

Specifications



Photo is representative



Eaton 3-5013-002A

Eaton DM1 Variable frequency drive, 400 V AC, 3-phase, 23 A, 11 kW, IP20/NEMA0, Radio interference suppression filter, 7-digital display assembly, Setpoint potentiometer, Brake chopper, FS3

General specifications

PRODUCT NAME	Eaton DM1 Variable frequency drive
CATALOG NUMBER	3-5013-002A
MODEL CODE	DM1-34023EB-S20S-EM
EAN	4015081981052
PRODUCT LENGTH/DEPTH	180 mm
PRODUCT HEIGHT	260 mm
PRODUCT WIDTH	130 mm
PRODUCT WEIGHT	3.7 kg
CERTIFICATIONS	EAC UL 508C UL Listed CUL UL Category Control No.: NMMS, NMMS7 UkrSEPRO CSA-C22.2 No. 274-17 UL report applies to both US and Canada UL CSA-C22.2 No. 274-13 IEC/EN61800-3 IEC/EN61800-5 IEC/EN 61800-3 IEC/EN 61800-5-1 RoHS, ISO 9001 CE marking UL File No.: E134360 Certified by UL for use in Canada C-Tick CE IEC/EN 61800-2
GLOBAL CATALOG	3-5013-002A

Product specifications

PRODUCT CATEGORY	Variable frequency drives
FEATURES	Parameterization: Power Xpert inControl Parameterization: Keypad Parameterization: Fieldbus Temperature-controlled fan
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	Does not apply, since the

Resources

APPLICATION NOTES	eaton-connecting-drive-to-generator-supplies-ap040169-en-us.pdf eaton-powerxl-vfd-dual-rating-ap040114-en-us.pdf Electromagnetic compatibility (EMC)
BROCHURES	eaton-powerxl-dm1-variable-frequency-drives-brochure-br040016en-en-us.pdf
CATALOGS	Product Range Catalog Drives Engineering
DECLARATIONS OF CONFORMITY	DA-DC-00004643.pdf DA-DC-00004864.pdf
INSTALLATION INSTRUCTIONS	DM1 IL PUB 53-675 TBG Change Request 12-24-21 Final (300 DPI).pdf
INSTALLATION VIDEOS	PowerXL Variable Frequency Drive DM1 MN040060EN
MANUALS AND USER GUIDES	eaton-variable-frequency-drive-dm1-application-manual-mn040049-en-us.pdf
MCAD MODEL	fs3-89-1313.stp fs3_89_1313.dwg PowerXL DM1 Variable Frequency Drive - Configuration with keypad PowerXL DM1 Variable Frequency Drive - PowerXpert inControl with Bluetooth PowerXL DM1 Variable Frequency Drive - Setup via WebUI PowerXL DM1 Variable Frequency Drive - Establishing a Modbus TCP connection with software Power Xper PowerXL DM1 Variable Frequency Drive - Setup via Software

IMPACT	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:	IGBT inverter Radio interference suppression filter 7-digital display assembly Brake chopper Setpoint potentiometer Internal DC link Breaking resistance Control unit PC connection
POLLUTION DEGREE	2
CLIMATIC PROOFING	< 95 average relative humidity (RH), no condensation, no corrosion
CONNECTION TO SMARTWIRE-DT	Yes In conjunction with DXG-NET-SWD SmartWire DT module
OPERATING MODE	Speed control with slip compensation U/f control

PRODUCT NOTIFICATIONS	eaton-drives-ecodesign-directive-mz040046en-en.pdf
SALES NOTES	eaton-powerxl-dm1-variable-frequency-drives-flyer-fl040006en-en-us.pdf

	Sensorless vector control (SLV) Torque regulation PM motors
FRAME SIZE	FS3
AIR VOLUME CAPACITY	100 m ³ /h
ALTITUDE	Above 1000 m with 1 % derating per 100 m Max. 1000 m Max. 3000 m Max. 2000 m for Corner Grounded TN Systems
ENVIRONMENTAL CLASS	3C2, 3S2 (Air quality)
APPLICATION IN DOMESTIC AND COMMERCIAL AREA PERMITTED	Yes
MAINS SWITCH-ON FREQUENCY	Maximum of one time every 60 seconds
APPLICATION IN INDUSTRIAL AREA PERMITTED	Yes
AMBIENT OPERATING TEMPERATURE - MAX	50 °C
AMBIENT OPERATING TEMPERATURE - MIN	-10 °C
AMBIENT STORAGE TEMPERATURE - MAX	70 °C
AMBIENT STORAGE TEMPERATURE - MIN	-40 °C
ASSIGNED MOTOR CURRENT IM AT 400 V, 50 HZ, 110% OVERLOAD	29.3 A
ASSIGNED MOTOR CURRENT IM AT 400 V, 50 HZ, 150% OVERLOAD	21.7 A
MOUNTING POSITION	Vertical
RATED CONDITIONAL SHORT-CIRCUIT CURRENT (IQ)	100 kA
RELATIVE SYMMETRIC NET FREQUENCY TOLERANCE	10 %
RELATIVE SYMMETRIC NET VOLTAGE TOLERANCE	10 %
PROTECTION	Finger and back-of-hand proof, Protection against direct contact (BGV A3,

	VBG4)
RATED OPERATIONAL POWER AT 500 V, 50 HZ, 3-PHASE, 110% OVERLOAD	18.5 kW
RESOLUTION	0.01 Hz (Frequency resolution, setpoint value)
SWITCH-ON THRESHOLD FOR THE BRAKING TRANSISTOR	800 VDC
VOLTAGE RATING - MAX	500 V
OVERVOLTAGE CATEGORY	III
COMMUNICATION INTERFACE	BACnet TCP SmartWire-DT, optional BACnet MS/TP, built in Modbus RTU, built in DeviceNet, optional CANopen®, optional PROFIBUS, optional Modbus TCP, built in Ethernet IP, built in
CONVERTER TYPE	U converter
DEGREE OF PROTECTION	IP20 NEMA Other
PROTOCOL	BACnet CAN EtherNet/IP MODBUS Other bus systems PROFIBUS TCP/IP
ASSIGNED MOTOR CURRENT IM AT 440 - 480 V, 60 HZ, 150% OVERLOAD	21 A
ASSIGNED MOTOR CURRENT IM AT 440/480 V, 60 HZ, 110% OVERLOAD	27 A
ASSIGNED MOTOR CURRENT IM AT 500 V, 50 HZ, 110% OVERLOAD	28.9 A
ASSIGNED MOTOR CURRENT IM AT 500 V, 50 HZ, 150% OVERLOAD	17.4 A
SYSTEM CONFIGURATION TYPE	TN-S, TN-C, TN-C-S, TT, IT
ELECTROMAGNETIC COMPATIBILITY	1st and 2nd environments (according to EN 61800-3)

ASSIGNED MOTOR POWER AT 460/480 V, 60 HZ	15 HP
ASSIGNED MOTOR POWER AT 460/480 V, 60 HZ, 110% OVERLOAD	20 HP
BRAKING RESISTANCE	26 Ω
EQUIPMENT HEAT DISSIPATION, CURRENT- DEPENDENT PVID	407.4 W
INPUT CURRENT ILN AT 110% OVERLOAD	35.7 A
INPUT CURRENT ILN AT 150% OVERLOAD	26.5 A
MAINS CURRENT DISTORTION	40 %
CURRENT LIMITATION	0.1 - 2 x IH (CT), motor, main circuit
NUMBER OF SLOTS	1 (expansion)
BRAKING TORQUE	Max. 100 % of rated operational current I _e with external braking resistor - Main circuit Max. 30 % MN, Standard - Main circuit Adjustable to 150 %, DC - Main circuit
CABLE LENGTH	C3 \leq 25 m, maximum motor cable length C2 \leq 5 m, maximum motor cable length
FUNCTIONS	4-quadrant operation possible
OUTPUT VOLTAGE (U2)	400 V AC, 3-phase 480 V AC, 3-phase 500 V AC, 3-phase
NUMBER OF INPUTS (ANALOG)	1
NUMBER OF INPUTS (DIGITAL)	4
RADIO INTERFERENCE CLASS	C1: with external filter, for conducted emissions only 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)	0
STARTING CURRENT - MAX	200 %, IH, max. starting current (High Overload), For 2 seconds every 20 seconds, Power section
NUMBER OF PHASES (INPUT)	3
NUMBER OF RELAY OUTPUTS	2 (parameterizable, 1 changeover contact and 1 N/O, 3 A (240 V AC) / 3 A (24 V DC))
NUMBER OF PHASES (OUTPUT)	3
POWER CONSUMPTION	407.4 W
RATED CONTROL SUPPLY VOLTAGE	10 V DC (Us, max. 10 mA)
RATED CONTROL VOLTAGE (UC)	24 V DC (external, max. 100 mA options incl.)
SUPPLY FREQUENCY	50/60 Hz
MAINS VOLTAGE - MAX	480 V
MAINS VOLTAGE - MIN	380 V
NOMINAL OUTPUT CURRENT I2N	23 A
NUMBER OF HW-INTERFACES (INDUSTRIAL ETHERNET)	1
NUMBER OF HW-INTERFACES (OTHER)	1
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	0

(PROFINET)	
NUMBER OF OUTPUTS (ANALOG)	1
OUTPUT AT LINEAR LOAD AT RATED OUTPUT VOLTAGE - MAX	11 kW
OUTPUT AT QUADRATIC LOAD AT RATED OUTPUT VOLTAGE - MAX	15 kW
OUTPUT FREQUENCY - MAX	400 Hz
OUTPUT FREQUENCY - MIN	0 Hz
OUTPUT VOLTAGE - MAX	500 V
OVERLOAD CURRENT IL AT 110% OVERLOAD	34.1 A
OVERLOAD CURRENT IL AT 150% OVERLOAD	34.5 A
SHOCK RESISTANCE	0.75 mm (peak) at 10 - 57 Hz, max. 1 g at 57 - 150 Hz, according to EN 61800-5-1, EN 60068-2-6: 10 - 150 Hz
SUITABLE FOR	Branch circuits, (UL/CSA)
SWITCHING FREQUENCY	4 kHz, 1 - 16 kHz adjustable, fPWM, Power section, Main circuit
RATED OPERATIONAL VOLTAGE	480 V AC, 3-phase 400 V AC, 3-phase 500 V AC, 3-phase
SHORT-CIRCUIT PROTECTION RATING	40 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring
RATED FREQUENCY - MAX	66 Hz
RATED FREQUENCY - MIN	45 Hz
RATED OPERATIONAL CURRENT (IE) AT 110% OVERLOAD	31 A
RATED OPERATIONAL CURRENT (IE) AT 150% OVERLOAD	23 A
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	31 A
RATED OPERATIONAL POWER AT 380/400 V, 50 HZ, 110% OVERLOAD	15 kW

RATED OPERATIONAL POWER AT 380/400 V, 50 HZ, 3-PHASE	11 kW
RATED OPERATIONAL POWER AT 500 V, 50 HZ, 3-PHASE	11 kW
SAFETY FUNCTION/LEVEL	STO (Safe Torque Off, SIL2, PLc Cat 2)
HEAT DISSIPATION AT CURRENT/SPEED	166.7 W at 25% current and 50% speed 170 W at 25% current and 0% speed 205.8 W at 100% current and 50% speed 223.4 W at 50% current and 90% speed 276.5 W at 50% current and 50% speed 326.5 W at 100% current and 0% speed 392.9 W at 100% current and 90% speed 520.8 W at 50% current and 0% speed

PROJECT NAME:

PROJECT NUMBER:

PREPARED BY:

DATE:



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