

Eaton 185761

Catalog Number: 185761

Eaton DC1 Variable frequency drive, 400 V AC, 3-phase, 18 A, 7.5 kW, IP20/NEMA 0, Radio interference suppression filter, Brake chopper, FS3 DC1-34018FB-A20CE1



General specifications

Product Name

Eaton DC1 Variable frequency drive

Catalog Number

185761

EAN

4015081812608

Product Length/Depth

175 mm

Product Height

273 mm

Product Width

129 mm

Product Weight

6 kg

Certifications

IEC/EN61800-3

UL 508C

Certified by UL for use in Canada

UL report applies to both US and Canada

UL

IEC/EN61800-5

Specification for general requirements:

IEC/EN 61800-2

UL File No.: E172143

CSA-C22.2 No. 14

IEC/EN 61800-3

RoHS, ISO 9001

UL Category Control No.: NMMS,

NMMS7

RCM

CE

CUL

EAC

Safety requirements: IEC/EN 61800-5-1

UkrSEPRO

Features

Parameterization: drivesConnect

Parameterization: drivesConnect mobile (App)

Parameterization: Fieldbus

Parameterization: Keypad

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.

eCAD model

DA-CE-ETN.DC1-34018FB-A20CE1

Joonised

eaton-frequency-inverter-dimensions-020.eps

8230DIM-77

Joonised

eaton-frequency-inverter-3d-drawing-009.eps

8230DRW-337

Kasutusmärkmed

Conformal Coating

The OP System Bus - Parameterizing - Control

Motor data - Motor Protection - V/f curves Slip Compensation

Dependency of the output current on switching frequency and ambient temperature

DX-COM-STICK3_Connection

Low Temperature Applications

I/O Configuration

Operating Permanent Magnet and Brushless DC Motors

How does the internal motor protection work?

PI controller

Operating Single Phase Motors

Set Point Setting

Fire Mode

Update DX-COM-STICK3

Access to Parameter Levels 2 + 3 Parameter Lock - Load Default

Starting, Stopping and Operation

Kataloogid

Drives - Product range catalog

mCAD model

eaton-cadenas-side_view-dc1_fs3_side.pra

eaton-cadenas-front_view-dc1_fs3_front.pra

DA-CD-dc1_fs3

eaton-cadenas-path-frequenzumrichter-dc1_fs3.3db

DA-CS-dc1_fs3

Paigaldusjuhised

IL04020009Z

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.

Fitted with:

Brake chopper

7-digital display assembly

IGBT inverter

Radio interference suppression filter

PC connection

Control unit

Internal DC link

Breaking resistance

Additional PCB protection

Climatic proofing

< 95 average relative humidity (RH), no condensation, no corrosion

Connection to SmartWire-DT

Yes

In conjunction with DX-NET-SWD3 SmartWire DT module

Operating mode

U/f control

Sensorless vector control (SLV)

Speed control with slip compensation

Paigaldusvideod

Video PowerXL DA1

Vastavusavaldused

DA-DC-00003964.pdf

DA-DC-00004552.pdf

DA-DC-00004184.pdf

DA-DC-00004555.pdf

Voldikud

eaton-powerxl-variable-frequency-drives-dc1-da1-brochure-br040001en-en-us.pdf

Voldikud

DA-SW-USB Driver PC Cable DX-CBL-PC-1M5

DA-SW-DC1 ModbusRTU V1_00 Library

DA-SW-DC1 CANopen CODESYSV2 Library

DA-SW-DC1 CANopen ConfigFile 203

DA-SW-Codesys 2 SWD for DC1 and DE1

DA-SW-Driver DX-CBL-PC-3M0

DA-SW-DC1 CANopen CODESYSV1_2 Library

DA-SW-USB Driver DX-COM-STICK3-KIT

DA-SW-drivesConnect

DA-SW-drivesConnect - installation help

DA-SW-Codesys 3 SWD for DC1 and DE1

DA-SW-DC1 CANopen ConfigFile 202

DA-SW-drivesConnect - Installationshilfe

BLDC motors

PM motors

Synchronous reluctance motors

Rated impulse withstand voltage (Uimp)

2000 V

Frame size

FS3

Altitude

Above 1000 m with 1 % derating per 100 m

Max. 4000 m

Application in domestic and commercial area permitted

Yes

Mains switch-on frequency

Maximum of one time every 30 seconds

Ambient operating temperature - max

50 °C

Ambient operating temperature - min

-10 °C

Mains voltage - max

480 V

Output voltage - max

500 V

Relative symmetric net frequency tolerance

10 %

Relative symmetric net voltage tolerance

10 %

Ambient operating temperature at 150% overload - max

50 °C

Ambient operating temperature at 150% overload - min

-10 °C

Ambient storage temperature - max

60 °C

Ambient storage temperature - min

-40 °C

Apparent power at 400 V

12.47 kVA

Apparent power at 480 V

14.96 kVA

Assigned motor current IM at 110/120 V, 60 Hz, 150% overload

14 A

Assigned motor current IM at 115 V, 50 Hz, 150% overload

15.2 A

Application in industrial area permitted

Yes

Heat dissipation details

Operation (with 150 % overload)

Product category

Variable frequency drives

Protection

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

Resolution

0.1 Hz (Frequency resolution, setpoint value)

Static heat dissipation, non-current-dependent Pvs

0 W

Switch-on threshold for the braking transistor

780 VDC

Voltage rating - max

480 V

Mounting position

Vertical

Overvoltage category

III

Communication interface

SmartWire-DT, optional

Modbus RTU, built in

OP-Bus (RS485), built in

CANopen®, built in

Converter type

U converter

Degree of protection

IP20

NEMA Other

Assigned motor power at 115/120 V, 60 Hz, 1-phase

10 HP

Assigned motor power at 230/240 V, 60 Hz, 1-phase

10 HP

Assigned motor power at 460/480 V, 60 Hz

10 HP

Assigned motor power at 460/480 V, 60 Hz, 3-phase

10 HP

Braking resistance

80 Ω

Equipment heat dissipation, current-dependent P_{vid}

300 W

Heat dissipation capacity P_{diss}

0 W

Heat dissipation per pole, current-dependent P_{vid}

0 W

Input current I_{LN} at 150% overload

21.2 A

Mains current distortion

120 %

Assigned motor current I_M at 220 - 240 V, 60 Hz, 150% overload

14 A

Assigned motor current I_M at 230 V, 50 Hz, 150% overload

15.2 A

Protocol

Other bus systems

MODBUS

CAN

EtherNet/IP

Overload current I_L at 150% overload

27 A

Rated frequency - max

62 Hz

Rated frequency - min

48 Hz

Rated operational current for specified heat dissipation (I_n)

18 A

Rated operational power at 380/400 V, 50 Hz, 3-phase

7.5 kW

Assigned motor current I_M at 400 V, 50 Hz, 150% overload

15.2 A

Assigned motor current IM at 440 - 480 V, 60 Hz, 150% overload

14 A

System configuration type

AC supply systems with earthed center point

Braking current

≤ 0.6 A (max. 6 A for 120 ms), Actuator for external motor brake

Electromagnetic compatibility

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

Braking torque

Max. 30 % MN, Standard - Main circuit

Max. 100 % of rated operational current Ie, variable, DC - Main circuit

Max. 100 % of rated operational current Ie with external braking resistor - Main circuit

Cable length

C3 ≤ 25 m, Radio interference level, maximum motor cable length

300 m, unscreened, with motor choke, maximum permissible, Motor feeder

100 m, screened, maximum permissible, Motor feeder

200 m, screened, with motor choke, maximum permissible, Motor feeder

150 m, unscreened, maximum permissible, Motor feeder

C2 ≤ 5 m, Radio interference level, maximum motor cable length

Functions

4-quadrant operation possible

Output voltage (U2)

480 V AC, 3-phase

400 V AC, 3-phase

Delay time

< 10 ms, On-delay

< 10 ms, Off-delay

Number of inputs (analog)

2 (parameterizable, 0 - 10 V DC, 0/4 - 20 mA)

Number of inputs (digital)

4 (parameterizable, 10 - 30 V DC)

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

Number of outputs (digital)

1

Starting current - max

175 %, IH, max. starting current (High Overload), For 2.5 seconds every 600 seconds, Power section

Number of phases (input)

3

Number of relay outputs

1 (parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1))

Number of phases (output)

3

Power consumption

300W

Rated control supply voltage

10 V DC (Us, max. 10 mA)

Efficiency

97 % (η)

Supply frequency

50/60 Hz

Leakage current at ground IPE - max

12.7 mA

Mains voltage - min

380 V

Nominal output current I2N

18 A

Number of HW-interfaces (industrial ethernet)

0

Number of HW-interfaces (other)

0

Number of HW-interfaces (parallel)

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 interfaces (PROFINET)

0

Number of outputs (analog)

1

Output at linear load at rated output voltage - max

7.5 kW

Output at quadratic load at rated output voltage - max

7.5 kW

Output frequency - max

500 Hz

Output frequency - min

0 Hz

Short-circuit protection (external output circuits)

Type 1 coordination via the power bus' feeder unit, Main circuit

Suitable for

Branch circuits, (UL/CSA)

Switching frequency

8 kHz, 4 - 24 kHz adjustable (audible), fPWM, Power section,
Main circuit

Rated operational current (I_e)

18 A at 150% overload (at an operating frequency of 16 kHz and
an ambient air temperature of +50 °C)

Rated operational voltage

400 V AC, 3-phase

480 V AC, 3-phase

Short-circuit protection rating

25 A, UL (Class CC or J), Safety device (fuse or miniature
circuit-breaker), Power Wiring

Heat dissipation at current/speed

105 W at 50% current and 0% speed

111 W at 50% current and 50% speed

118 W at 50% current and 90% speed

167 W at 100% current and 0% speed

194 W at 100% current and 50% speed

209 W at 100% current and 90% speed

64 W at 25% current and 0% speed

84 W at 25% current and 50% speed



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