

# Eaton 197494

Eaton DA1 Frequency inverter, 400 V AC, 3-phase, 39 A, 18.5 kW, IP20/NEMA 0, Radio interference suppression filter, Additional PCB protection, FS4

<b>PRODUCT NAME</b>	Eaton DA1 Variable frequency drive
<b>CATALOG NUMBER</b>	197494
<b>PRODUCT LENGTH/DEPTH</b>	241 mm
<b>PRODUCT HEIGHT</b>	419 mm
<b>PRODUCT WIDTH</b>	173 mm
<b>PRODUCT WEIGHT</b>	9.2 kg
<b>CERTIFICATIONS</b>	UL Category Control No.: NMMS, NMMS7 EAC IEC/EN 61800-2 Safety: EN 61800-5-1: 2003
	RCM UL File No.: E172143 UL report applies to both US and Canada UL CE Certified by UL for use in Canada IEC/EN61800-5 UkrSEPRO RoHS, ISO 9001 IEC/EN61800-3 CUL UL 508C IEC/EN 61800-3
<b>CATALOG NOTES</b>	The brake resistors are assigned based on the maximum rated power of the variable frequency drive. Additional brake resistors and designs (e.g. different duty cycles) are available upon request.

<b>PRODUCT CATEGORY</b>	Variable frequency drives
<b>FEATURES</b>	Parameterization: drivesConnect Parameterization: drivesConnect mobile (App) Parameterization: Fieldbus  Parameterization: Keypad
<b>10.10 TEMPERATURE RISE</b>	The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
<b>10.11 SHORT-CIRCUIT RATING</b>	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
<b>10.12 ELECTROMAGNETIC COMPATIBILITY</b>	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
<b>10.13 MECHANICAL FUNCTION</b>	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.
<b>10.2.2 CORROSION RESISTANCE</b>	Meets the product standard's requirements.
<b>10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES</b>	Meets the product standard's requirements.
<b>10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS TO NORMAL HEAT</b>	Meets the product standard's requirements.
<b>10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS</b>	Meets the product standard's requirements.
<b>10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION</b>	Meets the product standard's requirements.
<b>10.2.5 LIFTING</b>	Does not apply, since the entire switchgear needs to be evaluated.

<b>INSTALLATION VIDEOS</b>	<a href="#">Video PowerXL DA1</a>
	<a href="#">eaton-da1-variable-frequency-drive-il040049zu.pdf</a>
	<a href="#">eaton-powerxl-variable-frequency-drives-dc1-da1-brochure-br040001en-en-us.pdf</a>
	<a href="#">eaton-powerxl-da1-application-manual-mn04020006z-en-us.pdf</a>
	<a href="#">eaton-powerxl-da1-installation-manual-mn04020005z-en-us.pdf</a>
	<a href="#">eaton-frequency-inverter-dimensions-012.eps</a>

<b>10.2.6 MECHANICAL IMPACT</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.7 INSCRIPTIONS</b>	Meets the product standard's requirements.
<b>10.3 DEGREE OF PROTECTION OF ASSEMBLIES</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.4 CLEARANCES AND CREEPAGE DISTANCES</b>	Meets the product standard's requirements.
<b>10.5 PROTECTION AGAINST ELECTRIC SHOCK</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS</b>	Is the panel builder's responsibility.
<b>10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS</b>	Is the panel builder's responsibility.
<b>10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH</b>	Is the panel builder's responsibility.
<b>10.9.3 IMPULSE WITHSTAND VOLTAGE</b>	Is the panel builder's responsibility.
<b>10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL</b>	Is the panel builder's responsibility.
<b>FITTED WITH:</b>	Breaking resistance OLED display Control unit IGBT inverter Radio interference suppression filter PC connection Internal DC link Brake chopper Additional PCB protection
<b>CLIMATIC PROOFING</b>	< 95 average relative humidity (RH), no condensation, no corrosion
<b>CONNECTION TO SMARTWIRE-DT</b>	Yes In conjunction with DX-NET-SWD1 SmartWire DT module
<b>OPERATING MODE</b>	Sensorless vector control (SLV) Speed control with slip compensation

	Optional: Vector control with feedback (CLV) U/f control
<b>FRAME SIZE</b>	FS4
<b>ALTITUDE</b>	Max. 1000 m Max. 4000 m Above 1000 m with 1 % derating per 100 m
<b>ENVIRONMENTAL CLASS</b>	3C2, 3S2 (Air quality)
<b>APPLICATION IN DOMESTIC AND COMMERCIAL AREA PERMITTED</b>	Yes
<b>MAINS SWITCH-ON FREQUENCY</b>	Maximum of one time every 30 seconds
<b>APPLICATION IN INDUSTRIAL AREA PERMITTED</b>	Yes
<b>AMBIENT OPERATING TEMPERATURE - MAX</b>	50 °C
<b>AMBIENT OPERATING TEMPERATURE - MIN</b>	-10 °C
<b>AMBIENT OPERATING TEMPERATURE AT 150% OVERLOAD - MAX</b>	50 °C
<b>AMBIENT OPERATING TEMPERATURE AT 150% OVERLOAD - MIN</b>	-10 °C
<b>AMBIENT STORAGE TEMPERATURE - MAX</b>	60 °C
<b>AMBIENT STORAGE TEMPERATURE - MIN</b>	-40 °C
<b>APPARENT POWER AT 400 V</b>	27.02 kVA
<b>APPARENT POWER AT 480 V</b>	32.42 kVA
<b>ASSIGNED MOTOR CURRENT IM AT 400 V, 50 HZ, 150% OVERLOAD</b>	39 A
<b>MOUNTING POSITION</b>	Vertical
<b>RELATIVE SYMMETRIC NET FREQUENCY TOLERANCE</b>	10 %
<b>RELATIVE SYMMETRIC NET VOLTAGE TOLERANCE</b>	10 %
<b>PROTECTION</b>	Finger and back-of-hand proof, Protection against direct contact (BGV A3,

	VBG4)
<b>RESOLUTION</b>	0.1 Hz (Frequency resolution, setpoint value)
<b>SWITCH-ON THRESHOLD FOR THE BRAKING TRANSISTOR</b>	780 VDC
<b>VOLTAGE RATING - MAX</b>	480 VAC
<b>COMMUNICATION INTERFACE</b>	EtherCAT, optional Ethernet IP, optional Modbus RTU PROFIBUS, optional PROFINET, optional SmartWire-DT, optional OP-Bus (RS485) CANopen® Modbus-TCP, optional DeviceNet, optional
<b>CONVERTER TYPE</b>	U converter
<b>DEGREE OF PROTECTION</b>	IP20 NEMA Other
<b>PROTOCOL</b>	TCP/IP MODBUS PROFINET IO EtherNet/IP Other bus systems CAN PROFIBUS DeviceNet
<b>ASSIGNED MOTOR CURRENT IM AT 440 - 480 V, 60 HZ, 150% OVERLOAD</b>	34 A
<b>SYSTEM CONFIGURATION TYPE</b>	AC supply systems with earthed center point
<b>ELECTROMAGNETIC COMPATIBILITY</b>	1st and 2nd environments (according to EN 61800-3)
<b>ASSIGNED MOTOR POWER AT 460/480 V, 60 HZ, 3-PHASE</b>	25 HP
<b>BRAKING RESISTANCE</b>	22 Ω
<b>INPUT CURRENT ILN AT 150% OVERLOAD</b>	47 A
<b>BRAKING TORQUE</b>	Adjustable to 100 % (DC) Max. 100 % of rated operational current I <sub>e</sub> with external braking resistor - Main circuit Max. 30 % MN, Standard - Main circuit
<b>CABLE LENGTH</b>	200 m, unscreened, with

	<p>motor choke, maximum permissible cable length</p> <p>C2 ≤ 5 m, maximum motor cable length</p> <p>100 m, screened, maximum permissible cable length</p> <p>C3 ≤ 25 m, maximum motor cable length</p> <p>150 m, unscreened, maximum permissible cable length</p> <p>200 m, screened, with motor choke, maximum permissible cable length</p>
<b>FUNCTIONS</b>	4-quadrant operation possible
<b>OUTPUT VOLTAGE (U2)</b>	400 V AC, 3-phase 480 V AC, 3-phase
<b>NUMBER OF INPUTS (ANALOG)</b>	2
<b>NUMBER OF INPUTS (DIGITAL)</b>	5
<b>RADIO INTERFERENCE CLASS</b>	<p>Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments</p> <p>C2, C3: depending on the motor cable length, the connected load, and ambient conditions.</p> <p>External radio interference suppression filters (optional) may be necessary.</p>
<b>NUMBER OF OUTPUTS (DIGITAL)</b>	2
<b>STARTING CURRENT - MAX</b>	200 %, IH, max. starting current (High Overload), for 4 seconds every 40 seconds, Power section
<b>NUMBER OF PHASES (INPUT)</b>	3
<b>NUMBER OF RELAY OUTPUTS</b>	2 (parameterizable, 1 N/O and 1 changeover contact, 6 A (250 V, AC-1) / 5 A (30 V, DC-1))
<b>NUMBER OF PHASES (OUTPUT)</b>	3
<b>POWER CONSUMPTION</b>	444 W

<b>RATED CONTROL SUPPLY VOLTAGE</b>	10 V DC (Us, max. 10 mA)
<b>EFFICIENCY</b>	97.5 % ( $\eta$ )
<b>RATED CONTROL VOLTAGE (UC)</b>	24 V DC (external, max. 100 mA)
<b>SUPPLY FREQUENCY</b>	50/60 Hz
<b>LEAKAGE CURRENT AT GROUND IPE - MAX</b>	2.47 mA
<b>MAINS VOLTAGE - MAX</b>	480 V
<b>MAINS VOLTAGE - MIN</b>	380 V
<b>NOMINAL OUTPUT CURRENT I2N</b>	39 A
<b>NUMBER OF HW-INTERFACES (INDUSTRIAL ETHERNET)</b>	0
<b>NUMBER OF HW-INTERFACES (OTHER)</b>	0
<b>NUMBER OF HW-INTERFACES (PARALLEL)</b>	0
<b>NUMBER OF HW-INTERFACES (RS-232)</b>	0
<b>NUMBER OF HW-INTERFACES (RS-422)</b>	0
<b>NUMBER OF HW-INTERFACES (RS-485)</b>	1
<b>NUMBER OF HW-INTERFACES (SERIAL TTY)</b>	0
<b>NUMBER OF HW-INTERFACES (USB)</b>	0
<b>NUMBER OF INTERFACES (PROFINET)</b>	0
<b>NUMBER OF OUTPUTS (ANALOG)</b>	2
<b>OUTPUT AT LINEAR LOAD AT RATED OUTPUT VOLTAGE - MAX</b>	18.5 kW
<b>OUTPUT AT QUADRATIC LOAD AT RATED OUTPUT VOLTAGE - MAX</b>	18.5 kW
<b>OUTPUT FREQUENCY - MAX</b>	500 Hz
<b>OUTPUT FREQUENCY - MIN</b>	0 Hz
<b>OUTPUT VOLTAGE - MAX</b>	500 V
<b>OVERLOAD CURRENT IL AT 150% OVERLOAD</b>	58.5 A
<b>SUITABLE FOR</b>	Branch circuits, (UL/CSA)

<b>SWITCHING FREQUENCY</b>	8 kHz, 4 - 24 kHz adjustable (audible), fPWM, Power section, Main circuit
<b>RATED OPERATIONAL VOLTAGE</b>	480 V AC, 3-phase 400 V AC, 3-phase
<b>SHORT-CIRCUIT PROTECTION RATING</b>	60 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring
<b>RATED FREQUENCY - MAX</b>	62 Hz
<b>RATED FREQUENCY - MIN</b>	48 Hz
<b>RATED OPERATIONAL CURRENT (IE) AT 150% OVERLOAD</b>	39 A
<b>RATED OPERATIONAL POWER AT 380/400 V, 50 HZ, 3-PHASE</b>	18.5 kW
<b>SAFETY FUNCTION/LEVEL</b>	STO (Safe Torque Off, SIL2, PLc Cat 2)
<b>HEAT DISSIPATION AT CURRENT/SPEED</b>	181 W at 25% current and 0% speed 202 W at 25% current and 50% speed 230 W at 50% current and 0% speed 258 W at 50% current and 50% speed 301 W at 50% current and 90% speed 386 W at 100% current and 0% speed 461 W at 100% current and 50% speed 536 W at 100% current and 90% speed

**PROJECT NAME:**

**PROJECT NUMBER:**

**PREPARED BY:**

:



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