V, 50 HZ, 3-PHASE	15 kW
RATED OPERATIONAL VOLTAGE	500 V AC, 3-phase 600 V AC, 3-phase
RESOLUTION	0.1 Hz (Frequency resolution, setpoint value)
SHORT-CIRCUIT PROTECTION	LPJ fuse used together with J60060-3 fuse base, Power wiring, Assigned switching and protective elements NH fuse used together with TB00-D fuse base, Power wiring, Assigned switching and protective elements
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	8 kHz, 4 - 16 kHz adjustable (audible), fPWM, Power section, Main circuit
SYSTEM CONFIGURATION TYPE	AC supply systems with earthed center point
VOLTAGE RATING - MAX	600 VAC

Resources

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

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

[eaton-powerxl-da1-use-of-multiple-ramps-ap040031-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-set-point-setting-ap040040-en-us.pdf](#)

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

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

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

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

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

[eaton-powerxl-da1-vector-control-induction-motors-ap040028-en-us.pdf](#)

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

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

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

APPLICATION NOTES

	eaton-powerxl-da1-dc1-de1-internal-motor-protection-ap040016-en-us.pdf Start, Stopp und Betrieb eaton-powerxl-da1-dc1-de1-conformal-coating-ap040182-en-us.pdf eaton-powerxl-da1-i-o-configuration-ap040034-en-us.pdf eaton-powerxl-vfd-dual-rating-ap040114-en-us.pdf eaton-powerxl-da1-derating-ap040039-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-022.eps eaton-frequency-inverter-3d-drawing-013.eps
ECAD MODEL	DA-CE-ETN.DA1-35022NB-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	MN040018_EN eaton-powerxl-da1-application-manual-mn04020006z-en-us.pdf

	eaton-da1-variable-frequency-drive-mn040063-en-us.pdf 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-powerxl-vfd-profinet-manual-mn040062en-us.pdf
MCAD MODEL	eaton-general-purpose-drives-mcad-drawings-da1-fs3-ip20.dwg DA-CS-da1 fs3 ip20
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-dx-cbl-pc-1m5-usb-driver.zip eaton-powerxl-da1-profinet-gsdml-v226.zip eaton-powerxl-da1-ethercat-esi-v310.zip eaton-powerxl-da1-ethernetip-eds-v150.zip eaton-powerxl-da1-firmware-release-note-mz040041en-us.pdf eaton-powerxl-da1-canopen-codesys-v3-library.zip eaton-powerxl-da1-devicenet-eds-v100.zip eaton-powerxl-da1-ethercat-esi-for-omron-v311.zip

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

[eaton-powerxl-da1-
canopen-eds-v250.zip](#)

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

[eaton-powerxl-dx-
comstick3-ble-drivers.zip](#)

[eaton-powerxl-da1-
profibus-gsd-v216.zip](#)

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

[eaton-powerxl-da1-
profinet-tia-v12-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.

