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Eaton 199416

Eaton DC1 Variable frequency drive, 230 V AC, 3-phase, 7 A, 1.5 kW, IP66/NEMA 4X, Radio interference suppression filter, 7-digit digital display assembly, Local controls, Additional PCB protection, UV resistant, FS1

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PRODUCT NAME	Eaton DC1 Variable frequency drive
CATALOG NUMBER	199416
PRODUCT LENGTH/DEPTH	162 mm
PRODUCT HEIGHT	232 mm
PRODUCT WIDTH	161 mm
PRODUCT WEIGHT	2.5 kg

CERTIFICATIONS

CUL
RCM
UL
EAC
UL File No.: E172143
Certified by UL for use in Canada
CE
UkrSEPRO
IEC/EN61800-5
UL 508C
CE marking
IEC/EN 61800-3
UL report applies to both US and Canada
IEC/EN 61800-2
CSA-C22.2 No. 14
UL Listed
IEC/EN 61800-5-1
RoHS, ISO 9001
UL Category Control No.: NMMS, NMMS7

CATALOG NOTES

- Environmental class: 3C3, 3S3
- Overload cycle for 60 s every 600 s
- For normal internally and externally

ventilated four-pole
three-phase
asynchronous
motors with 1500
rpm at 50 Hz and
1800 rpm at 60 Hz

FEATURES

Parameterization:
drivesConnect mobile
(App)
Parameterization: Keypad
Parameterization: Fieldbus

Parameterization:
drivesConnect

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 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:	Local controls Internal DC link PC connection Radio interference suppression filter Control unit 7-digital display assembly IGBT inverter UV resistance Additional PCB protection
CLIMATIC PROOFING	< 95 average relative humidity (RH), no condensation, no corrosion
CONNECTION TO SMARTWIRE-DT	No
OPERATING MODE	Sensorless vector control (SLV) BLDC motors U/f control Synchronous reluctance motors PM motors Speed control with slip compensation
RATED IMPULSE WITHSTAND VOLTAGE (UIMP)	2000 V
FRAME SIZE	FS1

ALTITUDE	Max. 4000 m Above 1000 m with 1 % derating per 100 m
APPLICATION IN DOMESTIC AND COMMERCIAL AREA PERMITTED	Yes
MAINS SWITCH-ON FREQUENCY	Maximum of one time every 30 seconds
AMBIENT OPERATING TEMPERATURE - MAX	40 °C
AMBIENT OPERATING TEMPERATURE - MIN	-20 °C
MAINS VOLTAGE - MAX	240 V
OUTPUT VOLTAGE - MAX	250 V
RATED OPERATIONAL POWER AT 220/230 V, 50 HZ, 3-PHASE	1.5 kW
RELATIVE SYMMETRIC NET FREQUENCY TOLERANCE	10 %
RELATIVE SYMMETRIC NET VOLTAGE TOLERANCE	10 %
AMBIENT STORAGE TEMPERATURE - MAX	60 °C
AMBIENT STORAGE TEMPERATURE - MIN	-40 °C
APPARENT POWER AT 230 V	2.79 kVA
APPARENT POWER AT 240 V	2.91 kVA
APPLICATION IN INDUSTRIAL AREA PERMITTED	Yes
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)
VOLTAGE RATING - MAX	240 V
MOUNTING POSITION	Vertical
OVERVOLTAGE CATEGORY	III
COMMUNICATION INTERFACE	CANopen®, built in OP-Bus (RS485), built in SmartWire-DT, optional Modbus RTU, built in
CONVERTER TYPE	U converter

DEGREE OF PROTECTION	IP66 NEMA 4X
ASSIGNED MOTOR POWER AT 220/230 V, 60 HZ, 3-PHASE	2 HP
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT- DEPENDENT PVID	0 W
INPUT CURRENT ILN AT 150% OVERLOAD	9.5 A
MAINS CURRENT DISTORTION	120 %
ASSIGNED MOTOR CURRENT IM AT 220 - 240 V, 60 HZ, 150% OVERLOAD	6.8 A
ASSIGNED MOTOR CURRENT IM AT 230 V, 50 HZ, 150% OVERLOAD	6.3 A
PROTOCOL	MODBUS CAN Other bus systems EtherNet/IP
OVERLOAD CURRENT IL AT 150% OVERLOAD	10.5 A
RATED FREQUENCY - MAX	62 Hz
RATED FREQUENCY - MIN	48 Hz
RATED OPERATIONAL POWER AT 380/400 V, 50 HZ, 3-PHASE	0.75 kW
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 I _e , variable, DC - Main circuit
CABLE LENGTH	75 m, unscreened, maximum permissible, Motor feeder 150 m, unscreened, with motor choke, maximum permissible, Motor feeder 50 m, screened, maximum permissible, Motor feeder

	100 m, screened, with motor choke, maximum permissible, Motor feeder
OUTPUT VOLTAGE (U2)	230 V AC, 3-phase 240 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 % I _H
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	61.5 W
RATED CONTROL SUPPLY VOLTAGE	10 V DC (U _s , max. 10 mA)
EFFICIENCY	97 % (η)
SUPPLY FREQUENCY	50/60 Hz
LEAKAGE CURRENT AT GROUND IPE - MAX	7.5 mA
MAINS VOLTAGE - MIN	200 V
NOMINAL OUTPUT CURRENT I_{2N}	7 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	1.5 kW
OUTPUT AT QUADRATIC LOAD AT RATED OUTPUT VOLTAGE - MAX	1.5 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 - 32 kHz adjustable (audible), fPWM, Power section, Main circuit
RATED OPERATIONAL CURRENT (IE)	7 A at 150% overload (at an operating frequency of 6 kHz and an ambient air temperature of +40 °C)
RATED OPERATIONAL VOLTAGE	240 V AC, 3-phase 230 V AC, 3-phase
SHORT-CIRCUIT PROTECTION RATING	10 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring
HEAT DISSIPATION AT CURRENT/SPEED	37 W at 25% current and 0% speed 37 W at 25% current and 50% speed 44 W at 50% current and 0% speed 48 W at 50% current and 50% speed

54 W at 50% current and
90% speed
58 W at 100% current and
0% speed
69 W at 100% current and
50% speed
81 W at 100% current and
90% speed

DECLARATIONS OF CONFORMITY	<u>eaton-variable-frequency-drive-declaration-of-conformity-uk251078en.pdf</u>
INSTALLATION VIDEOS	<u>Video PowerXL DA1</u>
MCAD MODEL	<u>e3_s1_ip66_mit_bedienelementen.dwg</u> <u>e3_s1_ip66_mit_bedienelementen.stp</u>
	<u>eaton-powerxl-variable-frequency-drives-dc1-da1-brochure-br040001en-us.pdf</u>
	<u>eaton-frequency-inverter-dc1-dimensions.eps</u>
	<u>The OP System Bus - Parameterizing - Control</u>
	<u>DX-COM-STICK3 Connection</u> <u>How does the internal motor protection work?</u>

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