DATASHEET - DG1-34046FB-C21C



Variable frequency drive, 400 V AC, 3-phase, 46 A, 22 kW, IP21/NEMA1, Brake chopper, DC link choke

Part no. DG1-34046FB-C21C
Catalog No. 9702-3001-00P
Eaton Catalog No. DG1-34046FB-C21C
EL-Nummer 4138076

(Norway)





Delivery program

Delivery program			
Product range			Variable frequency drives
Part group reference (e.g. DIL)			DG1
Rated operational voltage	U _e		400 V AC, 3-phase 480 V AC, 3-phase 500 V AC, 3-phase
Output voltage with $V_{\rm e}$	U ₂		400 V AC, 3-phase 480 V AC, 3-phase 500 V AC, 3-phase
Mains voltage (50/60Hz)	U_{LN}	V	380 (-15%) - 500 (+10%)
Rated operational current			
At 150% overload	I _e	Α	46
At 110% overload	I _e	Α	61
Note			Rated operational current for a switching frequency of 1 - 12 kHz and an ambient temperature of +50 °C for a 150% overload and +40 °C for a 110% overload
Assigned motor rating			
Note			for normal internally and externally ventilated 4 pole, three-phase asynchronous motors with 1500 rpm ⁻¹ at 50 Hz or 1800 min ⁻¹ at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 400 V, 50 Hz
150 % Overload	P	kW	22
110 % Overload	P	kW	30
150 % Overload	I _M	Α	41
110 % Overload	I _M	Α	55.2
Note			at 500 V, 50 Hz
150 % Overload	P	kW	30
110 % Overload	P	kW	37
150 % Overload	I _M	Α	44
110 % Overload	I _M	Α	54
Note			at 480 V, 60 Hz
150 % Overload	P	HP	30
110 % Overload	P	HP	40
150 % Overload	I _M	Α	40
110 % Overload	I _M	Α	52
Degree of Protection			IP21/NEMA1
Interface/field bus (built-in)			Modbus RTU Modbus TCP BACnet MS/TP Ethernet IP
Fieldbus connection (optional)			PROFIBUS CANopen® DeviceNet SmartWire-DT
Fitted with			Radio interference suppression filter Additional PCB protection Multi-line graphic display Brake chopper DC link choke

Frame size	FS3
Connection to SmartWire-DT	yes in conjunction with DXG-NET-SWD SmartWire DT module

Technical data General

General			
Standards			Specification for general requirements: IEC/EN 61800-2 EMC requirements: IEC/EN 61800-3 Safety requirements: IEC/EN 61800-5
Certifications			CE, UL, cUL, c-Tick, UkrSEPRO, EAC
Production quality			RoHS, ISO 9001
Climatic proofing	ρ_{W}	%	< 95%, average relative humidity (RH), non-condensing, non-corrosive
Air quality			3C2, 3S2
Ambient temperature			
operation (150 % overload)	θ	°C	-30 - +50 (max. +60 with 1 % derating per Kelvin temperature rise)
operation (110 % overload)	θ	°C	-30 - +40 (max. +55 mit 1 % Derating pro Kelvin Temperaturerhöhung)
Storage	9	°C	-40 - +70
Overvoltage category			III
Pollution degree			2
Radio interference level			
Radio interference class (EMC)			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.
Environment (EMC)			1st and 2nd environments as per EN 61800-3
maximum motor cable length	I	m	C2 ≤ 10 m C3 ≤ 50 m
Mechanical shock resistance		g	EN 61800-5-1, EN 60068-2-27 UPS drop test (for weights inside the UPS frame) Storage and transportation: maximum 15 g, 11 ms (inside the packaging)
Vibration			EN 61800-5-1, EN 60068-2-6: 5 - 150 Hz Amplitude: 1 mm (peak) at 5 - 15.8 Hz Maximum acceleration amplitude: 1 g at 15.8 — 150 Hz
Mounting position			Vertical
Altitude		m	0 - 1000 m above sea level Above 1000 m: 1% derating for every 100 m max. 3000 m (2000 m for Corner Grounded TN Systems)
Degree of Protection			IP21/NEMA1
Protection against direct contact			BGV A3 (VBG4, finger- and back-of-hand proof)
Main circuit			
Supply			
Rated operational voltage	U _e		400 V AC, 3-phase 480 V AC, 3-phase 500 V AC, 3-phase
Mains voltage (50/60Hz)	U_{LN}	V	380 (-15%) - 500 (+10%)
Input current (150% overload)	I _{LN}	Α	42.6
Input current (110% overload)	I _{LN}	Т	55.7
System configuration			TN-S, TN-C, TN-C-S, TT, IT
Supply frequency	f _{LN}	Hz	50/60
Frequency range	f _{LN}	Hz	45 - 66
Mains switch-on frequency	LIV		Maximum of one time every 60 seconds
Mains current distortion	THD	%	32.6
Rated conditional short-circuit current		kA	<100
Power section	Iq	NA.	1100
			Veriable frequency drive with internal DC link DC link about and ICCT
Function Overland overest (150% overland)		Δ	Variable frequency drive with internal DC link, DC link choke and IGBT inverter
Overload current (150% overload)	IL .	A	69
Overload current (110% overload)	IL	Α	67.1
	1	%	200
max. starting current (High Overload)	Ін		
max. starting current (High Overload) Note about max. starting current	ч		for 2 seconds every 20 seconds

Output Frequency	f ₂	Hz	0 - 50/60 (max. 400)
Switching frequency	f _{PWM}	kHz	4
			adjustable 1 - 12
Operation Mode			U/f control Speed control with slip compensation
			sensorless vector control (SLV) Torque regulation
Frequency resolution (setpoint value)	Δf	Hz	0.01
Rated operational current			
At 150% overload	I _e	Α	46
At 110% overload	I _e	Α	61
Note			Rated operational current for a switching frequency of 1 - 12 kHz and an ambient
			temperature of +50 °C for a 150% overload and +40 °C for a 110% overload
Motor current limit	ı	Α	0.1 - 2 x I _H (CT)
Power loss	_		
Heat dissipation at rated operational current I $_{\rm e}$ =150 %	P_V	W	541
Heat dissipation at rated operational current I _e =110%	P_V	W	818
Efficiency	η	%	97.7
Maximum leakage current to ground (PE) without motor	I _{PE}	mA	12.2
Fan			temperature controlled Tool-less swapping
Internal fan delivery rate		m ³ /h	144
Fitted with			Radio interference suppression filter
			Additional PCB protection Multi-line graphic display
			Brake chopper DC link choke
Safety function			STO (Safe Torque Off, SIL1, PLc Cat 1)
Frame size			FS3
Motor feeder			
Note			for normal internally and externally ventilated 4 pole, three-phase asynchronous motors with 1500 rpm ⁻¹ at 50 Hz or 1800 min ⁻¹ at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 400 V, 50 Hz
150 % Overload	Р	kW	22
110 % Overload	Р	kW	30
Note			at 500 V, 50 Hz
150 % Overload	Р	kW	30
110 % Overload	Р	kW	37
Note			at 480 V, 60 Hz
150 % Overload	Р	HP	30
110 % Overload	Р	HP	40
maximum permissible cable length	I	m	screened: 150
Apparent power	0	1376	40.0
Apparent power at rated operation 400 V	S	kVA	42.3
Apparent power at rated operation 480 V	S	kVA	52.8
Braking function			may 20 % M
Standard braking torque			max. 30 % M _N
DC braking torque			adjustable to 150 %
Braking torque with external braking resistance	D	0	Max. 100% of rated operational current I _e with external braking resistor
minimum external braking resistance	R _{min}	Ω	14
Switch-on threshold for the braking transistor	U _{DC}	V	850 V DC
DC braking	%	I/I _e	≦ 150, adjustable
Control section External control voltage	U _c	V	24 V DC (max. 250 mA options incl.)
Reference voltage	U _s	V	10 V DC (max. 10 mA)
Analog inputs	O _S	, and the second	2, parameterizable, 0 - 10 V DC, 2 - 10 V DC, -10 - +10 V DC, 0/4 - 20 mA
Analog outputs			2, parameterizable, 0 - 10 V DC, 2 - 10 V DC, -10 - +10 V DC, 0/4 - 20 IIIA 2, parameterizable, 0 - 10 V, 0/4 - 20 mA
Digital inputs			8, parameterizable, max. 30 V DC
Digital inputs			o, μαι απιθετεπίζαυτε, πιαχ. 30 v DC

Relay carpuis a parameter parameter and 1 Ny0, S A (240 VAC) (1 S A (240 V			
Expansion slots 2 2	Relay outputs		3, parameterizable, 2 changeover contacts and 1 N/O, 6 A (240 VAC) / 6 A (24 VDC)
Power Wining Safety device fuse or ministure circuit-breaker)	Interface/field bus (built-in)		Modbus TCP BACnet MS/TP
Power Wring Power Wring Image: Company to the property of the propert	Expansion slots		2
Selety device (fuse or miniature circuit-breaker) IEC (Type B, 96), 150 % PKZM4-50 PKZM4-63			
IEC (Type B, gG), 150 %	•		
IEC (Type B, gG), 110 %			
UL (Class CC or J) Mains contactor 150 % overload (CT/I _{II} , at 50 °C) 110 % overload (VT/I _{IL} , at 40 °C) Main choke 150 % overload (CT/I _{II} , at 40 °C) Main choke 150 % overload (VT/I _{IL} , at 40 °C) Radio interference suppression filter (external, 150 %) Radio interference suppression filter (external, 110 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) DX-EMC34-055 DX-EMC34-055			
Mains contactor 150 % overload (CT/I _{III} , at 50 °C) Main choke 150 % overload (CT/I _{III} , at 50 °C) Main choke 150 % overload (CT/I _{III} , at 50 °C) Radio interference suppression filter (external, 150 %) Radio interference suppression filter (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 110 %) Note regarding radio interference suppression filter Note regarding resistance 10 % duty factor (DF) 20 % duty factor (DF) 40 % duty factor (DF) Notes concerning braking resistances: Motor feeder motor choke 150 % overload (CT/I _{III} , at 50 °C) 110 % overload (VT/I _{II} , at 50 °C) Sine filter 150 % overload (VT/I _{II} , at 40 °C) All-pole sine filter	.,, .,		
150 % overload (CT/I _{II} , at 50 °C) 110 % overload (VT/I _L at 40 °C) Main choke 150 % overload (CT/I _{II} , at 50 °C) 110 % overload (CT/I _{II} , at 50 °C) Radio interference suppression filter (external, 150 %) Radio interference suppression filter (external, 110 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 110 %) Note regarding radio interference suppression filter DC link connection Braking resistance 10 % duty factor (DF) 20 % duty factor (DF) 40 % duty factor (DF) Notes concerning braking resistances: Motor feeder motor choke 150 % overload (CT/I _{II} , at 40 °C) 10 % overload (CT/I _{II} , at 40 °C) Sine filter 150 % overload (CT/I _{II} , at 40 °C) All-pole sine filter	UL (Class CC or J)	А	80
110 % overload (VT/I _L , at 40 °C) Main choke 150 % overload (CT/I _H , at 50 °C) Integrated DC link choke, uk = 5% DX-EMC34-055 Radio interference suppression filter (external, 110 %) Radio interference suppression filter, low leakage currents (external, 110 %) Not regarding radio interference suppression filter, low leakage currents (external, 110 %) Not regarding radio interference suppression filter for longer motor cable lengths and for use in different EMC environments DC link connection Braking resistance 10 % duty factor (DF) 20 % duty factor (DF) 40 % duty factor (DF) Notes concerning braking resistances: P:n = 'n' resistors connected in parallel Motor choke 150 % overload (CT/I _H , at 50 °C) DX-LM3-050 DX-LM3-063 Sine filter 150 % overload (CT/I _H , at 40 °C) All-pole sine filter	Mains contactor		
Main choke 150 % overload (CT/l _H , at 50 °C) 110 % overload (CT/l _H , at 40 °C) Radio interference suppression filter (external, 150 %) Radio interference suppression filter (external, 110 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 110 %) Note regarding radio interference suppression filter DX-EMC34-055-L Radio interference suppression filter, low leakage currents (external, 110 %) Note regarding radio interference suppression filter DX-EMC34-055-L Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments DC link connection Braking resistance 10 % duty factor (DF) 20 % duty factor (DF) 40 % duty factor (DF) 50 x DX-BR047-3K1 Final Policy overload (CT/l _H , at 50 °C) DX-LM3-050 DX-LM3-050 DX-LM3-050 DX-LM3-061 All-pole sine filter	150 % overload (CT/I _H , at 50 °C)		DILM40
Integrated DC link choke, uk = 5% 110 % overload (VT/I _{IL} at 40 °C) Radio interference suppression filter (external, 150 %) Radio interference suppression filter (external, 110 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 110 %) Note regarding radio interference suppression filter Note regarding radio interference suppression filter DC link connection Braking resistance 10 % duty factor (DF) 20 % duty factor (DF) 40 % duty factor (DF) Notes concerning braking resistances: P.n = "n" resistors connected in parallel Motor feeder motor choke 150 % overload (CT/I _{II} , at 50 °C) 110 % overload (CT/I _{II} , at 50 °C) Sine filter DX-SIN3-048 All-pole sine filter	110 % overload (VT/I _L , at 40 °C)		DILM50
110 % overload (VT/I _L at 40 °C) Radio interference suppression filter (external, 150 %) Radio interference suppression filter (external, 110 %) Radio interference suppression filter, low leakage currents (external, 110 %) Radio interference suppression filter, low leakage currents (external, 110 %) Note regarding radio interference suppression filter Note regarding radio interference suppression filter DC link connection Braking resistance 10 % duty factor (DF) 20 % duty factor (DF) Notes concerning braking resistances: P:n = 'n' resistors connected in parallel Motor feeder motor choke 150 % overload (CT/I _H , at 50 °C) 110 % overload (VT/I _L at 40 °C) Sine filter 150 % overload (VT/I _L at 40 °C) All-pole sine filter	Main choke		
Radio interference suppression filter (external, 150 %) Radio interference suppression filter (external, 110 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 110 %) Note regarding radio interference suppression filter DY-EMC34-075-L DX-EMC34-075-L DX-EMC34-075-L Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments DC link connection Braking resistance 10 % duty factor (DF) 20 % duty factor (DF) 40 % duty factor (DF) Notes concerning braking resistances: Pr.a = "n" resistors connected in parallel Motor feeder motor choke 150 % overload (CT/l _H , at 50 °C) 110 % overload (VT/l _L , at 40 °C) Sine filter 150 % overload (VT/l _L , at 40 °C) All-pole sine filter	150 % overload (CT/I _H , at 50 °C)		Integrated DC link choke, uk = 5%
Radio interference suppression filter (external, 110 %) Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 110 %) Note regarding radio interference suppression filter DY-EMC34-075-L DX-EMC34-075-L DX-EMC34-075-L Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments DC link connection Braking resistance 10 % duty factor (DF) 20 % duty factor (DF) 40 % duty factor (DF) Notes concerning braking resistances: Notes concerning braking resistances: Motor feeder motor choke 150 % overload (CT/l _H , at 50 °C) 110 % overload (VT/l _L , at 40 °C) Sine filter 150 % overload (CT/l _H , at 50 °C) 110 % overload (VT/l _L , at 40 °C) All-pole sine filter	110 % overload (VT/I _L , at 40 °C)		Integrated DC link choke, uk = 5%
Radio interference suppression filter, low leakage currents (external, 150 %) Radio interference suppression filter, low leakage currents (external, 110 %) Note regarding radio interference suppression filter Note regarding radio interference suppression filter DC link connection Braking resistance 10 % duty factor (DF) 20 % duty factor (DF) 40 % duty factor (DF) Notes concerning braking resistances: P:3 x DX-BR047-3K1 40 % duty factor (DF) Notes concerning braking resistances: Motor feeder motor choke 150 % overload (CT/l _H , at 50 °C) 110 % overload (VT/l _L , at 40 °C) Sine filter DX-SIN3-048 DX-SIN3-048 DX-SIN3-061 All-pole sine filter	Radio interference suppression filter (external, 150 %)		DX-EMC34-055
Radio interference suppression filter, low leakage currents (external, 110 %) Note regarding radio interference suppression filter DC link connection Braking resistance 10 % duty factor (DF) 20 % duty factor (DF) 40 % duty factor (DF) Notes concerning braking resistances: P:3 x DX-BR047-3K1 40 % duty factor (DF) Notes concerning braking resistances: P:3 x DX-BR047-3K1 P:3 x DX-BR047-9K2 Notes concerning braking resistances: P:n = "n" resistors connected in parallel Motor feeder motor choke 150 % overload (CT/I _H , at 50 °C) 110 % overload (VT/I _L , at 40 °C) Sine filter DX-LM3-063 DX-LM3-063 DX-SIN3-048 All-pole sine filter	Radio interference suppression filter (external, 110 %)		DX-EMC34-075
Note regarding radio interference suppression filter DC link connection Braking resistance 10 % duty factor (DF) 20 % duty factor (DF) 40 % duty factor (DF) Notes concerning braking resistances: Motor feeder motor choke 150 % overload (CT/I _H , at 50 °C) 110 % overload (VT/I _L , at 40 °C) All-pole sine filter Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments P:3 x DX-BR047-3K1 P:3 x DX-BR047-3K1 P:3 x DX-BR047-3K1 P:3 x DX-BR047-9K2 DX-LM3-09K2 DX-LM3-050 DX-LM3-050 DX-LM3-063	Radio interference suppression filter, low leakage currents (external, 150 $\%)$		DX-EMC34-055-L
lengths and for use in different EMC environments DC link connection	Radio interference suppression filter, low leakage currents (external, 110 %)		DX-EMC34-075-L
Braking resistance P:3 x DX-BR047-3K1 10 % duty factor (DF) P:3 x DX-BR047-5K1 40 % duty factor (DF) P:3 x DX-BR047-9K2 Notes concerning braking resistances: P:n = "n" resistors connected in parallel Motor feeder DX-LM3-050 150 % overload (CT/I _H , at 50 °C) DX-LM3-050 110 % overload (VT/I _L , at 40 °C) DX-LM3-063 Sine filter DX-SIN3-048 110 % overload (VT/I _L , at 40 °C) DX-SIN3-061 All-pole sine filter DX-SIN3-061	Note regarding radio interference suppression filter		
10 % duty factor (DF) 20 % duty factor (DF) 40 % duty factor (DF) 40 % duty factor (DF) P:3 x DX-BR047-5K1 P:3 x DX-BR047-5K1 P:3 x DX-BR047-9K2 Notes concerning braking resistances: P:n = "n" resistors connected in parallel Motor feeder motor choke 150 % overload (CT/I _H , at 50 °C) DX-LM3-050 DX-LM3-050 Sine filter 150 % overload (CT/I _H , at 50 °C) DX-SIN3-063 Sine filter 150 % overload (CT/I _H , at 50 °C) DX-SIN3-048 DX-SIN3-061 All-pole sine filter	DC link connection		
20 % duty factor (DF) 40 % duty factor (DF) P:3 x DX-BR047-9K2 Notes concerning braking resistances: P:n = "n" resistors connected in parallel Motor feeder motor choke 150 % overload (CT/I _H , at 50 °C) DX-LM3-050 DX-LM3-063 Sine filter 150 % overload (CT/I _H , at 50 °C) DX-SIN3-048 110 % overload (VT/I _L at 40 °C) All-pole sine filter	Braking resistance		
40 % duty factor (DF) Notes concerning braking resistances: Motor feeder motor choke 150 % overload (CT/I _H , at 50 °C) 110 % overload (VT/I _L , at 40 °C) Sine filter 150 % overload (VT/I _L , at 40 °C) DX-SIN3-048 All-pole sine filter P:3 x DX-BR047-9K2 P:n = "n" resistors connected in parallel DX-LM3-050 DX-LM3-050 DX-LM3-050 DX-LM3-063 DX-SIN3-063	10 % duty factor (DF)		P:3 x DX-BR047-3K1
Notes concerning braking resistances: Motor feeder motor choke 150 % overload (CT/I _H , at 50 °C) 110 % overload (VT/I _L , at 40 °C) Sine filter 150 % overload (CT/I _H , at 50 °C) DX-LM3-063 Sine filter DX-SIN3-048 110 % overload (VT/I _L , at 40 °C) DX-SIN3-061 All-pole sine filter	20 % duty factor (DF)		P:3 x DX-BR047-5K1
Motor feeder motor choke 150 % overload (CT/I _H , at 50 °C) DX-LM3-050 110 % overload (VT/I _L , at 40 °C) DX-LM3-063 Sine filter DX-SIN3-048 110 % overload (VT/I _L , at 40 °C) DX-SIN3-048 All-pole sine filter DX-SIN3-061	40 % duty factor (DF)		P:3 x DX-BR047-9K2
motor choke DX-LM3-050 150 % overload (CT/I _H , at 50 °C) DX-LM3-050 110 % overload (VT/I _L , at 40 °C) DX-LM3-063 Sine filter DX-SIN3-048 110 % overload (VT/I _L , at 40 °C) DX-SIN3-061 All-pole sine filter DX-SIN3-061	Notes concerning braking resistances:		P:n = "n" resistors connected in parallel
150 % overload (CT/I _H , at 50 °C) 110 % overload (VT/I _L , at 40 °C) DX-LM3-050 DX-LM3-063 Sine filter 150 % overload (CT/I _H , at 50 °C) DX-SIN3-048 110 % overload (VT/I _L , at 40 °C) DX-SIN3-061 All-pole sine filter	Motor feeder		
110 % overload (VT/I _L , at 40 °C) DX-LM3-063 Sine filter DX-SIN3-048 150 % overload (CT/I _H , at 50 °C) DX-SIN3-048 110 % overload (VT/I _L , at 40 °C) DX-SIN3-061 All-pole sine filter DX-SIN3-061	motor choke		
Sine filter 150 % overload (CT/I _H , at 50 °C) DX-SIN3-048 110 % overload (VT/I _L , at 40 °C) DX-SIN3-061 All-pole sine filter	150 % overload (CT/I _H , at 50 °C)		DX-LM3-050
150 % overload (CT/I _H , at 50 °C) DX-SIN3-048 110 % overload (VT/I _L , at 40 °C) DX-SIN3-061 All-pole sine filter	110 % overload (VT/I _L , at 40 °C)		DX-LM3-063
110 % overload (VT/I _L , at 40 °C) All-pole sine filter DX-SIN3-061	Sine filter		
All-pole sine filter	150 % overload (CT/I _H , at 50 °C)		DX-SIN3-048
	110 % overload (VT/I _L , at 40 °C)		DX-SIN3-061
150 % overload (CT/I _H , at 50 °C) DX-SIN3-046-A	All-pole sine filter		
	150 % overload (CT/I _H , at 50 °C)		DX-SIN3-046-A

1, parameterizable, 24 V DC

Design verification as per IEC/EN 61439

Digital outputs

·			
Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	46
Heat dissipation per pole, current-dependent	P _{vid}	W	0
Equipment heat dissipation, current-dependent	P _{vid}	W	818
Static heat dissipation, non-current-dependent	P_{vs}	W	24.12
Heat dissipation capacity	P _{diss}	W	0
Operating ambient temperature min.		°C	-30
Operating ambient temperature max.		°C	60
			Operation (with 150 % overload), allow for derating
IEC/EN 61439 design verification			
10.2 Strength of materials and parts			
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 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric 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 Insulation properties	
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.

Technical data ETIM 7.0

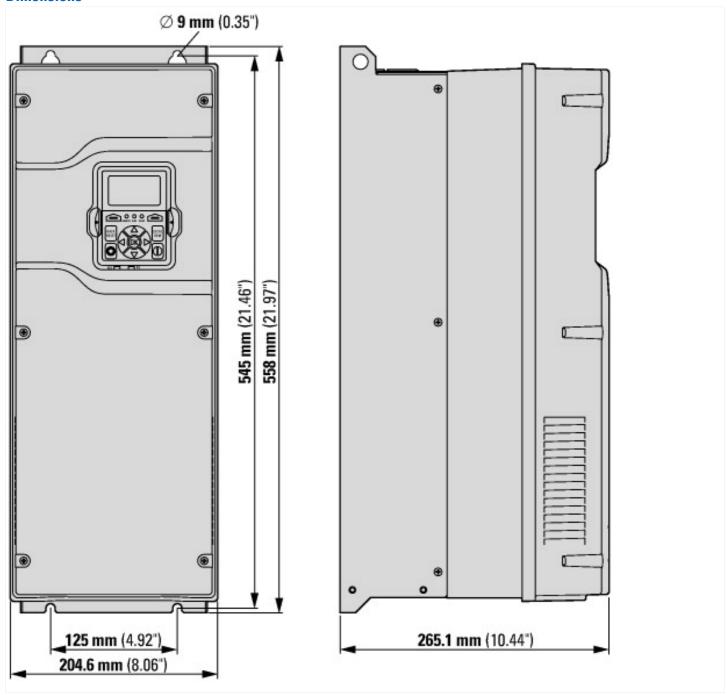
Toomical data Ellivi 7.0		
Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)		
Electric engineering, automation, process control engineering / Electrical drive / Static fre	quency converte	r / Static frequency converter = < 1 kV (ecl@ss10.0.1-27-02-31-01 [AKE177014])
Mains voltage	V	380 - 480
Mains frequency		50/60 Hz
Number of phases input		3
Number of phases output		3
Max. output frequency	Hz	400
Max. output voltage	V	480
Nominal output current I2N	А	61
Max. output at quadratic load at rated output voltage	kW	30
Max. output at linear load at rated output voltage	kW	44
Relative symmetric net frequency tolerance	%	10
Relative symmetric net voltage tolerance	%	10
Number of analogue outputs		2
Number of analogue inputs		2
Number of digital outputs		1
Number of digital inputs		8
With control unit		Yes
Application in industrial area permitted		Yes
Application in domestic- and commercial area permitted		Yes
Supporting protocol for TCP/IP		Yes
Supporting protocol for PROFIBUS		Yes
Supporting protocol for CAN		Yes
Supporting protocol for INTERBUS		No
Supporting protocol for ASI		No
Supporting protocol for KNX		No
Supporting protocol for MODBUS		Yes
Supporting protocol for Data-Highway		No
Supporting protocol for DeviceNet		Yes
Supporting protocol for SUCONET		No
Supporting protocol for LON		No

Supporting protocol for RRDFINET IOR Yes Supporting protocol for SEROS No Supporting protocol for ExeroNation Fieldbus No Supporting protocol for ExeroNation Fieldbus No Supporting protocol for ExeroNation Fieldbus No Supporting protocol for ExeroNatife No Supporting protocol for AS-Interface Safety at Work No Supporting protocol for INTERBUS-Safety No Supporting protocol for INTERBUS-Safety No Supporting protocol for PRDFIsafe No Supporting protocol for SafetyBUS P No Supporting protocol for Other bus systems Yes Supporting protocol for SafetyBUS P No Number of HW-interfaces industrial Ethront Q Number of HW-interfaces industrial Ethront Q Number of HW-interfaces RY-22 Q Number of HW-interfaces RY-23 Q Number of HW-interfaces Parallel			
Supporting protocol for SERCOS No Supporting protocol for Foundation Fieldbus No Supporting protocol for Far-Interface Safety at Work No Supporting protocol for DeviceNet Safety No Supporting protocol for Interface Safety at Work No Supporting protocol for DeviceNet Safety No Supporting protocol for INTERBUS-Safety No Supporting protocol for PROFIsale No Supporting protocol for BAChet Yes Supporting protocol for BAChet Yes Supporting protocol for other bus systems 1 Number of HW-interfaces RS-232 0 Number of HW-interfaces RS-232 0 Number of HW-interfaces RS-425 1 Number of HW-interfaces RS-425 0 Number of HW-interfaces RS-426 1 Number of HW-interfaces sparallel 0 Number of HW-interfaces Staff 1 Number of HW-interfaces sparallel 9 Number of HW-interfaces Staff 1 Number of HW-interfaces parallel 9 Number of HW-interfaces Staff 1 Yes	Supporting protocol for PROFINET IO		Yes
Supporting protocol for Foundation Fieldbus No Supporting protocol for EthenNet/IP No Supporting protocol for AS-Interface Safety at Work No Supporting protocol for DeviceNet Safety No Supporting protocol for PROFISEBUS Safety No Supporting protocol for PROFISEGE No Supporting protocol for SafetyBUS p No Supporting protocol for SafetyBUS p Yes Supporting protocol for Other bus systems Yes Supporting protocol for Other bus systems Yes Number of HW-interfaces industrial Ethernet Yes Number of HW-interfaces RS-322 0 Number of HW-interfaces RS-323 Yes Number of HW-interfaces RS-425 0 Number of HW-interfaces RS-426 Yes Number of HW-interfaces sorial TTY 0 Number of HW-interfaces surial TTY Yes Number of HW-interfaces surial HW-interfaces surial TY Yes Number of HW-interfaces surial TY Yes Number of HW-interfaces surial TY Yes Number of HW-interfaces surial TY Yes Yes Yes <td>Supporting protocol for PROFINET CBA</td> <td></td> <td>No</td>	Supporting protocol for PROFINET CBA		No
Supporting protocol for EthenevIP No Supporting protocol for AS-Interface Safety at Work No Supporting protocol for DeviceNet Safety No Supporting protocol for PROFISAGE No Supporting protocol for PROFISAGE No Supporting protocol for SafetyBUS p No Supporting protocol for BACheat Yes Supporting protocol for other bus systems Yes Number of HW-interfaces industrial Ethernet 1 Number of HW-interfaces industrial Ethernet 0 Number of HW-interfaces RS-322 0 Number of HW-interfaces RS-422 0 Number of HW-interfaces RS-428 0 Number of HW-interfaces USB 0 Number of HW-interfaces BUS 0 Number of HW-interfaces USB 0 Number of HW-interfaces Bus 0 Number of HW-interfaces USB 0 Vist 0 Vist<	Supporting protocol for SERCOS		No
Supporting protocol for AS-Interface Safety at Work No Supporting protocol for DeviceNet Safety No Supporting protocol for INTERBUS-Safety No Supporting protocol for INTERBUS-Safety No Supporting protocol for RAGIPAISE No Supporting protocol for SafetyBUS p No Supporting protocol for BACnet Yes Supporting protocol for other bus systems Yes Number of HW-interfaces industrial Ethernet 1 Number of HW-interfaces RS-232 0 Number of HW-interfaces RS-428 0 Number of HW-interfaces RS-428 1 Number of HW-interfaces parallel 0 Number of HW-interfaces parallel 0 Number of HW-interfaces other 1 With Optical interface No With PC connection Yes Integrated breaking resistance Yes 4-quadrant operation possible Yes Type of converter P21 Degree of protection (IP) U converter Degree of protection (IPMA) U converter Degree of protection (NEMA) mm <td>Supporting protocol for Foundation Fieldbus</td> <td></td> <td>No</td>	Supporting protocol for Foundation Fieldbus		No
Supporting protocol for DeviceNet Safety No Supporting protocol for INTERBUS-Safety No Supporting protocol for PROFIsafe No Supporting protocol for SafetyBUS p No Supporting protocol for BACnet Yes Supporting protocol for other bus systems Yes Number of IW-interfaces industrial Ethernet 1 Number of IW-interfaces RS-232 0 Number of IW-interfaces RS-428 0 Number of IW-interfaces RS-485 1 Number of IW-interfaces RS-485 0 Number of IW-interfaces parallel 0 Number of IW-interfaces parallel 0 Number of IW-interfaces parallel 0 Number of IW-interfaces other 1 With optical interface No With Optical interface with optical interface Yes 4-quadrant operation possible Yes 4-quadrant operation possible Yes 1 perfection (IP) 1 Degree of protection (IP) 1 Degree of protection (IPMA) 1 Height mm 558	Supporting protocol for EtherNet/IP		No
Supporting protocol for PNDFIsafe No Supporting protocol for SafetyBUS p No Supporting protocol for SafetyBUS p Yes Supporting protocol for BACnet Yes Supporting protocol for other bus systems Yes Number of HW-interfaces industrial Ethernet 1 Number of HW-interfaces RS-322 0 Number of HW-interfaces RS-422 0 Number of HW-interfaces RS-425 0 Number of HW-interfaces RS-485 1 Number of HW-interfaces serial TTY 0 Number of HW-interfaces serial TTY 0 Number of HW-interfaces serial TTY 0 Number of HW-interfaces uSB 0 Number of HW-interfaces other 1 With optical interface No With PC connection Yes Integrated breaking resistance Yes 4-quadrant operation possible Yes Type of converter U converter Degree of protection (IP) IP21 Degree of protection (NEMA) Integrated protection (NEMA) Height mm 558	Supporting protocol for AS-Interface Safety at Work		No
Supporting protocol for SAfetyBUS p No Supporting protocol for SACnet 1 Yes Supporting protocol for BACnet 1 Yes Supporting protocol for other bus systems 1 1 Number of HW-interfaces industrial Ethernet 1 1 Number of HW-interfaces RS-232 0 0 Number of HW-interfaces RS-422 0 0 Number of HW-interfaces RS-485 1 1 Number of HW-interfaces serial TTY 0 0 Number of HW-interfaces usb 1 0 Number of HW-interfaces berial TTY 0 0 Number of HW-interfaces usb 1 0 Number of HW-interfaces brailed 1 0 Number of HW-interfaces other 1 No With potical interface 9 No With potical interface 9 Yes 4-quadrant operation possible 9 Yes Type of converter 1 U converter Degree of protection (IP) 1 1 Degree of protection (NEMA) <td>Supporting protocol for DeviceNet Safety</td> <td></td> <td>No</td>	Supporting protocol for DeviceNet Safety		No
Supporting protocol for SafetyBUS p No Supporting protocol for BACnet Yes Supporting protocol for other bus systems Yes Number of HW-interfaces industrial Ethernet 1 Number of HW-interfaces PROFINET 0 Number of HW-interfaces RS-232 0 Number of HW-interfaces RS-428 0 Number of HW-interfaces RS-485 1 Number of HW-interfaces usb 0 Vith optical interface 0 With optical interface No With pC connection 9 Integrated breaking resistance 9 4-quadrant operation possible 7 Type of converter 1 Degree of protection (IP) 1 Degree of protection (NEMA) 1 Height Mm 58 Width Mm 58 Width Mm 58 <t< td=""><td>Supporting protocol for INTERBUS-Safety</td><td></td><td>No</td></t<>	Supporting protocol for INTERBUS-Safety		No
Supporting protocol for BACnet Yes Supporting protocol for other bus systems Yes Number of HW-interfaces industrial Ethernet 1 Number of interfaces PROFINET 0 Number of HW-interfaces RS-232 0 Number of HW-interfaces RS-422 0 Number of HW-interfaces serial TTY 0 Number of HW-interfaces serial TTY 0 Number of HW-interfaces parallel 0 Number of HW-interfaces other 1 With optical interface No With PC connection Yes Integrated breaking resistance Yes 4-quadrant operation possible Yes Type of converter U converter Degree of protection (IP) IP21 Degree of protection (NEMA) 1 Height mm 558 Width mm 500	Supporting protocol for PROFIsafe		No
Supporting protocol for other bus systems Number of HW-interfaces industrial Ethernet Number of interfaces PROFINET Number of HW-interfaces RS-232 Number of HW-interfaces RS-422 Number of HW-interfaces RS-425 Number of HW-interfaces serial TTY Number of HW-interfaces serial TTY Number of HW-interfaces serial TTY Number of HW-interfaces parallel Number of HW-interfaces other Number of HW-interfaces other Number of HW-interfaces other Number of HW-interfaces other No Virth optical interface Virth optic	Supporting protocol for SafetyBUS p		No
Number of HW-interfaces industrial Ethernet 1 Number of interfaces PR0FINET 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 HW-interfaces parallel 0 Number of HW-interfaces other 1 With optical interface No With PC connection Yes Vith optical interface Yes Vith optical interface other U converter 4-quadrant operation possible Yes 1-quadrant operation possible Yes 1-yee of converter U converter Degree of protection (IP) IP21 Degree of protection (NEMA) Imm 558 Withth Mm 500	Supporting protocol for BACnet		Yes
Number of interfaces PROFINET 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 HW-interfaces parallel 0 Number of HW-interfaces other 1 With optical interface No With PC connection Yes With aptical breaking resistance Yes 4-quadrant operation possible Yes Type of converter U converter Degree of protection (IP) IP21 Degree of protection (NEMA) Integrated Integrate	Supporting protocol for other bus systems		Yes
Number of HW-interfaces RS-322 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 HW-interfaces parallel 0 Number of HW-interfaces other 1 With optical interface No With PC connection Yes Integrated breaking resistance Yes 4-quadrant operation possible Yes Type of converter U converter Degree of protection (IP) IP21 Degree of protection (NEMA) 1 Height mm 558 Width mm 558	Number of HW-interfaces industrial Ethernet		1
Number of HW-interfaces RS-422 Number of HW-interfaces RS-485 Number of HW-interfaces serial TTY Number of HW-interfaces USB Number of HW-interfaces USB Number of HW-interfaces parallel Number of HW-interfaces other Number of HW-interfaces other No With optical interface With proconnection Integrated breaking resistance 4-quadrant operation possible Type of converter Degree of protection (IP) Degree of protection (IP) Degree of protection (NEMA) Height Mm Mm Mm Mm Mm Mm Mm Mm Mm M	Number of interfaces PROFINET		0
Number of HW-interfaces RS-485 Number of HW-interfaces serial TTY Number of HW-interfaces USB Number of HW-interfaces parallel Number of HW-interfaces parallel Number of HW-interfaces other Vith optical interface With Optical interface With PC connection Vith PC connection Vith Quadrant operation possible Type of converter Degree of protection (IP) Degree of protection (NEMA) Height Width Midth I 1 I 1 I 1 I 1 I 1 I 1 I 1 I	Number of HW-interfaces RS-232		0
Number of HW-interfaces USB Number of HW-interfaces USB Number of HW-interfaces parallel Number of HW-interfaces other Number of HW-interfaces other Number of HW-interfaces other No With optical interface With PC connection Integrated breaking resistance 4-quadrant operation possible Type of converter Degree of protection (IP) Degree of protection (NEMA) Height Width Mmm 558 Width	Number of HW-interfaces RS-422		0
Number of HW-interfaces USB Number of HW-interfaces parallel Number of HW-interfaces other 1 With optical interface With PC connection Number of HW-interfaces other Integrated breaking resistance 4-quadrant operation possible Type of converter Degree of protection (IP) Degree of protection (NEMA) Height Width Midth O O O O O O O O O O O O O	Number of HW-interfaces RS-485		1
Number of HW-interfaces parallel Number of HW-interfaces other 1 With optical interface With PC connection With PC connection Integrated breaking resistance 4-quadrant operation possible Type of converter Degree of protection (IP) Degree of protection (NEMA) Height Width Degree of with the state of	Number of HW-interfaces serial TTY		0
Number of HW-interfaces other With optical interface With PC connection With PC connection Integrated breaking resistance 4-quadrant operation possible Type of converter Degree of protection (IP) Degree of protection (NEMA) Height mm Degree of protection (NEMA) Width I I I I I I I I I I I I I	Number of HW-interfaces USB		0
With optical interface With PC connection Ves Integrated breaking resistance 4-quadrant operation possible Type of converter Degree of protection (IP) Degree of protection (NEMA) Height Midth No Yes Yes U converter U converter IP21 1 1 1 1 1 1 1 1 1 1 1 1	Number of HW-interfaces parallel		0
With PC connection Integrated breaking resistance 4-quadrant operation possible Type of converter Degree of protection (IP) Degree of protection (NEMA) Height Width Yes Yes Yes Yes Yes I converter I p21 I height mm 558 Width	Number of HW-interfaces other		1
Integrated breaking resistance 4-quadrant operation possible Type of converter U converter Degree of protection (IP) IP21 Degree of protection (NEMA) I Height mm 558 Width mm 200	With optical interface		No
4-quadrant operation possible Type of converter Degree of protection (IP) Degree of protection (NEMA) Height Width Yes U converter IP21 IP21 IP21 Width I 1 IP21	With PC connection		Yes
Type of converter Degree of protection (IP) Degree of protection (NEMA) Height mm 558 Width Width U converter IP21 1 1 200	Integrated breaking resistance		Yes
Degree of protection (IP) Degree of protection (NEMA) Height mm 558 Width mm 200	4-quadrant operation possible		Yes
Degree of protection (NEMA) 1 Height mm 558 Width mm 200	Type of converter		U converter
Height mm 558 Width mm 200	Degree of protection (IP)		IP21
Width mm 200	Degree of protection (NEMA)		1
	Height	mm	558
	Width	mm	200
Depth mm 252	Depth	mm	252

Approvals

Product Standards	UL508C, CSA-C22.2 No. 274-13; IEC/EN61800-3; IEC/EN61800-5; CE marking
UL File No.	E134360
UL Category Control No.	NMMS, NMMS7
CSA File No.	UL report applies to both US and Canada
North America Certification	UL listed, certified by UL for use in Canada
Suitable for	Branch circuits
Max. Voltage Rating	3~500 V AC IEC: TN-S UL/CSA: 'Y' (Solidly Grounded Wey)
Degree of Protection	IP21/NEMA1

Dimensions



Additional product information (links)

Documentation	http://www.eaton.eu/Europe/Electrical/ProductsServices/AutomationControl/ SwitchingProtectingDrivingMotors/PowerXLfrequencydrives/DG1GeneralPurposeDrives/index.htm? wtredirect=www.eaton.eu/dg1#tabs-7
Manuals	lem:http://www.eaton.eu/Europe/Electrical/ProductsServices/AutomationControl/SwitchingProtectingDrivingMotors/PowerXLfrequencydrives/DG1GeneralPurposeDrives/index.htm? wtredirect=www.eaton.eu/dg1#tabs-8