



# ACCU-Torq® Vector Duty 3-Phase AC Motors

## 56C – 256TC Frame – 1/4hp to 20hp

### Available with or without encoder installed

U.S. MOTORS® ACCU-Torq® series AC motors offer a solution to applications requiring accurate positioning or precise speed control without the rapid acceleration dynamics of a servomotor. ACCU-Torq motors are designed to be used with AC drives, including full closed-loop vector drives, in applications requiring up to a 5000:1 constant torque speed range.

### Standard Features

- 230/460 VAC
- Rated output: 1/4 - 20hp
- 1800 rpm, with or without encoder
- 1200 rpm up to 10hp
- Encoder Motors are pre-built with Avtron HS35A encoders. Complete encoder kit is also available for separate purchase.
- Standard motors have dual shaft for encoder mounting.
- Class F insulation (155° C), inverter duty NEMA MG1 Part 31
- Constant torque operation; zero to base speed on vector drives
- Constant horsepower operation to twice base speed
- Optimized for operation with IGBT and intelligent power module drives (NEMA®+ Design A)
- F-1 Standard, field convertible to F-2 for 180 frame and above
- Normally closed thermostats standard
- Horizontal or Vertical mounting
- Continuous duty at 40°C ambient

### Applications

- Packaging machinery
- Extruders
- Material handling
- Indexing and positioning
- Positive displacement pumps
- DC Motor Replacements



**UN5T2BC**



**UN5T2BC-HS35A**



Cover can be removed to reveal second shaft



**HS35AY1CDU1EA000**



# ACCU-Torq® Vector Duty 3-Phase AC Motors

| Motor Specifications – 3-phase    |            |       |          |             |           |                  |            |                |             |             |                     |                     |                     |
|-----------------------------------|------------|-------|----------|-------------|-----------|------------------|------------|----------------|-------------|-------------|---------------------|---------------------|---------------------|
| Part Number                       | Price      | HP*   | Base RPM | Volts       | Enclosure | Encoder Included | NEMA Frame | Service Factor | NEMA Design | Weight (lb) | Data Pack Links*    | Drawing Links       |                     |
| Rigid Base With C-face - 1800 RPM |            |       |          |             |           |                  |            |                |             |             |                     |                     |                     |
| <a href="#">UN14T2BC</a>          | \$370.00   | 1/4   | 1800     | 230/460 VAC | TENV      | No               | 56C        | 1.0            | A           | 35          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN14T2BC-HS35A</a>    | \$1,199.00 |       |          |             |           | Yes              |            |                |             | 30          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN12T2BC</a>          | \$448.00   | 1/2   |          |             |           | No               |            |                |             | 56C         | 42                  | <a href="#">PDF</a> | <a href="#">PDF</a> |
| <a href="#">UN12T2BC-HS35A</a>    | \$1,298.00 |       |          |             |           | Yes              |            |                |             |             | 30                  | <a href="#">PDF</a> | <a href="#">PDF</a> |
| <a href="#">UN1T2BFC</a>          | \$530.00   | 1     |          |             |           | No               | 56C        |                |             | 43          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN1T2BFC-HS35A</a>    | \$1,379.00 |       |          |             |           | Yes              |            |                |             | 30          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN1T2BC</a>           | \$530.00   |       |          |             |           | No               | 143TC      |                |             | 43          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN1T2BC-HS35A</a>     | \$1,379.00 |       |          |             |           | Yes              |            |                |             | 30          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN32T2BC</a>          | \$651.00   | 1 1/2 |          |             |           | No               | 145TC      |                |             | 50          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN32T2BC-HS35A</a>    | \$1,498.00 |       |          |             |           | Yes              |            |                |             | 35          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN2T2BC</a>           | \$697.00   | 2     |          |             |           | No               |            |                |             | 145TC       | 57                  | <a href="#">PDF</a> | <a href="#">PDF</a> |
| <a href="#">UN2T2BC-HS35A</a>     | \$1,538.00 |       |          |             |           | Yes              |            |                |             |             | 60                  | <a href="#">PDF</a> | <a href="#">PDF</a> |
| <a href="#">UN3T2BC</a>           | \$781.00   | 3     |          |             |           | No               | 182TC      |                |             | 65          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN3T2BC-HS35A</a>     | \$1,625.00 |       |          |             |           | Yes              |            |                |             | 60          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN5T2BC</a>           | \$908.00   | 5     |          |             |           | No               | 184TC      |                |             | 85          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN5T2BC-HS35A</a>     | \$1,738.00 |       |          |             |           | Yes              |            |                |             | 60          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN7T2BC</a>           | \$1,241.00 | 7 1/2 |          |             |           | No               | 213TC      |                |             | 135         | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN7T2BC-HS35A</a>     | \$2,071.00 |       |          |             |           | Yes              |            |                |             | 105         | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN10T2BC</a>          | \$1,499.00 | 10    |          |             |           | No               | 215TC      |                |             | 178         | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN10T2BC-HS35A</a>    | \$2,329.00 |       |          |             |           | Yes              |            |                |             | 120         | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN15T2BC</a>          | \$2,070.00 | 15    |          |             |           | No               | 254TC      |                |             | 255         | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN15T2BC-HS35A</a>    | \$2,900.00 |       |          |             |           | Yes              |            |                |             | 120         | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN20T2BC</a>          | \$2,551.00 | 20    |          |             |           | No               | 256TC      |                |             | 266         | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN20T2BC-HS35A</a>    | \$3,381.00 |       |          |             |           | Yes              |            |                |             | 230         | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| Rigid Base With C-face - 1200 RPM |            |       |          |             |           |                  |            |                |             |             |                     |                     |                     |
| <a href="#">UN1T3BC</a>           | \$578.00   | 1     | 1200     | 230/460 VAC | TENV      | No               | 145TC      | 1.0            | A           | 35          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN2T3BC</a>           | \$963.00   | 2     |          |             |           |                  | 184TC      |                |             | 75          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN5T3BC</a>           | \$1,707.00 | 5     |          |             |           |                  | 215TC      |                |             | 60          | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN7T3BC</a>           | \$2,279.00 | 7 1/2 |          |             |           |                  | 254TC      |                |             | 211         | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |
| <a href="#">UN10T3BC</a>          | \$2,752.00 | 10    |          |             |           |                  | 256TC      |                |             | 266         | <a href="#">PDF</a> | <a href="#">PDF</a> |                     |

\*See Motor Data Pack for additional specifications



# ACCU-Torq® Vector Duty 3-Phase AC Motors

| Performance Data – 3-phase        |       |                |             |                     |                |                   |                   |                       |            |                 |       |                     |          |                    |                        |                                         |      |       |
|-----------------------------------|-------|----------------|-------------|---------------------|----------------|-------------------|-------------------|-----------------------|------------|-----------------|-------|---------------------|----------|--------------------|------------------------|-----------------------------------------|------|-------|
| Part Number                       | HP*   | Full Load RPM* | Volts*      | Current (230V/460V) |                |                   | Torque            |                       |            | Resistance Main |       | Torque Speed Rating |          | Full Load Effic. % | Full Load Power Factor | Moment of Inertia (lb-ft <sup>2</sup> ) |      |       |
|                                   |       |                |             | No Load Current     | Full Load Amps | Locked Rotor Amps | Full Load (lb-ft) | Locked Rotor          | Break-down |                 |       | Constant            | Variable |                    |                        |                                         |      |       |
|                                   |       |                |             |                     |                |                   |                   | % of Full Load Torque | 230V       | 460V            |       |                     |          |                    |                        |                                         |      |       |
| Rigid Base With C-face - 1800 RPM |       |                |             |                     |                |                   |                   |                       |            |                 |       |                     |          |                    |                        |                                         |      |       |
| UN14T2BC                          | 1/4   | 1765           | 230/460 VAC | 0.8 / 0.4           | 1 / 0.5        | 8.2 / 4.1         | 0.70              | 419                   | 586        | 12.42           | 49.69 | 5000:1              | 5000:1   | 77.0               | 61.1                   | 0.070                                   |      |       |
| UN14T2BC-HS35A                    |       |                |             |                     | 1 / 0.5        |                   |                   |                       |            |                 | 49.69 |                     |          |                    |                        |                                         |      |       |
| UN12T2BC                          | 1/2   | 1750           |             | 1 / 0.5             | 1.5 / 0.8      | 12.1 / 6          | 1.50              | 335                   | 457        | 6.47            | 25.87 |                     |          | 84.0               | 74.2                   | 0.105                                   |      |       |
| UN12T2BC-HS35A                    |       |                |             |                     | 1.5 / 0.8      |                   |                   |                       |            |                 | 25.87 |                     |          |                    |                        |                                         |      |       |
| UN1T2BC                           | 1     | 1755           |             | 2.2 / 1.1           | 3.2 / 1.6      | 32 / 15.8         | 3.00              | 480                   | 606        | 2.72            | 10.88 |                     |          | 84.0               | 69.5                   | 0.107                                   |      |       |
| UN1T2BC-HS35A                     |       |                |             |                     | 3.2 / 1.6      |                   |                   | 10.88                 |            |                 |       |                     |          |                    |                        |                                         |      |       |
| UN1T2BFC                          |       |                |             |                     | 3.2 / 1.6      | 31 / 15.6         |                   | 476                   | 600        | 2.66            | 10.64 |                     |          |                    | 69.3                   |                                         |      |       |
| UN1T2BFC-HS35A                    |       |                |             |                     | 3.2 / 1.6      | 10.64             |                   |                       |            |                 |       |                     |          |                    |                        |                                         |      |       |
| UN32T2BC                          | 1 1/2 | 1760           |             | 3.2 / 1.6           | 4.6 / 2.3      | 52 / 25.9         | 4.50              | 518                   | 665        | 1.55            | 6.18  |                     |          | 5000:1             | 5000:1                 | 86.5                                    | 69.7 | 0.14  |
| UN32T2BC-HS35A                    |       |                |             |                     | 4.6 / 2.3      |                   |                   |                       |            |                 | 6.18  |                     |          |                    |                        |                                         |      |       |
| UN2T2BC                           | 2     | 1750           |             | 3.3 / 1.7           | 5.6 / 2.8      | 56 / 28           | 6.00              | 425                   | 543        | 1.37            | 5.46  |                     |          |                    |                        | 86.5                                    | 76.8 | 0.174 |
| UN2T2BC-HS35A                     |       |                |             |                     | 5.6 / 2.8      |                   |                   |                       |            |                 | 5.46  |                     |          |                    |                        |                                         |      |       |
| UN3T2BC                           | 3     | 1770           |             | 7.9 / 4             | 10.1 / 5       | 92 / 46           | 8.90              | 400                   | 573        | 0.77            | 3.08  |                     |          |                    |                        | 87.5                                    | 63.6 | 0.314 |
| UN3T2BC-HS35A                     |       |                |             |                     | 10.1 / 5       |                   |                   |                       |            |                 | 3.08  |                     |          |                    |                        |                                         |      |       |
| UN5T2BC                           | 5     |                |             | 8 / 4               | 14.2 / 7.1     | 139 / 70          | 14.80             | 363                   | 522        | 0.46            | 1.84  |                     |          |                    |                        | 90.2                                    | 74.5 | 0.472 |
| UN5T2BC-HS35A                     |       |                |             |                     | 14.2 / 7.1     |                   |                   |                       |            |                 | 1.84  |                     |          |                    |                        |                                         |      |       |
| UN7T2BC                           | 7 1/2 | 1775           |             | 9 / 4.5             | 18.8 / 9.4     | 178 / 89          | 22.20             | 349                   | 445        | 0.21            | 0.84  |                     |          |                    |                        | 92.4                                    | 80.7 | 0.964 |
| UN7T2BC-HS35A                     |       |                |             |                     | 18.8 / 9.4     |                   |                   |                       |            |                 | 0.84  |                     |          |                    |                        |                                         |      |       |
| UN10T2BC                          | 10    |                |             | 12.9 / 6.4          | 25.3 / 12.7    | 275 / 138         | 29.60             | 416                   | 519        | 0.13            | 0.53  |                     |          |                    |                        | 93.0                                    | 79.6 | 1.33  |
| UN10T2BC-HS35A                    |       |                |             |                     | 25 / 12.7      |                   |                   |                       |            |                 | 0.53  |                     |          |                    |                        |                                         |      |       |
| UN15T2BC                          | 15    | 1785           |             | 14.3 / 7.2          | 36 / 17.8      | 345 / 172         | 44.20             | 394                   | 381        | 0.08            | 0.33  |                     |          |                    |                        | 94.5                                    | 83.4 | 3.43  |
| UN15T2BC-HS35A                    |       |                |             |                     | 36 / 17.8      |                   |                   |                       |            |                 | 0.33  |                     |          |                    |                        |                                         |      |       |
| UN20T2BC                          | 20    | 1780           |             | 22.9 / 11.5         | 50 / 24.8      | 486 / 243         | 58.90             | 419                   | 403        | 0.06            | 0.24  |                     |          |                    |                        | 94.1                                    | 80.3 | 3.56  |
| UN20T2BC-HS35A                    |       |                |             |                     | 50 / 24.8      |                   |                   |                       |            |                 | 0.24  |                     |          |                    |                        |                                         |      |       |
| Rigid Base With C-face - 1200 RPM |       |                |             |                     |                |                   |                   |                       |            |                 |       |                     |          |                    |                        |                                         |      |       |
| UN1T3BC                           | 1     | 1150           | 230/460 VAC | 7.1                 | 3.7 / 1.8      | 21.1 / 10.5       | 4.60              | 298                   | 390        | 3.59            | 14.35 | 5000:1              | 5000:1   |                    |                        | 80.0                                    | 63.8 | 0.122 |
| UN2T3BC                           | 2     | 1170           |             | 2.1 / 4.3           | 6.2 / 3.1      | 47.3 / 23.5       | 9.00              | 228                   | 386        | 1.79            | 7.17  |                     |          |                    |                        | 86.5                                    | 69.4 | 0.361 |
| UN5T3BC                           | 5     | 1175           |             | 10.9 / 5.5          | 15.9 / 7.9     | 127.7 / 63.9      | 22.30             | 383                   | 445        | 0.35            | 1.42  |                     |          |                    |                        | 89.5                                    | 65.9 | 0.928 |
| UN7T3BC                           | 7 1/2 | 1185           |             | 10.5 / 5.3          | 19.8 / 9.9     | 162.7 / 81.4      | 33.20             | 285                   | 393        | 0.27            | 1.08  |                     |          |                    |                        | 91.7                                    | 77.4 | 3.21  |
| UN10T3BC                          | 10    |                |             | 11.9 / 6            | 25 / 12.7      | 199.8 / 99.9      | 45.00             | 269                   | 366        | 0.20            | 0.79  |                     |          |                    |                        | 92.4                                    | 80.1 | 4.05  |

\*See Motor Data Pack for additional specifications linked in specification table above



# Avtron Encoder Kit

## HS35A Encoder Kit Overview

Avtron™ HS35A Encoder kits come standard on US MOTORS ACCU-Torq® series encoder motors or can be purchased separately for installation on existing dual shaft motors such as Marathon Black Max. The HS35A encoders fit shafts from 1/2" to 1" easily, using durable shaft inserts. The encoders can be adapted to different shaft sizes by replacing or removing the included inserts, enabling customer stockrooms to swiftly meet any need. The shaft inserts and insulated bearings also provide isolation from motor shaft currents, while permitting case grounding to meet NEC requirements. Avtron encoders have superior shaft seals and bearings that stay sealed to keep out contamination caused by temperature cycling and liquid sprays. Encoder seals are protected by mechanical barriers to prevent flexing or failure, and Avtron's rugged bearings feature synthetic lubricants for even longer life. Avtron uses only unbreakable disks and a sensor-to-disk gap over eight times larger than the competition. The optical HS35A encoders use superior sensor, disk, bearing, and seal technology to give top performance in industrial conditions.



**HS35AY1CDU1EA000**

## HS35A Features

- All digital, fully integrated design
- Easily mountable on US MOTORS ACCU-Torq series or Marathon Black Max Series vector duty motors
- No mechanical adjustments or trim potentiometers
- Innovative shaft ring retains collar during installation
- Advanced sensor technology
- Superior bearings with synthetic lubricant for longer life
- Encoder provides signal complements and marker pulse (A,A-, B,B-, Z,Z-)
- Insulated from motor shaft currents
- Models can be resized by interchanging inserts
- Included basket guard adds even more protection

### HS35A Encoder Specifications

|                        |                                            |
|------------------------|--------------------------------------------|
| <b>Part Number</b>     | HS35AY1CDU1EA000                           |
| <b>Price</b>           | \$839.00                                   |
| <b>Operating Power</b> | Volts: 5-28 VDC<br>Current: 50 mA, no load |
| <b>Output Format</b>   | A Quad B with marker (A,/A, B,/B, Z,/Z)    |
| <b>Frequency Range</b> | 0 to 125 kHz                               |
| <b>PPR</b>             | 1024                                       |
| <b>Max Speed</b>       | 6000 RPM                                   |
| <b>Temperature</b>     | -20° to 100°C*                             |
| <b>Environmental</b>   | IP65                                       |
| <b>Vibration</b>       | 5-2000 Hz                                  |
| <b>Shock</b>           | 50G, 11ms duration                         |
| <b>Weight</b>          | 1.6 lbs [730g]                             |
| <b>Drawing Link</b>    | <a href="#">PDF</a>                        |

\*Consult Avtron for temperature/speed derating:  
<https://www.nidec-avtronencoders.com/contact>



Click image above for Encoder Installation:

<https://www.youtube.com/watch?v=ZhX63xp7kOw>