

# MX2 INVERTER

Born to drive machines



» Omron Quality with a capital 'Q'

» High programming functionality

» Built-in safety

# Harmonised motor and machine control

*The MX2 is specifically designed to drive machines. It has been developed to harmonise advanced motor and machine control. Thanks to its advanced design and algorithms the MX2 provides smooth control down to zero speed, plus precise operation for fast cyclic operations and torque control capability in open loop. The MX2 also gives you comprehensive functionality for machine control such as positioning, speed synchronisation and logic programming. The MX2 is fully integrated within the Omron smart automation platform. The MX2 is the child of a true leader in machine automation.*

## MOTOR CONTROL

### 200% starting torque

- Near stand-still operation (0.5 Hz)
- Smooth control of high inertia loads
- Control of fast cyclic loads

### Torque control in open loop

- Ideal for low to medium torque applications
- Can replace a flux vector or servo drive in suitable systems

### Special motors

- Permanent magnet motors
- High speed motors up to 1000 Hz

### One parameter auto-tuning

- Just by entering the kW rating of the motor the MX2 gives you smooth and safe operation







## MACHINE CONTROL

### Safety inside

- Conforms to safety norm ISO-13849 CAT3 performance level PLD
- 2 Safety inputs
- External device monitoring (EDM)

### Logic programming

- Flow chart programming
- Intuitive – up to 5 tasks in parallel

### Positioning

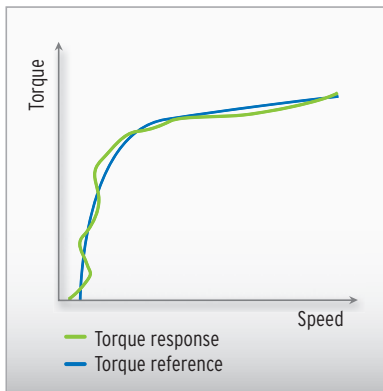
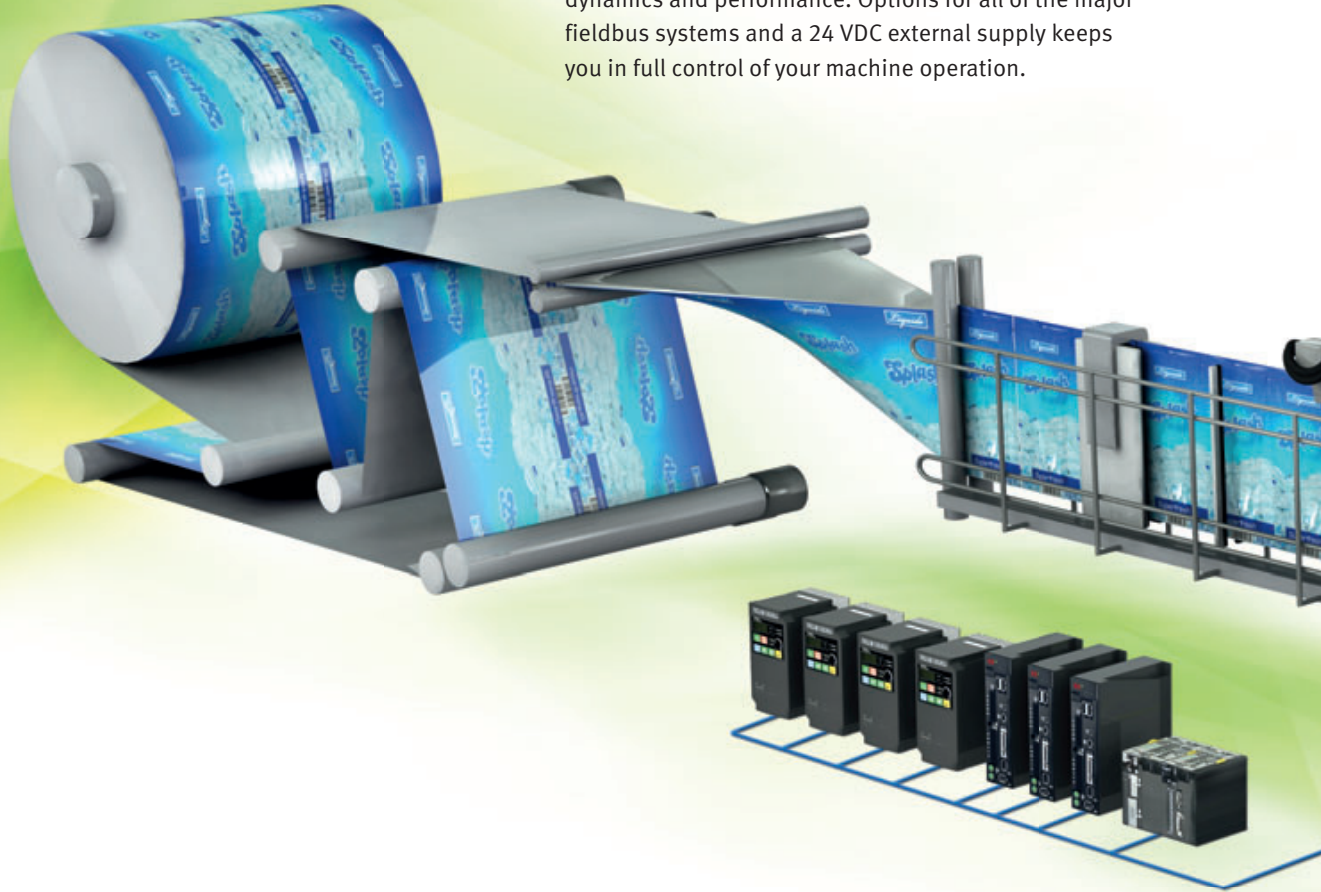
- Up to 8 pre-set positions with “Homing”
- Speed synchronisation

### Integrated in the Omron Smart Automation

- CX-Drive programming tool connected via integrated USB port on MX2.
- Modbus RS485 built-in
- Option units for EtherCAT, Profibus, DeviceNet, ML-II and more...

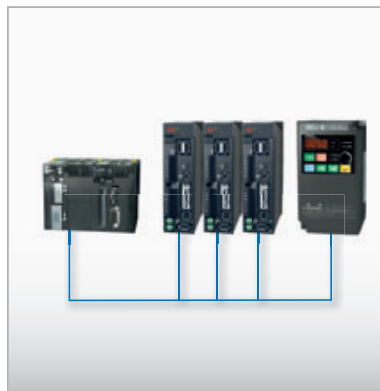
# 100% Control...

High starting torque and torque control capability in open loop mode give you full control of your machine dynamics and performance. Options for all of the major fieldbus systems and a 24 VDC external supply keeps you in full control of your machine operation.



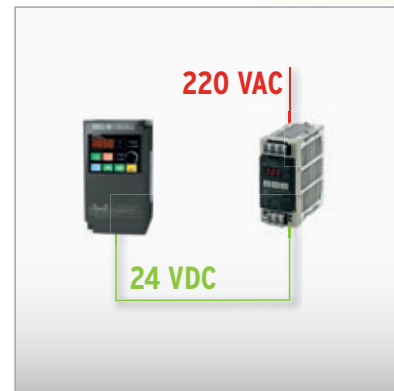
## Torque master

The MX2 delivers 200% starting torque near stand-still (0.5 Hz) and can operate in torque control in open loop mode. This allows the MX2 to be used in applications where closed loop AC vector drives were previously used.



## Easy network integration

Built-in RS485 Modbus communications and the possibility for integration in standard industrial networks, such as Dnet, Profibus, CANopen, CompoNet, ML-II or EtherCat makes the MX2 exceptionally easy to integrate.



## External 24 VDC for continuous operation

With no additional hardware, a 24 VDC connection to the MX2 ensures the CPU is always in control, even if the main input is removed. This feature is vital in providing a controlled stop in emergency situations and in keeping the network communications operating.



# ...0% risk!

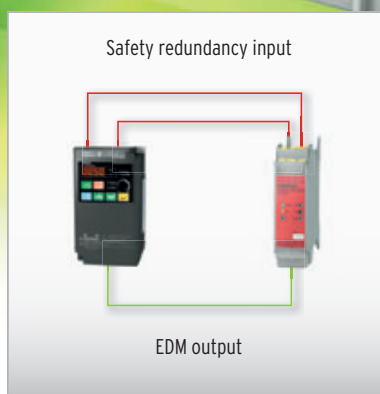
Safety is embedded in the MX2, according to ISO 13849-1, Cat 3, with two safety inputs and an External Device Monitoring (EDM) output.

No external contactors on the motor side are required, meaning simpler wiring for the user.



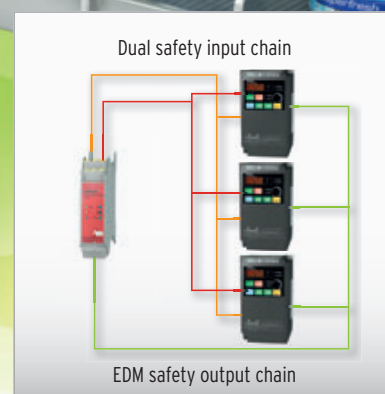
## Safety embedded; ISO 13849-1, cat 3

Dual contactors at the output of the inverter are no longer required. Direct connection to a safety controller ensures compliance to ISO 13849-1, cat 3.



## EDM monitoring output

An External Device Monitoring (EDM) output confirms the safety status of the inverter, saving you the cost and wiring of external devices to carry out the same function.

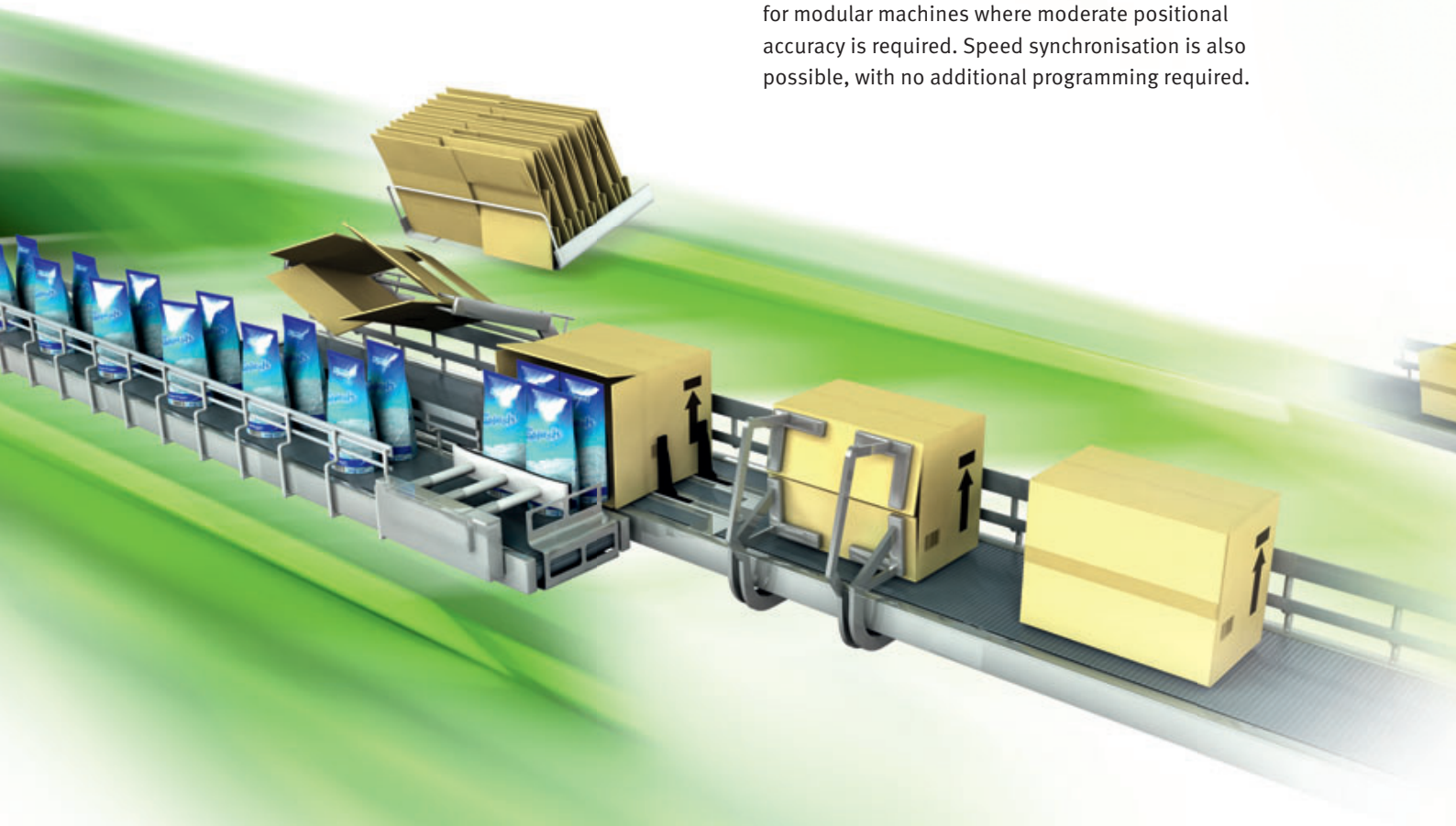


## Direct integration into the safety circuit

MX2 inverters can fit easily into the safety circuit. The safety inputs can be linked from one inverter to another without additional safety relays.

# Position and run!

The MX2 is a drive and position controller in one, ideal for modular machines where moderate positional accuracy is required. Speed synchronisation is also possible, with no additional programming required.



## Speed synchronisation

With no external hardware required, and via standard parameter settings, speed synchronisation can be achieved. The MX2 will act as a speed follower to an external pulse generator/ encoder signal up to 32 KHz.



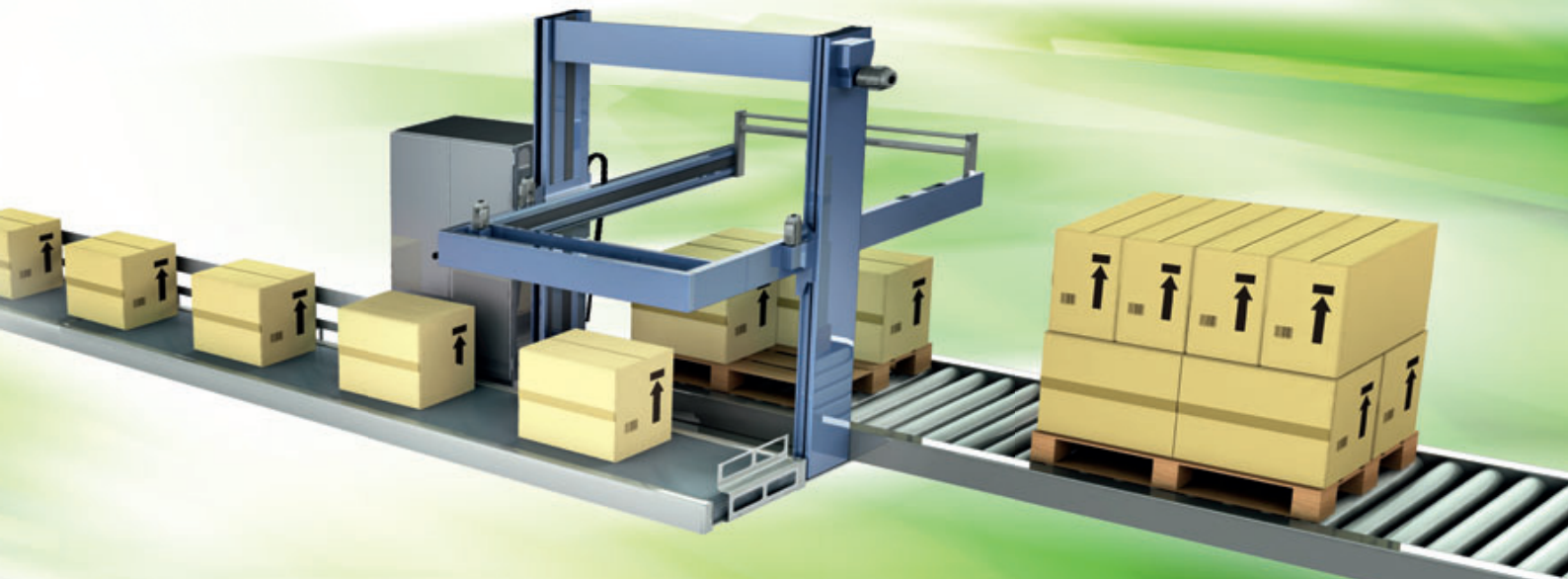
## Positioning functionality

Specially developed application functionality enables the MX2 to solve simple positioning tasks without the need for an external controller. Up to 8 positions, plus home, can be selected by the user, and furthermore, the MX2 can be switched between speed and position mode.



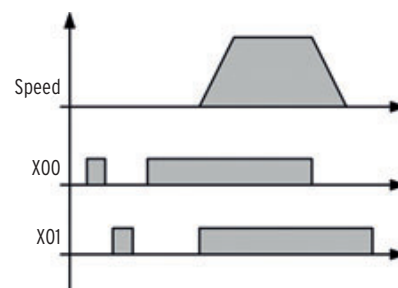
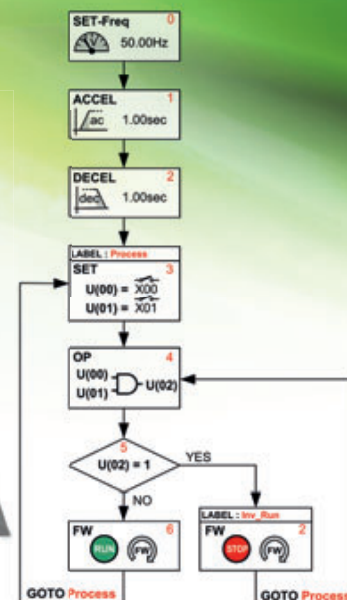
# Program and play!

The MX2 gives you the power to create smart solutions using PLC functionality, as standard. Via an intuitive flow chart programming tool, you can create programs with up to 1000 lines of code and with 5 tasks running in parallel.



## Free to program

- Intuitive and user friendly flow chart programming
- Integrated in CX-Drive
- Up to 1000 lines in a program
- 5 tasks can run in parallel



# Multi-function Compact Inverter

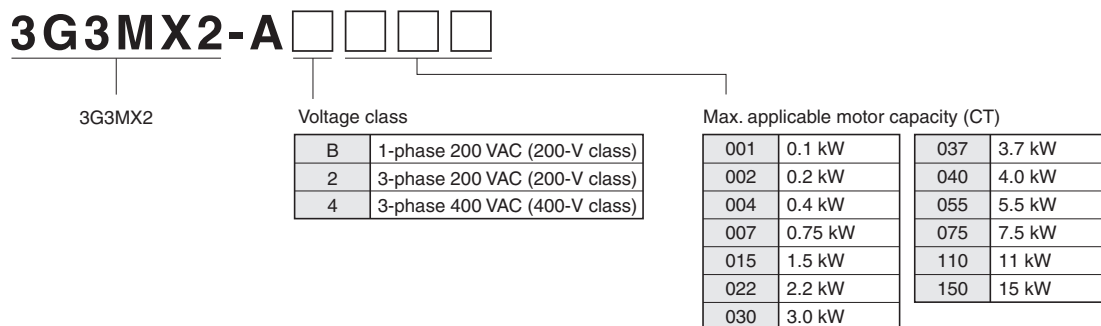
# 3G3MX2

## With Machine Automation Mentality

- Current vector Control.
- High Starting torque: 200% at 0.5 Hz.
- Double rating VT 120%/1 min and CT 150% /1 min.
- Speed range up to 1,000 Hz.
- Positioning functionality.
- Safety embedded compliant with ISO 13849-1: 2006 (PLd)  
(under application) (double input circuit and external device monitor)
- Modbus communications.
- PC Configuration tool: CX-Drive.



## Interpreting Model Numbers





## Ordering Information

### International Standards

- The standards are abbreviated as follows: U: UL, U1: UL (Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Contact your OMRON representative for further details and applicable conditions for these standards.

### 3G3MX2 Inverter Models

Rated voltage	Enclosure ratings	Max. applicable motor capacity		Model
		CT: Heavy load	VT: Light load	
3-phase 200 VAC	IP20	0.1kW	0.2 kW	3G3MX2-A2001
		0.2 kW	0.4 kW	3G3MX2-A2002
		0.4 kW	0.75 kW	3G3MX2-A2004
		0.75 kW	1.1 kW	3G3MX2-A2007
		1.5 kW	2.2 kW	3G3MX2-A2015
		2.2 kW	3.0 kW	3G3MX2-A2022
		3.7 kW	5.5 kW	3G3MX2-A2037
		5.5 kW	7.5 kW	3G3MX2-A2055
		7.5 kW	11 kW	3G3MX2-A2075
		11 kW	15 kW	3G3MX2-A2110
		15 kW	18.5 kW	3G3MX2-A2150
3-phase 400 VAC	IP20	0.4 kW	0.75 kW	3G3MX2-A4004
		0.75 kW	1.5 kW	3G3MX2-A4007
		1.5 kW	2.2 kW	3G3MX2-A4015
		2.2 kW	3.0 kW	3G3MX2-A4022
		3.0 kW	4.0 kW	3G3MX2-A4030
		4.0 kW	5.5 kW	3G3MX2-A4040
		5.5 kW	7.5 kW	3G3MX2-A4055
		7.5 kW	11 kW	3G3MX2-A4075
		11 kW	15 kW	3G3MX2-A4110
		15 kW	18.5 kW	3G3MX2-A4150
1-phase 200 VAC	IP20	0.1 kW	0.2 kW	3G3MX2-AB001
		0.2 kW	0.4 kW	3G3MX2-AB002
		0.4 kW	0.55 kW	3G3MX2-AB004
		0.75 kW	1.1 kW	3G3MX2-AB007
		1.5 kW	2.2 kW	3G3MX2-AB015
		2.2 kW	3.0 kW	3G3MX2-AB022

For option, refer to 15 page.

### Support Software

Product name	Specifications	Number of licenses	Media	Model	Standards
FA Integrated Tool Package CX-One Ver. 4.□	The CX-One is a package that integrates the Support Software for OMRON PLCs and components. CX-One runs on the following OS. Windows 2000 (Service Pack 4 or higher), XP, Vista or 7 <b>Note:</b> Except for 64-bit version CX-One Ver.4.□ includes CX-Programmer Ver.9.□. For details, refer to the CX-One catalog (Cat. No. R134).	1 license *1	CD	CXONE-AL01C-V4	---
			DVD *2	CXONE-AL01D-V4	
FA Integrated Tool Package CX-One Lite Ver. 4.□	The CX-One Lite is a subset of the complete CX-One package that provides only the Support Software required for micro PLC applications. CX-One Lite runs on the following OS. Windows 2000 (Service Pack 4 or higher), XP, Vista or 7 <b>Note:</b> Except for 64-bit version CX-One Ver.4.□ includes Micro PLC Edition CX-Programmer Ver.9.□. .	1 license	CD	CXONE-LT01C-V4	---
	CX-Drive can still be ordered individually in the following model numbers.				
CX-Drive Ver.1.□	Application software to set and control data for Inverters and Servos. OS: Windows 2000 (Service Pack 3a or higher), XP, or Vista	1 license	CD	WS02-DRVC1	---

\*1. Multi licenses are available for the CX-One (3, 10, 30, or 50 licenses).

\*2. When purchasing the DVD format, verify the computer model and DVD drive specifications before purchasing.

## Standard Specification List

### 3-phase 200 V Class

Function name			3-phase 200 V										
Model name (3G3MX2-)			A2001	A2002	A2004	A2007	A2015	A2022	A2037	A2055	A2075	A2110	A2150
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 ± 5%										
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	A4007	A4015	A4022	A4030	A4040	A4055	A4075	A4110	A4150
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 ± 5%									
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	AB002	AB004	AB007	AB015	AB022
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 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%.

## Common 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 1,000 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 ( $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$ )
	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: Variable resistance/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
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 suppression function, etc.
General specifications	Ambient temperature	-10 to 50°C (However, derating is required).
	Ambient storage temperature	-20°C to 65°C (short-time temperature during transport)
	Humidity	20% to 90% RH (with no condensation)
	Vibration	5.9 m/s <sup>2</sup> (0.6G), 10 to 55 Hz
	Location	At a maximum altitude of 1,000 m; indoors (without corrosive gases or dust)
Options		DC reactor, AC reactor, radio noise filter, input noise filter, output noise filter, regenerative braking unit, Braking Resistor, EMC noise filter, etc.

**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.

\*1. Protection method complies with JEM 1030.

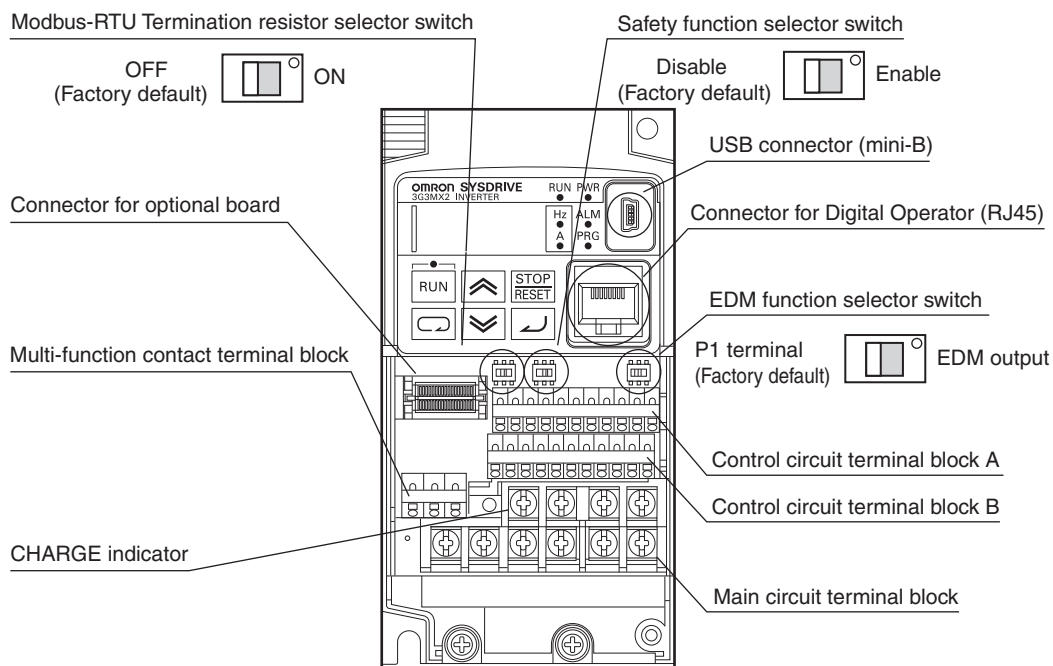
\*2. To operate the motor at over 50/60 Hz, contact the motor manufacturer to find out the maximum allowable speed of revolution.

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

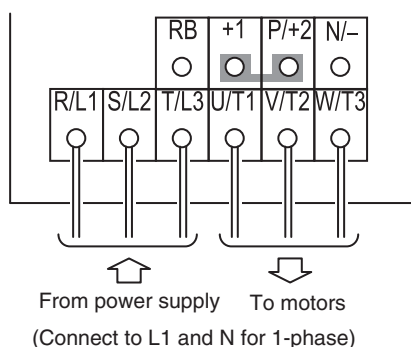
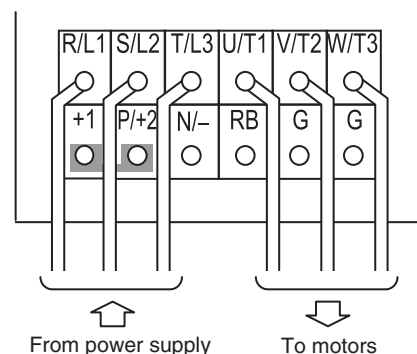


## Terminal Block Specifications

### Names of Parts Inside the Terminal Block Cover



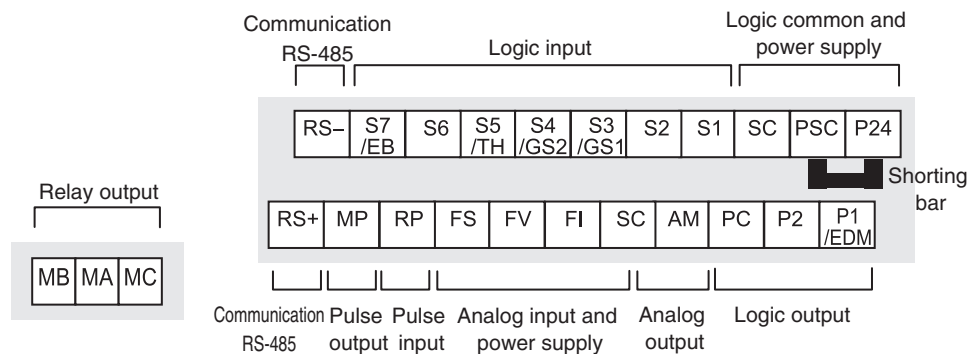
Name	Description
Modbus-RTU Termination resistor selector switch	Use this Terminal Resistor selector switch for RS-485 terminals on the control circuit terminal block. When this switch is turned ON, the internal 200 Ω Resistor is connected.
Safety function selector switch	Turn this switch ON when using the safety function. Turn OFF the power before turning this switch ON/OFF. For details, refer to User's Manual (I570).
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 (I570).
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. (The optional board will be released soon.)
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.

**Main Circuit Terminals Specifications****[Main Circuit Terminal Block]****3G3MX2-A2001 to A2037****3G3MX2-A4004 to A4040****3G3MX2-AB001 to AB022****[Main Circuit Terminal Block]****3G3MX2-A2001 to A2037****3G3MX2-A4004 to A4040****3G3MX2-AB001 to AB022**

Terminal symbol	Terminal name	Description
R/L1	Main power supply input terminal	Connect the input AC power supply. In the case of a 1-phase 200 V power supply, connect to L1 and N.
S/L2		
T/L3		
U/T1	Inverter output terminal	Connect a 3-phase motor.
V/T2		
W/T3		
+1	DC reactor connection terminal	Remove the shorting bar between terminals +1 and P/+2, and connect the optional DC reactor.
P/+2		
P/+2	Braking Resistor connection terminal	Connect optional braking resistors. (If a braking torque is required)
RB		
P/+2	Regenerative braking unit connection terminal	Connect optional regenerative braking units. (When braking torque is required or the built-in braking circuit is not sufficient)
N/-		
G ⊕	Ground terminal	This is a ground terminal. Connect this terminal to the ground. Provide Class D grounding for 200 V class models, and class C grounding for 400 V class models. On 200 V class models of 3.7 kW or below and 400 V class models of 4.0 kW or below, the ground terminal is located on the cooling fin.



## Control Circuit Terminals Specifications



	Terminal symbol	Terminal name	Description	Specifications
Analog	Power supply	SC	Input signal common	This is a common terminal used by the internal power supply, digital input and analog input/output terminals.
		FS	Frequency reference power supply	10 VDC power supply for the FV terminal.
	Frequency setting input	FV	Frequency reference input terminal (analog voltage input)	Use this terminal if the frequency reference is provided by 0 to 10 VDC voltage input.
		FI	Frequency reference terminal (analog current input)	Use this terminal if the frequency reference is provided by 4 to 20 mA current input.
	Sensor input	S5/TH	External thermistor input (also used as multi-function input terminal)	Connect an external thermistor between the SCs, to trip the Inverter when a temperature error occurs. (The inverter will trip when the input from thermistor is approx. 3 kΩ or higher.) Since this input is also used as the multi-function input terminal, setting of C005 is required. For details, refer to User's Manual (I570).
	Output	AM	Multi-function analog output (voltage)	Specified signals can be output using voltage signals of 0 to 10 VDC.
Digital	Power supply	SC	Input signal common	This is a common terminal used by the internal power supply, digital input and analog input/output terminals.
		P24	Power supply terminal for input signal	24 VDC power supply for contact input signal. This is used as a common terminal if the source logic is input.
		PSC	Power supply terminal for input terminal	Sink logic input: Shorted with P24 Source logic input: Shorted with SC To drive the contact input using an external power supply, remove the shorting bar. For details, refer to User's Manual (I570).
	Input Contact	S7/EB S6 S5/TH S4/GS2 S3/GS1 S2 S1	Multi-function input terminal	Select 7 functions from among 59, and allocate them to terminals S1 through S7/EB. Both sink and source logics are supported. For details, refer to User's Manual (I570).
		S4/GS2 S3/GS1	Safety input	Enabled when the safety function selector switch is turned ON. For details, refer to User's Manual (I570).

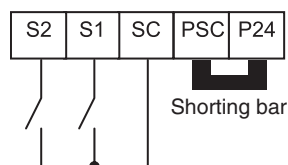
			Terminal symbol	Terminal name	Description	Specifications
Digital	Input	Pulse	RP	Pulse input-A	A pulse input for frequency setting. (Take note that the internal circuit is different from input terminals S7/EB.)	Input pulse 32 kHz max.  Voltage between input and SC ON voltage: 4 V min. OFF voltage: 1 V max. Allowable max. voltage: 27 VDC
			S7/EB	Pulse input-B	A pulse input for frequency setting. (Take note that the internal circuit is different from input terminal RP.)	Input pulse 1.8 kHz max.  ON voltage: 18 V min. OFF voltage: 3 V max. Allowable max. voltage: 27 VDC Load current: 5 mA (at 24 V)
	Output	Open collector	P1/EDM P2	Multi-function output terminal	Select 2 functions from among 43, and allocate them to terminals P1 through P2. Both sink and source logics are supported. For details, refer to User's Manual (I570).	Open collector output Between each terminal and PC Allowable max. voltage: 27 V Allowable max. current: 50 mA Voltage drop when ON: 4 V max.
			P1/EDM	Safety monitor	Enabled when the EDM function selector switch is ON. For details, refer to "Safety Function" on page 5-167.	
		Relay	MA MB	Relay output terminal	Select the desired functions from among 43 functions, and allocate them to these terminals. SPDT contact. The factory default of Relay Output (MA, MB) Contact Selection (C036) is NC contact between MA-MC, and NO contact between MB-MC.	Max. contact capacity MA-MC: 250 VAC, 2 A (resistance) 0.2 A (induction) MB-MC: 250 VAC, 1 A (resistance) 0.2 A (induction) Contact min. capacity 100 VAC, 10mA 5 VDC, 100mA
			MC	Relay output common		
	Pulse	MP	Pulse output	Pulses are output.	Output pulse: 32 kHz max. Output voltage: 10 VDC Allowable max. current: 2 mA	
	Serial communication			RS+ RS–	Modbus port (RS-485)	RS-485 port RS+ RS-485 differential (+) signal RS- RS-485 differential (–) signal

### Switching Method for Input Control Logics

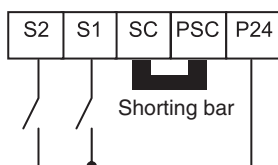
Multi-function input terminals are set to sink logic at the factory.

To switch the input control logic to source logic, remove the shorting bar between terminals P24 and PSC on the control circuit terminal block, and connect it between terminals PSC and SC.

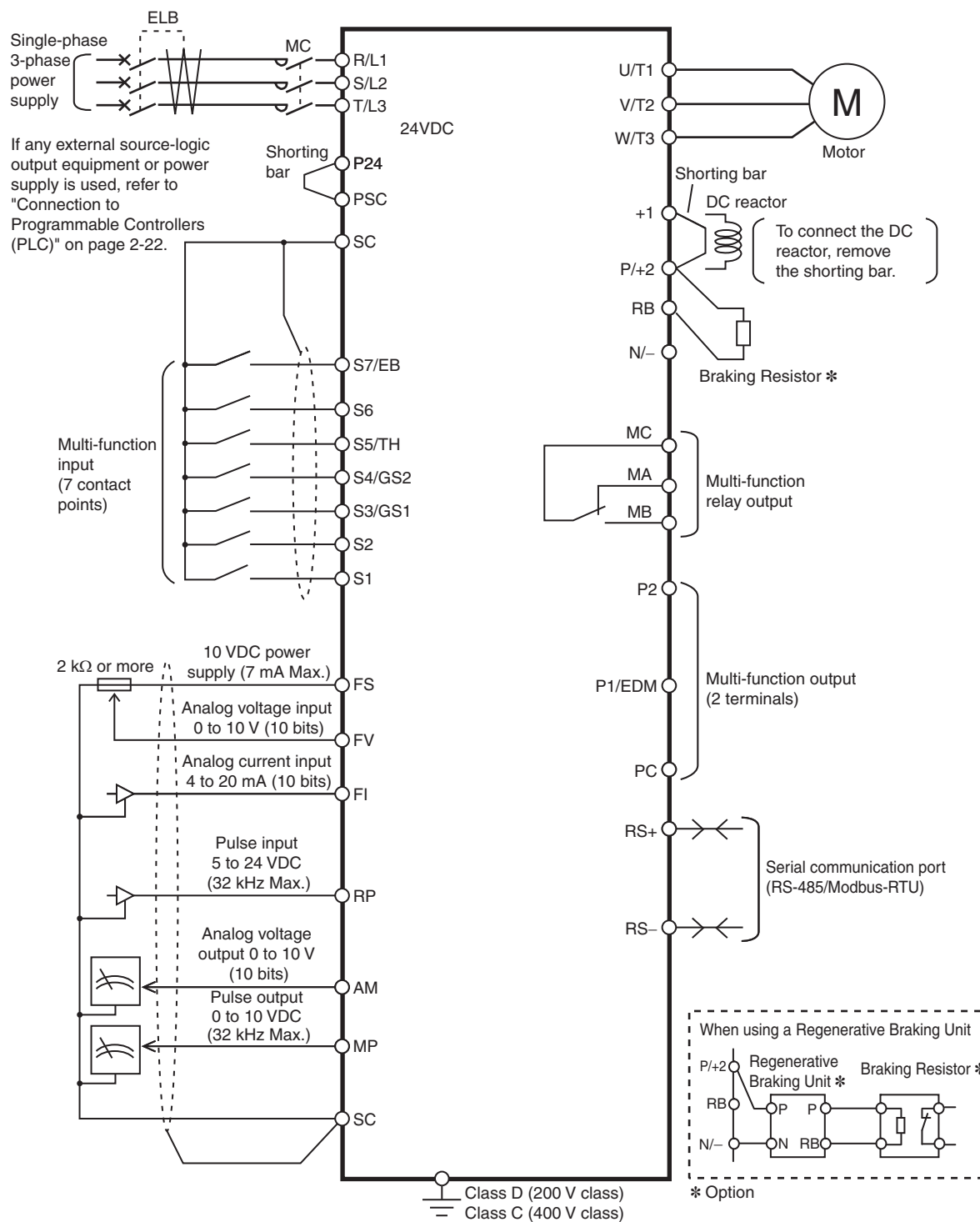
(1) Sink logic



(2) Source logic



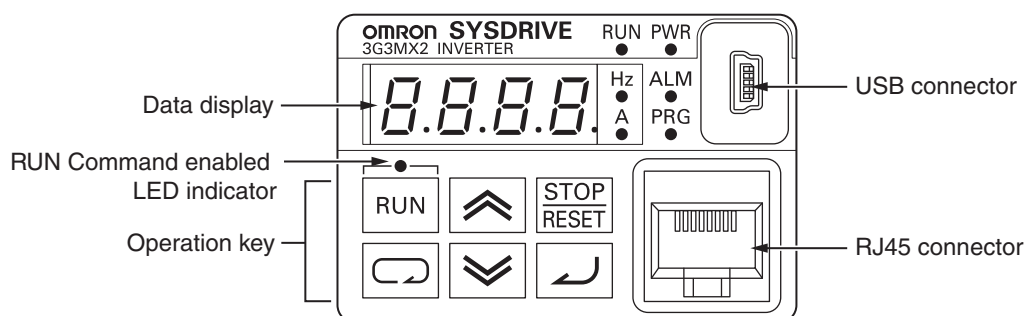
# Connection Diagram



**Note:** 1. Connect a single-phase 200 V AC input to terminals L1 and N.  
2. Factory default settings for relay output are NC contact for MA and NO contact for MB.



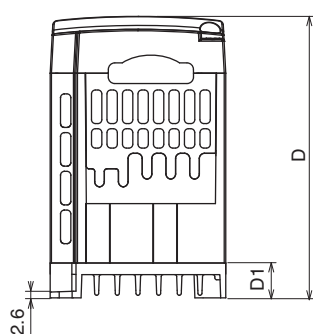
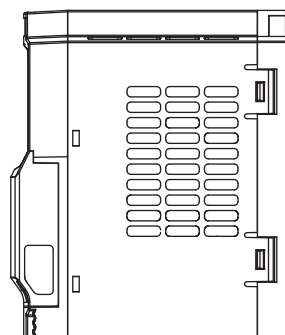
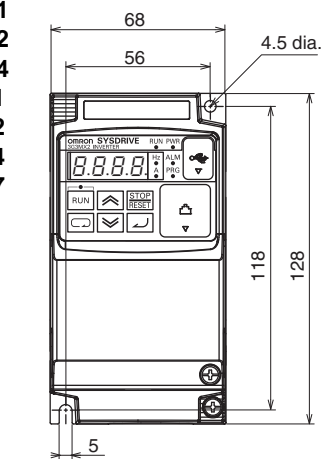
## Names of Parts and their Descriptions



	Name	Description
	POWER LED	Lit (green) while the Inverter is receiving power.
	ALARM LED	Lit (red) when the Inverter trips. For information on how to reset the trip, refer to User's Manual (I570).
	PROGRAM LED indicator	Lit (green) when the displayed data (set value) can be changed. Blinks if the set value is invalid. Refer to User's Manual (I570).
	RUN (during RUN) LED indicator	Lit (green) when the Inverter is running. (Lit when there is either a "valid RUN command" or "inverter output." Accordingly, it is also lit when a RUN command is issued at a set frequency of 0 Hz or while the motor is decelerating after the RUN command is turned OFF.)
	Monitor LED indicator (Hz)	Lit (green) when the displayed data is frequency.
	Monitor LED indicator (A)	Lit (green) when the displayed data is current.
	RUN Command enabled LED indicator	Lit (green) when the RUN command is set to the Digital Operator. (The RUN key on the Digital Operator is enabled.)
	Display	Various parameters, frequency/set value and other data are displayed (red).
	RUN key	Runs the Inverter. Take note that this key is enabled only when the RUN command destination is the Digital Operator.
	STOP/RESET key	This key decelerates the Inverter to a stop. (Although the STOP/RESET key is enabled even when a RUN command is issued to a destination other than the Digital Operator (factory default), it can be disabled by a Setting (b087).) If the Inverter is already tripped, the trip will be reset (return from the tripping).
	Mode key	Parameter is displayed: Move to the beginning of the next function group. Data is displayed: Cancel the setting and return to the parameter display. Individual input mode: Move the blinking digit to the left. Regardless of the displayed screen, pressing and holding this key (for 1 second or more) displays the data for Output Frequency Monitor (d001).
	Increment key Decrement key	These keys are used to increment/decrement a parameter or set data. Pressing and holding each key increases the incrementing/decrementing speed. Pressing the Increment and Decrement keys together activates the "Individual Input MODE" where each digit can be edited independently.
	Enter key	Parameter is displayed: Move to the data display. Data is displayed: Confirm/store the setting (in the EEPROM) and return to the parameter display. Individual input mode: Move the blinking digit to the right.
	USB connector	Use this connector (mini-B type) to connect a PC. The Inverter can still be operated from the Digital Operator even when it is being operated using a PC, etc., via USB communication.
	RJ45 connector	Use this connector (RS-422) to connect the optional Remote Operator. Once the Remote Operator is connected, the keys on the main unit become disabled. In this case, use b150 to set the item to be displayed.

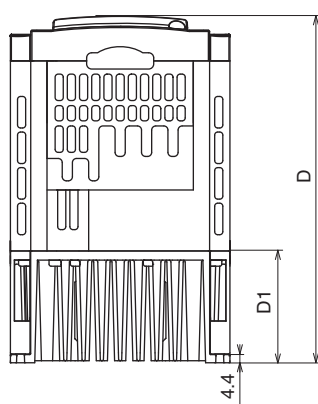
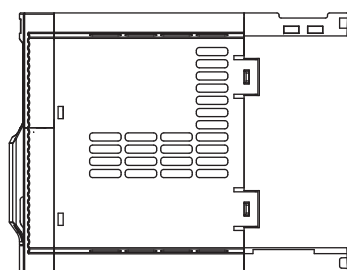
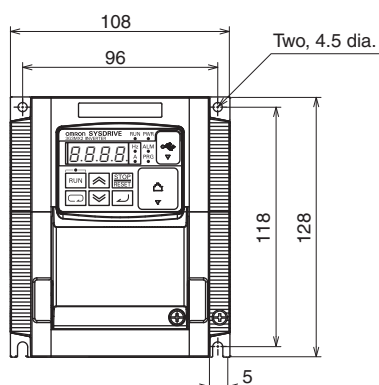
## Dimensions

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



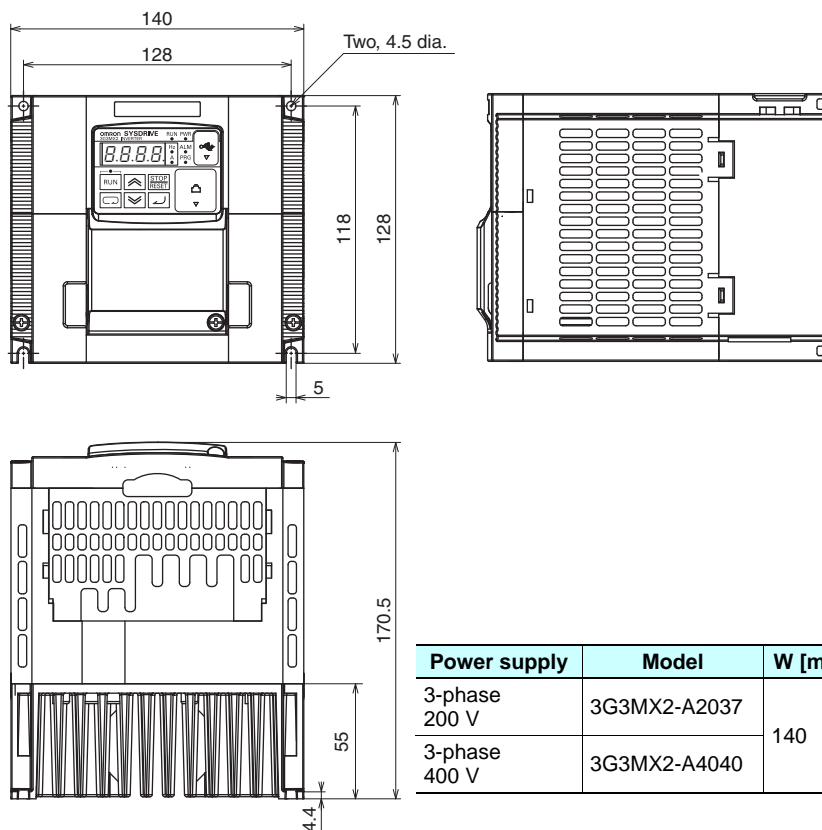
Power supply	Model	W [mm]	H [mm]	D [mm]	D1 [mm]
1-phase 200 V	3G3MX2-AB001	68	128	109	13.5
	3G3MX2-AB002			122.5	27
	3G3MX2-AB004			122.5	27
3-phase 200 V	3G3MX2-A2001	68	128	109	13.5
	3G3MX2-A2002			122.5	27
	3G3MX2-A2004			145.5	50

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

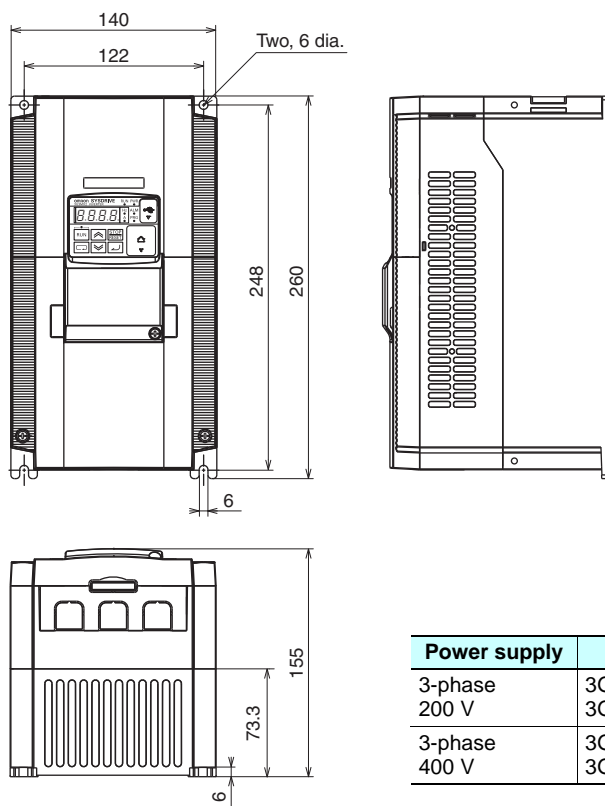


Power supply	Model	W [mm]	H [mm]	D [mm]	D1 [mm]
1-phase 200 V	3G3MX2-AB007	108	128	170.5	55
	3G3MX2-AB015			170.5	55
	3G3MX2-AB022			143.5	28
3-phase 200 V	3G3MX2-A2015	108	128	170.5	55
	3G3MX2-A2022			170.5	55
3-phase 400 V	3G3MX2-A4004	108	128	143.5	28
	3G3MX2-A4007			170.5	55
	3G3MX2-A4015			170.5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

## 3G3MX2-A2037 3G3MX2-A4040

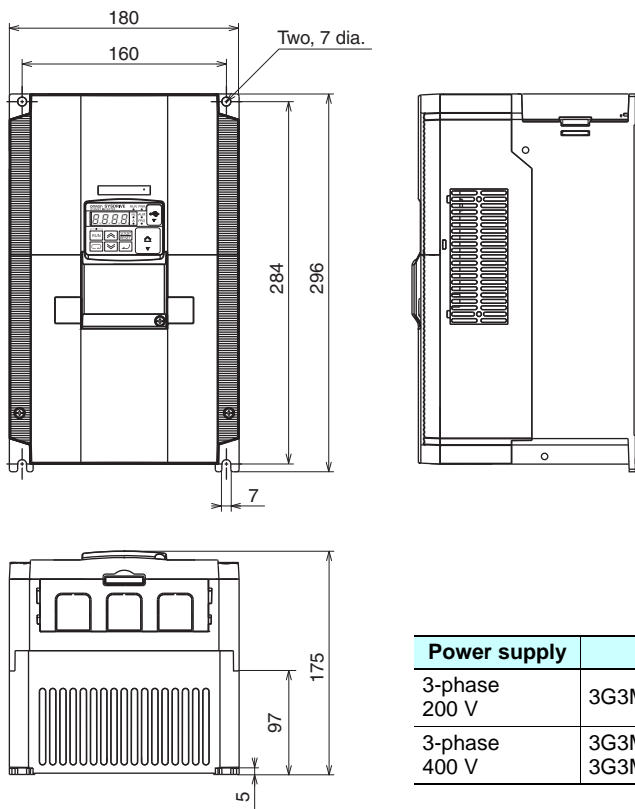


## 3G3MX2-A2055 3G3MX2-A2075 3G3MX2-A4055 3G3MX2-A4075

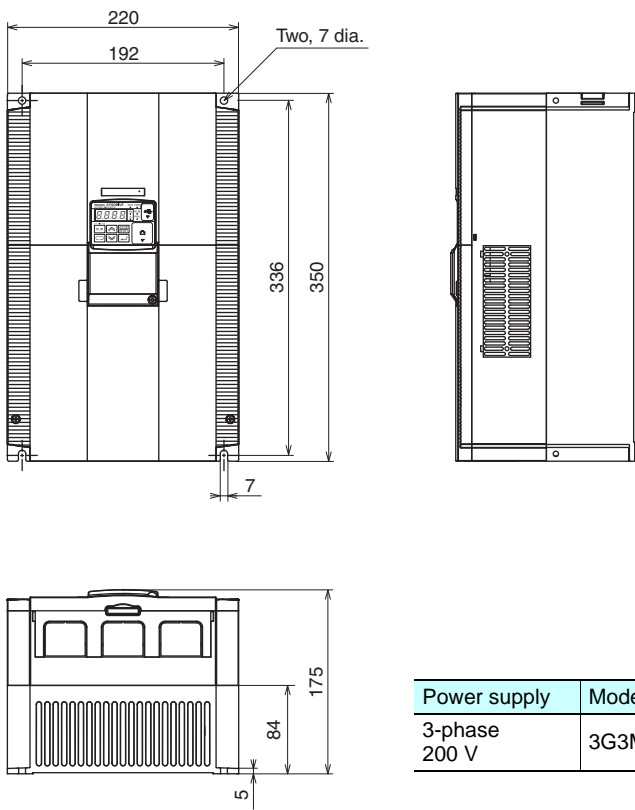


3G3MX2

3G3MX2-A2110  
3G3MX2-A4110  
3G3MX2-A4150



3G3MX2-A2150





## 3G3MX2 Related Options

Type	Specifications								Model
	% ED	Voltage	Max. Motor kW	Inverter 3G3MX2-A□		Connectable min. resistance Ω	Resist Ω	Braking torque %	
				3-Phase	1-Phase				
BRAKING RESISTORS	3% 10 sec max.	200V (Single-/ Three-phase)	0.12	2001	B001	100	400	200	AX-REM00K1400-IE
			0.25	2002	B002			180	
			0.55	2004	B004		200	180	AX-REM00K1200-IE
			1.1	2007	B007	50		100	
			1.5	2015	B015		70	140	AX-REM00K2070-IE
			2.2	2022	B022	35		90	
			4.0	2037	-		75	50	AX-REM00K4075-IE
			5.5	2055	-	20	75	AX-REM00K4035-IE	
			7.5	2075	-	17	35		55
			11	2110	-		35	40	AX-REM00K6035-IE
		15	2150	-	10	17	55	AX-REM00K9017-IE	
		400V (Three-phase)	0.55	4004	-	180	400	200	AX-REM00K1400-IE
			1.1	4007	-			200	
			1.5	4015	-		200	190	AX-REM00K1200-IE
			2.2	4022	-	200	130	AX-REM00K2200-IE	
			3.0	4030	-	100	120	160	AX-REM00K2120-IE
			4.0	4040	-			120	
			5.5	4055	-	70	75	140	AX-REM00K4075-IE
			7.5	4075	-			100	
			11	4110	-		100	50	AX-REM00K6100-IE
			15	4150	-	30	70	55	AX-REM00K9070-IE
	10% 10 sec max.	200V (Single-/ Three-phase)	0.12	2001	B001	100	400	200	AX-REM00K1400-IE
			0.25	2002	B002			180	
			0.55	2004	B004		200	180	AX-REM00K1200-IE
			1.1	2007	B007	50		70	200
			1.5	2015	B015		75	130	AX-REM00K4075-IE
			2.2	2022	B022	35	35	180	AX-REM00K4035-IE
			4.0	2037	-		35	100	AX-REM00K6035-IE
			5.5	2055	-	20	20	150	AX-REM00K9020-IE
			7.5	2075	-	17	17	110	AX-REM01K9017-IE
			11	2110	-		17	75	AX-REM02K1017-IE
			15	2150	-	10	10	95	AX-REM03K5010-IE
		400V (Three-phase)	0.55	4004	-	180	400	200	AX-REM00K1400-IE
			1.1	4007	-			200	
			1.5	4015	-		200	190	AX-REM00K2200-IE
			2.2	4022	-	100	120	200	AX-REM00K5120-IE
			3.0	4030	-			160	
			4.0	4040	-	100	140	AX-REM00K6100-IE	
			5.5	4055	-	70	70	150	AX-REM00K9070-IE
			7.5	4075	-		70	110	AX-REM01K9070-IE
			11	4110	-		70	75	AX-REM02K1070-IE
			15	4150	-	30	35	110	AX-REM03K5035-IE

Type	Specifications				Model
	Type	Voltage	Inverter 3G3MX2-A□	Rated Current (A)	
EMC LINE FILTERS	Foot Mounting [Rasmi]	200V (Single-phase)	B001 / B002 / B004	10	AX-FIM1010-RE
			B007	14	AX-FIM1014-RE
			B015 / B022	24	AX-FIM1024-RE
		200V (Three-phase)	2001 / 2002 / 2004 / 2007	10	AX-FIM2010-RE
			2015 / 2022	20	AX-FIM2020-RE
			2037	30	AX-FIM2030-RE
			2055 / 2075	60	AX-FIM2060-RE
			2110	80	AX-FIM2080-RE
			2150	100	AX-FIM2100-RE
		400V (Three-phase)	4004 / 4007	5	AX-FIM3005-RE
			4015 / 4022 / 4030	10	AX-FIM3010-RE
			4040	14	AX-FIM3014-RE
			4055 / 4075	23	AX-FIM3030-RE
			4110 / 4150	50	AX-FIM3050-RE
	Separate Mounting [Schaffner]	200V (Single-phase)	B001 / B002 / B004	10	AX-FIM1010-SE
			B007 / B015 / B022	24	AX-FIM1024-SE
		200V (Three-phase)	2001 / 2002 / 2004 / 2007	10	AX-FIM2010-SE
			2015 / 2022	20	AX-FIM2020-SE
			2037	30	AX-FIM2030-SE
			2055 / 2075	60	AX-FIM2060-SE
			2110	80	AX-FIM2080-SE
			2150	100	AX-FIM2100-SE
		400V (Three-phase)	4004 / 4007	5	AX-FIM3005-SE
			4015 / 4022 / 4030	10	AX-FIM3010-SE
			4040	14	AX-FIM3014-SE
			4055 / 4075	23	AX-FIM3030-SE
			4110 / 4150	50	AX-FIM3050-SE

Type	Specifications		Model
	Voltage	Inverter 3G3MX2-A□	
INPUT AC REACTORS	200V (Single-phase)	B001 / B002 / B004 / B007 / B015 / B022	UNDER DEVELOPMENT
	200V (Three-phase)	2001 / 2002 / 2004 / 2007	AX-RAI02800080-DE
		2015 / 2022 / 2037	AX-RAI00880200-DE
		2055 / 2075	AX-RAI00350335-DE
		2110 / 2015	AX-RAI00180670-DE
	400V (Three-phase)	4004 / 4007 / 4015	AX-RAI07700050-DE
		4022 / 4030 / 4040	AX-RAI03500100-DE
		4055 / 4075	AX-RAI01300170-DE
		4110 / 4150	AX-RAI00740335-DE

Type	Specifications		Model
	Voltage	Inverter 3G3MX2-A□	
DC REACTORS	200V (Single-phase)	B001 / B002	AX-RC10700032-DE
		B004	AX-RC06750061-DE
		B007	AX-RC03510093-DE
		B015	AX-RC02510138-DE
		B022	AX-RC01600223-DE
	200V (Three-phase)	2001 / 2002	AX-RC21400016-DE
		2004	AX-RC10700032-DE
		2007	AX-RC06750061-DE
		2015	AX-RC03510093-DE
		2022	AX-RC02510138-DE
		2037	AX-RC01600223-DE
		2055	AX-RC01110309-DE
		2075	AX-RC00840437-DE
		2110	AX-RC00590614-DE
		2150	AX-RC00440859-DE
	400V (Three-phase)	4004	AX-RC43000020-DE
		4007	AX-RC27000030-DE
		4015	AX-RC14000047-DE
		4022	AX-RC10100069-DE
		4030	AX-RC08250093-DE
		4040	AX-RC06400116-DE
		4055	AX-RC04410167-DE
		4075	AX-RC03350219-DE
		4110	AX-RC02330307-DE
		4150	AX-RC01750430-DE
OUTPUT AC REACTORS	200V (Single-phase)	B001 / B002 / B004	AX-RAO11500026-DE
		B007	AX-RAO07600042-DE
		B015	AX-RAO04100075-DE
		B022	AX-RAO03000105-DE
	200V (Three-phase)	2001 / 2002 / 2004	AX-RAO11500026-DE
		2007	AX-RAO07600042-DE
		2015	AX-RAO04100075-DE
		2022	AX-RAO03000105-DE
		2037	AX-RAO01830160-DE
		2055	AX-RAO01150220-DE
		2075	AX-RAO00950320-DE
		2110	AX-RAO00630430-DE
		2150	AX-RAO00490640-DE
	400V (Three-phase)	4004 / 4007 / 4015	AX-RAO16300038-DE
		4022	AX-RAO11800053-DE
		4030 / 4040	AX-RAO07300080-DE
		4055	AX-RAO04600110-DE
		4075	AX-RAO03600160-DE
		4110	AX-RAO02500220-DE
		4150	AX-RAO02000320-DE

Type	Specifications		Model
	Description	Diameter	
RADIO NOISE FILTERS	For 2.2 kW motors or below	21	AX-FER2102-RE
	For 15 kW motors or below	25	AX-FER2515-RE
	For 45 kW motors or below	55	AX-FER5045-RE

Type	Description	Model
COMMUNICATION OPTION	Profibus option card	3G3AX-MX2-PRT-E
	DeviceNet option card	3G3AX-MX2-PRT-E
	EtherCat option card	3G3AX-MX2-ERT*
	CompoNet option card	3G3AX-MX2-CRT*
	Mechatrolink II option card	3G3AX-MX2-ML2*
	CanOpen option card	3G3AX-MX2-CORT*
PC CABLE	PC Communication cable (2m, PC USB to Mini USB Connecting Cable with Ferrite)	AX-CUSBM002-E
REMOTE OPERATOR	Remote operator with frequency reference volume	3G3AX-OP01
	LCD Remote operator (5 Line LCD remote operator with copy function, cable length max. 3m.)	AX-OP05-E
	3 meters cable for connecting remote operator	3G3AX-CAJOP300-EE

\* Available soon. Please contact OMRON for availability.

## Related Manuals

Manual No.	Model	Category
I570	3G3MX2	USERS MANUAL
W453	CXONE-ALL□□C/D-V□ WS02-DRVC01	OPERATION MANUAL



## Read and Understand this Catalog

Please read and understand this catalog before purchasing the product. Please consult your OMRON representative if you have any questions or comments.

## Warranty and Limitations of Liability

### WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

### LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS, OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

## Application Considerations

### SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

### PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

## Disclaimers

### CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

### DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

### PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.



**Singapore Office:**  
**OMRON ELECTRONICS PTE. LTD.**  
438A Alexandra Road, #05-05/08  
(Lobby 2) Alexandra Technopark  
Singapore 119967  
Tel: (65) 6547 6789  
Fax: (65) 6547 6769  
E-mail: mktg\_sg@ap.omron.com



**Malaysia Office:**  
**OMRON ELECTRONICS SDN. BHD.**  
1101 Level 11 Uptown 1  
1 Jalan SS21/58 Damansara Uptown  
47400 Petaling Jaya, Selangor  
Malaysia  
Tel: (60-3) 7688 2888  
Fax: (60-3) 7688 2833  
E-mail: my\_enquiry@ap.omron.com



**Thailand Office:**  
**OMRON ELECTRONICS CO. LTD.**  
Rasa Tower 20th Floor  
555 Phaholyothin Road  
Chatuchak, Bangkok  
10900, Thailand  
Tel: (66-2) 937 0500  
Fax: (66-2) 937 0501  
CRM Call Centre: (66-2) 942 6700  
E-mail: th\_enquiry@ap.omron.com



**Indonesia Office:**  
**PT. OMRON ELECTRONICS**  
Graha Pratama Building, 3A Floor  
Jl. M.T. Haryono Kav 15  
Jakarta Selatan 12810  
Indonesia  
Tel: (62-21) 8370 9555  
Fax: (62-21) 8370 9550  
E-mail: id\_enquiry@ap.omron.com



**Philippines Office:**  
**OMRON ASIA PACIFIC PTE. LTD.**  
**MANILA REPRESENTATIVE OFFICE**  
2nd Floor, Kings Court II Building  
2129 Do Chino Roces Avenue  
Corner Dela Rosa Street  
1231 Makati City, Metro Manila  
Philippines  
Tel: (63-2) 811 2831  
Fax: (63-2) 811 2583  
E-mail: ph\_enquiry@ap.omron.com



**Australia Offices:**  
**Sydney Office:**  
**OMRON ELECTRONICS PTY. LTD.**  
Omron House  
71 Epping Road, North Ryde  
Sydney, New South Wales 2113  
Australia  
Tel: (61-2) 9878 6377  
Fax: (61-2) 9878 6981  
Toll Free: 1800 678838  
E-mail: au\_enquiry@ap.omron.com

**Melbourne Office:**  
**OMRON ELECTRONICS PTY. LTD.**  
Axxess Corporate Park  
Unit 98, 45 Gilby Road  
Mt Waverley Victoria 3149  
Australia  
Tel: (61-3) 8588 2600  
Fax: (61-3) 8588 2690  
E-mail: au\_enquiry@ap.omron.com

**Brisbane Office:**  
**OMRON ELECTRONICS PTY. LTD.**  
Unit 14, 1378 Lytton Road  
Hemmant 4174, Queensland  
Australia  
Tel: (61-7) 3859 3900  
Fax: (61-7) 3348 8701  
E-mail: au\_enquiry@ap.omron.com

**Adelaide Office:**  
**OMRON ELECTRONICS PTY. LTD.**  
Suite 12, 18 Humpheries Terrace  
Kilkenny, SA 5009  
Australia  
Tel: (61-8) 8440 6412  
Fax: (61-8) 8345 1204  
E-mail: au\_enquiry@ap.omron.com



**New Zealand Office:**  
**OMRON ELECTRONICS LTD.**  
65 Boston Road, Mt Eden  
Private Bag 92620  
Symonds Street, Auckland  
New Zealand  
Tel: (64-9) 358 4400  
Fax: (64-9) 358 4411  
E-mail: nz\_enquiry@ap.omron.com



**India Offices:**  
**Bangalore Office:**  
**OMRON AUTOMATION PVT. LTD.**  
No. 43, G.N. Complex  
St.Johns Road  
Bangalore - 560 042  
India  
Tel: (91-80) 4072 6400/401  
Fax: (91-80) 4146 6403  
E-mail: in\_enquiry@ap.omron.com

**Noida Office:**  
**OMRON AUTOMATION PVT. LTD.**  
212 & 213, 2nd Floor  
International Home Deco Park (IHDP)  
Plot No.7, Sector 127, Taj Express Way  
Noida 201301  
India  
Tel: (91-120) 4745 800  
Fax: (91-120) 4745 801  
E-mail: newdelhi\_enquiry@ap.omron.com

**Mumbai Office:**  
**OMRON AUTOMATION PVT. LTD.**  
102 & 103, Meadows, Sahar Plaza,  
Andheri-Kurla Road, Andheri East  
Mumbai - 400 059  
India  
Tel: (91-22) 4275 5600  
Fax: (91-22) 4275 5602  
E-mail: mumbai\_enquiry@ap.omron.com



**Vietnam Offices:**  
**OMRON ASIA PACIFIC PTE. LTD.**  
**HANOI REPRESENTATIVE OFFICE**  
6th Floor, 92 Hoang Ngan Street  
Trung Hoa, Cau Giay  
Hanoi, SR Vietnam  
Tel: (84-4) 3556 3444  
Fax: (84-4) 3556 3443  
E-mail: hn\_enquiry@ap.omron.com

**HO CHI MINH REPRESENTATIVE OFFICE**  
2nd Floor, IWA, 102 A-B, Cong Quynh,  
P. Pham Ngu Lao, Q1, TP. Ho Chi Minh  
SR Vietnam  
Tel: (84-8) 3920 4338  
Fax: (84-8) 3920 4335  
E-mail: hcm\_enquiry@ap.omron.com

Asia Pacific Head Office:

## OMRON ASIA PACIFIC PTE. LTD.

438A Alexandra Road  
#05-05/08  
(Lobby 2) Alexandra Technopark  
Singapore 119967  
Tel: (65) 6835 3011 Fax: (65) 6835 2711  
E-mail: ask@ap.omron.com

Website: [www.omron-ap.com](http://www.omron-ap.com)

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