# EQ SERIES EQ7

## High Performance, Full-Featured Drive

*Constant Torque 1 - 900 hp*

*Variable Torque 1 - 1000 hp*



c UL

UL LISTED

CE

ANAB
ACCREDITED

SGS

# *Features and Benefits*

**State of the art engineering and robust, best-in-class performance.**

## CONTROL FEATURES

- Four selectable control modes – Volts/Hertz, Dynamic Torque, Sensorless Vector, Closed Loop Vector
- Provides drive solutions for today's demanding motor driven machinery

## ADVANCED SPEED AND TORQUE CONTROL CAPABILITIES

- High levels of torque boost attainable
- Power loss ride through
- Torque limit adjustable features

## ADVANCED TUNING FEATURES

- High level of detail and information regarding applied motors
- Motor types range from variable torque to full flux vector motors

## PID LOOP CONTROL FEATURES

- Process or dancer control
- Loss of feedback detection
- Sleep-wake mode
- High and low feedback alarms
- Wide variety of process set point signals to choose from

## CLOSED LOOP SPEED CONTROL

- 100 Hz speed loop bandwidth
- Full-quadrature encoder feedback with marker pulse
- Range: 20 – 60,000 counts/ revolution
- Loss of encoder signal detection with alternative operation selection
- PI speed loop with adjustable gains and notch filtering

## EXTENSIVE INPUT/ OUTPUT CAPABILITIES

- Forward and reverse inputs plus seven assignable digital inputs
- Over 50 settings available; each assignable as normally open or normally closed state
- Three analog inputs; 0 to ±10V or 0 to 10V, 4 to 20ma, 0 to ±10V signals
- Assignable frequency reference, PID set point or feedback, torque reference, torque gain plus many choices
- Two analog outputs: selectable as 0 to 10V or 4 to 20ma output, scaling, plus over a dozen configuration choices such as output frequency, current, voltage, torque plus more.
- Four transistor type outputs; over 50 settings available; each assignable as normally open or normally closed state
- Two assignable contact outputs; over 50 settings identical to the transistor outputs
- Pulse train input
- Dedicated safety relay (STO) input

## MONITORING AND DIAGNOSTICS

- Extensive monitoring capabilities
- Detailed status information for all recorded faults (up to 4)
- Cumulative operating time displays for component maintenance
- Output frequency reduction to avoid overload trips and transistor junction over temperature

# Applications

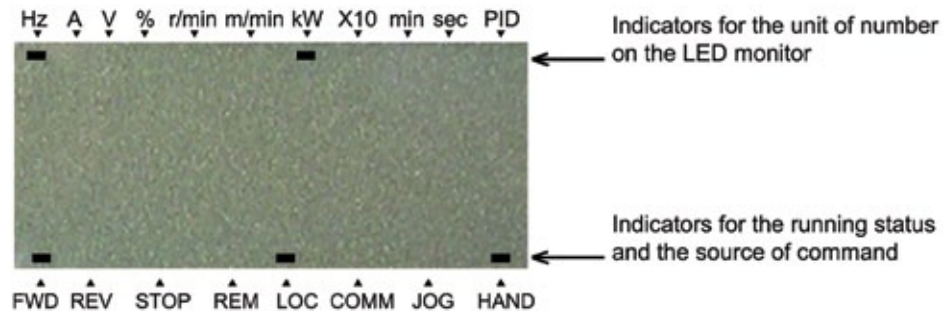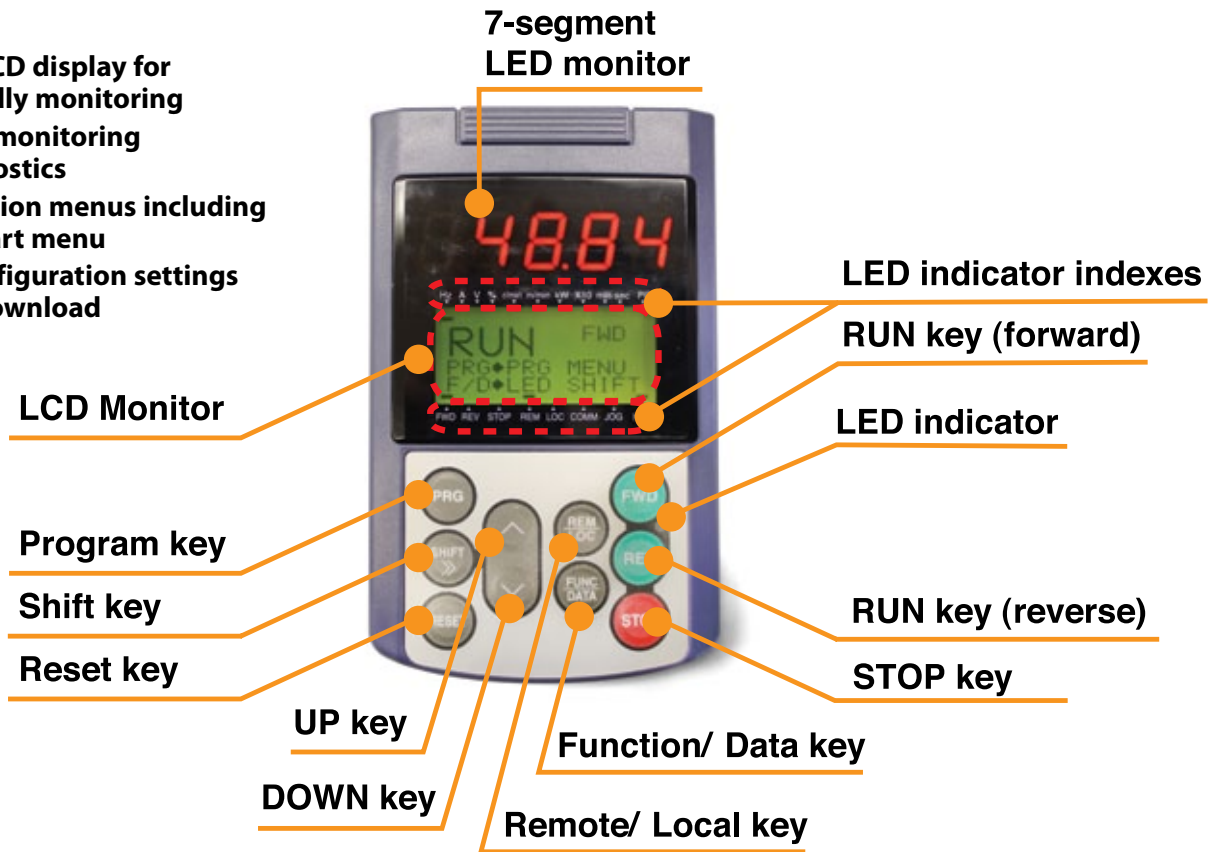| Application Type | V/F Mode | Dynamic Torque Mode | Sensorless Vector Mode | Closed-Loop Vector Mode |
|---|---|---|---|---|
| Fans and Blowers | X | | | |
| Centrifugal Pumps | X | X | | |
| Mixers | X | X | | |
| Conveyors | X | X | X | |
| Compressors | | X | X | |
| Hoist/ Crane | | X | X | |
| Stamping/ Punch Press | | X | X | |
| Dynamometers | | | X | X |
| Extruders | | | X | X |
| Web/ Roll Processes | | | | X |
| Torque Trim | | X | | |
| Direct Torque Regulation | | | | X |
| Indexing Operations | | | X | X |
| Positioning * | | | | X |

\* Requires External Positioning Controller Interface

# *Keypad Panel Functions and Operations*

**FEATURES:**

- **LED and LCD display for user-friendly monitoring**
- **Extensive monitoring and diagnostics**
- **Configuration menus including a quick-start menu**
- **Stores configuration settings for easy download**

**7-segment LED monitor**

**LED indicator indexes**

**RUN key (forward)**

**LCD Monitor**

**LED indicator**

**Program key**

**Shift key**

**Reset key**

**RUN key (reverse)**

**STOP key**

**UP key**

**Function/ Data key**

**DOWN key**

**Remote/ Local key**

Indicators for the unit of number on the LED monitor

Hz A V % r/min m/min kW X10 min sec PID

Indicators for the running status and the source of command

FWD REV STOP REM LOC COMM JOG HAND

| Type | Item | Description (information, condition, status) |
|---|---|---|
| Unit of Number Displayed on LED Monitor | Hz | Output frequency, frequency command |
| | A | Output current |
| | V | Output voltage |
| | % | Calculated torque, load factor, speed |
| | r/min | Motor speed, set motor speed, load shaft speed, set load shaft speed |
| | m/min | Line speed, set line speed |
| | kW | Input power, motor output |
| | X10 | Data greater than 99,999 |
| | min | Constant feeding rate time, constant feeding rate time setting |
| | sec | Timer |
| | PID | PID process value |
| Operating Status | FWD | Running (forward rotation) |
| | REV | Running (reverse rotation) |
| | STOP | No output frequency |
| Source of Operation | REM | Remote mode |
| | LOC | Local mode |
| | COMM | Communication enabled (RS-485 (standard,optional) field bus option) |
| | JOG | Jogging mode |
| | HAND | Keypad effective (lights also in local mode) |

# Constant Torque/ Variable Torque - 230V Series

## Constant Torque mode

| Item | | | Specifications | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model EQ7-2XXX-C | | | 001 | 002 | 003 | 005 | 007 | 010 | 015 | 020 | 025 | 030 | 040 | 050 | 060 | 075 | 100 | 125 | 150 |
| Nominal applied motor hp [*1] for three phase input | | | 1 | 2 | 3 | 5 | 7.5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 |
| Nominal applied motor hp [*1] for single phase input | | | 0.5 | 1 | 1.5 | 3 | 3 | 3 | 5 | 7.5 | 10 | 10 | 15 | 20 | 25 | 30 | 30 | 40 | 40 |
| Output ratings | Three phase input [*9] | Rated capacity [*2] [kVa] | 2 | 3.2 | 4.4 | 7.2 | 11 | 11 | 15 | 20 | 25 | 30 | 36 | 47 | 58 | 72 | 86 | 113 | 138 |
| | | Rated current [A] | 5 | 8 | 11 | 18 | 27 | 27 | 37 | 49 | 63 | 76 | 90 | 119 | 146 | 180 | 215 | 283 | 346 |
| | Rated voltage [*3] [V] | | Three-phase, 200 to 240V (with AVR function) | | | | | | | | | | | Three-phase 200 to 230V (with AVR function) | | | | | |
| | Overload Capability | | 150%-1 min, 200% -3.0 s | | | | | | | | | | | | | | | | |
| Input ratings | Three phase input | Voltage, frequency | Three-phase, 200 to 240V, 50/60Hz | | | | | | | | | | | Three-phase, 200 to 220V, 50Hz / Three-phase, 200 to 230V, 60Hz | | | | | |
| | | Voltage, frequency variations | Voltage +10 to -15% (Interphase voltage unbalance: 2% or less),[*5] Frequency +5 to -5% | | | | | | | | | | | | | | | | |
| | | Input current with DCR | 3.0 | 5.5 | 7.7 | 13 | 18.5 | 18.5 | 25.1 | 37.6 | 50.2 | 62.7 | 75.3 | 100 | 120 | 145 | 178 | 246 | 291 |
| | | Input current without DCR | 4.7 | 8.5 | 11.9 | 20 | 28.4 | 28.4 | 38.6 | 54.8 | 72.4 | 87.7 | 101 | 136 | 167 | 203 | - | | |
| | | Required capacity with DCR [*6] [kVa] | 1.2 | 2.2 | 3.1 | 5.2 | 7.4 | 7.4 | 10 | 15 | 20 | 25 | 30 | 40 | 48 | 58 | 71 | 98 | 116 |
| Braking | Torque [*7] [%] | | 150% | 100% | | | | | | 20% | | | | 10 to 15% | | | | | |
| | Braking transistor | | Built-in | | | | | | | - | | | | | | | | | |
| | Built-in braking resistor | | Built-in | | | | | | - | | | | | | | | | | |
| | Braking time [s] | | 5 s | | | | | | - | | | | | | | | | | |
| | %ED | | 3 | 5 | 3 | 2 | 3 | 3 | 2 | - | | | | | | | | | |
| DC reactor (DCR) | | | Option | | | | | | | | | | | | As standard [*8] | | | | |
| Keypad | | | Multi-function keypad | | | | | | | | | | | | | | | | |
| Applicable Safety Standards | | | UL508C, C22.2 No.14, EN61800-5-1:2007, EN61800-5-2:2007 SIL2, EN ISO13849-1:2008 PL=d Cat.3, EN954-1:1996 Cat.3 | | | | | | | | | | | | | | | | |
| Enclosure (IEC60529) | | | IP20, UL open type, NEMA 1 (Option) | | | | | | | | | | | IP00, UL open type, NEMA 1 (Option) | | | | | |
| Cooling method | | | Natural Cooling | | | | Fan cooling | | | | | | | | | | | | |
| Weight/ Mass [lbs(kg)] | | | 4.4 (2.0) | 6.2 (2.8) | 6.6 (3.0) | 6.6 (3.0) | 14.3 (6.5) | 14.3 (6.5) | 14.3 (6.5) | 12.8 (5.8) | 20.9 (9.5) | 20.9 (9.5) | 22 (10) | 55.1 (25) | 70.6 (32) | 92.6 (42) | 94.8 (43) | 137 (62) | 231 (105) |

## Variable Torque mode

| Item | | | Specifications | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model EQ7-2XXX-C | | | 001 | 002 | 003 | 005 | 007 | 010 | 015 | 020 | 025 | 030 | 040 | 050 | 060 | 075 | 100 | 125 | 150 |
| Nominal applied motor hp [*1] for three phase input | | | 1 | 2 | 3 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 |
| Nominal applied motor hp [*1] for single phase input | | | 0.5 | 1 | 1.5 | 3 | 3 | 5 | 7.5 | 10 | 10 | 15 | 20 | 25 | 30 | 30 | 40 | 40 | 50 |
| Output ratings | Three phase input [*9] | Rated capacity [*2] [kVa] | 2 | 3.2 | 4.4 | 7.2 | 11 | 13 | 18 | 24 | 30 | 35 | 46 | 58 | 72 | 86 | 113 | 138 | 165 |
| | | Rated current [A][*4] | 5 | 8 | 11 | 18 | 27 | 31.8 | 46.2 | 59.4 | 74.8 | 88 | 115 | 146 | 180 | 215 | 283 | 346 | 415 |
| | Rated voltage [*3] [V] | | Three-phase, 200 to 240V (with AVR function) | | | | | | | | | | | Three-phase 200 to 230V (with AVR function) | | | | | |
| | Overload Capability | | 150%-1 min, 200% -3.0 s | | | | | | | 120%-1 min | | | | | | | | | |
| Input ratings | Three phase input | Voltage, frequency | Three-phase, 200 to 240V (with AVR function) | | | | | | | | | | | Three-phase, 200 to 220V, 50Hz / Three-phase, 200 to 230V, 60Hz | | | | | |
| | | Voltage, frequency variations | Voltage +10 to -15% (Interphase voltage unbalance: 2% or less),[*5] Frequency +5 to -5% | | | | | | | | | | | | | | | | |
| | | Input current with DCR | 3.0 | 5.5 | 7.7 | 13 | 18.5 | 25.1 | 37.6 | 50.2 | 62.7 | 75.3 | 100 | 120 | 145 | 178 | 246 | 291 | 358 |
| | | Input current without DCR | 4.7 | 8.5 | 11.9 | 20 | 28.4 | 38.6 | 54.8 | 72.4 | 87.7 | 101 | 136 | 167 | 203 | 244 | - | | |
| | | Required capacity with DCR [*6] [kVa] | 1.2 | 2.2 | 3.1 | 5.2 | 7.4 | 10 | 15 | 20 | 25 | 30 | 40 | 48 | 58 | 71 | 98 | 116 | 143 |
| Braking | Torque [*7] [%] | | 150% | 100% | | 70% | | 15% | | | | | 7 to 12% | | | | | | |
| | Braking transistor | | Built-in | | | | | | | - | | | | | | | | | |
| DC reactor (DCR) | | | Option | | | | | | | | | | | | As standard [*8] | | | | |
| Keypad | | | Multi-function keypad | | | | | | | | | | | | | | | | |
| Applicable Safety Standards | | | UL508C, C22.2 No.14, EN61800-5-1:2007, EN61800-5-2:2007 SIL2, EN ISO13849-1:2008 PL=d Cat.3, EN954-1:1996 Cat.3 | | | | | | | | | | | | | | | | |
| Enclosure (IEC60529) | | | IP20, UL open type, NEMA 1 (Option) | | | | | | | | | | | IP00, UL open type, NEMA 1 (Option) | | | | | |
| Cooling method | | | Natural Cooling | | | | Fan cooling | | | | | | | | | | | | |
| Weight/ Mass [lbs(kg)] | | | 4.4 (2.0) | 6.2 (2.8) | 6.6 (3.0) | 6.6 (3.0) | 14.3 (6.5) | 14.3 (6.5) | 14.3 (6.5) | 12.8 (5.8) | 20.9 (9.5) | 20.9 (9.5) | 22 (10) | 55.1 (25) | 70.6 (32) | 92.6 (42) | 94.8 (43) | 137 (62) | 231 (105) |

(*1) 4-pole standard motor
(*2) Rated capacity is calculated by assuming the output rated voltage as 230V for 230V series
(*3) Output voltage cannot exceed the power supply voltage. At single-phase input use, the output voltage may be lower than three-phase input.
(*4) To use the inverter with the carrier frequency of 3 kHz or more at ambient temperature of 40ºC (104ºF) or higher, please consult the instruction manual for modified amp ratings at these conditions
(*5) Voltage unbalance[%] = (Max.voltage [V] - Min. voltage [V]/Three-phase average voltage [V]x67(See IEC61800-3.) If this value is 2 to 3%, use an optional AC reactor (ACR).
(*6) Required when a DC reactor (DCR) is used.
(*7) Without external braking resistor condition. Average braking torque for the motor running alone. (It varies with the efficiency of the motor.)
(*8) For inverters of 100 hp or above, the DC reactor is provided as separate standard component. be sure to connect it to those inverters.
(*9) For single-phase input installations, please consult factory.

# Constant Torque - 460V Series

**Constant Torque mode designed for constant torque loads**

| Item | | | Specifications | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model EQ7-4XXX-C | | | 001 | 002 | 003 | 005 | 007 | 010 | 015 | 020 | 025 | 030 | 040 | 050 | 060 | 075 | 100 |
| Nominal applied motor hp [1] for three phase input | | | 1 | 2 | 3 | 5 | 7.5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 |
| Nominal applied motor hp [1] for single phase input | | | 0.5 | 1 | 1.5 | 3 | 3 | 3 | 5 | 7.5 | 10 | 10 | 15 | 20 | 25 | 30 | 30 |
| Output ratings | Three phase input [9] | Rated capacity [2] [kVa] | 2 | 3.2 | 4.4 | 7.2 | 11 | 11 | 15 | 20 | 25 | 31 | 36 | 48 | 60 | 73 | 89 |
| | | Rated current [A] | 2.5 | 4 | 5.5 | 9 | 13.5 | 13.5 | 18.5 | 24.5 | 32 | 39 | 45 | 60 | 75 | 91 | 112 |
| | Rated voltage [3] [V] | | Three-phase, 380 to 480V (with AVR function) | | | | | | | | | | | | | | |
| | Overload Capability | | 150%-1 min, 200% -3.0 s | | | | | | | | | | | | | | |
| Input ratings | Three phase input | Voltage, frequency | Three-phase, 380 to 480V, 50/60Hz | | | | | | | | | | | | | | |
| | | Voltage, frequency variations | Voltage +10 to -15% (Interphase voltage unbalance: 2% or less),[5] Frequency +5 to -5% | | | | | | | | | | | | | | |
| | | Input current with DCR | 1.5 | 2.6 | 4 | 6.6 | 9.2 | 9.2 | 12.4 | 18.8 | 25 | 31 | 36 | 50 | 60 | 72 | 89 |
| | | Input current without DCR | 2.6 | 5.1 | 7.1 | 11.3 | 15 | 15 | 20.1 | 28.6 | 38 | 45.4 | 52.6 | 67.7 | 82 | 99.1 | - |
| | | Required capacity with DCR [6] [kVa] | 1.2 | 2.1 | 3.2 | 5.3 | 7.4 | 7.4 | 9.9 | 15.0 | 20.0 | 25.0 | 29.0 | 40.0 | 48.0 | 58.0 | 71.0 |
| Braking | Torque [7] [%] | | 150% | 100% | | | | | 20% | | | | 10 to 15% | | | | |
| | Braking transistor | | Built-in | | | | | | | | | | - | | | | |
| DC reactor (DCR) | | | Option | | | | | | | | | | | | | | Std [8] |
| Keypad | | | Multi-function keypad as standard | | | | | | | | | | | | | | |
| Applicable Safety Standards | | | UL508C, C22.2 No.14, EN61800-5-1:2007, EN61800-5-2:2007 SIL2, EN ISO13849-1:2008 PL=d Cat.3, EN954-1:1996 Cat.3 | | | | | | | | | | | | | | |
| Enclosure (IEC60529) | | | IP20, UL open type, NEMA 1 (Option) | | | | | | | | | | IP00, UL open type, NEMA 1 (Option) | | | | |
| Cooling method | | | Natural Cooling | | | Fan cooling | | | | | | | | | | | |
| Weight/ Mass [lbs(kg)] | | | 4.4 (2.0) | 5.7 (2.6) | 6.0 (2.7) | 6.6 (3.0) | 14.3 (6.5) | 14.3 (6.5) | 14.3 (6.5) | 12.8 (5.8) | 20.9 (9.5) | 20.9 (9.5) | 22 (10) | 55.1 (25) | 57.3 (26) | 68.3 (31) | 72.8 (33) |

| Item | | | Specifications | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model EQ7-4XXX-C | | | 125 | 150 | 200 | 250 | 300 | 350 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Nominal applied motor hp [1] for three phase input | | | 100 | 125/ 150 | 200 | 250 | 300 | 350 | 350 | 400/ 450 | 500 | 600 | 700 | 800 | 900 |
| Nominal applied motor hp [1] for single phase input | | | 40 | 50 | 60 | 60 | 75 | 100 | 100 | 125 | 150 | 150 | 200 | 250 | 300 |
| Output ratings | Three phase input [9] | Rated capacity [2] [kVa] | 120 | 140 | 167 | 202 | 242 | 300 | 330 | 414 | 466 | 518 | 590 | 765 | 932 |
| | | Rated current [A] | 150 | 210[10] | 253[10] | 304[10] | 377[10] | 415[10] | 468[10] | 585[10] | 650[10] | 740[10] | 840[10] | 960 | 1170 |
| | Rated voltage [3] [V] | | Three-phase, 380 to 480V (with AVR function) | | | | | | | | | | | | |
| | Overload Capability | | 150%-1 min, 200% -3.0 s | | | | | | | | | | | | |
| Input ratings | Three phase input | Voltage frequency | Three-phase, 380 to 440V, 50Hz<br>Three-phase, 380 to 480V, 60Hz | | | | | | | | | | | | |
| | | Voltage, frequency variations | Voltage +10 to -15% (Interphase voltage unbalance: 2% or less),[5] Frequency +5 to -5% | | | | | | | | | | | | |
| | | Input current with DCR | 120 | 143 | 176 | 207 | 250 | 311 | 340 | 436 | 487 | 547 | 614 | 767 | 970 |
| | | Required capacity with DCR [6] [kVa] | 96 | 114 | 140 | 165 | 199 | 248 | 271 | 347 | 388 | 436 | 489 | 611 | 773 |
| Braking | Torque [7] [%] | | 10 to 15% | | | | | | | | | | | | |
| | Braking transistor | | - | | | | | | | | | | | | |
| DC reactor (DCR) | | | As standard [8] | | | | | | | | | | | | |
| Keypad | | | Multi-function keypad as standard | | | | | | | | | | | | |
| Applicable Safety Standards | | | UL508C, C22.2 No.14, EN61800-5-1:2007, EN61800-5-2:2007 SIL2, EN ISO13849-1:2008 PL=d Cat.3, EN954-1:1996 Cat.3 | | | | | | | | | | | | |
| Enclosure (IEC60529) | | | IP00, UL open type, NEMA 1 (Option) | | | | | | | | | | | | |
| Cooling method | | | Fan cooling | | | | | | | | | | | | |
| Weight/ Mass [lbs(kg)] | | | 93 (42) | 137 (62) | 141 (64) | 207 (94) | 216 (98) | 284 (129) | 309 (140) | 540 (245) | 540 (245) | 805 (365) | 805 (365) | 1170 (530) | 1170 (530) |

(*1) 4-pole standard motor
(*2) Rated capacity is calculated by assuming the output rated voltage as 460V for 460V series.
(*3) Output voltage cannot exceed the power supply voltage. At single-phase input use, the output voltage may be lower than three-phase input.
(*5) Voltage unbalance[%] = (Max.voltage [V] - Min. voltage [V]/Three-phase average voltage [V]x67(See IEC61800-3.) If this value is 2 to 3%, use an optional AC reactor (ACR).
(*6) Required when a DC reactor (DCR) is used.
(*7) Without external braking resistor condition. Average braking torque for the motor running alone. (It varies with the efficiency of the motor.)
(*8) For inverters of 100 hp or above, the DC reactor is provided as separate standard component. Be sure to connect it to those inverters.
(*9) For single-phase input installations, please consult factory.
(*10) Please consult factory for constant torque vector control/ full load amps for these models.

# Variable Torque - 460V Series

## Variable Torque mode designed for variable torque load applications

| Item | | | Specifications | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model EQ7-4XXX-C | | | 001 | 002 | 003 | 005 | 007 | 010 | 015 | 020 | 025 | 030 | 040 | 050 | 060 | 075 | 100 |
| Nominal applied motor hp [1] for three phase input | | | 1 | 2 | 3 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 |
| Nominal applied motor hp [1] for single phase input | | | 0.5 | 1 | 1.5 | 3 | 3 | 5 | 7.5 | 10 | 10 | 15 | 20 | 25 | 30 | 30 | 40 |
| Output ratings | Three phase input [9] | Rated capacity [2] [kVa] | 2 | 3.2 | 4.4 | 7.2 | 11 | 13.1 | 18.3 | 24 | 29 | 36 | 48 | 60 | 73 | 89 | 120 |
| | | Rated current [A] | 2.5 | 4 | 5.5 | 9 | 13.5 | 16.5 | 23 | 30.5 | 37 | 45 | 60 | 75 | 91 | 112 | 150 |
| | Rated voltage [3] [V] | | Three-phase, 380 to 480V (with AVR function) | | | | | | | | | | | | | | |
| | Overload Capability | | 150%-1 min, 200% -3.0 s | | | | | | 120%-1 min | | | | | | | | |
| Input ratings | Three phase input | Voltage, frequency | Three-phase, 380 to 480V, 50/60Hz | | | | | | | | | | | | | | |
| | | Voltage, frequency variations | Voltage +10 to -15% (Interphase voltage unbalance: 2% or less),[5] Frequency +5 to -5% | | | | | | | | | | | | | | |
| | | Input current with DCR | 1.5 | 2.6 | 4 | 6.6 | 9.2 | 12.5 | 18.8 | 25.1 | 31.3 | 36.3 | 50.2 | 60.2 | 72.7 | 89.1 | 120 |
| | | Input current without DCR | 2.6 | 5.1 | 7.1 | 11.3 | 15 | 20.1 | 28.6 | 35 | 45.4 | 52.6 | 67.7 | 82 | 99.1 | 121 | - |
| | | Required capacity with DCR [6] [kVa] | 1.2 | 2.2 | 3.1 | 5.2 | 7.4 | 10 | 15 | 20 | 25 | 29 | 40 | 48 | 58 | 71 | 96 |
| Braking | Torque [7] [%] | | 150% | 100% | | 70% | | | 15 | | | | 7 to 12% | | | | |
| | Braking transistor | | Built-in | | | | | | | | | - | | | | | |
| DC reactor (DCR) | | | Option | | | | | | | | | | | | | | Std [8] |
| Keypad | | | Multi-function keypad as standard | | | | | | | | | | | | | | |
| Applicable Safety Standards | | | UL508C, C22.2 No.14, EN61800-5-1:2007, EN61800-5-2:2007 SIL2, EN ISO13849-1:2008 PL=d Cat.3, EN954-1:1996 Cat.3 | | | | | | | | | | | | | | |
| Enclosure (IEC60529) | | | IP20, UL open type, NEMA 1 (Option) | | | | | | | | | IP00, UL open type, NEMA 1 (Option) | | | | | |
| Cooling method | | | Natural Cooling | | Fan cooling | | | | | | | | | | | | |
| Weight/ Mass [lbs(kg)] | | | 4.4 (2.0) | 5.7 (2.6) | 6.0 (2.7) | 6.6 (3.0) | 14.3 (6.5) | 14.3 (6.5) | 14.3 (6.5) | 12.8 (5.8) | 20.9 (9.5) | 20.9 (9.5) | 22 (10) | 55.1 (25) | 57.3 (26) | 68.3 (31) | 72.8 (33) |

| Item | | | Specifications | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model EQ7-4XXX-C | | | 125 | 150 | 200 | 250 | 300 | 350 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Nominal applied motor hp [1] for three phase input | | | 125 | 150 | 200 | 250 | 300 | 350 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 |
| Nominal applied motor hp [1] for single phase input | | | 50 | 50 | 60 | 75 | 100 | 100 | 125 | 150 | 200 | 200 | 250 | 300 | 400 |
| Output ratings | Three phase input [9] | Rated capacity [2] [kVa] | 140 | 167 | 202 | 242 | 300 | 331 | 414 | 518 | 590 | 669 | 765 | 932 | 1092 |
| | | Rated current [A] | 176 | 210 | 253 | 304 | 377 | 415 | 520 | 650 | 740 | 840 | 960 | 1170 | 1370 |
| | Rated voltage [3] [V] | | Three-phase, 380 to 480V (with AVR function) | | | | | | | | | | | | |
| | Overload Capability | | 120%-1 min | | | | | | | | | | | | |
| Input ratings | Three phase input | Voltage frequency | Three-phase, 380 to 440V, 50Hz<br>Three-phase, 380 to 480V, 60Hz | | | | | | | | | | | | |
| | | Voltage, frequency variations | Voltage +10 to -15% (Interphase voltage unbalance: 2% or less),[5] Frequency +5 to -5% | | | | | | | | | | | | |
| | | Input current with DCR | 143 | 175 | 207 | 249 | 311 | 340 | 435 | 547 | 613 | 686 | 766 | 970 | 1093 |
| | | Required capacity with DCR [6] [kVa] | 114 | 140 | 165 | 199 | 248 | 271 | 347 | 436 | 489 | 547 | 611 | 773 | 871 |
| Braking | Torque [7] [%] | | 7 to 12% | | | | | | | | | | | | |
| | Braking transistor | | - | | | | | | | | | | | | |
| DC reactor (DCR) | | | As standard [8] | | | | | | | | | | | | |
| Keypad | | | Multi-function keypad as standard | | | | | | | | | | | | |
| Applicable Safety Standards | | | UL508C, C22.2 No.14, EN61800-5-1:2007, EN61800-5-2:2007 SIL2, EN ISO13849-1:2008 PL=d Cat.3, EN954-1:1996 Cat.3 | | | | | | | | | | | | |
| Enclosure (IEC60529) | | | IP00, UL open type, NEMA 1 (Option) | | | | | | | | | | | | |
| Cooling method | | | Fan cooling | | | | | | | | | | | | |
| Weight/ Mass [lbs(kg)] | | | 93 (42) | 137 (62) | 141 (64) | 207 (94) | 216 (98) | 284 (129) | 309 (140) | 540 (245) | 540 (245) | 805 (365) | 805 (365) | 1170 (530) | 1170 (530) |

(*1) 4-pole standard motor
(*2) Rated capacity is calculated by assuming the output rated voltage as 460V for 460V series.
(*3) Output voltage cannot exceed the power supply voltage. At single-phase input use, the output voltage may be lower than three-phase input.
(*5) Voltage unbalance[%] = (Max.voltage [V] - Min. voltage [V]/Three-phase average voltage [V]x67(See IEC61800-3.) If this value is 2 to 3%, use an optional AC reactor (ACR).
(*6) Required when a DC reactor (DCR) is used.
(*7) Without external braking resistor condition. Average braking torque for the motor running alone. (It varies with the efficiency of the motor.)
(*8) For inverters of 100 hp or above, the DC reactor is provided as separate standard component. Be sure to connect it to those inverters.
(*9) For single-phase input installations, please consult factory.

# Common Specifications

| Item | | | Specifications |
|---|---|---|---|
| Output | Setting range | Maximum frequency setting | • 500 Hz (Constant Torque and dynamic torque control)<br>• 200 Hz (CT Vector and PG Feedback)<br>• 120 Hz (CT-Variable Torque and sensorless vector mode) |
| | | Base frequency | 25 to 500 Hz variable setting (Variable Torque (Model EQ7-x001-C or above) and Constant Torque mode: 120 Hz) |
| | | Starting Frequency | 0.1 to 60.0 Hz variable setting (sensorless vector control[6]/ vector control w/PG, 0.0Hz for[7]) |
| | | Carrier frequency | • 0.75 to 16 kHz (Constant Torque: EQ7-x001-C to EQ7-x100-C, Variable Torque: EQ7-x001-C to EQ7-x040-C)<br>• 0.75 to 10 kHz (CT-Vector: EQ7-x125-C to EQ7-x800-C, Variable Torque: EQ7-x050-C to EQ7-x100-C)<br>• 0.75 to 2 kHz (Constant Torque V/F: EQ7-x150-C to EQ7-x800-C)<br>• 0.75 to 6 kHz (CT-Vector: EQ7-x900-C to EQ7-x1000-C, Variable Torque: EQ7-x125-C to EQ7-x900-C)<br>• 0.75 to 4 kHz (Variable Torque: EQ7-x1000-C)<br><br>NOTE: Frequency drops automatically to protect the inverter depending on environmental temperature and output current. (This auto drop function can be cancelled) |
| | Output frequency accuracy (Stability) | | • Analog setting: ±0.2% of max. frequency (at 25 ±10°C)[1]<br>• Digital setting: ±0.01% of max. frequency (at -10 to +50°C) |
| | Setting resolution | | • Analog setting: Analog setting: 1/3000 of max. frequency (1/1500 with V2 input)<br>• Keypad setting: 0.01Hz (99.99Hz or less), 0.1Hz (100.0 to 500Hz)<br>• Link setting: 1/20000 of max. frequency or 0.01 Hz (fixed) |
| | Speed control range | | • Min. speed: Base speed 1:1500 (4P 1r/min to 1500r/min)*7<br>• Min speed: Base speed 1:200 (4P 7.5r/min to 1500r/min) |
| | Speed control accuracy | Vector control with speed sensor | • Analog setting: ±0.2% of max. frequency (at 25 ±10°C)<br>• Digital setting: ±0.01% of max. frequency (at -10 to +50°C) |
| | | Vector control without speed sensor | • Analog setting: ±0.5% or below of base speed (at 25 ±10°C)<br>• Digital setting: ±0.5% or below of base speed (at -10 to +50°C) |
| Control | Control method | | • V/f control<br>• Dynamic torque control<br>• Vector control without speed sensor<br>• Vector control with speed sensor (with an optional PG interface card mounted) |
| | Voltage/freq. characteristics | | 230V (460V) Series<br>• Base Frequency and max. output frequency can be set to 80 to 240V (160-500V) in common.<br>• The AVR control ON/OFF can be selected.[1]<br>• Non-linear V/f setting (3 points) free voltage 0 to 240V (0-500V) and frequency (0 to 500Hz) can be set.[1] |
| | Torque boost | | • Auto torque boost (for constant torque load)[1, 2]<br>• Manual torque boost: Desired torque boost (0.0 to 20.0%) can be set.[1]<br>• Select application load with function code F37. (Variable torque load or constant torque load)[1] |
| | Starting torque (Constant Torque mode) | | • EQ7-x040-C or below: 200% or higher, EQ7-x050-C or above: 180% or higher/set frequency: 0.3Hz (Base frequency 50 Hz, slip compensation and auto torque boost operation[1, 2]) |
| | Start/ stop operation | | **Keypad**<br>• Multi-function keypad: Start and stop with FWD, REV, and STOP keys |
| | | | External signals (digital inputs): Forward (reverse) rotation, stop command (capable of 3-wire operation), coast-to-stop command, external alarm, alarm reset, etc. |
| | | | Link operation: Operation through RS-485 or field bus (option) communications. |
| | | | Remote/Local Switching |
| | Acceleration/ deceleration time | | • Setting range: From 0.00 to 6000s<br>• Switch: The four sets of accel/ decel. times can be set or selected individually (switchable during operation).<br>• Acceleration/deceleration pattern:<br>Linear accel./decel., S-shape accel./decel. (weak, free, strong), curvilinear accel./decel. (accel./decel. max capacity of constant output)<br>• Deceleration mode (coast-to-stop): Coast-to-stop at the operation command OFF.<br>• Forcible stop decel. time: Deceleration stop by the forcible stop (STOP) |

(*1) Effective function in V/f control
(*2) Effective function in dynamic torque control
(*6) effective function in vector control without speed sensor
(*7) Effective function in vector control with speed sensor (PG option is necessary.)
(*8) This specification does not guarantee that all single fault cases are surely detected (EN954-1/EN ISO 13849-1, Cat. 3)

# Common Specifications - Continued

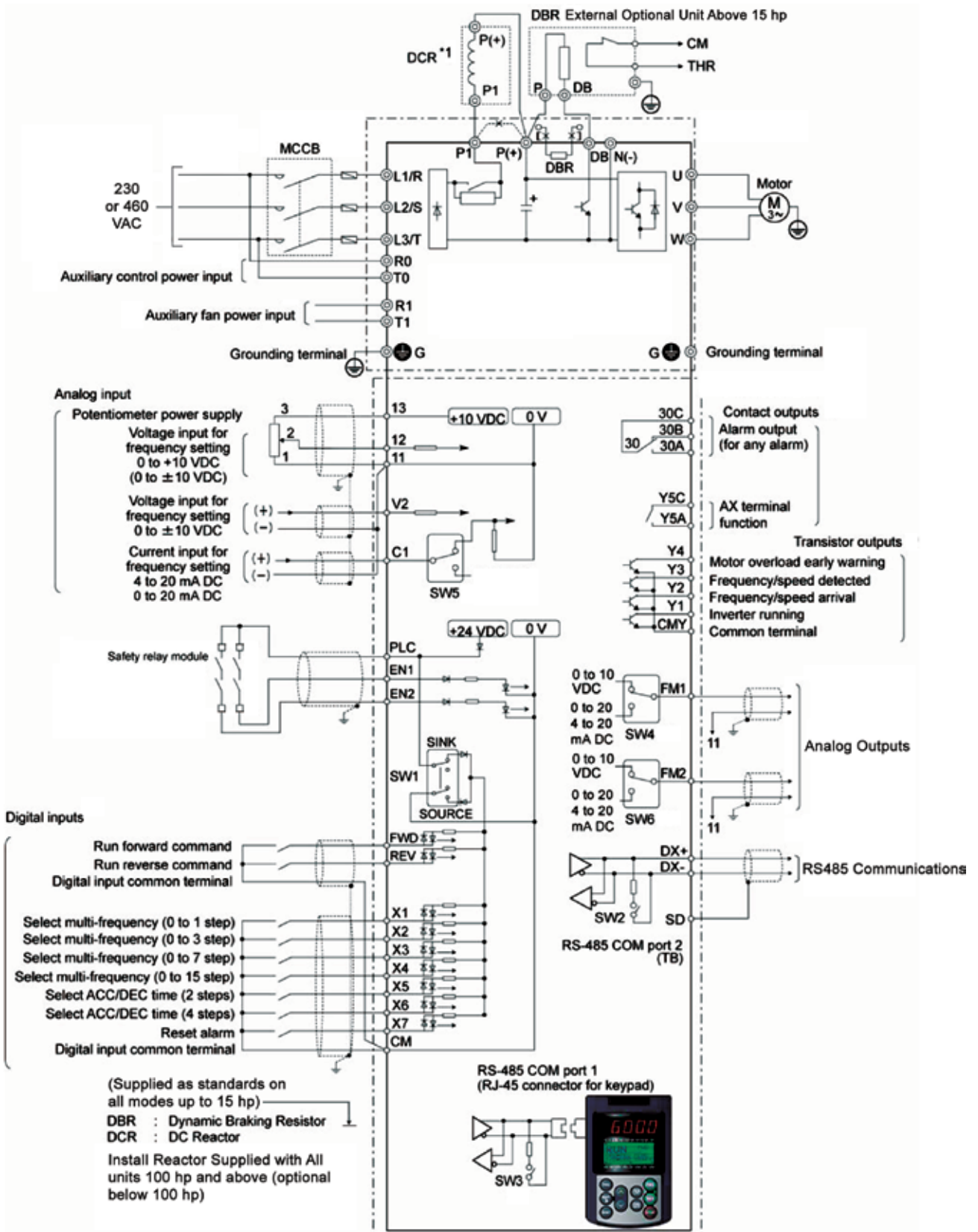| | Item | Specifications |
|---|---|---|
| **Control** | Auto-restart after momentary power failure | Adjustable to restart at running speed, trip on power failure, or ride through on load inertia |
| | Current limit by hardware | Limiting the current by hardware to prevent overcurrent trip due to sharp load change or momentary power failure which cannot be controlled by software current limit. (This function can be cancelled.) Operation Level (20 to 200%) |
| | Digital Input | Forward run, reverse run, plus 7 configurable 24V DC inputs that can be set for over 50 events, both as normally open or closed. |
| | Transistor output | Four transistor and two relay outputs configurable to indicate over 50 possible events as both normally open or closed. |
| | Analog output | • Terminals [FM1] and [FM2]<br>• Output a selected signal with analog DC voltage (0 to +10V) or analog DC current (4 to 20 mA)<br>• Selectable output to over 15 assigned parameters |
| **Other features** | Indication: Trip Mode | Trip History: Saves and displays the last 4 trip factors and their detailed description. |
| | Communications | RS-485 COM port 1 (for keypad connection), RS-485 COM port 2 (on terminal board) |
| | Protection against momentary power failure | Upon detection of a momentary power failure lasting more than 15 ms, this function stops the inverter output. If restart after momentary power failure is selected, this function invokes a restart process if power is restored within a predetermined period (allowable momentary power failure time). |
| **Environment** | Installation location | Shall be free from corrosive gases, flammable gases, oil mist, dust, direct sunlight. (Pollution degree 2 (IEC60664-1)). Indoor use only. |
| | Ambient temperature | Open type: -10 to +50°C (14 to 122°F) |
| | Ambient humidity | 5 to 95% RH (without condensation) |
| | Altitude | Lower than 3300ft (1000m) |
| | Atmospheric pressure | 86 to 106kPa |
| | Storage temperature | -25 to +65°C (-13 to 149°F) |
| | Storage humidity | 5 to 95% RH (without condensation) |
| **Control** | Enable input (Safe Torque Off (STO)) | Opening the circuit between terminals [EN1] and PLC or terminals [EN2] and [PLC] stops the inverter's output transistor (Safe Torque Off: STO) |
| | Frequency setting | • Keypad: can be set with UP and DOWN keys<br>• External Voltage: Can be set with external potentiometer (1 to 5kΩ 1/2W)<br>• Analog input: 0 to ±10 VDC (±5 VDC)/0 to ±100% or 0 to +10VDC (+5VDC)/ 0 to +100% (Terminals [12] and [V2])<br>     (inverse operation via parameter)<br>     +4 to +20 mA DC/0 to 100% (or 0 to +20mA) (inverse operation via parameter)<br>• Up/DOWN operation: Frequency can be increased or decreased while the digital input signal is ON.<br>• Multi-frequency: Selectable from 16 pre-set speeds<br>• Link operation: Frequency can be set through RS-485 (standard setting)<br>• Switching frequency setting: Frequency setting can be switched (2 settings) with external signal (digital input).<br>• Auxiliary frequency setting: Terminal [12], [C1], or [V2] input can be selected respectively as an additional input<br>• Pulse train input: Pulse input = X7 terminal, rotational direction = general terminal<br>    Complementary output: Max. 100kHz, Open collector output: Max. 30kHz<br>• Pulse train input: PG interface option CW/CCW pulse, pulse + rotational direction<br>    Complementary output: Max. 100kHz, Open collector output: Max. 25kHz |
| | PID control | • Terminals [FM1] and [FM2]<br>• Output a selected signal with analog DC voltage (0 to +10V) or analog DC current (4 to 20 mA)<br>• Selectable output to over 15 assigned parameters<br>• PID adjuster for process control and that for dancer control<br>• Switchable between forward and reverse operations<br>• Low liquid level stop function (pressurized operation possible before low liquid level stop)<br>• PID command: Keypad, analog input (from terminals [12], C1 V2), RS-485 communications<br>• PID feedback value: Analog input (from terminals [12], C1, V2)<br>• Alarm output (absolute value alarm, deviation alarm)<br>• PID output limiter<br>• Integratrion reset/hold |
| | Torque limiter | • Torque limit value (±300%)<br>• Torque limiter 1/2, torque limiter enabled/disabled, analog torque limit value |
| | Control functions | • Analog input adjustment (gain/offset/filter time constant), frequency limiter (high and low), bias freqency, jump frequency, jogging operation, pre-excitation, switch to commercial power, commercial power switching sequence, cooling fan ON/OFF control, select motor 2 to 4, protect motor from dew condensation, universal DI, universal DO, universal AO, rotational direction limitation<br>• Overload prevention control, auto search, slip compensation, automatic deceleration (anti-regenerative control), droop control, deceleration characteristics (improving braking capability), auto energy saving function<br>• Offline tuning<br>• Life early warning, cumulative inverter run time, cumulative motor run time<br>• Light alarm, retry, command loss detection |

(*1) Effective function in V/f control
(*2) Effective function in dynamic torque vector control
(*6) effective function in vector control without speed sensor
(*7) Effective function in vector control with speed sensor (PG option is necessary.)
(*8) This specification does not guarantee that all single fault cases are surely detected (EN954-1/EN ISO 13849-1, Cat. 3)

# EQ7 Typical Wiring Diagram

# Dimensions and Weights

Dimensions inch (mm)

| Inverter type EQ7-2XXX-C (230 V) | EQ7-4XXX-C (460 V) | W | W1 | W2 | H | H1 | H2 | D | D1 | D2 | D3 | ØA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 001 | 4.33 (110) | 3.78 (96) | 0.24 (6) | 10.24 (260) | 9.69 (246) | 0.28 (7) | 5.71 (145) | 4.45 (113) | 1.26 (32) | 0.12 (3) | 0.24 (6) |
| 002 | 002 | 5.91 (150) | 5.35 (136) | | | | | | | | | |
| 003 | 003 | | | | | | | | | | | |
| 005 | 005 | | | | | | | | | | | |
| 007 | 007 | 8.66 (220) | 7.72 (196) | 0.39 (10) | | 9.37 (238) | 0.43 (11) | 7.68 (195) | 4.13 (105) | 3.54 (90) | 0.39 (10) | 0.39 (10) |
| 010 | 010 | | | | | | | | | | | |
| 015 | 015 | | | | | | | | | | | |
| 020 | 020 | | | | | | | | | | | |
| 025 | 025 | 9.84 (250) | 8.9 (226) | | 15.75 (400) | 14.88 (378) | | | | | | |
| 030 | 030 | | | | | | | | | | | |
| 040 | 040 | | | | | | | | | | | |
| 050 | 050 | 12.6 (320) | 9.45 (240) | | 21.65 (550) | 20.87 (530) | | 10.04 (255) | | 5.51 (140) | | |
|  | 060 | | | | | | | | | | | |
| 060 | 075 | 13.98 (355) | 10.83 (275) | | 24.21 (615) | 23.43 (595) | 0.47 (12) | 10.63 (270) | 4.53 (115) | 6.1 (155) | | |
| — | 100 | | | | 26.57 (675) | 25.79 (655) | | | | | | |
| 75 | 125 | | | | 29.13 (740) | 28.35 (720) | | | | | | |
| 100 | | | | | | | | | | | | |
| 125 | — | 20.87 (530) | 16.93 (430) | 0.59 (15) | 29.53 (750) | | 0.61 (15.5) | 11.22 (285) | 5.71 (145) | 5.51 (140) | 0.16 (4) | |
| 150 | — | 24.8 (630) | 11.42 (290) | | 34.65 (880) | 33.46 (850) | | 14.17 (360) | 7.09 (180) | 7.09 (180) | | 0.59 (15) |
| — | 150 | 20.87 (530) | 16.93 (430) | | 29.13 (740) | 27.95 (710) | | 12.4 (315) | 5.31 (135) | | | |
| — | 200 | | | | | | | | | | | |
| — | 250 | | | | | | | | | | | |
| — | 300 | | | | 39.37 (1000) | 38.19 (970) | | 14.17 (360) | 7.09 (180) | | | |
| — | 350 | | | | | | | | | | | |
| — | 450 | 26.77 (680) | 11.42 (290) | | | | | | | | | |
| — | 500 | | | | | | | | | | | |
| — | 600 | | | | 55.12 (1400) | 53.94 (1370) | | 17.32 (440) | 10.24 (260) | | 0.25 (6.4) | |
| — | 700 | 34.65 (880) | 10.24 (260) | | | | | | | | | |
| — | 800 | | | | | | | | | | | |
| — | 900 | 39.37 (1000) | 11.81 (300) | | 61.02 (1550) | 59.84 (1520) | | 19.69 (500) | 12.33 (313.2) | 7.35 (186.8) | | |
| — | 1000 | | | | | | | | | | | |

**40 HP or below**
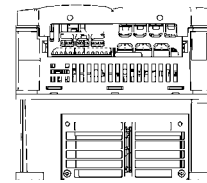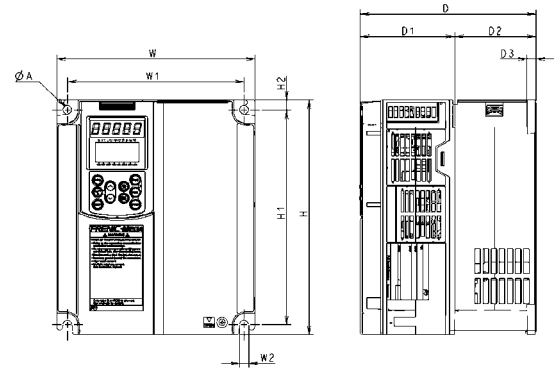
**50 HP or above**
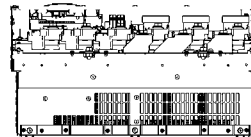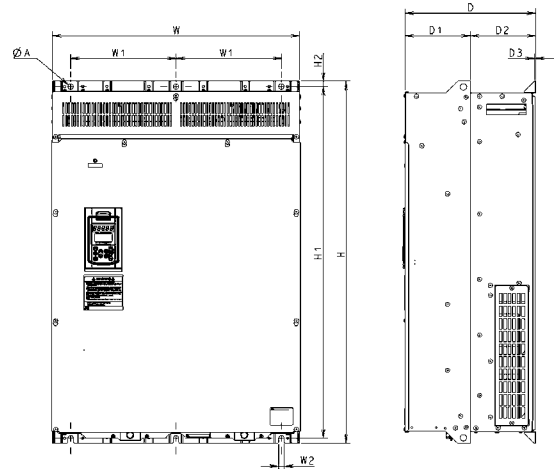
# DC Reactor

DC Link reactors provide smoothing capabilities to the DC bus sections in EQ7 Drives.

All units 100 hp and above come with a separate DC Link Reactor ready for field wiring at the DC Bus Terminals

| Power Supply Voltage | Inverter Type EQ7-2XXX-C | Reactor | Refer to: | Dimensions in Inches (mm) | | | | | | | Mounting Hole | Terminal Hole | Mass lb (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | W | W1 | D | D1 | D2 | D3 | H | | | |
| 230 V | 100 | DCR2-75C | Figure A | 10.04±0.39 (255±10) | 8.86 (225) | 4.17±0.08 (106±2) | 3.39 (86) | 5.71 (145) | 2.09±0.04 (53±1) | 5.71 (145) | M6 | M12 | 25 (11.4) |
| | 125 | DCR2-90C | | | | 4.57±0.08 (116±2) | 3.78 (96) | 6.1 (155) | 2.28±0.04 (58±1) | | | | 31 (14) |
| | 150 | DCR2-110C | | 11.81±0.39 (300±10) | 10.43 (265) | 4.57±0.16 (116±4) | 3.54 (90) | 7.28 (185) | | 6.3 (160) | M8 | | 37 (17) |

| Power Supply Voltage | Inverter Type EQ7-4XXX-C | Reactor | Refer to: | Dimensions in Inches (mm) | | | | | | | Mounting Hole | Terminal hole | Mass lb (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | W | W1 | D | D1 | D2 | D3 | H | | | |
| 460 V | 100 | DCR4-75C | Figure A | 10.04±0.39 (255±10) | 8.86 (225) | 4.17±0.08 (106±2) | 3.39 (86) | 4.92 (125) | 2.09±0.04 (53±1) | 5.71 (145) | M6 | M10 | 27 (12.4) |
| | 125 | DCR4-90C | | | | 4.57±0.08 (116±2) | 3.78 (96) | 5.51 (140) | 2.28±0.04 (58±1) | | | M12 | 32 (14.7) |
| | 150 | DCR4-110C | | 11.81±0.39 (300±10) | 10.43 (265) | | 3.54 (90) | 6.89 (175) | | 6.10 (155) | M8 | | 41 (18.4) |
| | 200 | DCR4-132C | | | | 4.96±0.16 (126±4) | 3.94 (100) | 7.09 (180) | 2.48±0.08 (63±2) | 6.30 (160) | | | 49 (22) |
| | 250 | DCR4-160C | | | | 5.16±0.16 (131±4) | 4.06 (103) | | 2.58±0.08 (65.5±2) | | | | 56 (25.5) |
| | 300 | DCR4-200C | | 13.78±0.39 (350±10) | 12.20 (310) | 5.55±0.16 (141±4) | 4.45 (113) | 7.28 (185) | 2.78±0.08 (70.5±2) | 7.48 (190) | M10 | | 65 (29.5) |
| | 350 | DCR4-220C | | | | 5.75±0.16 (146±4) | 4.65 (118) | 7.87 (200) | 2.87±0.08 (73±2) | | | | 72 (32.5) |
| | 450 | DCR4-280C | Figure B | 13.78±0.39 (350±10) | 12.20 (310) | 6.34±0.16 (161±4) | 5.24 (133) | 8.27 (210) | 3.17±0.08 (80.5±2) | 7.48 (190) | | M16 | 79 (36) |
| | 500 | DCR4-355C | | 15.75±0.39 (400±10) | 13.58 (345) | 6.14±0.16 (156±4) | 5.04 (128) | 7.87 (200) | 3.07±0.04 (78±1) | 8.86 (225) | | Ø15 | 104 (47) |
| | 600 | DCR4-400C | | 17.52±0.39 (445±10) | 15.16 (385) | 5.71±0.16 (145±4) | 4.61 (117) | 8.39 (213) | 2.85±0.04 72.5±1) | | M10 | | 115 (52) |
| | 700 | DCR4-450C | | 17.32±0.39 (440±10) | | 5.91±0.16 (150±4) | 4.80 (122) | 8.46 (215) | 2.95±0.08 (75±2) | 9.65 (245) | | | 132 (60) |
| | 800 | DCR4-500C | | 17.52±0.39 (445±10) | 15.35 (390) | 6.5±0.16 (165±4) | 5.39 (137) | 8.66 (220) | 3.25±0.08 (82.5±2) | | | | 154 (70) |
| | 900 | DCR4-630C | Figure C | 11.22±0.39 (285±10) | 5.71 (145) | 7.99±0.16 (203±4) | 6.69 (170) | 7.68 (195) | 4.09±0.08 (104±2) | 18.9 (480) | M12 | | 165 (75) |
| | 1000 | DCR4-710C | | 13.39±0.39 (340±10) | 6.3 (160) | 11.61±0.16 (295±4) | 10.04 (255) | 8.86 (225) | 4.21±0.08 (107±2) | | | | 209 (95) |

Figure A



4 x Mounting hole
2 x Terminal hole
D3, MAX. D2, D1, D, W1, W, MAX. H

Figure B



4 x Mounting hole
2 x 4 x Terminal hole
D3, MAX. D2, D1, D, W1, W, MAX. H

Figure C



4 x Mounting hole
D3, MAX. D2, D1, D, W1, W, MAX. H
DCR4-630C : 2 x 4 x Terminal hole
DCR4-710C : 2 x 4 x Terminal hole
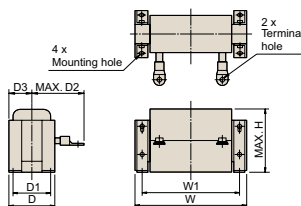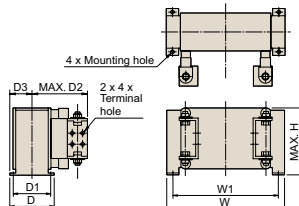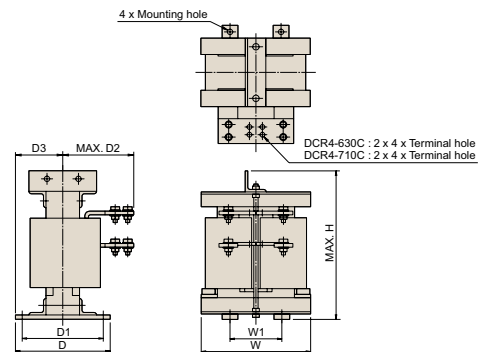
# Options - NEMA 1 Conversion Kits

| Model No. | Inverter type EQ7-2XXX-C 230 V | Inverter type EQ7-4XXX-C 460 V | Dimensions inch (mm) W | Dimensions inch (mm) H | Dimensions inch (mm) D |
|---|---|---|---|---|---|
| NEMA1-0.75G1-24 | 001 | 001 | 4.45 (113) | 12.2 (310) | 5.76 (146.3) |
| NEMA1-3.7G1-24 | 002 | 002 | 5.87 (149) | 12.2 (310) | 5.76 (146.2) |
| NEMA1-3.7G1-24 | 003 | 003 | 5.87 (149) | | |
| NEMA1-3.7G1-24 | 005 | 005 | 5.87 (149) | | |
| NEMA1-11G1-24 | 007 | 007 | 8.66 (220) | 13.24 (336.2) | 7.68 (195) |
| NEMA1-11G1-24 | 010 | 010 | | | |
| NEMA1-11G1-24 | 015 | 015 | | | |
| NEMA1-11G1-24 | 020 | 020 | | | |
| NEMA1-22G1-24 | 025 | 025 | 9.84 (250) | 19.27 (490) | 7.68 (195) |
| NEMA1-22G1-24 | 030 | 030 | | | |
| NEMA1-22G1-2 | 040 | — | 9.84 (250) | 22.05 (560) | 7.68 (195) |
| NEMA1-22G1-24 | — | 040 | 9.84 (250) | 19.27 (490) | 7.68 (195) |
| NEMA1-37G1-24 | 050 | 050 | 12.73 (323.4) | 26.97 (685) | 10.04 (255) |
| NEMA1-75G1-24 | 060 | — | 14.11 (358.4) | 29.92 (760) | 10.63 (270) |
| NEMA1-37G1-24 | — | 060 | 12.73 (323.4) | 26.97 (685) | 10.04 (255) |
| NEMA1-75G1-24 | 075 | — | 14.11 (358.4) | 34.84 (885) | 10.63 (270) |
| NEMA1-75G1-24 | — | 075 | | 29.92 (760) | |
| NEMA1-75G1-24 | 100 | — | | 34.84 (885) | |
| NEMA1-75G1-24 | — | 100 | | 32.28 (820) | |
| NEMA1-75G1-2 | 125 | — | 21 (533.4) | 37.8 (960) | 11.22 (285) |
| NEMA1-75G1-24 | — | 125 | 14.11 (358.4) | 34.84 (885) | 10.63 (270) |
| NEMA1-220G1-24 | 150 | — | 26.91 (683.4) | 46.46 (1180) | 14.17 (360) |
| NEMA1-110G1-4 | — | 150 | 21 (533.4) | 35.43 (900) | 12.4 (315) |
| NEMA1-110G1-4 | — | 200 | | | |
| NEMA1-160G1-4 | — | 250 | 21 (533.4) | 49.61 (1260) | 14.17 (360) |
| NEMA1-160G1-4 | — | 300 | | | |
| NEMA1-220G1-24 | — | 350 | 26.91 (683.4) | 51.18 (1300) | 14.17 (360) |
| NEMA1-220G1-24 | — | 450 | | | |
| NEMA1-315G1-4 | — | 500 | 26.94 (684.2) | 63.78 (1620) | 17.39 (441.6) |
| NEMA1-315G1-4 | — | 600 | | | |
| NEMA1-400G1-4 | — | 700 | 34.81 (884.2) | 64.17 (1630) | 17.39 (441.6) |
| NEMA1-400G1-4 | — | 800 | | | |
| NEMA1-630G1-4 | — | 900 | 39.54 (1004.2) | 64.57 (1640) | 19.75 (501.6) |
| NEMA1-630G1-4 | — | 1000 | | | |

**40 HP or below**
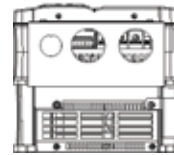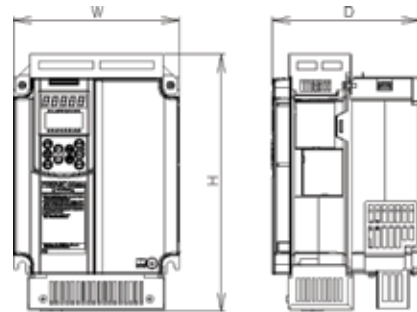
**50 HP or above**
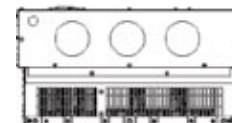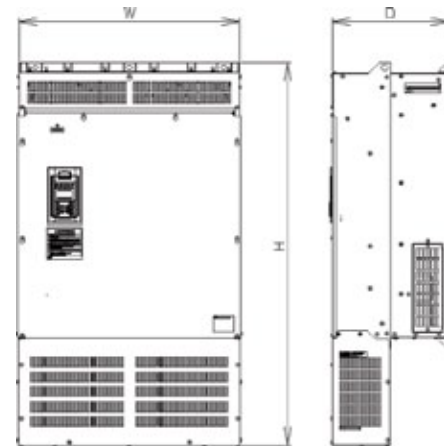
**Note:** Standard models with NEMA1 kit cannot employ external cooling.

# Options

| Parts Name | Type | Remarks |
|---|---|---|
| EtherNet Card | OPC-G1-ETH | The Ethernet option card allows for connectivity to various Ethernet protocols. These include:<br> - EtherNet/IP<br> - Modbus/TCP<br> - BACnet/IP<br>The card also contains an embedded web server for configuration of numerous additional functions such as alarm evaluation with email notification, dashboard GUI with multiple windows for monitoring, virtual keypad interface, and protocol configuration. |
| DeviceNet Card | OPC-G1-DEV | The DeviceNet option card allows for connectivity to a DeviceNet network. The card allows for control or monitoring of the inverter, monitor and change function codes, and the use of explicit messaging. The following are specifications for the DeviceNet options.<br> - 64 Nodes, maximum, including the Master device.<br> - Data rate (baud rate): 125 kbps, 250 kbps, 500 kbps<br> - I/O Message: Polling and Change of State supported<br> - Applicable Profile: AC Drive profile<br> - Reading and writing all the function codes applicable to the EQ7 (I/O Message (User Defined Assembly Instance or Access to Function Codes Instance) and Explicit Message)<br>This product has been tested by ODVA authorized Independent Test Lab and found to comply with ODVA's DeviceNet Conformance Test Version 20. |
| PROFIBUS DP Card | OPC-G1-PDP | The Profibus-DP option card allows for connectivity to a Profibus network. The card allows for control or monitoring of the inverter and for monitoring and changing of function codes. The following are specifications for the Profibus option.<br> - PROFIBUS version: DP-V0 compliant<br> - Transmission speed: 9,600 bps to 12 Mbps<br> - Maximum network cable length per segment: 100 m (912 Mbps) to 1200 m (9.6kbps)<br> - Applicable Profile: PROFIDrive V2 compliant |
| PROFINET I/O Card | OPC-PRT2 | The PROFINET I/O card is a user configurable interface card that installs directly into the drive and provides direct connectivity to PROFINET automation networks |
| CANopen | OPC-G1-COP | The CANopen is the card which supports various open bus types. With this card, the following operations can be performed using PC or PLC.<br> - Operation frequency setting<br> - Operation command setting (FWD, REV, RET, etc.)<br> - Data code setting for each function code<br> - Reading trip data |
| PG Interface Card (Supporting 12V) | OPC-G1-PG | Having this card built-in to the inverter allows the speed control and the position control. |
| PG Interface Card (Supporting 5V) | OPC-G1-PG2 | Having this card built-in to the inverter allows the speed control and the position control. |
| PG Synchronization Card | OPC-G1-PG22 | Velocity synchronization card, allowing both master and slave encoder inputs. |
| Digital Input Interface Card | OPC-G1-DI | Using this card allows frequency setting by 8, 12, 15, and 16 bits, and by BCD code. |
| Digital Output Interface Card | OPC-G1-DO | The output interface card to be equipped with the EQ7, which allows monitoring frequency, output voltage, and output current with binary code. |
| Analog Input/Output Interface Card | OPC-G1-AIO | Using this card allows the torque limit value input, frequency and frequency ratio setting with analog input. |
| Relay Communication Card | OPC-G1-RY | Using this card allows relay output of the inverter general output signal (transistor output). |
| Dynamic Braking Kits | ---- | Dynamic braking resistors are available to match ratings for the entire product range. Dynamic braking transistors are available for all models above 40 hp. |

## Multiple system and network expansion modules are supported on a single EQ7 unit per the table below

Restrictions on mounting an optional card                    Y: Available          N: Not Available

| Mounting port | OPC-G1S- | | | |
|---|---|---|---|---|
| | PG, PG2, PG22 | D1,D0, A10, DEV | RY | ETH, TL, COP, PDP, CCL, SX, PRT2 |
| C PORT | Y | Y | N | N |
| B PORT | N | Y | Y | N |
| A PORT | N | Y | Y | Y |
| Remarks | 1 | 2 | 3 | 2 |
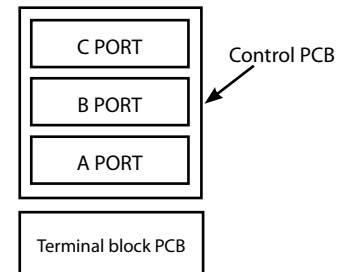
*1   Any one of the above can be mounted on only C port.
*2   Only one card can be mounted on any of A, B, or C ports.
    Cards can be mounted on DI, DO, and AIO ports at the same time, however, two identical cards cannot be allowed.
*3   The cards can be mounted on both A and B ports.
    Two RY cards can be mounted at the same time.
    The number of RY contact points of a card is two. If three or four points are necessary, prepare two cards.
Note: There are also restrictions on mounting when using the optional communications card. Contact us for details.
Note: When mounting the IP40 option, only one optional card can be mounted. (RY card allows mounting of two cards.)

C PORT

B PORT ← Control PCB

A PORT

Terminal block PCB

# EQ7 Configured Packages

**The EQ7 is available as the key unit in built-to-order packages for a variety of installations.**

## HVAC Packages

TECO-Westinghouse offers a complete line of packaged drives, including bypass packages for fan and pump applications.

### FEATURES

▌ Packages up to 1000 hp available
▌ Available in multiple disconnect options
▌ Two or three contactor and soft start bypass
▌ Custom design packages
▌ Wide range of harmonic filters available to meet IEEE 519-1992
▌ NEMA 1, NEMA 12, NEMA 3R standard
▌ NEMA 4 & 4X available
▌ Duplex - multiplex packages available
▌ Packages designed to customer specifications

### APPLICATIONS

▌ Fans
▌ Chillers
▌ Refrigeration
▌ Compressors
▌ Air handlers
▌ Pumps

## Industrial Packages

TECO-Westinghouse offers packaged drives to suit any robust industrial application.

### FEATURES

▌ NEMA 1, NEMA 12, NEMA 3R standard
▌ Packages up to 1000 hp
▌ Available in multiple disconnect options
▌ NEMA 4, 4X available
▌ Special designs to meet tight spacing requirements

### APPLICATIONS

▌ Conveyors
▌ Compressors
▌ Mixers
▌ Stamping/ punch press

TECO-Westinghouse Motor Company offers an extensive line of Variable Speed Drives and Soft Starters for your motor control applications.

We also offer a wide variety of motors that are matched with the Drives and Soft Starters including Vertical Hollow Shaft, Rolled Steel, and NEMA Premium Efficient Motors.

From "in stock" controls to engineered systems, we can provide you the right control solution, including an extensive line of TECO-Westinghouse AC motors.

## *Contact us for your application and packaging needs!*

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Round Rock, Texas 78681
1-800-279-4007

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