High Performance AC Drives 0.4-400kW VXM

IMO

5 YEAR GUARANTEE

- 5 year warranty
- Dual rated from 5.5kW
- High performance open and closed loop operation
- Speed or torque control
- 15 preset speeds
- FieldBus options – Profibus, DeviceNet etc
- RS485 port
- IMO loader PC software
- Display remote mounting
- Maintenance information/alarm

Standard specification

Type	VXM***	30kw VXM*** (K)		40	75	150	220	400	550	750	1100	1500	1850	2200G	–	30	37	45	55	75	90	110	132	160	200	220	280	315
	VXMKP		*1)	–	–	–	–	–	–	–	–	–	–	–	30	–	–	–	–	–	–	–	–	–	–	–	–	–
Applied	Nominal HD (heavy duty)	kW		0.4	0.75	1.5	2.2	4.0	5.5	7.5	11	15	18.5	22	–	30	37	45	55	75	90	110	132	160	200	220	280	315
	Maximum LD (light duty)	kW		–	–	–	–	–	7.5	11	15	18.5	22	–	30	37	45	55	75	90	110	132	160	200	220	280	315	400
Output ratings	Rated capacity *2	kVA		1.0	1.7	2.6	3.9	6.4	9.3	12	17	21	28	32	32	43	53	65	80	107	126	150	181	218	270	298	373	
	Rated voltage *3	V		3 phase 380, 400, 415V/50Hz 380, 400, 440, 460V/60Hz OM: 440V/50Hz																								
	Rated current *4	HD	A	1.5	2.5	3.7	5.5	9.0	13	18	24	30	39	45	–	60	75	91	112	150	176	210	253	304	377	415	520	
	Cont. (VT use)	LD	A	–	–	–	–	–	16.5	23	30	37	44	–	60	75	91	112	150	176	210	253	304	377	415	520		
	Over Load Capability Short time (CT use)	HD / LD	*1)	150% of rated current for 1 min. / 200% of rated current for 0.5s					110% HD - 60% LD						150% of rated current for 1 min. / 180% of rated current for 0.5s					110% 1 min LD								
	Output frequency	Hz		0.1 – 400																								
Input ratings	Phases, Voltage, Frequency	*10)		3 phase 380 to 480V 50/60Hz											3 phase 380 to 440V/50Hz 380 to 480V/60Hz *5													
	Voltage/Frequency variations			Voltage: +10 to -15% (Voltage unbalance *6): 2% or less) Frequency: +5 to -5%																								
	Momentary voltage dip capability	*7)		When the input voltage is 310V or more, the inverter can be operated continuously. When the input voltage drops below 310V from rated voltage, the inverter can be operated for 15ms. The smooth recovery method is selectable.																								
	Rated current *8 (with DCR)			0.82	1.5	2.9	4.2	7.1	10.0	13.5	19.8	26.8	33.2	39.3	54	54	67	81	100	134	160	196	232	282	352	385	491	
	(without DCR)	A		1.8	3.5	6.2	9.2	14.9	21.5	27.9	39.1	50.3	59.9	69.3	86	86	104	124	150	–	–	–	–	–	–	–	–	
	Required power supply capacity (with DCR)	kVA		0.6	1.1	2.1	3.0	5.0	7.0	9.4	14	19	24	28	38	38	47	57	70	93	111	136	161	196	244	267	341	
Control	Starting torque	*1)		>200% (with Dynamic torque-vector control selected)											>180% (with Dynamic torque-vector control selected)													
Braking (Standard)	Braking torque			150%					100%				20% *9		15 to 10% *9													
	Time	s		5					5				No limit															
	Duty cycle	%		5	3	5	3	2	3	2	No limit																	
	Braking torque (Using options)			150%											100%													
	DC injection braking			Starting frequency: 0.1 to 60.0Hz Braking time: 0.0 to 30.0s Braking level: 0 to 100% of rated current																								
Enclosure (IEC 60529)				IP 40											IP 00(IP20: Option)													
Cooling method				Natural cooling					Fan cooling																			
Standards				-UL/cUL -CE Marking (Low Voltage) -EMC Directive -TÜV (up to 22kW) -EN 61800-2 (Ratings, specifications for low voltage adjustable frequency a.c. power drive systems) -EN 61800-3 (EMC product standard including specific test methods)																								
Mass		kg		2.2	2.5	3.8	3.8	3.8	6.5	6.5	10	10	10.5	10.5	31	31	36	41	42	50	73	73	104	104	145	145		

CT: Constant torque   VT: Variable torque

NOTES:

*1) Specifications for VT use are shown below.

*2) Inverter output capacity (kVA) at 415V.

*3) Output voltage is proportional to the power supply voltage and cannot exceed the power supply voltage.

*4) Current derating may be required in case of low impedance loads such as high frequency motor.

*5) When the input voltage is 380V/50Hz or 380 to 415V/60Hz, the top of the auxiliary transformer must be changed.

*6) Refer to the EN 61800-3 (5.2.3).

*7) Tested at standard load condition (85% load).

*8) This value is calculated. (Refer to IMO).

*9) With a nominal applied motor, this value is average torque when the motor decelerates and stops from 60Hz. (It may change according to motor loss.)

*10) Input ratings given for HD use.

Conformity to Low Voltage Directive

The Jaguar VXM Series conforms to the Low Voltage Directive with EN50178.

Conformity to EMC Directive

- Emission requirement

  EMC filters in compliance with EN61800-3 are provided for all models as an optional extra

- Immunity requirement

  The Jaguar VXM Series inverters meet EN61800-3 as standard.

Common specification

	Item		Explanation
Output frequency	Setting	Maximum frequency	50 to 400Hz *1)
		Base frequency	25 to 400Hz *1)
		Starting frequency	0.2 to 60Hz, Holding time: 0.0 to 10.0s
		Carrier frequency *2)	HD use, heavy duty 0.75 to 15kHz (55kW or smaller) *3) / 0.75 to 10kHz (75kW or larger) — LD use light/normal duty 0.75 to 15kHz (22kW or smaller) / 0.75 to 10kHz (30 to 75kW) / 0.75 to 6kHz (90kW or larger)
	Accuracy (Stability)		• Analog setting : ±0.2% of maximum frequency (at 25 ±10˚C) • Digital setting : ±0.01% of maximum frequency (at -10 to +50˚C)
	Setting resolution		• Analog setting : 1/3000 of maximum frequency ex.) 0.02Hz at 60Hz, 0.04Hz at 120Hz, (0.15Hz at 400Hz : EN) • Digital setting : 0.01Hz at maximum frequency of up to 99.99Hz (0.1Hz at Maximum frequency of 100Hz and above) • LINK setting : 1/20000 of maximum frequency ex.) 0.003Hz at 60Hz, 0.006Hz at 120Hz, (0.02Hz at 400Hz : EN) • 0.01Hz (Fixed)
Control	Control method		• V/f control (Sinusoidal PWM control) • Dynamic torque-vector control (Sinusoidal PWM control) • Vector control with PG (*) (EN only)
	Voltage/freq. (V/f) characteristic		Adjustable at base and maximum frequency, with AVR control : 320 to 480V
	Torque boost		Selectable by load characteristics: Constant torque load (Auto/manual), variable torque (manual)
	Operation method		• KEYPAD operation : FWD or REV key, STOP key
			• Digital input signal operation : FWD or REV command, Coast-to-stop command, etc.
			• LINK operation : RS485 (Standard) Profibus-DP, Interbus-S, DeviceNet, Modbus Plus, CAN open (Option)
	Frequency setting (Frequency command)		• KEYPAD operation : ∧ or ∨ key
			• External potentiometer (*) : 1 to 5k (1/2W)
			• Analog input : 0 to +10VDC (0 to +5VDC), 4 to 20mA DC (Reversible) 0 to ±10VDC (0 to ±5VDC) . . . Reversible operation by polarised signal can be selected. (Inverse) +10 to 0VDC, 20 to 4mA DC . . . Inverse mode operation can be selected.
			• UP/DOWN control : Output frequency increases when UP signal is ON, and decreases when DOWN signal is ON.
			• Multistep frequency : Up to 16 different frequencies can be selected by digital input signal.
			• Pulse train input (*) : 0 to 100kp/s
			• Digital signal (parallel) (*) : 16-bit binary
			• LINK operation : RS485 (Standard) • Profibus-DP, Interbus-S, DeviceNet, Modbus Plus, CAN open (Option)
			• Programmed PATTERN operation: Maximum 7 stages
	Jogging operation		• FWD or REV key, FWD or REV digital input signal
	Running status signal		Transistor output (4 points) : RUN, FAR, FDT, OL, LU, TL, etc.
			Relay output (2 points) : Same as transistor output • Alarm output (for any fault)
			Analog output (1 point) : Output frequency, output current, output torque, etc.
			Pulse output (1 point) : Output frequency, output current, output torque, etc.
	Acceleration/Deceleration time		0.01 to 3600s : Independently adjustable acceleration and deceleration • 4 different times are selectable.
			Mode select : Linear, S-curve (weak), S-curve (strong), Non-linear
	Active drive		When the acceleration time reaches 60s, the motor output torque is automatically reduced to rated torque. After 60s the motor operation mode is changed to torque limiting operation. The acceleration time is automatically extended up to 3 times.
	Frequency limiter		High and low limiter can be preset.
	Bias frequency		Bias frequency can be preset.
	Gain for frequency setting		Gain for frequency setting can be preset (0.0 to 200.0%) ex.) Analog input 0 to +5VDC with 200% gain results in maximum frequency at 5VDC.
	Skip frequency control		Skip frequency (3 points) and its common skip hysteresis width (0 to 30Hz) can be preset.
	Rotating motor pick up (Flying start)		A rotating motor (including inverse rotating mode) can be smoothly picked up without stopping the motor (speed search method).
	Auto-restart after momentary power failure		Automatic restart is available without stopping motor after a momentary power failure (speed search method). When "Smooth recovery" mode is selected, the motor speed drop is held minimum. (The inverter searches the motor speed and smoothly returns to setting frequency.)
	Line/Inverter changeover operation		Controls the switching operation between line power and inverter. The inverter has internal sequence function.
	Slip compensation		The inverter output frequency is controlled according to the load torque to keep motor speed constant. When the value is set at "0.00" and "Torque-vector" is set at "active", the compensation value is automatically set.
			Slip compensation can be preset for the second motor.
	Droop operation		The motor speed droops in proportional to output torque (-9.9 to 0.0Hz).
	Torque limiting		• When the motor torque reaches a preset limiting level, this function automatically adjusts the output frequency to prevent the inverter from tripping due to an overcurrent. • Torque limiting 1 and 2 can be individually set, and are selectable with a digital input signal.
	Torque control		Output torque (or load factor) can be controlled with an analog input signal.
	PID control		This function can control flow rate pressure, etc. (with an analog feedback signal.) Reference signal • KEYPAD operation (∧ or ∨ key): Setting freq./Max. freq. X 100 (%) • PATTERN operation : Setting freq./Max. freq. X 100 (%) • Voltage input (Terminal 12 and V2) : 0 to +10V DC • DI option input (*) : BCD, setting freq./Max. freq. X 100 (%) • Current input (Terminal C1) : 4 to 20mA DC • Binary, full scale/100 (%) • Reversible operation with polarity (Terminal 12) : 0 to ±10V DC • Multistep frequency setting : Setting freq./Max. freq. X 100 (%) • Reversible operation with polarity (Terminal 12 + V1) : 0 to ±10V DC • RS485 : Setting freq./Max freq. X 100 (%) • Inverse mode operation (Terminal 12 and V2) : +10 to 0V DC • Inverse mode operation (Terminal C1) : 20 to 4mA DC Feedback signal • Terminal 12 (0 to +10V DC or +10 to 0V DC) • Terminal C1 (4 to 20mA DC or 20 to 4mA DC)

NOTES: (*) Option *1) For application at 120Hz or above, please contact IMO. *2) Inverter may automatically reduce carrier frequency, in accordance with ambient temperature or output current for protection purposes. *3) The minimum carrier frequency changes depending on maximum output frequency.

Common specification continued

	Item	Explanation	
Control	Automatic deceleration	Torque limiter 1 (braking) is set at "F41:0" (Same as Torque limiter 2 (braking)). • In deceleration : The deceleration time is automatically extended up to 3 times the setting time for tripless operation even if braking resistor not used. • In constant speed operation : Based on regenerative energy, the frequency is increased and tripless operation is active.	
	Second motor's setting	This function is used for two motors switching operation. • The second motor's V/f characteristics (base and maximum frequency) can be preset. • The second motor's circuit parameter can be preset. Torque-vector control can be applied to both motors.	
	Energy saving operation	This function minimises inverter and motor losses at light load.	
	Fan stop operation	This function is used for silent operation or extending the fan's lifetime.	
	Universal DI	Transmits to main controller of LINK operation.	
	Universal DO	Outputs command signal from main controller of LINK operation.	
	Universal AO	Outputs analog signal from main controller of LINK operation.	
	Zero speed control (*)	The motor speed is controlled with the speed reference of zero – (holding torque).	
	Positioning control (*)	The SY option card can be used for positioning control by differential counter method.	
	Synchronised operation (*)	The function controls the synchronised operation between 2 axes with encoders.	
Indication	Operating mode (Running)	LED monitor	LCD monitor (English, German, French, Spanish, Italian, Japanese)

		• Output frequency 1 (before slip compensation) (Hz)
		• Output frequency 2 (after slip compensation) (Hz)
		• Setting frequency (Hz)
		• Output current (A)
		• Output voltage (V)
		• Motor synchronous speed (r/min)
		• Line speed (m/min)
		• Load shaft speed (r/min)
		• Torque calculation value (%)
		• Input power (kW)
		• PID reference value ("F01")
		• PID reference value (Remote) ("C30")
		• PID feedback value
		• Trip history: Cause of trip by code (even when main power supply is off, trip history data of the last 4 trips are retained).
			Operation monitor and alarm monitor
			Operation monitor
			• Displays operation guidance
			• Bargraph:
			  Output frequency (%), output current (A), output torque (%)
			Alarm monitor
			• The alarm data is displayed when the inverter trips.
			
			Function setting and monitor
			Function setting
			Displays function codes and its data or data code, and changes the data value.
			Operation condition
			• Output frequency (Hz) • Motor synchronous speed (r/min)
			• Output current (A) • Load shaft speed (r/min)
			• Output voltage (V) • Line speed (m/min)
			• Torque calculation value (%) • PID reference value
			• Setting frequency (Hz) • PID feedback value
			• Operation condition • Driving torque limiter setting value (%)
			  (FWD/REV, IL, VL/LU, TL) • Braking torque limiter setting value (%)
			Tester function
			(I/O check)
			• Digital I/O: ■ (ON), □ (OFF)
			• Analog I/O: (V), (mA), (H), (p/s)
			Maintenance data
			• Operation time (h) • Cooling fan operation time (h)
			• DC link circuit voltage (V) • Communication error times
			• Temperature of inside air (°C) (KEYPAD, RS485, Option)
			• Temperature of heat sink (°C) • ROM version
			• Maximum current (A) (Inverter, KEYPAD, Option)
			• Main circuit capacitor life (%)
			• Control PC board life (h)
			Load factor calculation
			• Measurement time (s) • Average current (A)
			• Maximum current (A) • Average braking power (%)
			Alarm data
			• Output frequency (Hz) • Temperature of inside air (°C)
			• Output current (A) • Heat sink temperature (°C)
			• Output voltage (V) • Communication error times
			• Torque calculation value (%) (KEYPAD, RS485, Option)
			• Setting frequency (Hz) • Digital input terminal condition
			• Operation condition (Remote, communication)
			  (FWD/REV, IL, VL/LU, TL) • Transistor output terminal condition
			• Operation time (h) • Trip history code
			• DC link circuit voltage (V) • Multiple alarm occurrence

	Stopping	Selected setting value or output value	
	Trip mode	Displays the cause of trip by codes as follows. • OC1 (Overcurrent during acceleration) • OC2 (Overcurrent during deceleration) • OC3 (Overcurrent running at constant speed) • EF (Ground fault) • Lin (Input phase loss) • FUS (Fuse blown) • OU1 (Overvoltage during acceleration) • OU2 (Overvoltage during deceleration) • OU3 (Overvoltage running at constant speed) • LU (Undervoltage) • OH1 (Overheating at heat sink) • OH2 (External thermal relay tripped) • OH3 (Overtemperature of inside air) • dBH (Overheating of DB circuit) • OL1 (Motor 1 overload) • OL2 (Motor 2 overload) • OLU (Inverter unit overload) • OS (Overspeed) • PG (PG error) • Er1 (Memory error) • Er2 (KEYPAD panel communication error) • Er3 (CPU error) • Er4 (Option error) • Er5 (Option error) • Er7 (Output phase loss error, impedance imbalance) • Er8 (RS485 error)	
	Charge lamp	• When the DC link circuit voltage is higher than 50V, the charge lamp is ON.	

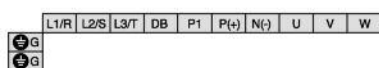## Common specification continued

	Item	Explanation
Protection	Overload	Protects the inverter by electronic thermal and detection of inverter temperature.
	Overvoltage	Detects DC link circuit overvoltage, and stops the inverter. 400V series: 800VDC.
	Undervoltage	Detects DC link circuit undervoltage, and stops the inverter. 400V series: 400VDC.
	Input phase loss	Phase loss protection for power line input.
	Overheating	Protects the inverter by detection of inverter temperature.
	Short-circuit	Short-circuit protection for inverter output circuit.
	Ground fault	• Ground fault protection for inverter output circuit (3 phase current detection method). • Zero-phase current detection method (30kW or larger).
	Motor overload	• Electronic thermal overload relay can be selected for standard motor or inverter rated motor. • Thermal time constant (0.5 to 75.0 minutes) can be preset for a special motor. • The second motor's electronic thermal overload relay can be preset for 2-motor changeover operation.
	DB resistor overheating	• Prevents DB resistor overheating by internal electronic thermal overload relay (7.5kW or smaller). • Prevents DB resistor overheating by external thermal overload relay attached to DB resistor (11kW or larger). (The inverter stops discharge operation to protect the DB resistor).
	Stall prevention	• Controls the output frequency to prevent (overcurrent) trip when the output current exceeds the limit value during acceleration. • Lowers the output frequency to hold almost constant torque when the output current exceeds the limit value during operation at constant speed. • Controls the output frequency to prevent (overvoltage) trip when the DC link circuit voltage exceeds the limit value during deceleration.
	Output phase loss	When the inverter executes auto-tuning, detects each phase impedance imbalance and displays an Error code.
	Motor protection by PTC thermistor	When the motor temperature exceeds allowable value, the inverter trips automatically.
	Auto reset	When the inverter is tripped it can be set to automatically reset and start.
Condition (Installation and operation)	Installation location	Free from corrosive gases, flammable gases, oil mist, dusts and direct sunlight. Indoor use only.
	Altitude	1000m or less. Applicable to 3000m with power derating (-10%/1000m).
	Ambient temperature	-10 to +50°C. For inverters of 22kW or smaller, remove the ventilation covers when operating it at a temperature of 40°C or above.
	Ambient humidity	5 to 95%RH (non-condensing).
	Vibration	3mm from 2 to less than 9Hz, 9.8m/s^2 from 9 to less than 20Hz 2m/s^2 from 20 to less than 55Hz, 1m/s^2 from 55 to less than 200Hz
Storage condition		Temperature: -25 to +65°C, Humidity: 5 to 95%RH (non-condensing)

Basic wiring diagram
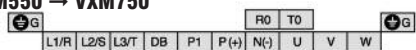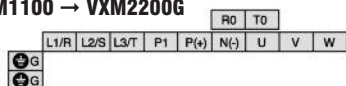
Terminal arrangement

• Main circuit terminals

• Control circuit terminals

VXM40 → VXM75

VXM30KP → VXM110K

VXM150 → VXM400

VXM132K → VXM220K

VXM550 → VXM750

VXM1100 → VXM2200G

Terminal functions continued

	Symbol	Terminal name	Function	Remarks	Func. code
Main circuit	L1/R, L2/S, L3/T	Power input	Connect a 3 phase power supply		
	U, V, W	Inverter output	Connect a 3 phase induction motor		
	P1, P(+)	For DC REACTOR	Connect the DC REACTOR for power-factor correcting or harmonic current reducing	DC REACTOR: Option	
	P(+), N(-)	For BRAKING UNIT	• Connect the BRAKING UNIT (option)	BRAKING UNIT (Option): 11kW or larger	
			Used for DC bus connection system		
	P(+), DB	For EXTERNAL BRAKING RESISTOR	Connect the EXTERNAL BRAKING RESISTOR (option)	Only for 7.5kW or smaller	
	⏚ G	Grounding	Ground terminal for inverter chassis (housing)		
	R0, T0	Auxiliary control power supply	Connect the same AC power supply as that of the main circuit to back up the control circuit power supply	0.75kW or smaller: Not applicable	
Analog input	13	Potentiometer power supply	+10VDC power supply for frequency setting POT (POT: 1 to 5k)	• Allowable maximum output current: 10mA	

	12	Voltage input	• 0 to +10VDC/0 to 100% (0 to +5VDC/0 to 100%)
			• Reversible operation can be selected by function setting.
			  0 to ±10VDC/0 to ±100% (0 to ±5VDC/0 to ±100%)
			• Inverse mode operation can be selected by function setting or digital input signal
			  +10 to 0VDC/0 to 100%
				• Input impedance: 22k
				• Allowable maximum input voltage: ±15VDC
				• If input voltage is 10 to 15VDC, the inverter estimates it to 10VDC
					F01, C30

		(Torque control)	Used for torque control reference signal		H18
		(PID control)	Used for PID control reference signal or feedback signal		F01, H21
		(PG feedback)	Used for reference signal of PG feedback control (option)		
	C1	Current input	• 4 to 20mA DC/0 to 100% • Inverse mode operation can be selected by function setting or digital input signal. 20 to 4mA DC/0 to 100%	• Input impedance: 250k • Allowable maximum input current: 30mA DC • If input current is 20 to 30mA DC, the inverter estimates it to 20mA DC	
		(PID control)	Used for PID control reference signal or feedback signal		F01, H21
		(PTC-Thermistor input)	The PTC-thermistor (for motor protection) can be connected to terminal C1-11	Change over the PIN switch on control board (SW2: PTC)	H26, H27
	V2	Voltage input 2	0 to +10VDC	Can't change over the terminal C1	F01
	11	Common	Common for analog signal	Isolated from terminal CMY and CM	
Digital input	FWD	Forward operation command	FWD: ON . . . The motor runs in the forward direction FWD: OFF . . . The motor decelerates and stops	When FWD and REV are simultaneously ON, the decelerates and stops	F02
	REV	Reverse operation command	REV: ON . . . The motor runs in the reverse direction REV: OFF . . . The motor decelerates and stops		
	X1	Digital input 1	These terminals can be preset as follows	• ON state maximum input voltage: 2V (maximum source current: 5mA) • OFF state maximum terminal voltage: 22 to 27V (allowable maximum leakage current: 0.5mA)	E01 to E09
	X2	Digital input 2			
	X3	Digital input 3			
	X4	Digital input 4			
	X5	Digital input 5			
	X6	Digital input 6			
	X7	Digital input 7			
	X8	Digital input 8			
	X9	Digital input 9			
	(SS1) (SS2) (SS4) (SS8)	Multistep freq. selection	(SS1) : 2 (0,1) different frequencies are selectable (SS1, SS2) : 4 (0 to 3) different frequencies are selectable (SS1, SS2, SS4) : 8 (0 to 7) different frequencies are selectable (SS1, SS2, SS4, SS8) : 16 (0 to 15) different frequencies are selectable	Frequency 0 is set by F01 (or C30) (All signals of SS1 to SS8 are OFF)	C05 to C19
	(RT1) (RT2)	ACC/DEC time selection	(RT1 : 2 (0, 1) different ACC/DEC times are selectable (RT1, RT2 : 4 (0 to 3) different ACC/DEC times are selectable	Time 0 is set by F07/F08 (All signals of RT1 to RT2 are OFF)	F07, F08 E10 to E15
	(HLD)	3 wire operation stop command	Used for 3 wire operation (HLD): ON . . . The inverter self-holds FWD or REV signal (HLD): OFF . . . The inverter releases self-holding	Assigned to terminal X7 at factory setting	
	(BX)	Coast-to-stop command	(BX): ON . . . Motor will coast-to-stop. (No alarm signal will be output)	• The motor restarts from 0Hz by turning off BX with the operation command (FWD or REV) ON • Assigned to terminal X8 at factory setting	H11
	(RST)	Alarm reset	(RST): ON . . . Faults are reset. (This signal should be held for more than 0.1s)	• During normal operating, this signal is ignored • Assigned to X9 at factory setting	
	(THR)	Trip command (External fault)	(THR): OFF . . . "OH2 trip" occurs and motor will coast-to-stop	This alarm signal is held internally	
	(JOG)	Jogging operation	(JOG): ON . . . JOG frequency is effective	This signal is effective only while the inverter is stopped	C20
	(Hz2/Hz1)	Freq. set 2/Freq. set 1	(Hz2/Hz1): ON . . . Freq. set 2 is effective	If this signal is changed while the inverter is running the signal is effective only after the inverter stops	C30/F01
	(M2/M1)	Motor 2/Motor 1	(M2/M1): ON . . . The motor circuit parameter and V/f characteristics are changed to the second motor's ones	If this signal is changed while the inverter is running the signal is effective only after the inverter stops	A10 to A18/ P01 to P09
	(DCBRK)	DC brake command	(DCBRK): ON . . . The DC injection brake is effective. (In the inverter deceleration mode)	If the operation command (FWD/REV) is input while DC braking is effective, the operation command (FWD/REV) has priority	F20 to F22
	(TL2/TL1)	Torque limiter 2/Torque limiter 1	(TL2/TL1): ON . . . Torque limiter 2 is effective		E16, E17/ F40, F41
	(SW50) (SW60)	Switching operation between line and inverter	(SW50(SW60)): ON . . . The motor is changed from inverter operation to line operation (SW50(SW60)): OFF . . . The motor is changed from line operation to inverter operation	Main circuit changeover signals are output through Y1 to Y5 terminal	
	(UP)	UP command	(UP): ON . . . The output frequency increases	When UP and DOWN commands are simultaneously ON, DOWN signal is effective	
	(DOWN)	DOWN command	(DOWN): ON . . . The output frequency decreases • The output frequency change rate is determined by ACC/DEC time • Restarting frequency can be selected from 0Hz or setting value at the time of stop		F01, C30
	(WE-KP)	Write enable for KEYPAD	(WE-KP): ON . . . The data is changed by KEYPAD		F00
	(Hz/PID)	PID control cancel	(Hz/PID): ON . . . The PID control is cancelled, and frequency setting by KEYPAD (▲ or ▼) is effective		H20 to H25
	(IVS)	Inverse mode changeover	(IVS): ON . . . Inverse mode is effective in analog signal input the signal is effective only after the inverter stops	If this signal is changed while the inverter is running	F01, C30
	(IL)	Interlock signal for 52-2	Connect to auxiliary contact (1NC) of 52-2		
	(Hz/TRQ)	TRQ control cancel	(Hz/TRQ): ON . . . The torque control is cancelled, and ordinary operation is effective		H18
	(LE)	Link enable (RS485, Bus)	(LE): ON . . . The link operation is effective. Used to switch between manual operation and serial link auto mode	RS485: Standard, Bus: option	H30
	(U-DI)	Universal DI	This signal is transmitted to main controller of LINK operation		
	(STM)	Pick up start mode	(STM): ON . . . The "Pick up" start mode is effective		H09

Terminal functions continued

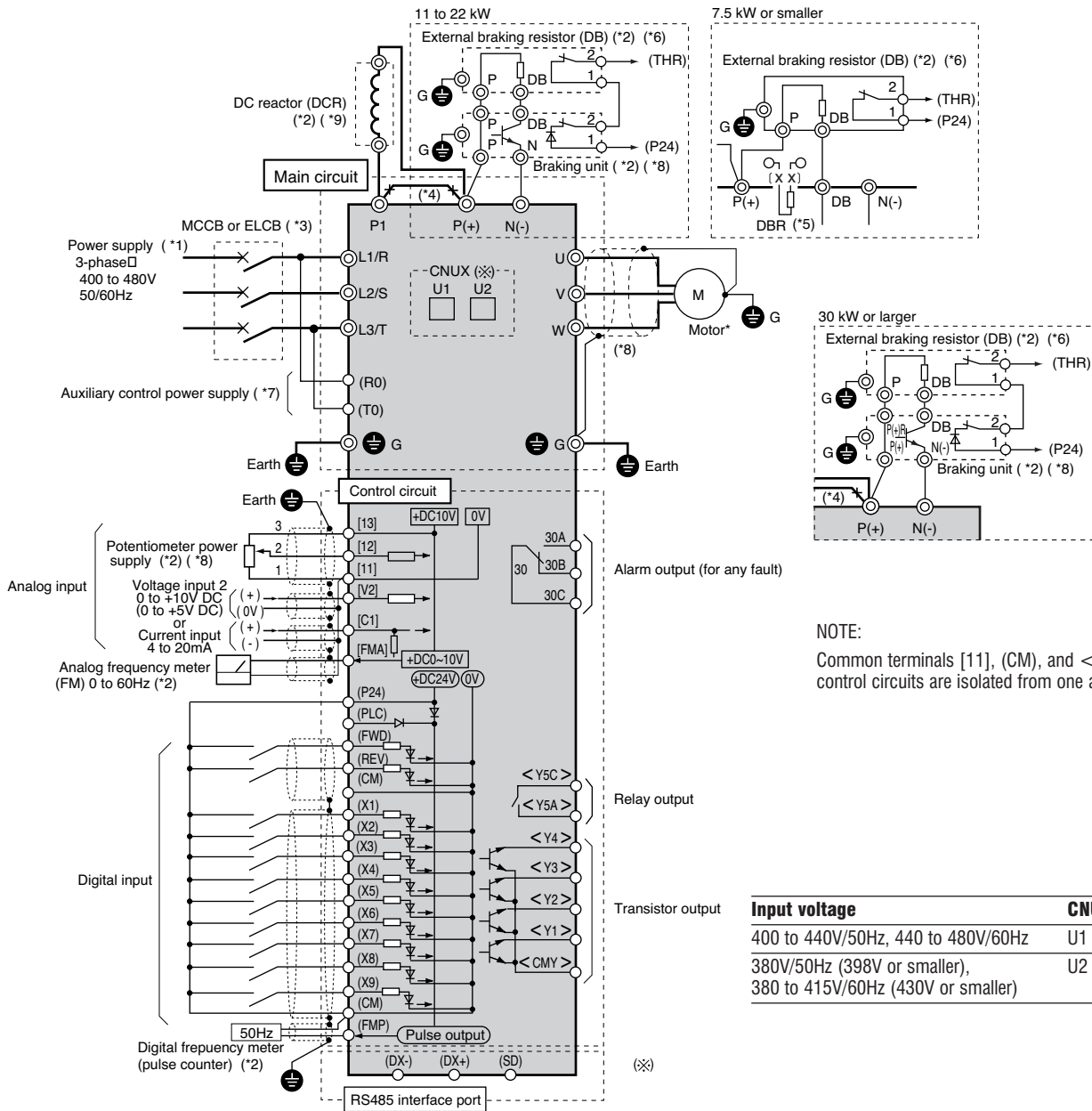|	Symbol	Terminal name	Function	Remarks	Func. code
Digital input	(PG/Hz)	SY-PG enabled	(PG/Hz): ON . . . Synchronised operation or PG-feedback operation is effective	Option	
	(SYC)	Synchronised command	(SYC): ON . . . The motor is controlled for synchronised operation between 2 axes with PGs	Option	
	(ZERO)	Zero speed command	(ZERO): ON . . . The motor speed is controlled with the speed reference of zero	This function can be selected at PG feedback control. Option	
	(STOP 1)	Forced stop command	(STOP 1): OFF . . . The motor decelerates and stops		
	(STOP 2)	Forced stop command with Deceleration time 4	(STOP 2): OFF . . . The motor decelerates and stops with Deceleration time 4		E15
	(EXITE)	Pre-exciting command	(EXITE): ON . . . Motor magnetic flux is established before starting in PG vector mode		
	PLC	PLC terminal	Connect PLC power supply to avoid malfunction of the inverter that has SINK type digital input, when PLC power supply is off		
	P24	DC voltage supply	DC voltage supply (+24V, maximum 100mA)		
Analog output	FMA	Analog monitor	Output voltage (0 to 10VDC) is proportional to selected function's value as follows. The proportional coefficient and bias value can be preset. • Output frequency 1 (Before slip compensation) (0 to max. frequency) • Output frequency 2 (After slip compensation) (0 to max. frequency) • Output current (0 to 200%) • Output voltage (0 to 200%) • Output torque (0 to 200%) • Load factor (0 to 200%) • Input power (0 to 200%) • PID feedback value (0 to 100%) • PG feedback value (0 to max. speed) • DC link circuit voltage (0 to 1000V) • Universal AO	Allowable maximum output current: 2mA	F30 to F31
	(11)	(Common)			
Pulse Output	FMP	Pulse rate monitor	• Pulse rate mode: Pulse rate is proportional to selected function's value* (50% duty pulse) • Average voltage mode: Average voltage is proportional to selected function's value* (2670p/s pulse width control)	Allowable maximum output current: 2mA	F33 to F35
	(CM)	(Common)	• Function to be output is same as those of analog output (FMA)		
	CM	Common	Common for pulse output	Isolated from terminal CMY and 11	
Transistor output	Y1	Transistor output 1	Output the selected signals from the following items	• ON state maximum output voltage: 3V (Allowable maximum sink current: 50mA) • OFF state maximum leakage current: 0.1mA (Allowable maximum voltage: 27V)	E20 to E23
	Y2	Transistor output 2			
	Y3	Transistor output 3			
	Y4	Transistor output 4			
	(RUN)	Inverter running	Outputs ON signal when the output frequency is higher than starting frequency		
	(FAR)	Frequency equivalence signal	Outputs ON signal when the difference between output frequency and setting frequency is smaller than FAR hysteresis width		E30
	(FDT1)	Frequency level detection	Outputs ON signal by comparison of output frequency and preset value (level and hysteresis)		E31, E32
	(LU)	Undervoltage detection signal	Outputs ON signal when the inverter stops by undervoltage while the operation command is ON.		
	(B/D)	Torque polarity	Outputs ON signal in braking or stopping mode, and OFF signal in driving mode		
	(TL)	Torque limiting	Output ON signal when the inverter is in torque-limiting mode		
	(IPF)	Auto-restarting	Outputs ON signal during auto restart operation (Instantaneous power failure) mode. (Including "restart time")		
	(OL1)	Overload early warning	• Outputs ON signal when the electronic thermal value is higher than preset alarm level • Outputs ON signal when the output current value is higher than preset alarm level		E33 to E35
	(KP)	KEYPAD operation mode	Outputs ON signal when the inverter is in KEYPAD operation mode		F02
	(STP)	Inverter stopping	Outputs ON signal when the inverter is in stopping mode or in DC braking mode		
	(RDY)	Ready output	Outputs ON signal when the inverter is ready for operation		
	(SW88)	Line/Inv changeover (for 88)	Outputs 88's ON signal for Line/Inverter changeover operation		
	(SW52-2)	Line/Inv changeover (for 52-2)	Outputs 52-2's ON signal for Line/Inverter changeover operation		
	(SW52-1)	Line/Inv changeover (for 52-1)	Outputs 52-1's ON signal for Line/Inverter changeover operation		
	(SWM2)	Motor2/Motor1	Outputs the motor changeover switch ON signal from motor 1 to motor 2		A01 to A18
	(AX)	Auxiliary terminal (for 52-1)	Used for auxiliary circuit of 52-1 (Same function as AX1, AX2 terminal Jaguar VX series. (30kW or larger)	Refer to wiring diagram example	
	(TU)	Time-up signal	Outputs time up signal (100ms ON pulse) at every stage end of PATTERN operation		C21 to C28
	(TO)	Cycle completion signal	Outputs one cycle completion signal (100ms ON pulse) at PATTERN operation		
	(STG1) (STG2) (STG4)	Stage No. indication 1 Stage No. indication 2 Stage No. indication 4	Outputs Pattern operation's stage No. by signals STG1, STG2 and STG4		
	(AL1) (AL2) (AL4) (AL8)	Alarm indication 1 Alarm indication 2 Alarm indication 4 Alarm indication 8	Outputs trip alarm No. by signals AL1, AL2, AL4 and AL8		
	(FAN)	Fan operation signal	Outputs the inverter cooling fan operation status signal		H06
	(TRY)	Auto-resetting	Outputs ON signal at auto resetting mode. (Including "Reset interval")		H04, H05
	(U-DO)	Universal DO	Outputs command signal from main controller of Link operation		
	(OH)	Overheat early warning	Outputs ON signal when the heat sink temperature is higher than (trip level – 10°C) and outputs OFF signal when the temperature is lower than (trip level – 15°C)		
	(SY)	Synchronisation completion signal	Synchronisation completion signal for synchronised operation	Option	
	(LIFE)	Lifetime alarm	Outputs ON signal when the calculated lifetime is longer than preset alarm level		
	(FDT2)	2nd Freq. level detection	2nd outputs ON signal by comparison of output frequency and preset value (FDT2 level)		
	(OL2)	2nd OL level early warning	2nd outputs ON signal when the output current value is larger than preset alarm level (OL2 level)		
	(C1OFF)	Terminal C1 off signal	Outputs ON signal when the C1 current is smaller than 2mA		
	(N-EX)	Speed existence signal	Outputs ON signal when motor speed is larger than stop speed* on vector control with PG	*stop speed = stop frequency (F25) x 120/pole (r/m)	F25
	CMY	Common (transistor output)	Common for transistor output signal	Isolated from terminals CM and 11	
Relay output	30A, 30B	Alarm relay output	Outputs a contact signal when a protective function is activated	• Contact rating:	F36
	30C		Changeable exciting mode active or non-exciting mode active by function "F36"	250VAC, 0.3A, cosø=0.3	E24
	Y5A, Y5C	Relay output	Functions can be selected the same as Y1 to Y4	48VDC, 0.5A, non-inductive	E25
			Changeable excitation mode active or non-excitation mode active by function "E25"		
Link	DX+, DX-, SD	RS485 I/O terminal	Connect the RS485 link signal		

External signal input operation

The following diagram is for reference only. For detailed wiring diagrams, refer to the relevant instruction manual.

NOTE:

Common terminals [11], (CM), and <CMY> for control circuits are isolated from one another.

Input voltage	CNUX connector
400 to 440V/50Hz, 440 to 480V/60Hz	U1 (Factory setting)
380V/50Hz (398V or smaller), 380 to 415V/60Hz (430V or smaller)	U2

NOTE:

Digital inputs can be source or sink depending on position of switch SW1 on control PCB. Do not connect (P24) to (CM) as shown or damage may occur.

*Option

*1) Use the inverter whose rated input voltage matches the power supply voltage.

*2) An optional device. Use it when necessary.

*3) Use this peripheral device when necessary.

*4) Terminals (P1) and (P(+)] are connected with a jumper wire before shipping. When connecting an optional DC reactor (DCR) *9), remove the jumper wire that connects the terminal (P1) and (P(+)].

*5) For models from 0.2 to 7.5kW, a built-in braking resistor (DBR) is connected to the inverter before shipping. (DBR is not mounted on models 11kW or larger.) When connecting an optional external braking resistor (DB), remove the DBR connection cables from (P(+)] and (DB) terminals. The end of the removed cables (indicated with an X) must be insulated.

*6) When connecting an optional external braking resistor (DB), be sure to also use an optional braking unit *8). Connect the optional braking unit to the (P(+)] and (N(-)] terminals. Auxiliary terminals (1) and (2) have polarity.
Be sure to connect cables to these terminals correctly. (See the diagram).

*7) Terminals (R0) and (T0) are provided for models 1.5kW or larger. These terminals are not provided for models 0.75kW or smaller. Even if these terminals are not powered, the invertor can be operated.

*8) For EMC compliance it is necessary to use screened/armoured cable between inverter U, V, W terminals and the motor. The screen should be terminated to earth at both ends of the cable. The appropriate power supply filter kit may also be fitted to the inverter input circuit. For further details contact IMO.

Protective functions

Function	Description			LED monitor
Overcurrent protection (Short-circuit) (Earth fault)	• Stops running to protect inverter from an overcurrent resulting from overload. • Stops running to protect inverter from an overcurrent due to a short-circuit in the output circuit. • Stops running to protect inverter from an overcurrent due to an earth fault in the output circuit. • Stops running to protect inverter from an overcurrent resulting from earth fault in the output circuit by detecting zero-phase current.	• 30kW or larger model only	During acceleration	$OC1$
			During deceleration	$OC2$
			While running at constant speed	$OC3$
			Earth	EF
Overvoltage protection	• The inverter stops when it detects an overvoltage in the DC link circuit.	• 400V series: 800VDC or more • Protection is not assured if excess AC line voltage is applied inadvertently.	During acceleration	$OU1$
			During deceleration	$OU2$
			While running at constant speed	$OU3$
Incoming surge protection	• Protects the inverter against surge voltage between the main circuit power line and earth. • Protects the inverter against surge voltage in the main circuit power line.	• The inverter may be tripped by some other protective function.		
Undervoltage protection	• Stops the inverter when the DC link circuit voltage drops below undervoltage level.	• 400V series : 400VDC or less • 200V series : 200VDC or less		LU
Input phase loss protection	• The inverter is protected from being damaged when open-phase fault occurs.			Lin
Overheat protection	• Stops the inverter when it detects excess heat sink temperature in case of cooling fan failure or overload.			$OH1$
	• Stops the inverter when it detects an abnormal rise in temperature in the inverter unit caused by insufficient ventilation in cubicles or an abnormal ambient temperature. • Stops the inverter when it detects an abnormal rise in temperature inside the inverter.			$OH3$
	• When the built-in braking resistor overheats, the inverter stops discharging and running. • Function data appropriate for the resistor type (built-in/external) must be set.	7.5kW or smaller model only		dbH
Electronic thermal overload relay (Motor protection)	• This function stops the inverter by detecting an inverter overload.			OLU
	• This function stops the inverter by detecting an overload in a standard motor or inverter motor.		Motor 1 overload	$OL1$
			Motor 2 overload	$OL2$
Fuse blown	• When a blown fuse is detected, the inverter stops running.	• 30kW or larger model only		FUS
Stall prevention (Momentary overcurrent limitation)	• When an output current exceeds the limit during acceleration, this function lowers output frequency to prevent an OC1 trip.	• The stall prevention function can be disabled.		
Active drive	• During running in which acceleration is 60s or longer, this function increases the acceleration time to prevent the occurrence of an OLU trip.	• The acceleration time can be prolonged up to three times the preset time.		
External alarm input	• The inverter stops on receiving external alarm signals.	• Use THR terminal function (digital input).		$OH2$
Overspeed protection	• Stops the inverter when the output frequency exceeds the rated maximum frequency by 20%.			OS
PG error	Alarm output if encoder (PG) signals are disconnected.			PG
Alarm output (for any fault)	• The inverter outputs a relay contact change over signal.	• Output terminals: 30A, 30B and 30C • Use the RST terminal function for signal input. • Even if main power input is turned off, alarm history and trip-cause data are retained.		
Alarm reset command	• An alarm-stop state of the inverter can be cleared with the RESET key or by a digital input signal (RST).			
Alarm history memory	• Stores up to four previous alarm conditions.			
Storage of data on cause of trip	• The inverter will store and display details of the latest alarm history data.			
Memory error	• The inverter checks memory data after power-on and when the data is written. If a memory error is detected, the inverter trips.			$Er1$
KEYPAD panel communication error	• If an error is detected in communication between the inverter and KEYPAD when the Keypad panel is being used, the inverter trips.	• When operated by external signals, the inverter continues running. The alarm output (for any fault) is not output. Only Er2 is displayed.		$Er2$
CPU error	• If the inverter detects a CPU error caused by noise or some other factor, the inverter trips.			$Er3$
Option communication error	• If a checksum error or disconnection is detected during communication, the inverter issues an alarm.			$Er4$
Option error	• If a linkage error or other option error is detected, the inverter issues an alarm.			$Er5$
Output phase loss error	If an unbalance of output circuits is detected during auto-tuning, this function issues an alarm (and trips the inverter).			$Er7$
RS485 communication error	• If an RS485 communication error is detected, the inverter issues an alarm.			$Er8$

NOTES:

1) Retaining alarm signal when auxiliary control power supply is not used:
If the inverter power supply is cut off while an internal alarm signal is being output, the alarm signal cannot be retained.

2) To issue the RESET command, press the [RESET] key on the KEYPAD panel or connect terminals RST and P24 and disconnect them afterwards.

3) Fault history data is stored for the past four trips.

External dimensions

Fig 1
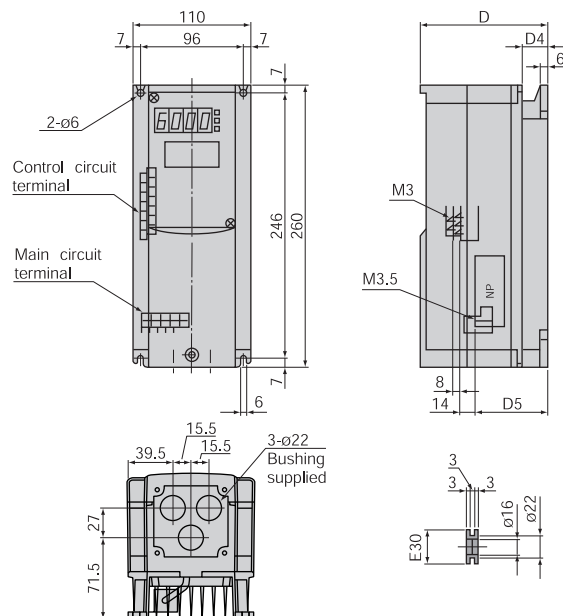**VXM40 → VXM75**

Type	D	D4	D5
VXM40	130	36.5	80
VXM75	145	51.5	95

Fig 2
VXM150 → VXM400
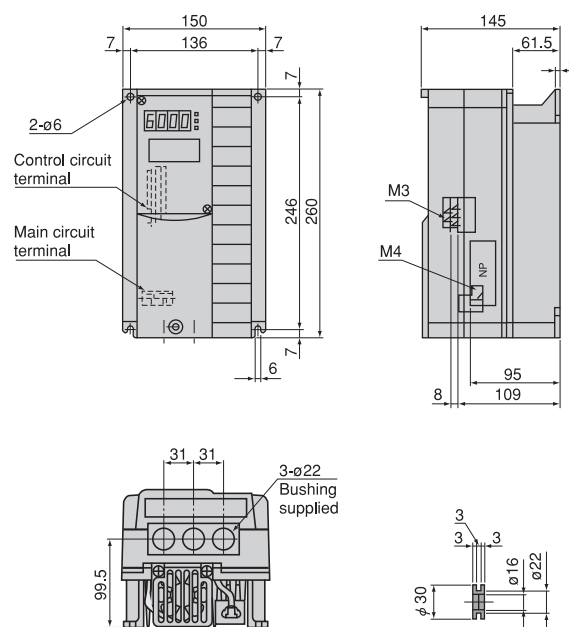
Fig 3
VXM550 → VXM750
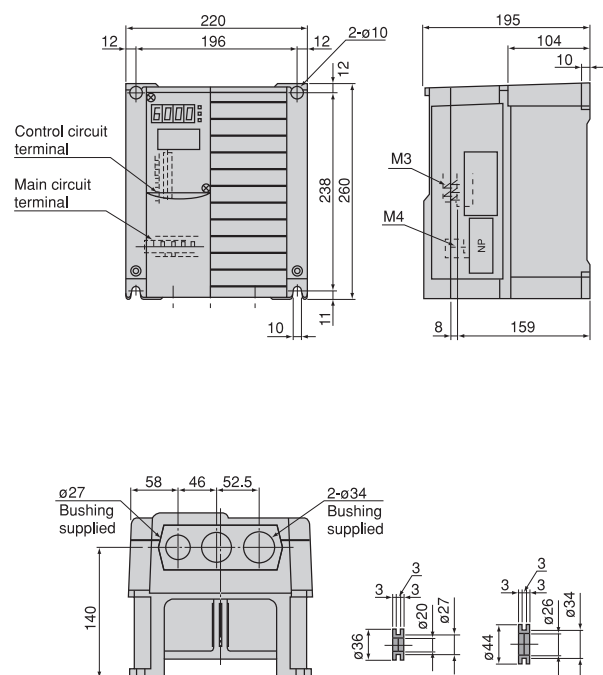
Fig 4
VXM1100 → VXM2200G

IMO
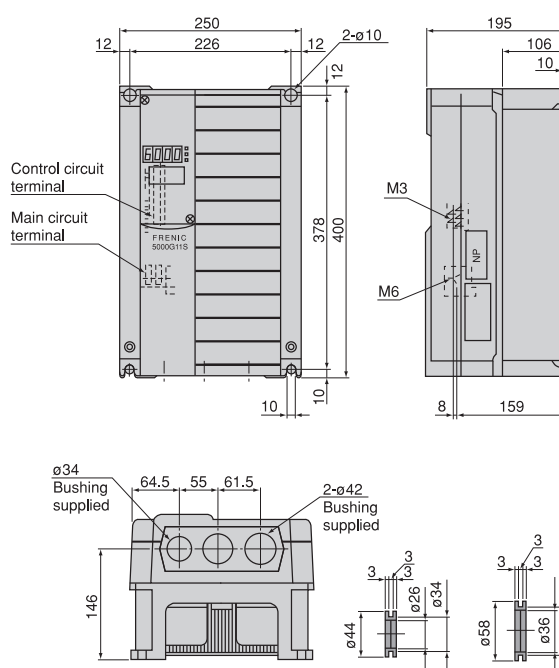
External dimensions continued

Fig 5

Internal mounting type (30kW or larger)

External cooling type (30kW or larger)
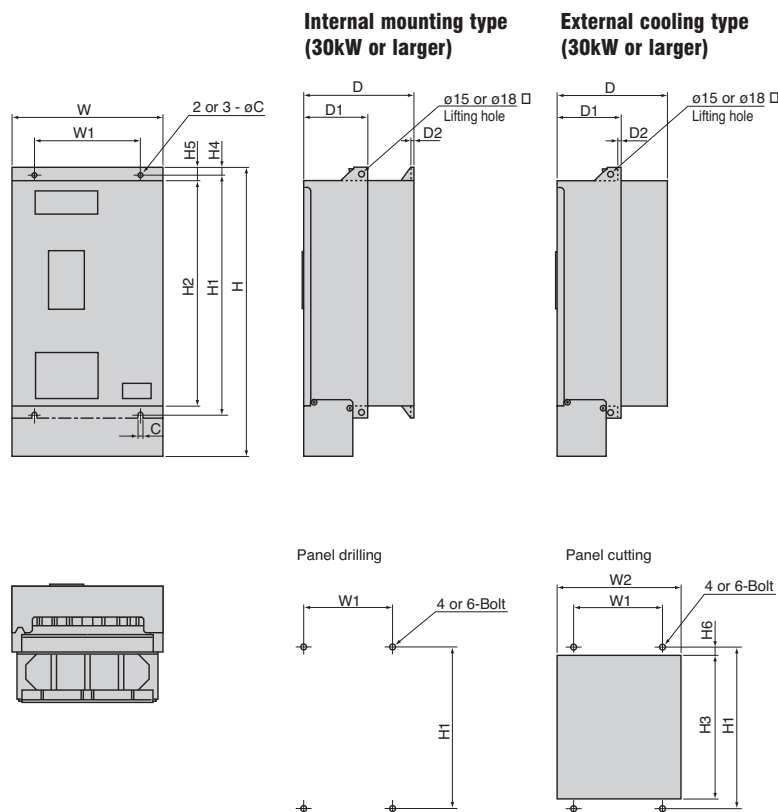
Fig 6

Keypad panel (common for all models)

Panel drilling

Panel cutting

2-M3×17 (Supplied)

Mounting hole positions
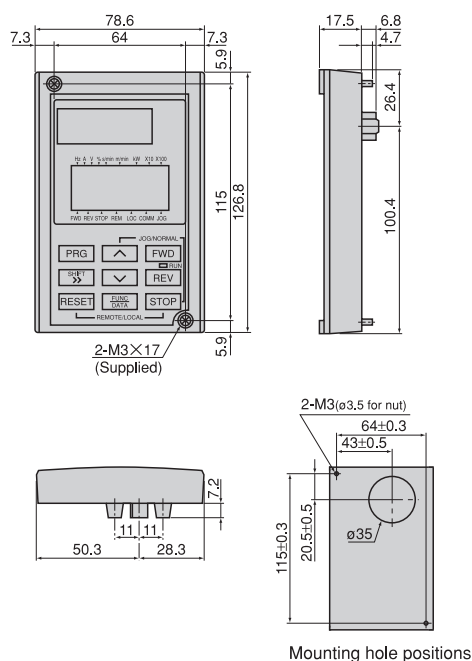
Power supply voltage	Nominal applied motor (kW)	Type	Dimensions (mm)														Mtg. Bolt
			W	W1	W2	H	H1	H2	H3	H4	H5	H6	D	D1	D2	C	
400V	30/37	VXM30K/VXM30KP	340	240	326	645	530	500	512	12	25	9	255	145	4	10	M8
	37/45	VXM37K	375	275	361								270				
	45/55	VXM45K				770	655	625	637								
	55/75	VXM55K															
	75/90	VXM75K				835	720	690	702								
	90/110	VXM90K	530	430	510	827.5	710	675	685		32.5	12.5	315	175		15	M12
	110/132	VXM110K															
	132/160	VXM132K				1087.5	970	935	945	15.5			360	220			
	160/200	VXM160K															
	200/220	VXM200K	680	580	660												
	220/280	VXM220K															
	280/315	VXM280K				1400	1370	1330	1340		35	14.5	450	285	6.4		
	315/355	VXM315K															

IMO

Options

EMC filters (typical)

Fig. A

Fig. B

Fig. C
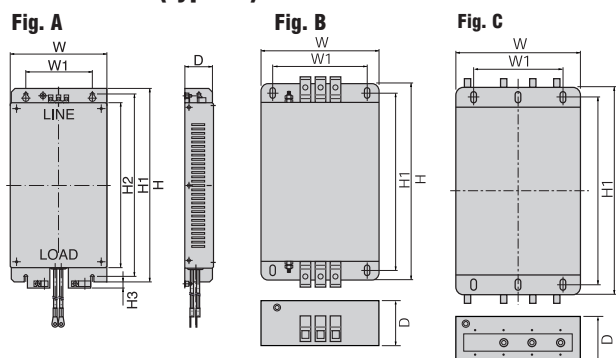
Inverter type (and use)	Filter required	Rated current (A)	Fig.	Dimensions (mm)						
				W	W1	H	H1	H2	H3	D
VXM40-75	RFM75FP	5		116	90	310	293	265	10	42
VXM150-400	RFM400FP	12		155	105	310	293	265	10	45
VXM550-750	RFM750FP	35	A	225	167	331	311	260	10	47.5
VXM1100-1500	RFM1500FP	50		250	185	480	449	400	20	70
VXM1850-2200G	RFM2200FP	72		250	185	480	449	400	20	70
VXM30K (HD) -30KP	RFM30K	100		200	166	435	408	–	–	130
VXM30K (LD) -90K (HD)	RFM90K	180	B	200	166	495	468	–	–	160
VXM90K (LD) -132K (HD)	RFM132K	280		250	170	587	560	–	–	205
VXM132K (LD) -220K (HD)	RFM220K	400	C	250	170	587	560	–	–	205
VXM220K (LD) -315K	RFM315K	880	*	364	300	688	648	–	–	180

* See Jaguar VXM instruction manual or contact IMO for details

DC reactors (typical)

Fig. A

Fig. B

Fig. C
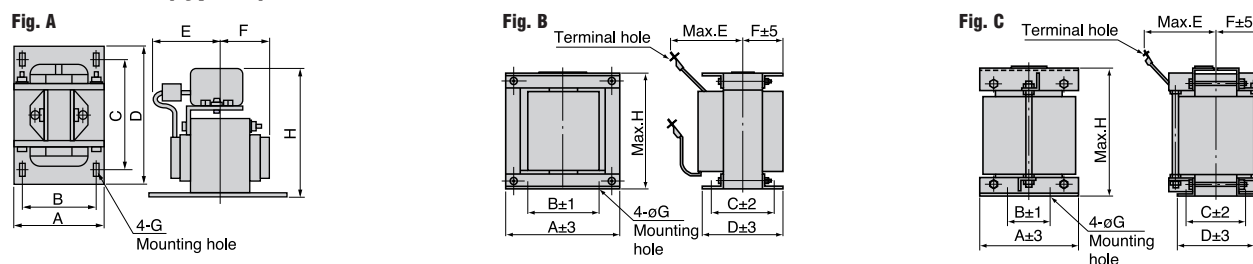
Power supply voltage	Nominal applied motor (kW)	Reactor type	Fig. A	Typical dimensions, mm									Typical mass
				B	C	D	E	F	G	H	Terminal screw	(kg)	
Three phase 400V	0.4	*	A	66	56	72	90	60	35	5.2 x 8	94	M4	1.0
	0.75	*	A	66	56	72	90	60	40	5.2 x 8	94	M4	1.4
	1.5	*	A	66	56	72	90	60	45	5.2 x 8	94	M4	1.6
	2.2	*	A	86	71	80	100	65	45	6 x 9	110	M4	2.0
	4.0	*	A	86	71	80	100	70	50	6 x 9	110	M4	2.6
	5.5	*	A	86	71	80	100	70	50	6 x 9	110	M4	2.6
	7.5	*	A	111	95	80	100	75	60	7 x 11	130	M5	4.2
	11	VXLC11	A	111	95	80	100	75	60	7 x 11	130	M5	4.3
	15	VXLC15	A	146	124	96	120	75	60	7 x 11	171	M5	5.9
	18.5	VXLC18	A	146	124	96	120	85	65	7 x 11	171	M6	7.2
	22	VXLC22	A	146	124	96	120	85	65	7 x 11	171	M6	7.2
	30	VXLC30	B	152	90	115	157	100	78	8	130	M8	13
	37	VXLC37	B	171	110	110	150	100	75	8	150	M8	15
	45	VXLC45	B	171	110	125	165	110	82	8	150	M8	18
	55	VXLC55	B	171	110	130	170	110	85	8	150	M8	20
	75	VXLC75	C	190	160	115	151	100	75	10	240	M10	20
	90	VXLC90	C	190	160	125	161	120	80	10	250	ø12	23
	110	VXLC110	C	190	160	125	161	120	80	10	250	ø12	25
	132	VXLC132	C	200	170	135	171	120	85	10	260	ø12	28
	160	VXLC160	C	210	180	135	171	120	85	12	290	ø12	32
	200	VXLC200	C	210	180	135	171	140	90	12	295	ø12	35
	220	VXLC220	C	220	190	135	171	140	90	12	300	ø15	40
	280	VXLC280	C	220	190	145	181	150	95	12	320	ø15	45
	315	VXLC315		Available soon									

NOTE:

(1) A DC reactor *must* be used for 75kW and above.

(2) The above drawings, masses and dimensions are intended as a guide only. Product details may be subject to change without prior notice. If in doubt contact IMO Ltd.

*Please contact IMO for details.

Options continued

Braking unit, braking resistor

Power supply voltage	Inverter				Option				HD	Continuous braking (100% torque conversion value)		Repetitive braking (100s or less cycle)		LD	Continuous braking (MAX. braking torque)		Repetitive braking (100s or less cycle)	
	Constant Torque Rating (HD)		Variable Torque Rating (LD)		Braking Unit		Braking resistor		Max. braking torque (%)	Braking time (s)	Discharging capability (kWs)	Duty cycle (%)	Average loss (kW)	Max. braking torque (%)	Braking time (s)	Discharging capability (kWs)	Duty cycle (%)	Average loss (kW)
	Motor (kW)	Inverter type	Motor (kW)	Inverter type	Type	Qty	(min)	kW										
Three-phase 400V	0.4	VXM40			–	1	200	0.2	150%	45	9	22	0.044	–	–	–	–	–
	0.75	VXM75			–	1	200	0.2		45	17	18	0.068					
	1.5	VXM150	–	–	–	1	160	0.4		45	34	10	0.075					
	2.2	VXM220			–	1	160	0.4		30	33	7	0.077					
	4.0	VXM400			–	1	130	0.4		20	37	5	0.093		15	37	3.5	0.093
	5.5	VXM550	7.5	VXM550	–	1	80	0.8		20	55	5	0.138		15	55	3.5	0.138
	7.5	VXM750	11	VXM750	–	1	60	0.9		10	38	5	0.188		7	38	3.5	0.188
	11	VXM1100	15	VXM1100		1	40	1.4		10	55	5	0.275	100%	7	55	3.5	0.275
	15	VXM1500	18.5	VXM1500	VXDBU 11-22	1	35	1.4		10	75	5	0.375		8	75	4	0.375
	18.5	VXM1850	22	VXM1850		1	27	1.8		10	93	5	0.463		8	93	4	0.463
	22	VXM2200G	–	–		1	22	1.8		8	88	5	0.55		6	88	3	0.55
	–	–	30	VXM30KP	VXDBU 30-37	1	15	3.6	–	–	–	–	–		10	150	10	1.5
	30	VXM30K	37	VXM30K		1	15	3.6		10	150	10	1.5		10	150	10	1.5
	37	VXM37K	45	VXM37K	VXDBU 45-55	1	12	4.8		10	185	10	1.85		10	185	10	1.85
	45	VXM45K	55	VXM45K		1	10	6		10	225	10	2.25		10	225	10	2.25
	55	VXM55K	75	VXM55K		1	7.5	7.2		10	275	10	2.75		10	275	10	2.75
	75	VXM75K	90	VXM75K	VXDBU 75-90	1	6	9.6	100%	10	375	10	3.75		10	375	10	3.75
	90	VXM90K	110	VXM90K		1	5	12		10	450	10	4.5	75%	10	450	10	4.5
	110	VXM110K	132	VXM110K	VXDBU 110-132	1	3.75	14.4		10	550	10	5.5		10	550	10	5.5
	132	VXM132K	160	VXM132K		1	3.33	18		10	660	10	6.6		10	660	10	6.6
	160	VXM160K	200	VXM160K	VXDBU 160-220	1	3.0	19.2		10	800	10	8.0		10	800	10	8.0
	200	VXM200K	220	VXM200K		1	2.5	24		10	1000	10	10.0		10	1000	10	10.0
	220	VXM220K	280	VXM220K		1	1.88	28.8		10	1100	10	11.0		10	1100	10	11.0
	280	VXM280K	315	VXM280K	Available soon													
	315	VXM315K	400	VXM315K														

NOTE:

The braking time and duty cycle (%) are calculated as the constant-torque braking used for deceleration.
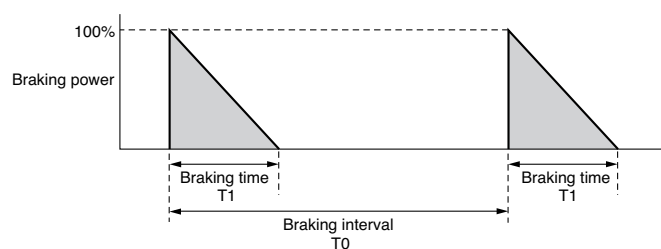
• Duty cycle (%) = $\dfrac{T1}{T0}$ x 100[%]

(Procedure for selecting options)

All three conditions listed below must be satisfied.

1. The maximum braking torque does not exceed the value shown in the table.

2. The energy discharged in the resistor for each braking (the area of the triangle shown in the above figure) does not exceed the discharging capability (kWs) in the table.

3. The average loss (energy discharged in the resistor divided by a braking interval) does not exceed the average loss (kW) shown in the table.

Options continued

Braking unit
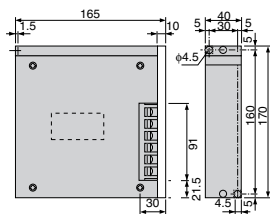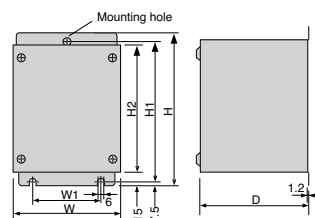
Fig. A   **Fig. B**   **Fig. C**
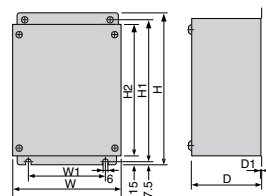
Voltage	Type	Fig.	Dimensions (mm)							Mass (kg)
			W	W1	H	H1	H2	D	D1	
400V Series	VXDBU 11-22	A	See Fig. A						–	1.1
	VXDBU 30-37	B	150	100	280	265	250	160	–	4
	VXDBU 45-55	C	230	130					1.2	5.5
	VXDBU 75-90		230	130					1.2	5.5
	VXDBU 110-132		250	150	370	355	340		2.4	9
	VXDBU 160-220		250	150	450	435	420		2.4	13

Braking resistors
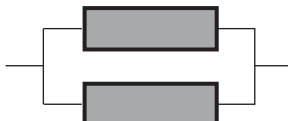
(typical combinations for heavier duty applications)

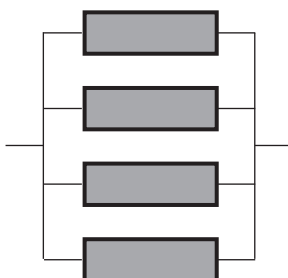**Example 1 – DBR160R380W**

Covers: VXM150 → VXM400   160Ω 380W

Covers: VXM550 → VXM750   80Ω 760W

Covers: VXM1100 → VXM2200G   40Ω 1520W

Example 2 – DBR150R220W

Covers: VXM40 → VXM75   150Ω 220W

Option Cards and other Options

Name (type)	Function	Specifications
Relay output card (VXMROC)	• Includes four relay output circuits. • Converts transistor output signals from inverter control output terminals Y1 to Y4 to relay (1SPDT) output signals.	
Digital I/O interface card (VXMDI0)	• For setting frequency using a binary code. • For monitoring frequency, output current and output voltage using a binary code. • For input and output of other individual signals.	
Analog I/O interface card (VXMAI0)	• For setting a torque limit value using an input analog signal. • For input of auxiliary signal to set frequency. • For analog monitoring of inverter output frequency, output current and torque.	
T-link interface card (OPC-G11S-TL)	• For setting a frequency. • For setting and reading function data for function codes. • For setting operation commands (FWD, REV, RST, etc.). • For monitoring the operation status. • For reading trip information.	• Used together with MICREX-F series PLC.
PG feedback card (VXMEFC)	• For performing PG vector control using feedback signals obtained from an encoder.	• Applicable Pulse Encoder specification: • 100 to 3000P/R • A, B, Z phase • 12V or 15V
Synchronised operation card (VXMSYN)	• Wait and synchronise mode, simultaneous start and synchronising mode. • Proportional speed operation. • Speed control by pulse train input can be made.	

Name (type)	Function	Type	Nominal length	Maximum length
Extension cable for keypad (VXPODCABLE)	Connects the keypad panel to an inverter unit. Three cable types are available: straight 2m, curled 1m and curled 2m. The curled 1m cable can be extended up to 5m, and the curled 2m cable up to 10m. Note: Cables once extended to the maximum length do not return to their original length.	VXPODCABLE	2m	2m
		CONTACT IMO	1m	5m
		CONTACT IMO	2m	10m

Name (type)	Function	Specifications
Copy unit (VXMCOPY)	• For batch data transfer (read, store, write) between an inverter unit and the copy unit. • For comparison of data stored in an inverter and data stored in the copy unit. • For comparison of two sets of data stored in the copy unit. • For editing a part of the data stored in an inverter. • Write protection is available in copy mode and edit mode. • The copy unit can write data to inverter memory even though the inverter is not connected to power source.	Application • Copying • Vertification • Editing • Write protect

Name (type)	Function	Type	Applicable inverter type
IP20 enclosure adaptor	• Used to put 30kW or larger models to increase enclosure rating from IP00 to IP20.	P20G11-30	VXM30K VXM30KP
		P20G11-55	VXM37K to VXM55K
		P20G11-75-4	VXM75K
		P20G11-75-2	Not Available
		P20G11-110	VXM90K to VXM110K
		P20G11-160	VXM132K to VXM160K
		P20G11-220	VXM200K to VXM220K
Mounting adaptor for external cooling	• Used to put the cooling fan section of the inverter outside the panel. • Only applicable to 22kW and below inverters. (30kW and above inverters can be modified to external cooling type by replacing the mounting bracket, as standard.)	Type	Applicable inverter type
		PBG11-0.75	VXM40 to VXM75
		PBG11-3.7	VXM150 to VXM400
		PBG11-7.5	VXM550 to VXM750
		PBG11-22	VXM1100to VXM2200G
Panel-mount adaptor (MAG9-□□)	Used to mount a Jaguar VXM inverter in panel holes that were used to mount a Fuji G7S inverter.	Type	Applicable inverter type
		MAG9-3.7	VXM40 to VXM400
		MAG9-7.5	VXM550 to VXM750
		MAG9-22	VXM1100 to VXM2200G

Wiring equipment

Power supply voltage	Nominal applied motor (kW)	Inverter type Heavy Duty Rating (HD)	Inverter type Light Duty Rating (LD)	MCCB/ELCB With DCR	MCCB/ELCB Without reactor	MC1 With DCR	MC1 Without reactor	MC2 for output circuit	Input circuit (L1/R,L2/S,L3/T) With DCR	Input circuit Without reactor	Output circuit (U.V.W.) HD	Output circuit (U.V.W.) LD	DCR circuit (P1,P(+))	DB circuit (P(+),DB,N(-))
Three phase 400V	0.4	VXM40	–	6	6	MC14-S-10	MC14-S-10	MC14-S-10	1.5	1.5	1.5	–	1.5	1.5
	0.75	VXM75	–	6	6	MC14-S-10	MC14-S-10	MC14-S-10	1.5	1.5	1.5	–	1.5	1.5
	1.5	VXM150	–	6	10	MC14-S-10	MC14-S-10	MC14-S-10	1.5	1.5	1.5	–	1.5	1.5
	2.2	VXM220	–	10	16	MC14-S-10	MC14-S-10	MC14-S-10	1.5	2.5	1.5	–	1.5	1.5
	4.0	VXM400	–	10	16	MC14-S-10	MC14-S-10	MC14-S-10	1.5	2.5	1.5	–	1.5	1.5
	5.5	VXM550	–	16	20	MC24-S-00	MC24-S-00	MC24-S-00	2.5	4	1.5	2.5	2.5	1.5
	7.5	VXM750	VXM550	20	32	MC24-S-00	MC24-S-00	MC24-S-00	2.5	6	2.5	2.5	2.5	1.5
	11	VXM1100	VXM750	32	40	MC32-S-00	MC32-S-00	MC32-S-00	4	10	2.5	4	4	2.5
	15	VXM1500	VXM1100	40	50	MC40-S-00	MC40-S-00	MC40-S-00	4	16	4	6	4	2.5
	18.5	VXM1850	VXM1500	40	60	MC50-S-00	MC50-S-00	MC50-S-00	6	16	6	10	6	2.5
	22	VXM2200G	VXM1850	50	75	MC50-S-00	MC50-S-00	MC50-S-00	10	25	10	10	10	2.5
	30	VXM30K	VXM30KP	75	100	MC62-S-00	MC62-S-00	MC62-S-00	16	25	16	16	16	2.5
	37	VXM37K	VXM30K	100	125	MC74-S-00	MC74-S-00	MC74-S-00	16	35	16	25	16	2.5
	45	VXM45K	VXM37K	100	150	K110A22	K110A22	K110A22	25	50	25	35	25	4
	55	VXM55K	VXM45K	125	175	K3150A11	K3150A11	K3150A11	35	70	35	50	35	4
	75	VXM75K	VXM55K	175	–	K3150A11	–	K3150A11	50	–	50	70	50	6
	90	VXM90K	VXM75K	200	–	K3150A11	–	K3150A11	70	–	70	95	70	6
	110	VXM110K	VXM90K	225	–	K3175A11	–	K3175A11	95	–	95	120	95	10
	132	VXM132K	VXM110K	300	–	K3175A11	–	K3315A11	120	–	120	150	120	10
	160	VXM160K	VXM132K	350	–	K3315A11	–	K3315A11	185	–	150	240	185	16
	200	VXM200K	VXM160K	400	–	K3450A22	–	K3450A22	300	–	240	300	300	25
	220	VXM220K	VXM200K	500	–	K3450A22	–	K3700A22	300	–	300	400	300	25
	280	VXM280K	VXM220K	600	–	K3700A22	–	K3700A22	500	–	400	–	500	25
	315	VXM315K	VXM280K	Available soon										
	400		VXM315K	Available soon										

NOTES:

- For moulded-case circuit breakers (MCCB) and earth-leakage circuit breakers (ELCB), the required frame type and series depend on the transformer capacity and other factors. When selecting breakers, refer to IMO, if uncertain.
- Select the current sensitivity of ELCB, with reference to motor cable length and type, and carrier frequency.
- The recommended cable sizes are based on the condition that the temperature inside the panel does not exceeds 50˚C.

- The above are 600V PVC insulated (75˚C).
- Data in the above table may differ for different conditions (ambient temperature, power supply voltage and other factors).

Caution:

- If in doubt, consult local/national wiring regulations such as the relevant IEE Wiring Regulations - latest edition.