Specifications

Eaton 197503



Catalog Number: 197503

Eaton DA1 Frequency inverter, 500 V AC, 3-phase, 65 A, 45 kW, IP20/NEMA 0, Additional PCB protection, DC link choke, FS5

General specifications

Product Name
Eaton DA1 Variable frequency drive

Catalog Number
197503

EAN
4015081940783

Product Length/Depth
261 mm

Product Height
485 mm

Product Width
234 mm

Product Weight
18.2 kg

Certifications
EAC
IEC/EN 61800-3
RCM
UL File No.: E172143
UL report applies to both US and Canada
IEC/EN 61800-2
UL 508C
CE
CUL
RoHS, ISO 9001
UL
IEC/EN61800-3
IEC/EN61800-5
UkrSEPRO
UL Category Control No.: NMMS, NMMS7
Safety: EN 61800-5-1: 2003
Certified by UL for use in Canada

Catalog Notes
The brake resistors are assigned based on the maximum rated power of the

General

Cable length

100 m, screened, maximum permissible cable length

150 m, unscreened, maximum permissible cable length

200 m, unscreened, with motor choke, maximum permissible cable length

200 m, screened, with motor choke, maximum permissible cable length

Communication interface

PROFINET, optional

DeviceNet, optional

PROFIBUS, optional

Modbus RTU

CANopen®

Modbus-TCP, optional

EtherCAT, optional

OP-Bus (RS485)

Ethernet IP, optional

SmartWire-DT, optional

Connection to SmartWire-DT

In conjunction with DX-NET-SWD1 SmartWire DT module

Yes

Degree of protection

IP20

NEMA Other

Fitted with:

OLED display

DC link choke

Internal DC link

Breaking resistance

Control unit

IGBT inverter

Brake chopper

PC connection

Additional PCB protection

Frame size

FS5

Functions

4-quadrant operation possible

Mounting position

Vertical

Product Category

Climatic environmental conditions

Ambient operating temperature - min

-10 °C

Altitude

Max. 4000 m

Max. 1000 m

Above 1000 m with 1 % derating per 100 m

Ambient operating temperature - max

50 °C

Ambient operating temperature at 150% overload - min

-10 °C

Ambient operating temperature at 150% overload - max

50 °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

97.9 % (η)

Heat dissipation at current/speed

1090 W at 100% current and 90% speed

280 W at 25% current and 0% speed

350 W at 25% current and 50% speed

390 W at 50% current and 0% speed

490 W at 50% current and 50% speed

550 W at 50% current and 90% speed

740 W at 100% current and 0% speed

900 W at 100% current and 50% speed

Input current ILN at 150% overload

75.8 A

Leakage current at ground IPE - max

65 mA

Mains switch-on frequency

Variable frequency drives

Protection

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

Protocol

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

Safety function/level

STO (Safe Torque Off, SIL2, PLc Cat 2)

Suitable for

Branch circuits, (UL/CSA)

Maximum of one time every 30 seconds

Mains voltage - min

500 V

Mains voltage - max

600 V

Operating mode

Speed control with slip compensation
U/f control
Optional: Vector control with feedback (CLV)
Sensorless vector control (SLV)

Output frequency - min

0 Hz

Output frequency - max

500 Hz

Output voltage (U2)

600 V AC, 3-phase
500 V AC, 3-phase

Overload current IL at 150% overload

97.5 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

65 A

Rated operational power at 500 V, 50 Hz, 3-phase

45 kW

Rated operational power at 525 V, 50 Hz, 3-phase

45 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

NH fuse used together with TB00-D fuse base, Power wiring, Assigned switching and protective elements

LPJ fuse used together with JM60100-3 fuse base, Power wiring, Assigned switching and protective elements

Short-circuit protection rating

100 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 - 24 kHz adjustable (audible), fPWM, Power section, Main circuit

System configuration type

AC supply systems with earthed center point

Voltage rating - max

600 VAC

Motor rating

Assigned motor current IM at 500 V, 50 Hz, 150% overload

65 A

Assigned motor current IM at 525 V, 50 Hz, 150% overload

62 A

Assigned motor current IM at 550 - 600 V, 60 Hz, 150% overload

62 A

Assigned motor power at 575/600 V, 60 Hz, 3-phase

60 HP

Apparent power

Apparent power at 600 V

67.55 kVA

Braking function

Braking resistance

12 Ω

Braking torque

Max. 30 % MN, Standard - Main circuit

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

Adjustable to 100 % (DC)

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

Design verification

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.

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)

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.

10.6 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.

Resources

Application notes

Setpoint Setting

Dual Rating What exactly does that mean?

Vector Control of Induction Motors

How does the internal motor protection work?

Equal load sharing with the droop function

Electromagnetic compatibility (EMC)

Hoist applications

Dependency of the output current on switching frequency and ambient temperature

DX-COM-STICK3_Connection

Motor data Motor Protection V/f curves for induction motors

The OP System Bus - Parameterizing - Control

Conformal Coating

Operating Permanent Magnet and Brushless DC Motors

I/O Configuration

Master slave operation

Connecting drives to generator supplies

Closed Loop Vector Control

Update DX-COM-STICK3

Starting, Stopping and Operation

Access to Parameter Level 2 and 3 Parameter Lock RESET

PID controller

Use of multiple ramps

Brochures

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

DA-SW-DA1 Profinet ConfigFile

DA-SW-DA1 Profinet GSDML V2.25 Config File

DA-SW-drivesConnect

DA-SW-DA1 Profinet Library

Catalogs

Product Range Catalog Drives Engineering

Declarations of conformity

DA-DC-00004184.pdf

DA-DC-00005020.pdf

DA-DC-00003964.pdf

DA-DC-00005021.pdf

Drawings

eaton-frequency-inverter-dimensions-013.eps

eCAD model

DA-CE-ETN.DA1-35065NB-B20C

Installation instructions

eaton-da1-variable-frequency-drive-il040049zu.pdf

Installation videos

Video PowerXL DA1

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Manuals and user guides

eaton-canopen-communication-manual-for-variable-frequency-drives-variable-speed-starters-da1-db1-dc1-de11-mn040019-en-us.pdf

MN04020005Z_EN

MN040018_EN

MN04020006Z_EN

MN040003_EN

eaton-da1-variable-frequency-drive-mn040063-en-us.pdf

mCAD model

DA-CD-da1_fs5_ip20

DA-CS-da1_fs5_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

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

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