

Multi-function Compact Inverter

MX2-Series V1 type

Born to drive machines

- Positioning functionality.
- Fieldbus communications with optional unit
EtherCAT, CompoNet and DeviceNet
- Drive Programming.
- Current vector Control.
- High Starting torque: 200% at 0.5 Hz.
- Safety function * EN ISO 13849-1:2008 (Cat.3/PLd)
IEC 60204-1 Stop Category 0
- Speed range up to 580 Hz.

* When optional DeviceNet communication unit or CompoNet communication unit is mounted onto the MX2-series V1 type, the inverter will not conform to the safety standards.



Performance Specifications

Inverter MX2-series V1 type

3-phase 200 V Class

Function name			3-phase 200 V										
Model name (3G3MX2-)			A2001-V1	A2002-V1	A2004-V1	A2007-V1	A2015-V1	A2022-V1	A2037-V1	A2055-V1	A2075-V1	A2110-V1	A2150-V1
Applicable motor capacity	kW	CT	0.1	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15
		VT	0.2	0.4	0.75	1.1	2.2	3.0	5.5	7.5	11	15	18.5
	HP	CT	1/8	1/4	1/2	1	2	3	5	7 1/2	10	15	20
		VT	1/4	1/2	1	1 1/2	3	4	7 1/2	10	15	20	25
Rated output capacity [kVA]	200 V	CT	0.2	0.5	1.0	1.7	2.7	3.8	6.0	8.6	11.4	16.2	20.7
		VT	0.4	0.6	1.2	2.0	3.3	4.1	6.7	10.3	13.8	19.3	23.9
	240 V	CT	0.3	0.6	1.2	2.0	3.3	4.5	7.2	10.3	13.7	19.5	24.9
		VT	0.4	0.7	1.4	2.4	3.9	4.9	8.1	12.4	16.6	23.2	28.6
Rated input voltage			3-phase 200 V - 15% to 240 V + 10%, 50/60 Hz ± 5%										
Rated input current [A]	CT		1.0	1.6	3.3	6.0	9.0	12.7	20.5	30.8	39.6	57.1	62.6
	VT		1.2	1.9	3.9	7.2	10.8	13.9	23.0	37.0	48.0	68.0	72.0
Rated output voltage			3-phase 200 to 240 V (The output cannot exceed the incoming voltage).										
Rated output current [A]	CT		1.0	1.6	3.0	5.0	8.0	11.0	17.5	25.0	33.0	47.0	60.0
	VT		1.2	1.9	3.5	6.0	9.6	12.0	19.6	30.0	40.0	56.0	69.0
Short-time deceleration braking torque (%) (Discharge Resistor not connected)			50	50	50	50	50	20	20	20	20	10	10
Braking Resistor circuit *	Regenerative braking		Built-in Braking Resistor circuit (separate Discharge Resistor)										
	Min. connectable resistance [Ω]		100	100	100	50	50	35	35	20	17	17	10
Weight [kg]			1.0	1.0	1.1	1.2	1.6	1.8	2.0	3.3	3.4	5.1	7.4
Dimensions (width × height) [mm]			68 × 128			108 × 128		140 × 128	140 × 260		180 × 296	220 × 350	
Dimensions (depth) [mm]			109		122.5	145.5	170.5		170.5	155		175	

* The BRD usage is 10%.

3-phase 400 V Class

Function name			3-phase 400 V									
Model name (3G3MX2-)			A4004-V1	A4007-V1	A4015-V1	A4022-V1	A4030-V1	A4040-V1	A4055-V1	A4075-V1	A4110-V1	A4150-V1
Applicable motor capacity	kW	CT	0.4	0.75	1.5	2.2	3.0	4.0	5.5	7.5	11	15
		VT	0.75	1.5	2.2	3.0	4.0	5.5	7.5	11	15	18.5
	HP	CT	1/2	1	2	3	4	5	7 1/2	10	15	20
		VT	1	2	3	4	5	7 1/2	10	15	20	25
Rated output capacity [kVA]	380 V	CT	1.1	2.2	3.1	3.6	4.7	6.0	9.7	11.8	15.7	20.4
		VT	1.3	2.6	3.5	4.5	5.7	7.3	11.5	15.1	20.4	25.0
	480 V	CT	1.4	2.8	3.9	4.5	5.9	7.6	12.3	14.9	19.9	25.7
		VT	1.7	3.4	4.4	5.7	7.3	9.2	14.5	19.1	25.7	31.5
Rated input voltage			3-phase 380 V - 15% to 480 V + 10%, 50/60 Hz ± 5%									
Rated input current [A]	CT	1.8	3.6	5.2	6.5	7.7	11.0	16.9	18.8	29.4	35.9	
	VT	2.1	4.3	5.9	8.1	9.4	13.3	20.0	24.0	38.0	44.0	
Rated output voltage			3-phase 380 to 480 V (The output cannot exceed the incoming voltage).									
Rated output current [A]	CT	1.8	3.4	4.8	5.5	7.2	9.2	14.8	18.0	24.0	31.0	
	VT	2.1	4.1	5.4	6.9	8.8	11.1	17.5	23.0	31.0	38.0	
Short-time deceleration braking torque (%) (Discharge Resistor not connected)			50	50	50	20	20	20	20	20	10	10
Braking Resistor circuit *	Regenerative braking	Built-in Braking Resistor circuit (separate Discharge Resistor)										
	Min. connectable resistance [Ω]	180	180	180	100	100	100	70	70	70	35	
Weight [kg]			1.5	1.6	1.8	1.9	1.9	2.1	3.5	3.5	4.7	5.2
Dimensions (width × height) [mm]			108 × 128				140 × 128	140 × 260		180 × 296		
Dimensions (depth) [mm]			143.5	170.5			170.5	155		175		

* The BRD usage is 10%.

1-phase 200 V Class

Function name			1-phase 200 V					
Model name (3G3MX2-)			AB001-V1	AB002-V1	AB004-V1	AB007-V1	AB015-V1	AB022-V1
Applicable motor capacity	kW	CT	0.1	0.2	0.4	0.75	1.5	2.2
		VT	0.2	0.4	0.55	1.1	2.2	3.0
	HP	CT	1/8	1/4	1/2	1	2	3
		VT	1/4	1/2	3/4	1 1/2	3	4
Rated output capacity [kVA]	200 V	CT	0.2	0.5	1.0	1.7	2.7	3.8
		VT	0.4	0.6	1.2	2.0	3.3	4.1
	240 V	CT	0.3	0.6	1.2	2.0	3.3	4.5
		VT	0.4	0.7	1.4	2.4	3.9	4.9
Rated input voltage			1-phase 200 V - 15% to 240 V + 10%, 50/60 Hz ± 5%					
Rated input current [A]	CT	1.3	3.0	6.3	11.5	16.8	22.0	
	VT	2.0	3.6	7.3	13.8	20.2	24.0	
Rated output voltage			3-phase 200 to 240 V (The output cannot exceed the incoming voltage).					
Rated output current [A]	CT	1.0	1.6	3.0	5.0	8.0	11.0	
	VT	1.2	1.9	3.5	6.0	9.6	12.0	
Short-time deceleration braking torque (%) (Discharge Resistor not connected)			50	50	50	50	50	20
Braking Resistor circuit *	Regenerative braking	Built-in Braking Resistor circuit (separate Discharge Resistor)						
	Min. connectable resistance [Ω]	100	100	100	50	50	35	
Weight [kg]			1.0	1.0	1.1	1.6	1.8	1.8
Dimensions (width × height) [mm]			68 × 128			108 × 128		
Dimensions (depth) [mm]			109	122.5		170.5		

* The BRD usage is 10%.

Function Specifications

Function name		Specifications
Enclosure ratings *1		Open type (IP20)
Control	Control method	Phase-to-phase sinusoidal modulation PWM
	Output frequency range *2	0.10 to 400 Hz (or 580 Hz in the high-frequency mode; restrictions apply)
	Frequency precision *3	Digital command: $\pm 0.01\%$ of the max. frequency, Analog command: $\pm 0.2\%$ of the max. frequency ($25 \pm 10^\circ\text{C}$)
	Frequency setting resolution	Digital setting: 0.01 Hz, Analog setting: One-thousandth of the maximum frequency
	Voltage/Frequency characteristics	V/f characteristics (constant/reduced torque) Sensorless vector control, V/f control with speed feedback
	Overload current rating	Heavy load rating (CT): 150%/60 s Light load rating (VT): 120%/60 s
	Instantaneous overcurrent protection	200% of the value of heavy load rating (CT)
	Acceleration/Deceleration time	0.01 to 3600 s (linear/curve selection), acceleration/deceleration 2 setting available
	Carrier frequency adjustment range	2 to 15 kHz (with derating)
	Starting torque	200%/0.5 Hz (sensorless vector control)
	External DC injection braking	Starts at a frequency lower than that in deceleration via the STOP command, at a value set lower than that during operation, or via an external input. (Level and time settable).
Protective functions		Overcurrent, overvoltage, undervoltage, electronic thermal, temperature error, ground fault overcurrent at power-on status, rush current prevention circuit, overload limit, incoming overvoltage, external trip, memory error, CPU error, USP error, communication error, overvoltage suppression during deceleration, protection upon momentary power outage, emergency cutoff, etc.
Input signal	Frequency settings	Digital Operator External analog input signal: 0 to 10 VDC/4 to 20 mA, Modbus communication (Modbus-RTU)
	RUN/STOP command	Digital Operator External digital input signal (3-wire input supported), Modbus communication (Modbus-RTU)
	Multi-function input	7 points (Selectable from 59 functions)
	Analog input	2 points (Voltage FV terminal: 10 bits/0 to 10 V, Current FI terminal: 10 bits/4 to 20 mA)
	Pulse input	1 point (RP terminal: 32 kHz max., 5 to 24 VDC)
Output signal	Multi-function output	2 points (P1/EDM, P2; selectable from 43 functions)
	Relay output	1 point (1c contact: MC, MA, MB; selectable from 43 functions)
	Analog output (Frequency monitor)	1 point (AM terminal: Voltage 10 bits/0 to 10 V) (Frequency, current selectable)
	Pulse output	1 point (MP terminal: 32 kHz max., 0 to 10 V)
Communications	RS-422	RJ45 connector (for Digital Operator)
	RS-485	Control circuit terminal block, Modbus communication (Modbus-RTU)
	USB	USB1.1, mini-B connector
Drive Programming *4		Calculate, Logic, Control I/O and so on
Other functions		AVR function, V/f characteristics switching, upper/lower limit, 16-step speeds, starting frequency adjustment, jogging operation, carrier frequency adjustment, PID control, frequency jump, analog gain/bias adjustment, S shape acceleration/deceleration, electronic thermal characteristics, level adjustment, restart function, torque boost function, fault monitor, soft lock function, frequency conversion display, USP function, motor 2 control function, UP/DWN, overcurrent control function, etc.
Operating environment	Ambient operating temperature	-10 to 50°C (However, derating is required).
	Ambient storage temperature	-20°C to 65°C
	Ambient operating humidity	20% to 90% RH (with no condensation)
	Vibration resistance	5.9 m/s ² (0.6G), 10 to 55 Hz
	Application environment	At a maximum altitude of 1,000 m; indoors (without corrosive gases or dust)
Options	EtherCAT Communication Unit	3G3AX-MX2-ECT
	CompoNet Communication Unit	3G3AX-MX2-CRT-E
	DeviceNet Communication Unit	3G3AX-MX2-DRT-E

Function name		Specifications	
Other option		DC reactor, AC reactor, radio noise filter, input noise filter, output noise filter, regenerative braking unit, Braking Resistor, etc.	
International standard	EC directive	EMC directive	EN61800-3: 2004
		Low voltage directive	EN61800-5-1: 2007
		Machinery directives	IEC 60204-1 Stop Category 0, EN IEC 61800-5-2 (STO), EN ISO 13849-1: 2008 (PLd)
	UL/cUL		UL508C

*1 Protection method complies with JEM 1030.

*2 To operate the motor at over 50/60 Hz, contact the motor manufacturer to find out the maximum allowable speed of revolution.

*3 For the stable control of the motor, the output frequency may exceed the maximum frequency set in A004 (A204) by 2 Hz max.

*4 Refer to the Drive Programming USER'S MANUAL (No. I580).

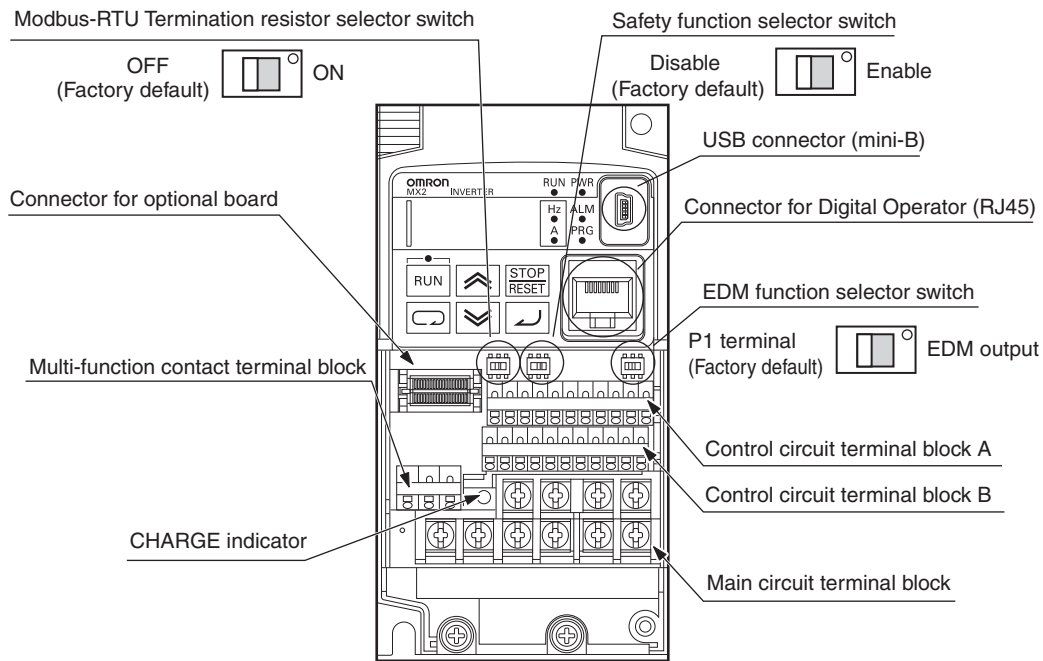
Note:

1. The applicable motor is a 3-phase standard motor. For using any other type, be sure that the rated current does not exceed that of the Inverter.
2. Output voltage decreases according to the level of the power supply voltage.
3. The braking torque at the time of capacitor feedback is an average deceleration torque at the shortest deceleration (when it stops from 50 Hz). It is not a continuous regeneration torque. Also, the average deceleration torque varies depending on the motor loss. The value is reduced in operation over 50 Hz.

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Components and Functions

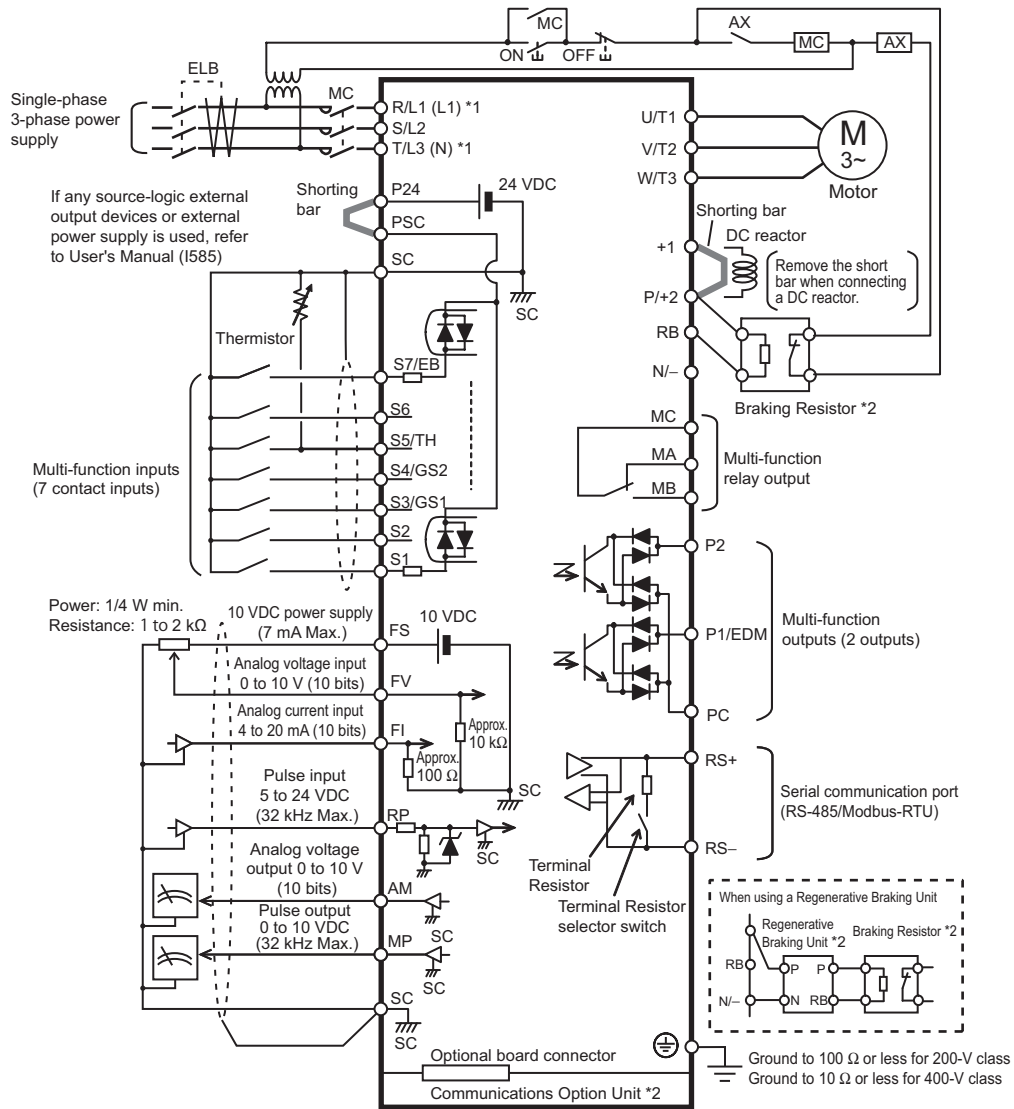
Inverter MX2-series V1 type



Name	Function
Modbus-RTU Termination resistor selector switch	Use this Terminal Resistor selector switch for RS-485 terminals on the control circuit terminal block. When this switch is turned ON, the internal 200 Ω Resistor is connected.
Safety function selector switch	Turn this switch ON when using the safety function. Turn OFF the power before turning this switch ON/OFF. For details, refer to USER'S MANUAL (Cat.No.I585).
EDM function selector switch	Turn this switch ON when using the EDM output of the safety function. Turn OFF the power before turning this switch ON/OFF. For details, refer to USER'S MANUAL (Cat.No.I585).
USB connector	Use this mini-B USB connector to connect a PC. Even when the Inverter is being operated by a PC, etc., via USB connection, it can still be operated using the Digital Operator.
Connector for Digital Operator	Use this connector to connect the Digital Operator.
Connector for optional board	Use this connector to mount the optional board. (Communications Units and other options can be connected.)
Control circuit terminal blocks A and B	These terminal blocks are used to connect various digital/analog input and output signals for inverter control, etc.
Multi-function contact terminal block	Use this SPDT contact terminal block for relay outputs.
Main circuit terminal block	Use this terminal block to connect an output to the motor and Braking Resistor, etc. Also, use this terminal block to connect the inverter to the main power supply.
CHARGE indicator (Charge indicator LED)	This LED indicator is lit if the DC voltage of the main circuit (between terminals P/+2 and N/-) remains approx. 45 V or above after the power has been cut off. Before wiring, etc. confirm that the Charge LED indicator is turned OFF.

Note: This illustration shows the terminal block with the front cover removed.

Connection Diagram

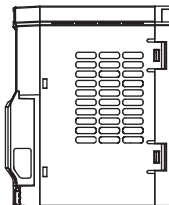
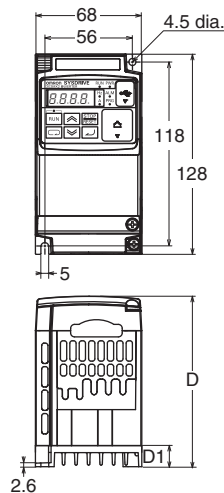


*1 Connect to terminals L1 and N on a single-phase, 200-V Inverter (3G3MX2-AB□□□-V1).
 *2 Optional.

Dimensions

(Unit: mm)

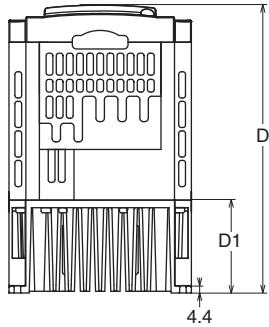
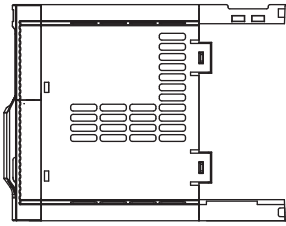
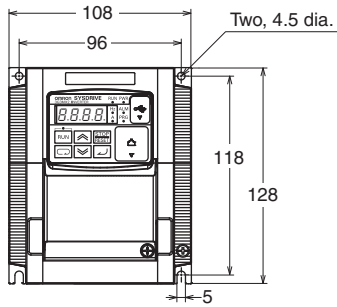
- 3G3MX2-AB001-V1
- 3G3MX2-AB002-V1
- 3G3MX2-AB004-V1
- 3G3MX2-A2001-V1
- 3G3MX2-A2002-V1
- 3G3MX2-A2004-V1
- 3G3MX2-A2007-V1



Power supply	Model	W [mm]	H [mm]	D [mm]	D1 [mm]
1-phase 200 V	3G3MX2-AB001-V1	68	128	109	13.5
	3G3MX2-AB002-V1			122.5	27
	3G3MX2-AB004-V1				
3-phase 200 V	3G3MX2-A2001-V1	68	128	109	13.5
	3G3MX2-A2002-V1			122.5	27
	3G3MX2-A2004-V1				
	3G3MX2-A2007-V1				

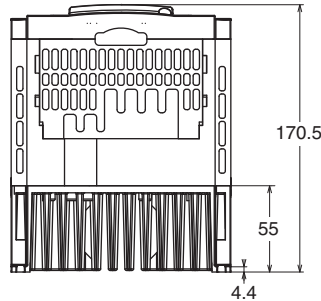
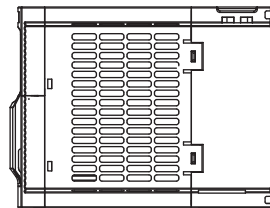
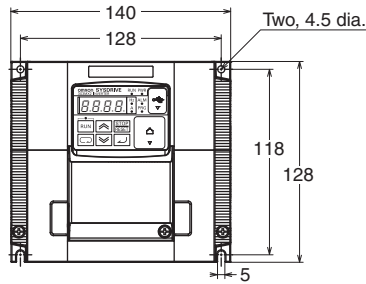
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- 3G3MX2-AB007-V1
- 3G3MX2-AB015-V1
- 3G3MX2-AB022-V1
- 3G3MX2-A2015-V1
- 3G3MX2-A2022-V1
- 3G3MX2-A4004-V1
- 3G3MX2-A4007-V1
- 3G3MX2-A4015-V1
- 3G3MX2-A4022-V1
- 3G3MX2-A4030-V1



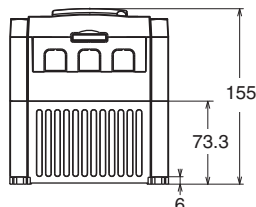
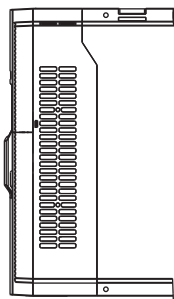
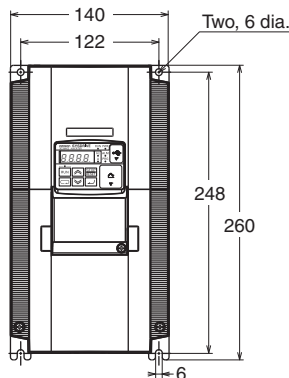
Power supply	Model	W [mm]	H [mm]	D [mm]	D1 [mm]
1-phase 200 V	3G3MX2-AB007-V1	108	128	170.5	55
	3G3MX2-AB015-V1				
	3G3MX2-AB022-V1				
3-phase 200 V	3G3MX2-A2015-V1			143.5	28
	3G3MX2-A2022-V1				
	3G3MX2-A4004-V1				
3-phase 400 V	3G3MX2-A4007-V1	170.5	55		
	3G3MX2-A4015-V1				
	3G3MX2-A4022-V1				
	3G3MX2-A4030-V1				

- 3G3MX2-A2037-V1
- 3G3MX2-A4040-V1



Power supply	Model	W [mm]	H [mm]	D [mm]	D1 [mm]
3-phase 200 V	3G3MX2-A2037-V1	140	128	170.5	55
3-phase 400 V	3G3MX2-A4040-V1				

- 3G3MX2-A2055-V1
- 3G3MX2-A2075-V1
- 3G3MX2-A4055-V1
- 3G3MX2-A4075-V1



Power supply	Model	W [mm]	H [mm]	D [mm]	D1 [mm]
3-phase 200 V	3G3MX2-A2055-V1	140	260	155	73.3
	3G3MX2-A2075-V1				
3-phase 400 V	3G3MX2-A4055-V1				
	3G3MX2-A4075-V1				