

## MHMA Series - High Inertia

### Outline

#### Output Range

500W, 1.0kW, 1.5kW, 2.0kW, 3.0kW, 4.0kW, 5.0kW

#### High Inertia Type

Rated Speed: 2000rpm

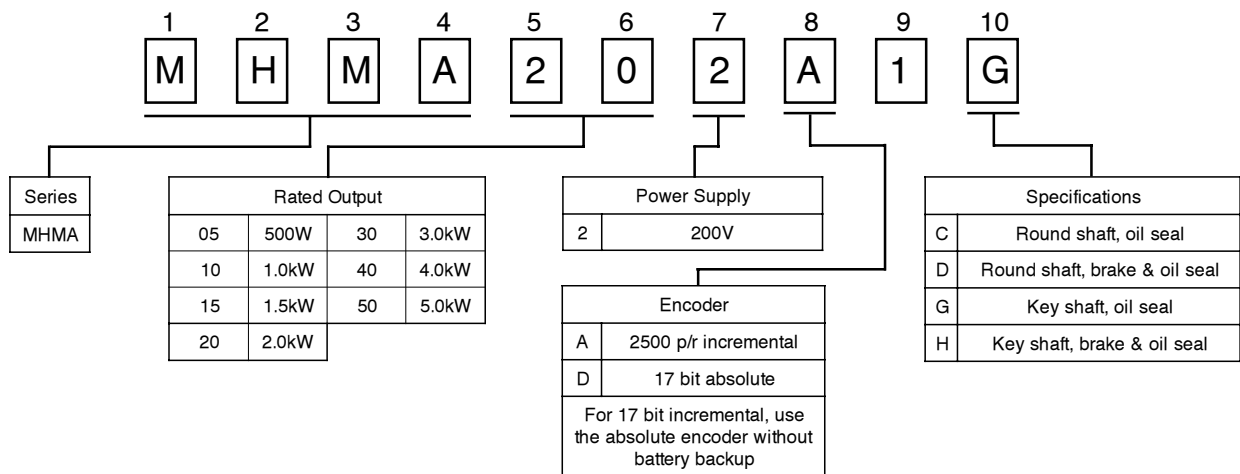
Maximum Speed: 3000rpm

Torque: From 53.14 to 632.37lb at peak

#### Applicable Amplifier

Use with MHDA Driver

### Explanation of Part Numbers



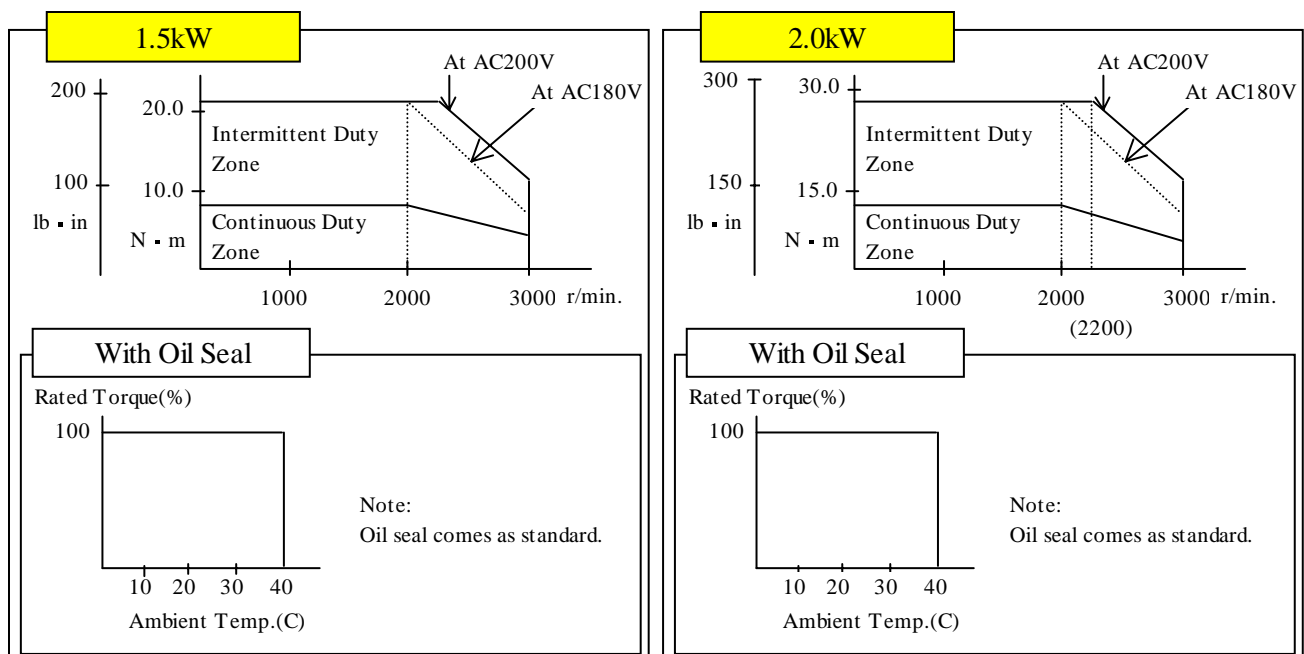
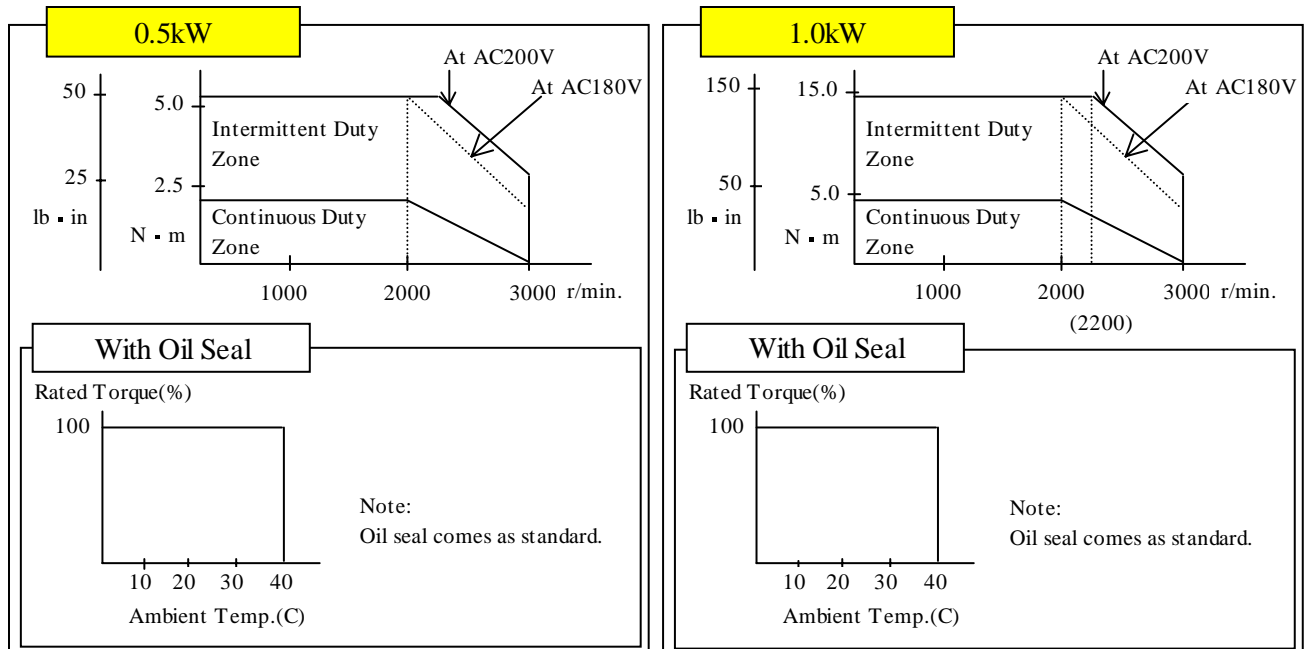
### Basic Specifications

Note: Separate power source required for brake (DC24V)

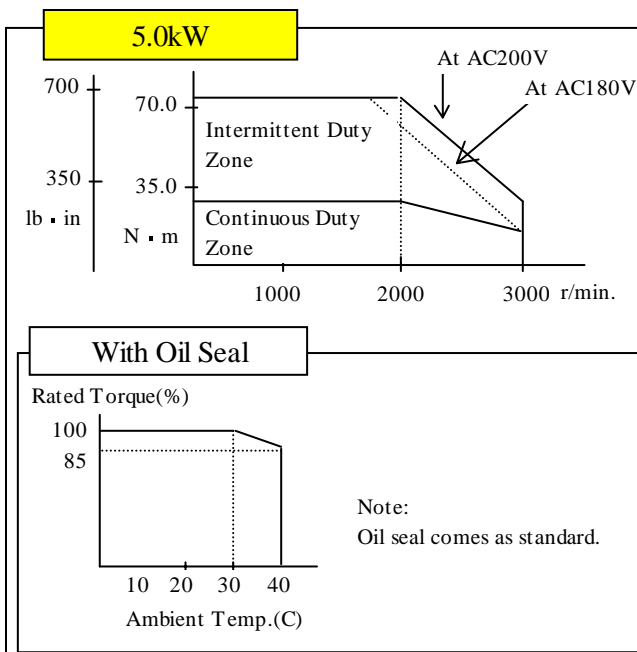
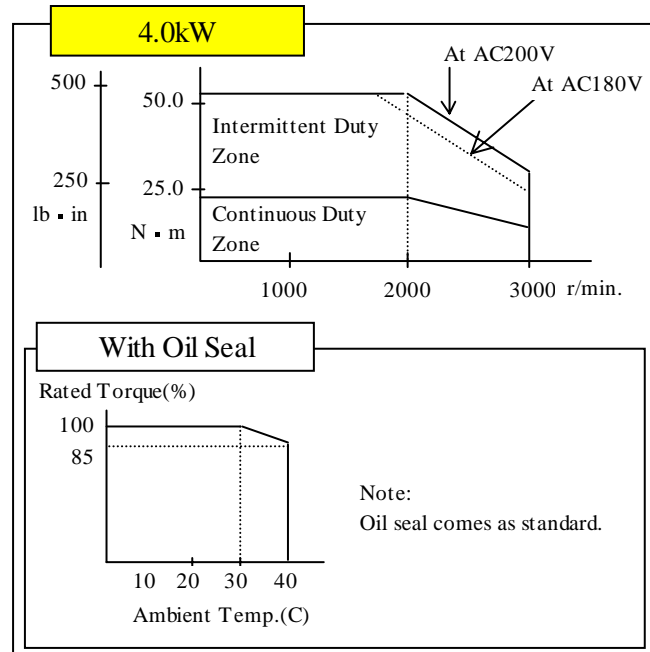
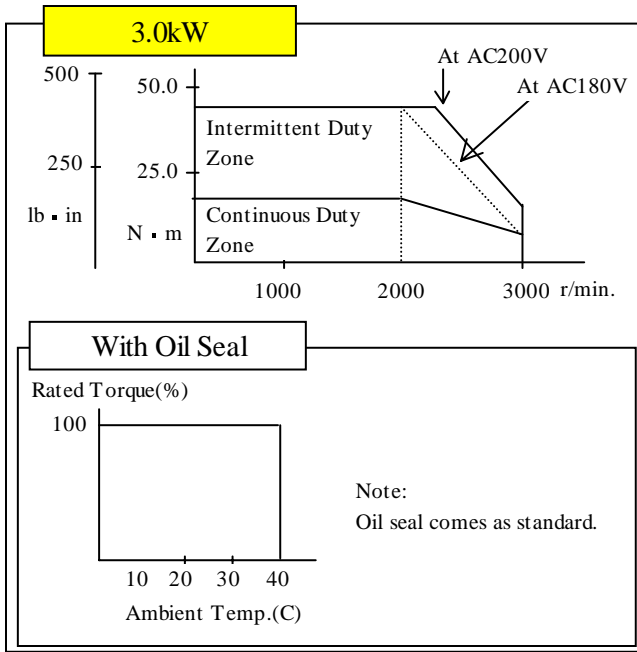
| Rated Output     |                        | kW                   | 0.5             | 1.0    | 1.5              | 2.0    | 3.0              | 4.0    | 5.0    |
|------------------|------------------------|----------------------|-----------------|--------|------------------|--------|------------------|--------|--------|
| Torque           | Rated                  | N. m                 | 2.38            | 4.80   | 7.15             | 9.54   | 14.3             | 18.8   | 23.8   |
|                  |                        | lb-in.               | 21.08           | 42.51  | 63.33            | 84.49  | 126.65           | 166.51 | 210.79 |
|                  | Peak                   | N. m                 | 6.0             | 14.4   | 21.5             | 28.5   | 42.9             | 56.4   | 71.4   |
|                  |                        | lb-in.               | 53.14           | 127.54 | 190.42           | 252.42 | 379.95           | 499.52 | 632.37 |
| Rotor Inertia    | Without Brake          | x10kg·m <sup>2</sup> | 14.0            | 26.0   | 42.9             | 62.0   | 94.1             | 120    | 170    |
|                  |                        | lb. in <sup>2</sup>  | 4.784           | 8.884  | 14.659           | 21.185 | 32.154           | 41.004 | 58.089 |
|                  | With Brake             | x10kg·m <sup>2</sup> | 15.2            | 27.2   | 44.1             | 45.3   | 100              | 126    | 176    |
|                  |                        | lb. in <sup>2</sup>  | 5.194           | 9.294  | 15.069           | 15.479 | 34.170           | 43.054 | 60.139 |
| Velocity         | Rated                  | r/min.               | 2000            |        |                  |        |                  |        |        |
|                  | Peak                   | r/min.               | 3000            |        |                  |        |                  |        |        |
| Approximate Mass | Without Brake          | kg                   | 5.3             | 8.9    | 10.0             | 16.0   | 18.2             | 22.0   | 26.7   |
|                  |                        | lb                   | 11.68           | 19.62  | 22.05            | 35.27  | 40.12            | 48.50  | 58.86  |
|                  | With Brake             | kg                   | 6.9             | 9.5    | 11.6             | 19.5   | 21.7             | 25.5   | 30.2   |
|                  |                        | lb                   | 15.21           | 20.94  | 25.57            | 42.99  | 47.84            | 56.22  | 66.58  |
| Current          | Rated                  | A(rms)               | 3.2             | 5.6    | 9.4              | 12.3   | 17.8             | 23.4   | 28.0   |
|                  | Peak                   | A(0-P)               | 11.5            | 21     | 40               | 52     | 76               | 100    | 120    |
| Power Rate       | Without Brake          | kW/s                 | 4.0             | 8.9    | 11.9             | 14.7   | 21.8             | 29.5   | 33.4   |
|                  | With Brake             | kW/s                 | 3.7             | 8.5    | 11.6             | 31.0   | 20.5             | 28.1   | 32.2   |
| Brake (Option)   | Voltage                | V                    | DC 24 ± 2.4     |        |                  |        |                  |        |        |
|                  | Current                | DC, A                | 0.59 ±10%       |        | 0.79 ±10%        |        | 1.30 ±10%        |        |        |
|                  | Static Friction Torque | N. m                 | 4.9 or higher   |        | 13.7 or higher   |        | 24.5 or higher   |        |        |
|                  |                        | lb-in                | 43.40 or higher |        | 121.34 or higher |        | 216.99 or higher |        |        |

Design and specifications are subject to change without notice. Ask Panasonic for technical specifications before purchase and/or use. Whenever a doubt about safety arises from this product, please contact Panasonic immediately for technical consultation.

### S-T Characteristics

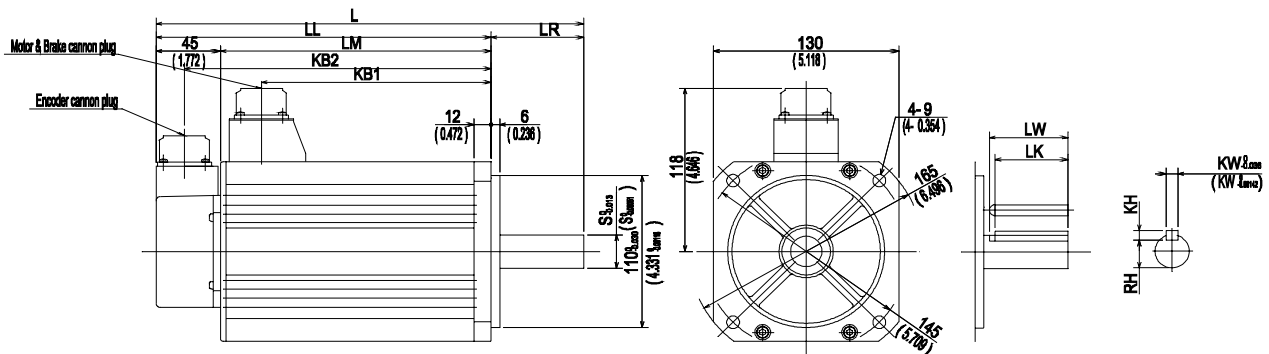


### S-T Characteristics

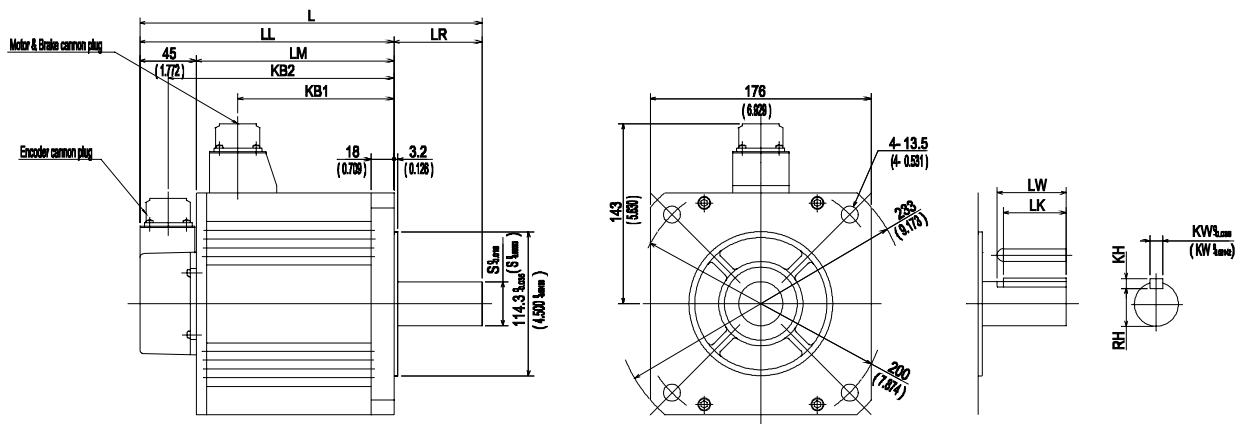


## Dimensions

### 0.5, 1.0, 1.5 kW



### 2.0, 3.0, 4.0, 5.0 kW



## Dimensions

Unit: mm

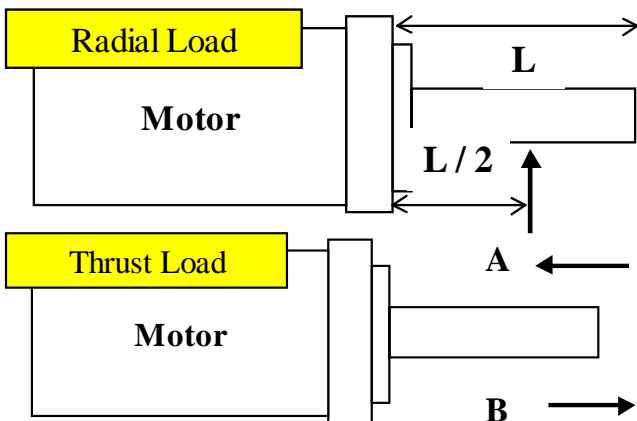
| Output | Brake   | L   | LL  | LM  | KB1 | KB2 | S  | LR | LW | LK | KW | KH | RH |
|--------|---------|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|
| 0.5    | Without | 205 | 150 | 105 | 75  | 130 | 22 | 55 | 45 | 41 | 8  | 7  | 18 |
|        | With    | 230 | 175 | 130 | 100 | 155 |    |    |    |    |    |    |    |
| 1.0    | Without | 230 | 175 | 130 | 100 | 155 | 22 | 55 | 45 | 41 | 8  | 7  | 18 |
|        | With    | 255 | 200 | 155 | 125 | 180 |    |    |    |    |    |    |    |
| 1.5    | Without | 255 | 200 | 155 | 125 | 180 | 22 | 55 | 45 | 41 | 8  | 7  | 18 |
|        | With    | 280 | 225 | 180 | 150 | 205 |    |    |    |    |    |    |    |
| 2.0    | Without | 267 | 187 | 142 | 110 | 167 | 35 | 80 | 55 | 50 | 10 | 8  | 30 |
|        | With    | 292 | 212 | 167 | 135 | 192 |    |    |    |    |    |    |    |
| 3.0    | Without | 282 | 202 | 157 | 125 | 182 | 35 | 80 | 55 | 50 | 10 | 8  | 30 |
|        | With    | 307 | 227 | 182 | 150 | 207 |    |    |    |    |    |    |    |
| 4.0    | Without | 307 | 227 | 182 | 150 | 207 | 35 | 80 | 55 | 50 | 10 | 8  | 30 |
|        | With    | 332 | 252 | 207 | 175 | 232 |    |    |    |    |    |    |    |
| 5.0    | Without | 332 | 252 | 207 | 175 | 232 | 35 | 80 | 55 | 50 | 10 | 8  | 30 |
|        | With    | 357 | 277 | 232 | 200 | 257 |    |    |    |    |    |    |    |

Unit: in.

| Output | Brake   | L      | LL     | LM    | KB1   | KB2    | S     | LR    | LW    | LK    | KW    | KH    | RH    |
|--------|---------|--------|--------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|
| 0.5    | Without | 8.071  | 5.906  | 4.134 | 2.953 | 5.118  | 0.866 | 2.165 | 1.772 | 1.614 | 0.315 | 0.276 | 0.709 |
|        | With    | 9.055  | 6.890  | 5.118 | 3.937 | 6.102  |       |       |       |       |       |       |       |
| 1.0    | Without | 9.055  | 6.890  | 5.118 | 3.937 | 6.102  | 0.866 | 2.165 | 1.772 | 1.614 | 0.315 | 0.276 | 0.709 |
|        | With    | 10.039 | 7.874  | 6.102 | 4.921 | 7.087  |       |       |       |       |       |       |       |
| 1.5    | Without | 10.039 | 7.874  | 6.102 | 4.921 | 7.087  | 0.866 | 2.165 | 1.772 | 1.614 | 0.315 | 0.276 | 0.709 |
|        | With    | 11.024 | 8.858  | 7.087 | 5.906 | 8.071  |       |       |       |       |       |       |       |
| 2.0    | Without | 10.512 | 7.362  | 5.591 | 4.331 | 6.575  | 1.378 | 3.150 | 2.165 | 1.969 | 0.394 | 0.315 | 1.181 |
|        | With    | 11.496 | 8.346  | 6.575 | 5.315 | 7.559  |       |       |       |       |       |       |       |
| 3.0    | Without | 11.102 | 7.953  | 6.181 | 4.921 | 7.165  | 1.378 | 3.150 | 2.165 | 1.969 | 0.394 | 0.315 | 1.181 |
|        | With    | 12.087 | 8.937  | 7.165 | 5.906 | 8.150  |       |       |       |       |       |       |       |
| 4.0    | Without | 12.087 | 8.937  | 7.165 | 5.906 | 8.150  | 1.378 | 3.150 | 2.165 | 1.969 | 0.394 | 0.315 | 1.181 |
|        | With    | 13.071 | 9.921  | 8.150 | 6.890 | 9.134  |       |       |       |       |       |       |       |
| 5.0    | Without | 13.071 | 9.921  | 8.150 | 6.890 | 9.134  | 1.378 | 3.150 | 2.165 | 1.969 | 0.394 | 0.315 | 1.181 |
|        | With    | 14.055 | 10.905 | 9.134 | 7.874 | 10.118 |       |       |       |       |       |       |       |

## Thrust and Radial Load

Note: Same overall length for both incremental and absolute



| Output (kW)        | Upon setting a motor to your system |          |          | Upon running a motor |             |
|--------------------|-------------------------------------|----------|----------|----------------------|-------------|
|                    | Radial Load                         | Thrust A | Thrust B | Radial Load          | Thrust Load |
| 0.5, 1.0, 1.5      | 980 N                               | 588 N    | 686 N    | 490 N                | 196 N       |
|                    | 220 lb                              | 132 lb   | 154 lb   | 110 lb               | 44 lb       |
| 2.0, 3.0, 4.0, 5.0 | 1666 N                              | 784 N    | 980 N    | 784 N                | 343 N       |
|                    | 374 lb                              | 176 lb   | 220 lb   | 176 lb               | 77 lb       |

### Connectors

#### Motor (Without Brake)

|           |                        |                    |
|-----------|------------------------|--------------------|
| 0.5-1.5kW | Plug                   | JL04V-2E20-4PE-B   |
|           | Female Plug - Straight | JL04V-6A20-4SE-EB  |
|           | Female Plug - L angle  | JL04V-8A20-4SE-EB  |
|           | Cable clamp            | JL04-2022CK(14)    |
| 2.0-5.0kW | Plug                   | JL04HV-2E22-22PE-B |
|           | Female Plug - Straight | JL04V-6A22-22SE-EB |
|           | Female Plug - L angle  | JL04V-8A20-22SE-EB |
|           | Cable clamp            | JL04-2022CK(14)    |

| Pin | Signal |
|-----|--------|
| A   | U      |
| B   | V      |
| C   | W      |
| D   | E      |

#### Motor (With Brake)

|           |                        |                    |
|-----------|------------------------|--------------------|
| 0.5-1.5kW | Plug                   | JL04V-2E20-18PE-B  |
|           | Female Plug - Straight | JL04V-6A20-18SE-EB |
|           | Female Plug - L angle  | JL04V-8A20-18SE-EB |
|           | Cable clamp            | JL04-2022CK(14)    |
| 2.0-5.0kW | Plug                   | JL04V-2E24-11PE-B  |
|           | Female Plug - Straight | JL04V-6A24-11SE-EB |
|           | Female Plug - L angle  | JL04V-8A24-11SE-EB |
|           | Cable clamp            | JL04-2428CK(17)    |

| Pin | Signal        |
|-----|---------------|
| G   | Brake         |
| H   | Brake         |
| A   | No Connection |
| F   | U             |
| I   | V             |

| Pin | Signal          |
|-----|-----------------|
| B   | W               |
| E   | FG-Frame Ground |
| D   | FG-Frame Ground |
| C   | No connection   |

| Pin | Signal        |
|-----|---------------|
| A   | Brake         |
| B   | Brake         |
| C   | No Connection |
| D   | U             |
| E   | V             |

| Pin | Signal          |
|-----|-----------------|
| F   | W               |
| G   | FG-Frame Ground |
| H   | FG-Frame Ground |
| I   | No connection   |

#### Encoder - 2500p/r Incremental

|           |                        |                    |
|-----------|------------------------|--------------------|
| 0.5-5.0kW | Plug                   | MS3102A 20-29P     |
|           | Female Plug - Straight | JA06A-20-29S-J1-EB |
|           | Female Plug - L angle  | JA08A-20-29S-J1-EB |
|           | Cable clamp            | JL04-2022CK(14)    |

| Pin | Signal          |
|-----|-----------------|
| A   | A               |
| B   | A               |
| C   | B               |
| D   | B               |
| E   | Z               |
| F   | Z               |
| G   | Power ground    |
| H   | +5V             |
| J   | FG-Frame ground |

| Pin | Signal        |
|-----|---------------|
| K   | No connection |
| L   | No connection |
| M   | No connection |
| N   | No connection |
| P   | RX            |
| R   | R $\bar{X}$   |
| S   | No connection |
| T   | No connection |

#### Encoder - 17 bit

|           |                        |                    |
|-----------|------------------------|--------------------|
| 0.5-5.0kW | Plug                   | MS3102A 20-29P     |
|           | Female Plug - Straight | JA06A-20-29S-J1-EB |
|           | Female Plug - L angle  | JA08A-20-29S-J1-EB |
|           | Cable clamp            | JL04-2022CK(14)    |

| Pin | Signal          |
|-----|-----------------|
| A   | No connection   |
| B   | No connection   |
| C   | No connection   |
| D   | No connection   |
| E   | No connection   |
| F   | No connection   |
| G   | 0V              |
| H   | +5V             |
| J   | FG-Frame ground |

| Pin | Signal         |
|-----|----------------|
| K   | SD             |
| L   | S $\bar{D}$    |
| M   | No connection  |
| N   | No connection  |
| P   | No connection  |
| R   | No connection  |
| S   | Battery ground |
| T   | No. 2 battery  |

Note: Pin assignment is for 17 bit absolute encoder.  
Connection of pin S and T not required for 17 bit incremental