

# EQ SERIES

## EQ5

## Multiple Purpose AC Drive

*Constant Torque 0.25 - 600 hp*

*Variable Torque 0.25 - 800 hp*



# Features and Benefits

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**Models are dual rated for constant or variable torque operation.**

## **DYNAMIC TORQUE-VECTOR CONTROL**

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Dynamic torque-vector control system performs high-speed calculations to determine the required motor power for the load status. Our key technology is optimal control of voltage and current vectors for maximum output torque.

- A high starting torque of 200% at 0.5 Hz.\*  
\* 180% for 40 hp or larger models.
- Achieves smooth acceleration/ deceleration in the shortest time for the load condition.
- Using a high-speed CPU quickly responds to an abrupt load change, detecting the regenerated power to control the deceleration time. This automatic deceleration function greatly reduces the likelihood of the inverter tripping.

## **REDUCED MOTOR INSTABILITY AT LOW SPEED**

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Motor instability at low speed (1 Hz) is reduced to less than 1/2 of that achieved by conventional inverters with the dynamic torque-vector control system, in combination with a unique digital Automatic Voltage Regulator.

## **ON-LINE TUNING SYSTEM**

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- On-line tuning to continuously check for variation of motor characteristics while running for high-precision speed control.
- This tuning function is also available for a second motor, which allows high-precision control of the second motor after changeover of operation between two motors.

## **ENVIRONMENT-FRIENDLY FEATURES**

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- Provided with low-noise control power supply systems which minimize noise interference on peripheral devices such as sensors.
- Equipped with terminals for connecting a DC LINK REACTOR that can suppress harmonics.
- Compliant with EMC Directive (Emission) when connected to optional EMC-compliant filter.

## **ADVANCED AND CONVENIENT FUNCTIONS**

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- 16-step speed with timer control for conveyor applications.
- Automatic energy-saving operation, PID control, cooling fan on/off control, and line/inverter changeover operation for fans and pumps.
- Rotating motor pick-up control: Restarts motor without any mechanical shock by detecting motor speed where motor is coasting after momentary power failure occurs.
- Automatic energy-saving operation function: Minimizes inverter and motor loss of lighter loads.

## **GLOBAL PRODUCTS AND COMMUNICATION**

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- Conforms to major world safety standards: UL, cUL, TÜV (up to 30 hp), EN (CE marking).
- Equipped with RS485 interface as standard.
- Connection to field bus: Protocol options are PROFIBUS-DP, Interbus-S, DeviceNet, Modbus Plus, BACnet, and Johnson-Metasys.
- Universal Digital Inputs and Outputs (DI/DO): Monitors digital I/O signal status and transmits to a host controller, helping to simplify factory automation.

## **INTELLIGENT KEYPAD PANEL**

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- Copy function: Easily copies function codes and data to duplicate inverters.
- Six languages (English, French, German, Italian, Spanish, and Japanese) are available as standard.
- Jogging (inching) operation from the keypad or external signal.
- Remote operation using an optional extension cable up to 33 feet away.

## **ADVANCED MONITORING AND PROGRAMMING VIA TECO LINK SOFTWARE**

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- RS232/ RS485 connection via PLC or computer.
- System overview screen displays drive status and up to 15 live parameters.
- Keypad control simulates the operators LCD keypad right from the computer.
- Meter screen provides graphical drive data for 4 parameters simultaneously.
- Graphic display screen provides trend recorder:
  - Plot and record data
  - Store, analyze and compare trend data
  - Function tuning

# Options and Accessories

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The EQ5 provides users with comprehensive packages. Options include NEMA 1 conversion kits for all models at 40 hp (30 hp, constant torque) and above.

## REGENERATIVE BRAKING TRANSISTORS

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- For dynamically demanding applications
- Power matched to regenerative braking resistors available as options

## OPTION I/O CARDS

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- Relay Output Card converts standard transistor outputs to relay contact outputs
- Digital I/O Interface Card sets a frequency using binary digital inputs
- Analog I/O Interface Card adds an additional voltage input and an analog output at 4-20mA

## FIELDBUS COMMUNICATION INTERFACES

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- Modbus Plus
- Profibus
- DeviceNet
- BACnet
- Johnson-MetasyS
- Interbus-S

## REMOTE KEYPAD EXTENSION KITS

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- Available in lengths ranging between 2 and 10 meters (6 and 33 feet)

# Applications

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# Keypad Panel Functions and Operations

## **LED monitor**

In operation mode:

Displays the setting frequency, output current, voltage, motor speed, or line speed.

In trip mode:

Displays code indicating the cause of trip.

## **Up/Down keys**

In operation mode :

Increases or decreases the frequency or speed.

In program mode :

Increases or decreases function code number and data set value.

## **Program key**

Switches the display to a menu screen or to the initial screen for operation mode or alarm mode.

## **Shift key (Column shift)**

In program mode :

Moves the cursor horizontally at data change. Pressing this key with the UP or DOWN key, the screen changes to the next function block.

## **Reset key**

In program mode :

Cancels the current input data and shifts the screen.

In trip mode :

Releases the trip-stop condition.

## **Data Copy**

Keypad can be used to upload and download configuration memory to duplicate drives.

## **LCD monitor**

In operation mode :

Displays various items of information such as operation condition and function data. Operation guidance, which can be scrolled, is displayed at the bottom.

In program mode :

Displays functions and data. This LCD monitor has a back light feature.

## **Unit indication**

Displays the unit for the information shown on the LED monitor.

## **FWD/REV keys**

In operation mode :

Starts the inverter with forward or reverse operation command. Pressing the FWD or REV key lights the RUN lamp. Invalid when the function code F02 (Operation method) is set at 1 (External signal operation).

## **Stop key**

In operation mode :

Stops the inverter. Invalid when the function code F02 (Operation method) is set at 1 (External signal operation).

## **Function/Data Select key**

In operation mode :

Changes the displayed values of LED monitor.

In program mode :

Selects the function code or stores the data.





# Constant Torque

EQ5 CT (Constant Torque) – 230V Series																					
Type		NEMA 1												PROTECTED CHASSIS							
Applied Motor Nominal (HP)		0.25	0.5	1	2	3	5	5	7.5	10	15	20	25	30	30	40	50	60	75	100	125
	Model <b>EQ5-2XXX-XX</b>	0P2 -N1	0P5 -N1	001 -N1	002 -N1	003 -N1	005 -N1	007 -N1	010 -N1	015 -N1	020 -N1	025 -N1	030 -N1	032 -N1	040 -C	050 -C	060 -C	075 -C	100 -C	125 -C	150 -C
	Rated output capacity [kVA] (*1)	0.6	1.2	2.0	3.2	4.4	6.8	6.8	10	13	18	24	29	35	35	46	58	72	86	113	138
	Rated output current [A] (*2)	1.5	3.0	5.0	8.0	11	17	17	25	33	46	59	74	87	87	115	145	180	215	283	346
	Overload capability	150% of rated output current for 1 min. 200% of rated output current for 0.5 s												150% of rated output current for 1 min. 180% of rated output current for 0.5 s							
	Starting torque	minimum 200% (torque vector control mode)												minimum 180% (torque vector control mode)							
Output ratings	Rated output voltage [V] (*3)	3-phase, 200V/50Hz, 200V,220V,230V/60Hz																			
	Rated output frequency [Hz]	50,60Hz																			
Input ratings	Phases, voltage, frequency	3-phase, 200 to 230V, 50/60Hz												3-phase, 200 to 230V, 50/60Hz							
	Voltage/frequency variations	Voltage: +10% to -15% (Imbalance rate between phases: 2% or less) (*5) , Frequency: +5% to -5%																			
	Momentary voltage dip capability (*6)	Operation will continue with 165V or more. If voltage drops below 165V, operation will continue for up to 15 ms. If "Continuous operation" is selected, the output frequency will be lowered to withstand the load until normal voltage is resumed.																			
	Required power supply capacity [kVA] (*7)	0.4	0.7	1.3	2.2	3.1	5	5	7.2	9.7	15	20	24	29	29	38	47	56	69	93	111

EQ5 CT (Constant Torque) – 460V Series																														
Type		NEMA 1												PROTECTED CHASSIS																
Applied Motor Nominal (HP)		0.5	1	2	3	5	5	7.5	10	15	20	25	30	30	40	50	60	75	100	125	150	200	250	300	350	350	400	450	500	600
	Model <b>EQ5-4XXX-XX</b>	0P5 -N1	001 -N1	002 -N1	003 -N1	005 -N1	007 -N1	010 -N1	015 -N1	020 -N1	025 -N1	030 -N1	032 -N1	040 -C	050 -C	060 -C	075 -C	100 -C	125 -C	150 -C	200 -C	250 -C	300 -C	350 -C	400 -C	450 -C	500 -C	600 -C	700 -C	800 -C
	Rated output capacity [kVA] (*1)	1.2	2.0	2.9	4.4	7.2	7.2	10	14	19	24	31	36	36	48	60	73	89	120	140	167	202	242	300	331	331	414	466	518	590
	Rated output current [A] (*2)	1.5	2.5	3.7	5.5	9	9	13	18	24	30	39	45	45	60	75	91	112	150	176	210	253	304	377	415	415	520	585	650	740
	Overload capability	150% of rated output current for 1 min. 200% of rated output current for 0.5 s												150% of rated output current for 1 min. 180% of rated output current for 0.5 s																
	Starting torque	minimum 200% (torque vector control mode)												minimum 180% (torque vector control mode)																
Output ratings	Rated output Voltage [V] (*3)	3-phase, 380V, 400V, 415V(440V)/50Hz, 380V, 400V, 440V, 460V/60Hz																												
	Rated output frequency [Hz]	50,60Hz																												
Input ratings	Phases, voltage, frequency	3-phase,380 to 480V,50/60Hz												3-phase, 380 to 440V, 50/60Hz (*5)																
	Voltage/frequency variations	Voltage: +10% to -15% (Imbalance rate between phases: 2% or less) (*5) , Frequency: +5% to -5%																												
	Momentary voltage dip capability (*6)	Operation will continue with 310V or more. If voltage drops below 310V, operation will continue for up to 15 ms. If "Continuous operation" is selected, the output frequency will be lowered to withstand the load until normal voltage is resumed.																												
	Required power supply capacity [kVA] (*7)	0.7	1.2	2.2	3.1	5.0	5.0	7.2	9.7	15	20	24	29	29	38	47	57	70	93	111	136	161	196	244	267	267	341	383	433	488

## Notes:

- (\*1) Indicated capacities are at the rated output voltage 230V for the 230V series and 460V for the 460V series. The rated capacity will be lowered if the supply voltage is lower.
- (\*2) In the case of a low impedance load, such as a high-frequency motor, the current may drop below the rated value.
- (\*3) The output voltage cannot exceed the input supply voltage.
- (\*4) The taps within the inverter must be changed for an input power supply rated at 380 to 398V/50 Hz or 380 to 30V/60 Hz.
- (\*5) If the imbalance between phases exceeds 2%, use a power-factor correcting DC reactor(DCR). Please refer to the equation on the next page.
- (\*6) The test was conducted under the standard load conditions stipulated by the JEMA committee (at the load equivalent to 85% of the nominal applied motor hp).
- (\*7) Indicates the values required when using a power factor correcting DC reactor (DCR) with a loaded nominal applied motor (optional for inverters of 75 hp/CT, 100 hp/VT or less).

# Variable Torque

## EQ5 VT (Variable Torque) – 230V Series

Type		NEMA 1												PROTECTED CHASSIS							
Applied Motor Nominal (HP)		0.25	0.5	1	2	3	5	7.5	10	15	20	25	30	30	40	50	60	75	100	125	150
Model EQ5-2XXX-XX		0P2-N1	0P5-N1	001-N1	002-N1	003-N1	005-N1	007-N1	010-N1	015-N1	020-N1	025-N1	030-N1	032-N1	040-C	050-C	060-C	075-C	100-C	125-C	150-C
Rated output capacity [kVA] (*1)		0.6	1.2	2.0	3.2	4.4	6.8	8.8	12	17	22	27	31	35	46	58	72	86	113	138	165
Rated output current [A] (*2)		1.5	3.0	5.0	8.0	11	17	22	29	42	55	68	80	87	115	145	180	215	283	346	415
Overload capability		110% of rated output current for 1 min.																			
Starting torque		50% or more																			
Output ratings	Rated output voltage [V] (*3)	3-phase, 200V/50Hz, 200V,220V,230V/60Hz																			
	Rated output frequency [Hz]	50,60Hz																			
Input ratings	Phases, voltage, frequency	3-phase, 200 to 230V, 50/60Hz												3-phase, 200 to 230V, 50/60Hz							
	Voltage/frequency variations	Voltage: +10% to -15% (Imbalance rate between phases: 2% or less) (*5), Frequency: +5% to -5%																			
	Momentary voltage dip capability (*6)	Operation will continue with 165V or more. If voltage drops below 165V, operation will continue for up to 15 ms. If "Continuous operation" is selected, the output frequency will be lowered to withstand the load until normal voltage is resumed.																			
	Required power supply capacity [kVA] (*7)	0.4	0.7	1.3	2.2	3.1	5	7.2	9.7	15	20	24	29	29	38	47	56	69	93	111	139

## EQ5 VT (Variable Torque) – 460V Series

Type		NEMA 1												PROTECTED CHASSIS																	
Applied Motor Nominal (HP)		0.5	1	2	3	5	7.5	10	15	20	25	30	30	40	50	60	75	100	125	150	200	250	300	350	400	450	500	600	700	800	
Model EQ5-4XXX-XX		0P5-N1	001-N1	002-N1	003-N1	005-N1	007-N1	010-N1	015-N1	020-N1	025-N1	030-N1	032-N1	040-C	050-C	060-C	075-C	100-C	125-C	150-C	200-C	250-C	300-C	350-C	400-C	450-C	500-C	600-C	700-C	800-C	
Rated output capacity [kVA] (*1)		1.2	2.0	2.9	4.4	7.2	10	13	18	24	29	35	36	48	60	73	89	120	140	167	202	242	300	331	386	414	518	590	669	765	
Rated output current [A] (*2)		1.5	2.5	3.7	5.5	9	12.5	16.5	23	30	37	44	45	60	75	91	112	150	176	210	253	304	377	415	485	520	650	740	840	960	
Overload capability		110% of rated output current for 1 min.																													
Starting torque		50% or more																													
Output ratings	Rated output voltage [V] (*3)	3-phase, 380V, 400V, 415V(440V)/50Hz, 380V, 400V, 440V, 460V/60Hz																													
	Rated output frequency [Hz]	50,60Hz																													
Input ratings	Phases, voltage, frequency	3-phase, 380 to 480V, 50/60Hz												3-phase, 380 to 440V, 50/60Hz (*4)																	
	Voltage/frequency variations	Voltage: +10% to -15% (Imbalance rate between phases: 2% or less) (*5), Frequency: +5% to -5%																													
	Momentary voltage dip capability (*6)	Operation will continue with 310V or more. If voltage drops below 310V, operation will continue for up to 15 ms. If "Continuous operation" is selected, the output frequency will be lowered to withstand the load until normal voltage is resumed.																													
	Required power supply capacity [kVA] (*7)	0.7	1.2	2.2	3.1	5.0	7.2	9.7	15	20	24	29	29	38	47	57	70	93	111	136	161	196	244	267	341	383	433	488	549	610	

From note (\*5) on previous page:

$$\text{Imbalance rate between phases [\%]} = \frac{(\text{Max. Voltage [V]} - \text{Min. Voltage [V]})}{3\text{-phase average voltage [V]}} \times 67[\%]$$

# Common Specifications

Item		Explanation	
Control	Control method	Sinusoidal wave PWM control (with V/F control, dynamic torque vector control)	
	Output frequency	Maximum frequency	50-120Hz variable torque setting
		Base frequency	25-120Hz variable torque setting
		Starting frequency	0.1 to 60Hz variable setting Holding time: 0.0 to 10.0 s
		Carrier frequency	0.75 to 15kHz (30 HP/CT, 40 HP/VT or less) 0.75 to 10kHz (40 to 100 HP/CT, 50 to 125 HP/VT) 0.75 to 6kHz (125 HP/CT, 150 HP/VT or more)
		Accuracy (stability)	Analog setting: +/- 0.2% of the max. frequency @ (25°C +/- 10°C (77°F +/-18°F)) Digital setting: +/- 0.01% of the max. frequency @ (-10°C to +50°C (14°F to 122°F))
		Setting resolution	Analog setting: 1/1000 of max. frequency (30 HP/CT, 40 HP/VT or less), 1/3000 of max. frequency (40 HP/CT, 50 HP/VT or more) Digital setting: 0.01Hz (99.99Hz or less), 0.1Hz (100.0Hz or more)
	Voltage / frequency characteristics	Output voltage at base frequency can be adjusted separately, such as 80 to 240V (230V series) or 320 to 480V (460V series). Output voltage at max. frequency can be adjusted separately, such as 80 to 240V (230V series) or 320 to 480V (460V series).	
	Torque boost	Auto: Optimum control corresponding to the load torque. Manual: 0.1 to 20.0 code setting (energy saving reduced torque, constant torque, high starting torque, etc.)	
	Accelerating / decelerating time	0.01 to 3600s Four accelerating and decelerating time settings are available independent of each other by selecting a combination of digital input signals. In addition to linear acceleration and deceleration, either S-shaped acceleration/ deceleration (weak/ strong) or non-linear acceleration/ deceleration can be selected.	
DC injection braking	Starting frequency: 0.0 to 60.0Hz, braking time: 0.0 to 10.0s, Braking level: 0-80%		
Function equipped	Frequency upper and lower limiter, bias frequency, frequency gain, jump frequency, pick-up operation, restart after momentary power failure, switching operation from line to inverter, slip compensation control, automatic energy saving operation, regeneration avoiding control, torque limiting (2-step), PID control, second motor switching, cooling fan ON/ OFF control.		
Operation	Operation method	Keypad panel: Run by <b>FWD</b> <b>REV</b> keys, stop by <b>STOP</b> key. Terminal input: Forward/ stop command, reverse/ stop command, coast-to-stop command, alarm reset, acceleration/ deceleration selection, multistep frequency selection, etc. RS485: Serial Commands	
	Frequency setting	Keypad panel: Setting by <b>▲</b> <b>▼</b> keys. External potentiometer: POT (VR) (1 to 5kΩ, 1/2watt) Analog input: 0 to +10V (0 to +5V), 4 to 20mA, 0 to +/- 10V (FWD/ REV operation) +10 V to 0 (reverse operation), 20 to 4mA (reverse operation) Up / Down control: Frequency increases or decreases as long as the digital input signal is turned on. Multistep frequency selection: Up to 16 steps are selectable by a combination of digital input signals. Serial Communication operation: Operation by RS 485 ModBus RTU. Program operation: Pattern operation by programming. Jogging operation: Jogging operation by <b>FWD</b> , <b>REV</b> key or digital input signals.	
	Operation status output signals	(4) Transistor outputs: Running, frequency arrival, frequency detection, overload early warning, etc. (2) Relay outputs: Alarm output (for any fault), multi-purpose relay output signals, etc. (1) Analog: Output frequency, output current, output voltage, output torque, power consumption, etc. 0-10V (1) Pulse output : Output frequency, output current, output power, output torque, power consumption, etc.	
Indication	Digital display (LED)	Output frequency, setting frequency, output current, output voltage, motor synchronous speed, line speed, load rotation speed, calculated torque value, power consumption, calculated PID value, PID command value, PID feedback value, and alarm code.	
	Liquid crystal display (LCD)	Operation information, operational guide, functional code / name / setting data, alarm information, tester function, motor load rate measuring function (Maximum / average current (rms) during measuring period, maintenance information (Integrated operation hours, capacitance measurement for main circuit capacitors, heat sink temperature, etc.))	
	Language	Six languages (Japanese, English, German, French, Spanish, and Italian)	
	Lamp display	Charge indication (voltage residual).	
Protective functions		Overcurrent, short-circuit, ground fault, overvoltage, undervoltage, overload, overheating, blown fuse, motor overload, external alarm, input open-phase, output open-phase (when tuning), braking resistor protection, CPU and memory error, keypad panel communication error, PTC thermistor protection, surge protection, stall prevention, etc.	
Environment	Installation location	Indoor, altitude less than 3300ft (1000m), free from corrosive gas, dust, and direct sunlight (Pollution degree 2)	
	Ambient temperature	-10°C (14°F) to +50°C (122°F) (ventilating cover must be removed under conditions exceeding +40°C (104°F) for models at 30 HP/CT, 40 HP/VT or less)	
	Humidity	5 to 95%RH (non-condensing)	
	Air pressure	Operation / storage : 12.5 - 15.4 PSI Transport : 10.2 - 15.4 PSI	
	Vibration	0.12inch(3mm) from 2 to less than 9Hz, 9.8m/s <sup>2</sup> t from 9 to less than 20Hz, 2m/s <sup>2</sup> from 20 to less than 55Hz, 1m/s <sup>2</sup> from 55 to less than 200Hz,	
	Storage	Ambient temperature	-25°C (-13°F) to +65°C (149°F)
Humidity		5 to 95%RH (non-condensing)	

# Dimensions and Weights

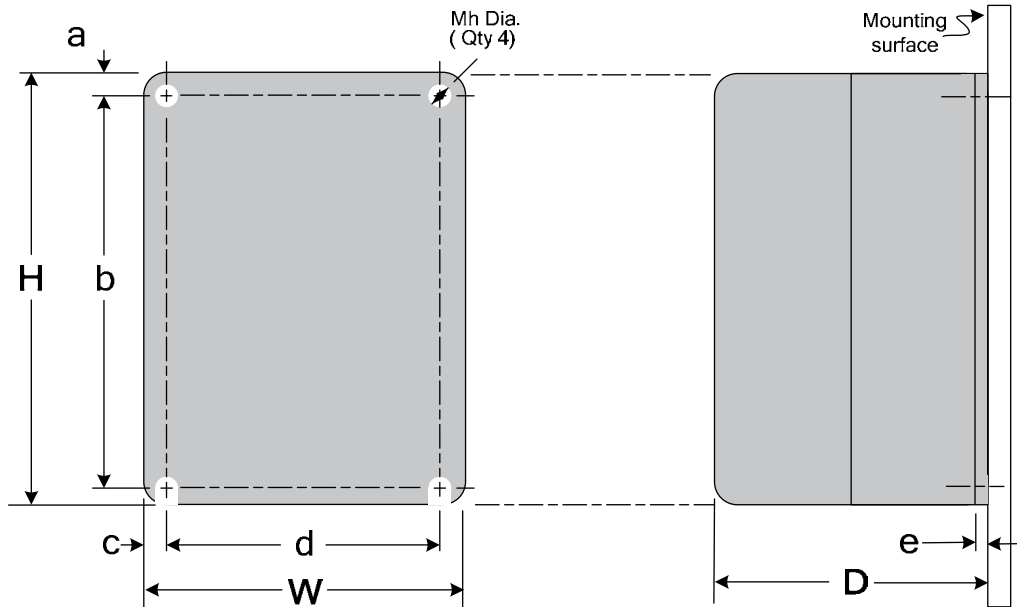
## 230V and 460V Series NEMA 1 (up to 30 hp CT, 40 hp VT)

### 230 V Series NEMA 1

Model EQ5- 2XXX-N1	Dimensions Inches/mm									Wt. Lbs./kg
	H	W	D	a	b	c	d	e	Mh	
0P2 & 0P5	10.24/260	4.33/110	5.12/130	0.28/7	9.69/246	0.28/7	3.78/96	0.24/6	0.24/6	4.9/2.2
001	10.24/260	4.33/110	5.71/145	0.28/7	9.69/246	0.28/7	3.78/96	0.24/6	0.24/6	5.5/2.5
002,003 & 005	10.24/260	5.90/150	5.71/145	0.28/7	9.69/246	0.28/7	5.35/136	0.24/6	0.24/6	8.4/3.8
007, 010 & 015	10.24/260	8.66/220	7.68/195	0.47/12	9.37/238	0.47/12	7.72/195	0.39/10	0.39/10	14.3/6.5
020, 025, 030 & 032	15.75/400	9.84/250	7.68/195	0.47/12	14.88/378	0.47/12	8.90/226	0.39/10	0.39/10	23/10.5

### 460 V Series NEMA 1

Model EQ5- 4XXX-N1	Dimensions Inches/mm									Wt. Lbs./kg
	H	W	D	a	b	c	d	e	Mh	
0P5	10.24/260	4.33/110	5.12/130	0.28/7	9.69/246	0.28/7	3.78/96	0.24/6	0.24/6	4.9/2.2
001	10.24/260	4.33/110	5.71/145	0.28/7	9.69/246	0.28/7	3.78/96	0.24/6	0.24/6	5.5/2.5
002,003 & 005	10.24/260	5.90/150	5.71/145	0.28/7	9.69/246	0.28/7	5.35/136	0.24/6	0.24/6	8.4/3.8
007, 010 & 015	10.24/260	8.66/220	7.68/195	0.47/12	9.37/238	0.47/12	7.72/195	0.39/10	0.39/10	14.3/6.5
020, 025, 030 & 032	15.75/400	9.84/250	7.68/195	0.47/12	14.88/378	0.47/12	8.90/226	0.39/10	0.39/10	23/10.5





# Dimensions and Weights

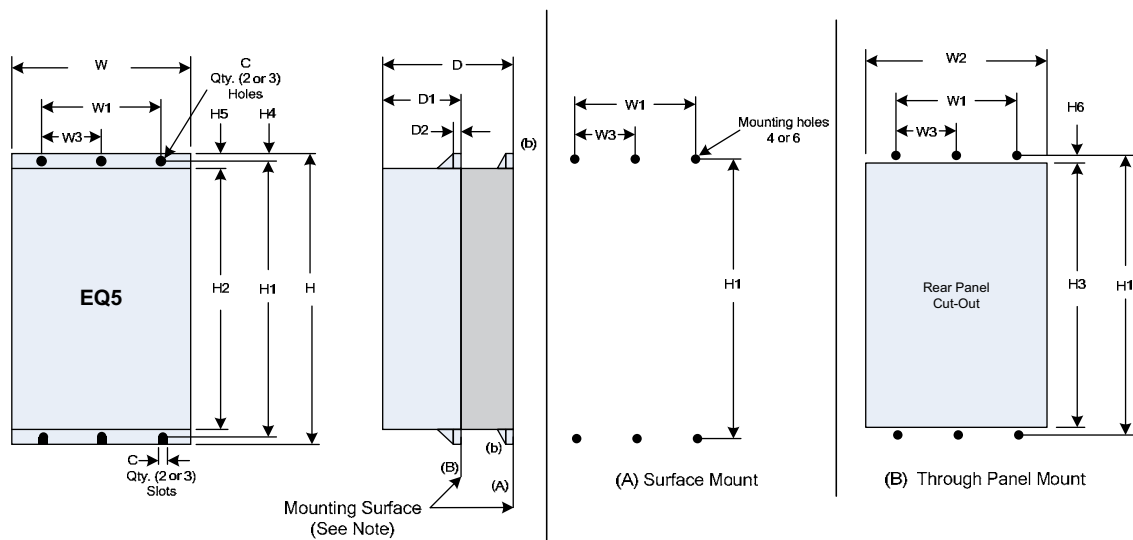
## 230V and 460V Series Protected Chassis (30 – 350 hp CT and 40 – 450 hp VT)

### 230 V Series Protected Chassis

Model EQ5- 2XXX-C	Dimensions Inches (mm)															Wt. Lb (kg)	
	W	W1	W2	W3	H	H1	H2	H3	H4	H5	H6	D	D1	D2	C		Bolt Size
40 & 50	13.4 (340)	9.45 (240)	12.8 (326)	N/A	21.7 (550)	20.9 (530)	19.7 (500)	20.2 (512)	0.47 (12)	0.98 (25)	0.35 (9)	10.0 (255)	5.71 (145)	0.16 (4)	0.39 (10)	M8	64 (29)
60	14.8 (375)	10.8 (275)	14.2 (361)		24.2 (615)	23.4 (595)	22.2 (565)	22.7 (577)	0.47 (12)	0.98 (25)	0.35 (9)	10.6 (270)	5.71 (145)	0.16 (4)	0.39 (10)	M8	79 (36)
75 & 100*	14.8 (375)	10.8 (275)	14.2 (361)		29.1 (740)	28.3 (720)	27.2 (690)	27.6 (702)	0.47 (12)	0.98 (25)	0.35 (9)	10.6 (270)	5.71 (145)	0.16 (4)	0.39 (10)	M8	97 (44)
125*	20.9 (530)	16.9 (430)	20.1 (510)		29.5 (750)	28.3 (720)	27.0 (685)	27.4 (695)	0.61 (15.5)	1.28 (32.5)	0.49 (12.5)	11.2 (285)	5.71 (145)	0.16 (4)	0.59 (15)	M12	154 (70)
150*	26.8 (680)	22.8 (580)	26.0 (660)		11.4 (290)	34.6 (880)	33.5 (850)	32.1 (815)	32.5 (825)	0.61 (15.5)	1.28 (32.5)	0.49 (12.5)	14.2 (360)	8.66 (220)	0.16 (4)	0.59 (15)	M12

### 460 V Series Protected Chassis

Model EQ5- 4XXX-C	Dimensions Inches (mm)															Wt. Lb (kg)	
	W	W1	W2	W3	H	H1	H2	H3	H4	H5	H6	D	D1	D2	C		Bolt Size
40 & 50	13.4 (340)	9.45 (240)	12.8 (326)	N/A	21.7 (550)	20.9 (530)	19.7 (500)	20.2 (512)	0.47 (12)	0.98 (25)	0.35 (9)	10.0 (255)	5.71 (145)	0.16 (4)	0.39 (10)	M8	64 (29)
60	14.8 (375)	10.8 (275)	14.2 (361)		21.7 (550)	20.9 (530)	19.7 (500)	20.2 (512)	0.47 (12)	0.98 (25)	0.35 (9)	10.6 (270)	5.71 (145)	0.16 (4)	0.39 (10)	M8	75 (34)
75 & 100*	14.8 (375)	10.8 (275)	14.2 (361)		26.6 (675)	25.8 (655)	24.6 (625)	25.1 (637)	0.47 (12)	0.98 (25)	0.35 (9)	10.6 (270)	5.71 (145)	0.16 (4)	0.39 (10)	M8	86 (39) 88.2 (40)
125*	14.8 (375)	10.8 (275)	14.2 (361)		29.1 (740)	28.3 (720)	27.2 (690)	27.6 (702)	0.47 (12)	0.98 (25)	0.35 (9)	10.6 (270)	5.71 (145)	0.16 (4)	0.39 (10)	M12	106 (48)
150* & 200*	20.9 (530)	16.9 (430)	20.1 (510)		29.1 (740)	28.0 (710)	26.6 (675)	27.0 (685)	0.61 (15.5)	1.28 (32.5)	0.49 (12.5)	12.4 (315)	6.89 (175)	0.16 (4)	0.59 (15)	M12	154 (70)
250* & 300*	20.9 (530)	16.9 (430)	20.1 (510)		39.4 (1000)	38.2 (970)	36.8 (935)	37.2 (945)	0.61 (15.5)	1.28 (32.5)	0.49 (12.5)	14.2 (360)	8.66 (220)	0.16 (4)	0.59 (15)	M12	220 (100)
350*, 400* & 450*	26.8 (680)	22.8 (580)	26.0 (660)		11.4 (290)	39.4 (1000)	38.2 (970)	36.8 (935)	37.2 (945)	0.61 (15.5)	1.28 (32.5)	0.49 (12.5)	14.2 (360)	8.66 (220)	0.16 (4)	0.59 (15)	M12



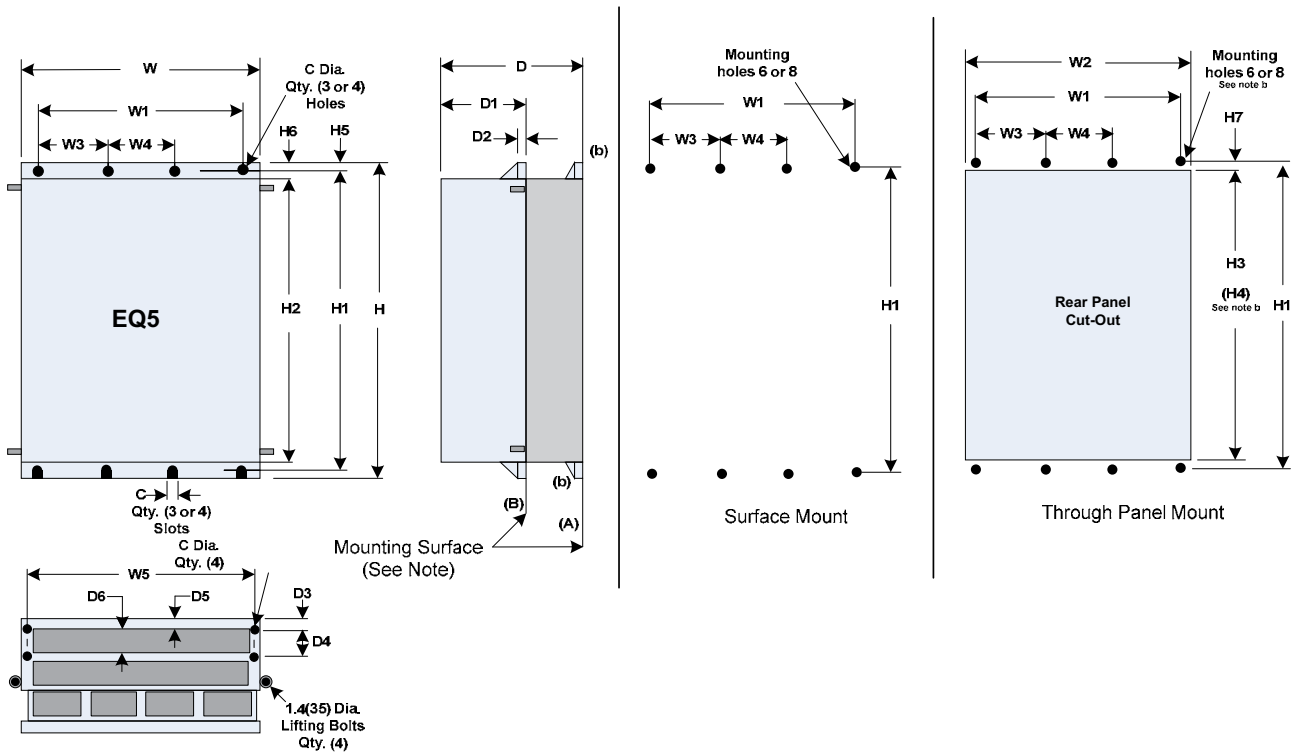
**Notes:**  
The EQ5 Protected Chassis can be mounted either by (A) Surface Mount or (B) Through Panel Mount, where the rear panel is cut out to allow the heatsink and cooling fans to protrude out of the back of the enclosure. In case B, the mounting brackets (b) are removed to the (B) position.

\* Ratings which have DC Choke shipped loose as standard

# Dimensions and Weights

## 460V Series Protected Chassis (400 – 600 hp CT and 500 – 800 hp VT)

Model EQ5- 4XXX-C	Dimensions Inches (mm)													
	W	W1	W2	W3	W4	W5	H	H1	H2	H3	H4	H5	H6	H7
500* & 600*	26.8 (680)	22.8 (580)	26 (660)	11.4 (290)	-	24 (610)	55.1 (1400)	53.9 (1370)	52.4 (1330)	52.8 (1340)	52.6 (1335)	0.61 (15.5)	1.38 (35)	0.57 (14.5)
700* & 800*	34.6 (880)	30.7 (780)	33.9 (860)	10.2 (260)	10.2 (260)	31.9 (810)	55.1 (1400)	53.9 (1370)	52.4 (1330)	52.8 (1340)	52.6 (1335)	0.61 (15.5)	1.38 (35)	0.57 (14.5)
Con't	D	D1	D2	D3	D4	D5	D6	C	Bolt Size	Wt. Lb (kg)				
500* & 600*	17.7 (450)	11.2 (285)	0.25 (6.4)	1.97 (50)	3.94 (100)	1.38 (35)	4.53 (115)	0.59 (15)	M12	551 (250)				
700* & 800*	17.7 (450)	11.2 (285)	0.25 (6.4)	1.97 (50)	3.94 (100)	1.38 (35)	4.53 (115)	0.59 (15)	M12	794 (360)				

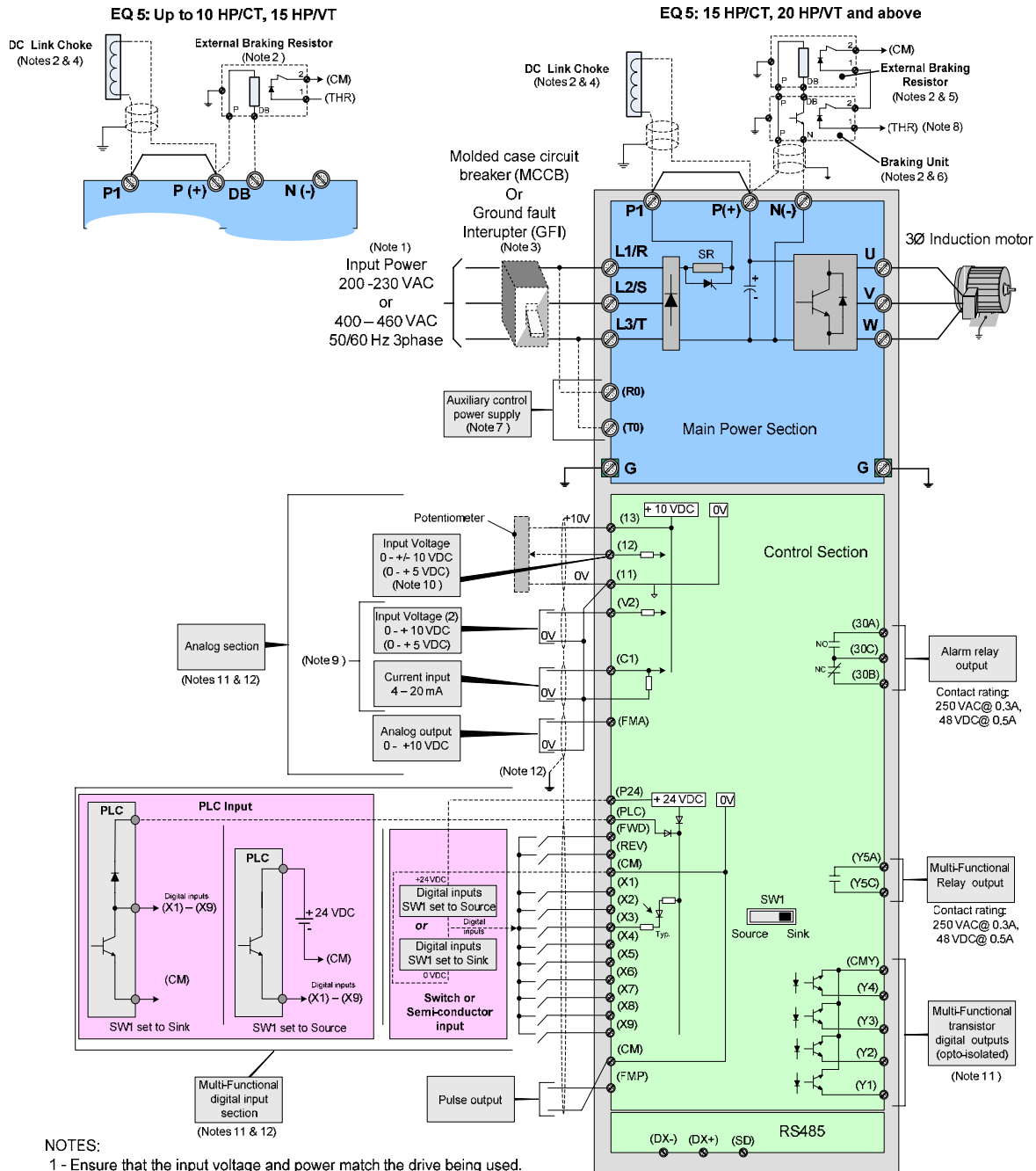


### Notes:

1. The EQ5 Protected Chassis can be mounted either by (A) Surface Mount or (B) Through Panel Mount, where the rear panel is cut out to allow the heatsink and cooling fans to protrude out of the back of the enclosure. In case B, the mounting brackets (b) are moved to the (B) position.
2. When mounting the unit through the panel, an alternative method of mounting the inverter is to use a bottom (customer supplied) bracket and the bottom mounting holes would not be necessary. Also the panel cut-out dimension will be (H4).

\* Ratings which have DC Choke shipped loose as standard

# Basic Wiring Diagram



## NOTES:

- 1 - Ensure that the input voltage and power match the drive being used.
- 2 - The installation of this device is optional.
- 3 - The use of this peripheral equipment depends on the application requirements.
- 4 - Remove the jumper between P1 and P(+) before installing the DC link choke.
- 5 - Install the braking unit option when using the external braking resistor.
- 6 - Connect the braking unit to P(+) and N(-). The auxiliary terminals 1 and 2 are polarity sensitive and must be connected as shown.
- 7 - The drive can be operated without connecting the auxiliary control power supply.
- 8 - One of the digital inputs (X1) to (X9) can be set to 9 (THR) - Braking unit thermal trip.
- 9 - Analog inputs V2 or C1 can not be used at the same time as a reference signal.
- 10 - The analog input signal to terminal (12) can be either from a potentiometer as shown or an external 0 - +10 VDC or 0 - +5 VDC source.
- 11 - Common points (11) analog input, (CM) digital input, and CMY digital output are electrically isolated from each other.
- 12 - All control signal input wiring should be shielded twisted pair with the shield connected to ground at the inverter end only.



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D-EQ5 10-10