## DATASHEET - DA1-35022NB-B55C

Variable frequency drive, 500 V AC, 3-phase, 22 A, 15 kW, IP55/NEMA 12, OLED display



Part no.	DA1-35022NB-B55C
	176965
EL Number	4110130
(Norway)	

## **General specifications**

Connection to SmartWire-DT   Connection to SmartWire-DT     Degree of protection   Field and the state of protection     Field with:   Field and the state of th	General specifications	
EA   413801714897     Product height   403801714897     Product height   400 millimetre     Product height   400 millimetre     Product height   115 kingsam     Broduct height   115 kingsam     Gardifications   Sample of the second	Product name	Eaton DA1 Variable frequency drive
Product Langtb/Depth   240 millinetice     Product veloph   200 millinetice     Product V	Part no.	DA1-35022NB-B55C
Product height   6   60 millinete     Product weight   17 millineters     Centioations   18 Market   17 millineters     Centioations   18 Market   18 Market     Centioations   19 Market   19 Market     Product height   19 Market   19 Market     Cable leight   19 Market   19 Market	EAN	4015081714087
Product weight   113 kilogram     Centrications   115 kilogram     Centrications   115 kilogram     Centrications   115 kilogram     Centrications   115 kilogram     Sected Sec	Product Length/Depth	240 millimetre
Product weight   Is biags m     Gerdinications   UL Gregory Carrot Not. NMMS , NMMS 7 (Contraginge)     Sector Secto	Product height	450 millimetre
Cartifications   IL Catagor Current No: NMMS7     Cartifications   IL Catagor Current No: NMMS7     Cartifications   International Current No: NMMS7     Cartifications   International Current No: NMMS7     Product Tradename   International Current No: NMMS7     Catalion Noss   Internation Current No: NMMS7     Catalion	Product width	173 millimetre
Product Tradename   Image: Specification for general requirements: ECEN S1800-2     Product Tradename   Image: Specification for general requirements: ECEN S1800-2     Product Tradename   Image: Specification for general requirements: ECEN S1800-2     Product Tradename   Image: Specification for general requirements: ECEN S1800-2     Product Tradename   Image: Specification for general requirements: ECEN S1800-2     Product Tradename   Image: Specification for general requirements: ECEN S1800-2     Product Tradename   Image: Specification for general requirements: ECEN S1800-2     Product Tradename   Image: Specification for general requirements: ECEN S1800-2     Product Tradename   Image: Specification for general requirements: ECEN S1800-2     Product Sup Type   Image: Specification for general requirements: ECEN S1800-2     Catalig Notes   Image: Specification for general requirements: ECEN S1800-2     General Information   Image: Specification for general requirements: ECEN S1800-2     General Information   Image: Specification for general requirements: ECEN S1800-2     General Information   Image: Specification for general requirements: ECEN S1800-2     General Information   Image: Specification for general requirements: ECEN S1800-2     General Information   Image: Specification for genenal requirements: ECEN S1800-2 <td>Product weight</td> <td>11.5 kilogram</td>	Product weight	11.5 kilogram
Product Type   Variable frequency drive     Product Sub Type   None     Catalog Notes   The brake resistors are assigned based on the maximum rated power of the variable frequency drive. Additional brake resistors and designs (e.g. different due cycles) are available upon request.     Seneral information   Image: Communication interface     Cable length   200 m, screened, maximum permissible, Motor feeder 100 m, screened, maximum permissible, Motor feeder 100 m, unscreened, maximum permissible, Motor	Certifications	Certified by UL for use in Canada IEC/EN61800-5 Specification for general requirements: IEC/EN 61800-2 DNV RoHS, ISO 9001 UL report applies to both US and Canada UL File No.: E172143 CUL UkrSEPRO UL 508C Safety: EN 61800-5-1: 2003 EAC IEC/EN 61800-3 CE RCM UL CSA-C22.2 No. 14
Product Six Type   None     Catalog Notes   The brake resistors are assigned based on the maximum rated power of the variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional brake resistors and designs (e.g. different du variable reguency drive. Additional Prake (e.g. drive.)     Communication interface   200 m. screened, with motor choke, maximum permissible, Motor feeder 150 m. screened, with motor choke, maximum permissible, Motor feeder 150 m. screened, with motor choke, maximum permissible, Motor feeder 150 m. scree	Product Tradename	DA1
Catalog Notes   Important provide and an analysis of the sectors are assigned based on the maximum rated power of the variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive. Additional brake resistors and designs (e.g., different due variable requency drive.)     Communication interface	Product Type	Variable frequency drive
Cable lengthCommunicationCable lengthCommunication interfaceCommunication interfaceCommunication interfaceCommunication interfaceCommunication interfaceConnection to SmartWire-DTCommunication interfaceCommunication interfaceDegree of protectionCommunication interfaceCommunication interfaceParame sizeCommunication interfaceCommunication interfaceFitted with:Communication interfaceCommunication interfaceConnection to SmartWire-DTCommunication interfaceCommunication interfacePages of protectionCommunication interfaceCommunication interfaceFitted with:Communication interfaceCommunication interfacePages of protectionCommunication interfaceCommunication interfacePages of protectionCommunication interfaceCommunication interfaceFitted with:Communication interfaceCommunication interfaceFitted with:Communicat	Product Sub Type	None
Cable length   200 m, screened, with motor choke, maximum permissible, Motor feeder     Communication interface   100 m, screened, with motor choke, maximum permissible, Motor feeder     Communication interface   Modbus RTU, built in     Communication interface   Modbus RTU, built in     Connection to SmartWire-DT   Modbus RTU, built in     Degree of protection   In conjunction with DX-NET-SWD1 SmartWire DT module     Fitted with:   Internal DC link     Fitted with:   Internal DC link     Fitted with:   Internal DC link     Frame size   FX4     Functions   FX4     Mounting position   FX4     Mounting position   FX4	Catalog Notes	variable frequency drive. Additional brake resistors and designs (e.g. different duty
I to m, unscreened, maximum permissible, Motor feeder 10 m, unscreened, maximum permissible, Motor feeder 300 m, unscreened, with motor choke, maximum permissible, Motor feeder 300 m, unscreened, with motor choke, maximum permissible, Motor feeder 300 m, unscreened, with motor choke, maximum permissible, Motor feeder 300 m, unscreened, with motor choke, maximum permissible, Motor feeder 300 m, unscreened, with motor choke, maximum permissible, Motor feeder 300 m, unscreened, with motor choke, maximum permissible, Motor feeder 300 m, unscreened, with motor choke, maximum permissible, Motor feeder 300 m, unscreened, with motor choke, maximum permissible, Motor feeder 300 m, unscreened, with motor choke, maximum permissible, Motor feeder sible, Motor feederCommunication interfaceOP-Bus (R\$485), built in CANopen8, built in CANopen8, built in DeviceNet, optional POFINEU, optional 	General information	
Image: Problem Scheme	Cable length	150 m, unscreened, maximum permissible, Motor feeder 100 m, screened, maximum permissible, Motor feeder
Image: Peer of protectionYes 'Degree of protectionIMMA 12Fitted with:Image: Peer of protectionFitted with:Image: Peer of protectionPeer of protectionImage: Peer of protectionFitted with:Image: Peer of protectionFitted with:Image: Peer of peer	Communication interface	OP-Bus (RS485), built in CANopen®, built in Ethernet IP, optional SmartWire-DT, optional EtherCAT, optional DeviceNet, optional Modbus-TCP, optional PROFIBUS, optional
Fitted with:IP55Fitted with:Internal DC link OLED display PC connection Breaking resistance Brake chopper Additional PCB protection IGBT inverter Control unitFrame sizeIMMFunctionsIMMFunctionsIMMMounting positionIMM	Connection to SmartWire-DT	
Image: Problem is a start of the start of	Degree of protection	
Functions A 4-quadrant operation possible   Mounting position A Vertical	Fitted with:	OLED display PC connection Breaking resistance Brake chopper Additional PCB protection IGBT inverter
Mounting position Vertical	Frame size	FS4
	Functions	4-quadrant operation possible
Product Category	Mounting position	Vertical
r rouuce category variable inequency drives	Product Category	Variable frequency drives

Protection	Finger and back-of-hand proof, Protection against direct contact (BGV A3, V
Protocol	PROFIBUS CAN
	Other bus systems DeviceNet
	EtherNet/IP MODBUS
	PROFINET IO TCP/IP
Safety function/level	STO (Safe Torque Off, SIL2, PLc Cat 2)
Suitable for	Branch circuits, (UL/CSA)
Climatic environmental conditions	
Ambient operating temperature - min	-10 °C
Altitude	Above 1000 m with 1 % derating per 100 m
	Max. 1000 m Max. 4000 m
Ambient operating temperature - max	40 °C
Ambient operating temperature at 150% overload - min	-10 °C
Ambient operating temperature at 150% overload - max	40 °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 % (η)
Heat dissipation at current/speed	180 W at 25% current and 0% speed 199 W at 25% current and 50% speed
	212 W at 50% current and 0% speed
	240 W at 50% current and 50% speed 260 W at 50% current and 90% speed
	345 W at 100% current and 0% speed 345 W at 100% current and 50% speed
	421 W at 100% current and 90% speed
Input current ILN at 150% overload	26 A
Leakage current at ground IPE - max	22 mA
Mains switch-on frequency	Maximum of one time every 30 seconds
Mains voltage - min	500 V
Mains voltage - max	600 V
Operating mode	Optional: Vector control with feedback (CLV) U/f control
	Speed control with slip compensation 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	33 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 (le) at 150% overload	22 A
Rated operational power at 500 V, 50 Hz, 3-phase	15 kW
Rated operational power at 525 V, 50 Hz, 3-phase	15 kW
Rated operational voltage	600 V AC, 3-phase 500 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 swit and protective elements
	and protective elements LPJ fuse used together with J60060-3 fuse base, Power wiring, Assigned sw and protective elements
Short-circuit protection rating	40 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Po Wiring
Starting current - max	200 %, IH, max. starting current (High Overload), for 4 seconds every 40 s
Supply frequency	50/60 Hz
Switching frequency	8 kHz, 4 - 16 kHz adjustable (audible), fPWM, Power section, Main circuit
System configuration type	AC supply systems with earthed center point

Voltage rating - max	600 V AC
Motor rating	
Assigned motor current IM at 500 V, 50 Hz, 150% overload	22 A
Assigned motor current IM at 525 V, 50 Hz, 150% overload	22 A
Assigned motor current IM at 550 - 600 V, 60 Hz, 150% overload	22 A
Assigned motor power at 575/600 V, 60 Hz, 3-phase	20 HP
Apparent power	
Apparent power at 600 V	22.86 kV·A
Braking function	
Braking resistance	33 0
Braking torque	Max. 100 % of rated operational current le, variable, DC - Main circuit Max. 100 % of rated operational current le with external braking resistor - Main circuit Max. 30 % MN, Standard - Main circuit
Switch-on threshold for the braking transistor	975 V DC
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	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)
Design verification	
Equipment heat dissipation, current-dependent Pvid	450 W
Heat dissipation capacity Pdiss	0 W
Heat dissipation per pole, current-dependent Pvid	0 W
Rated operational current for specified heat dissipation (In)	22 A
Static heat dissipation, non-current-dependent Pvs	0 W
Heat dissipation details	Operation (with 150 % overload)
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.
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 9.0**

Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)

Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency / Servo converter = < 1 kV (ecl@ss13-27-02-31-01 [AKE177019])

Electric engineering, automation, process control engineering / Electrical drive / Static frequency		
Mains voltage	V	500 - 600
Mains frequency		50/60 Hz
Number of phases input		3
Number of phases output		3
Max. output frequency	Hz	500
Max. output voltage	V	600
Nominal output current I2N	А	22
Max. output at quadratic load at rated output voltage	kW	15
Max. output at linear load at rated output voltage	kW	15
Power consumption	W	450
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		2
Number of digital inputs		5
With control element		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 PROFINET IO		Yes
Supporting protocol for PROFINET CBA		No
Supporting protocol for SERCOS		No
Supporting protocol for Foundation Fieldbus		No
Supporting protocol for EtherNet/IP		Yes
Supporting protocol for AS-Interface Safety at Work		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		No
Supporting protocol for other bus systems		Yes
Number of HW-interfaces industrial Ethernet		0
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		0
With optical interface		No
With PC connection		Yes
Integrated breaking resistance		Yes
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4-quadrant operation possible		Yes
Type of converter		U converter
Degree of protection (IP)		IP55
Degree of protection (NEMA)		12
Height	mm	450
Width	mm	173
Depth	mm	240