

INDUSTRIAL INDEXING SYSTEMS



DELTA SERIES

DeltaMax™
Positioning
Systems



DeltaMax Integrated Drive/Controller and Motors

Welcome to a motion control world where smaller is better and modest cost is equated with very high performance. Welcome to the world of DeltaMax, IIS's compact series of high performance, all digital controllers and motors.

There's no need to locate, assemble, test and connect pieces and parts...we did it for you. The result is DeltaMax: lightweight systems combining controller, driver and motor integrated into a single unit, ready to plug and play.

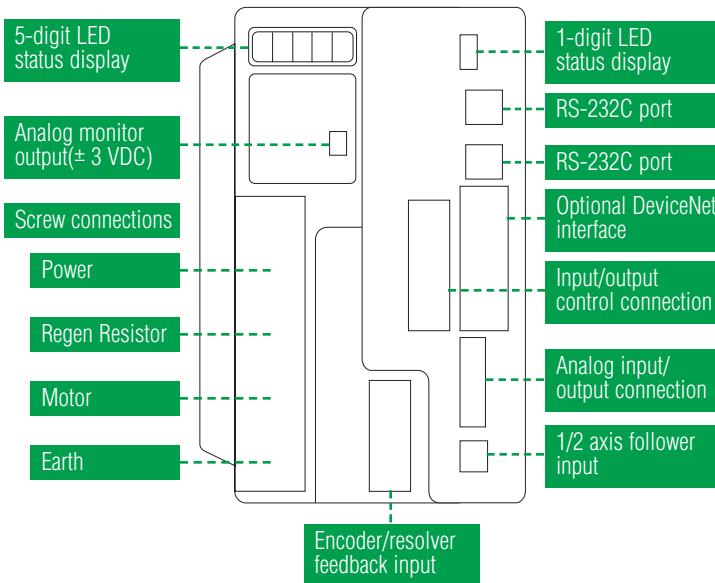
DeltaMax features one active servo axis with one-half axis follower fiber

optic input combined with a wide range of high power density motors from a modest 120 watts to a husky 6500 watts. DeltaMax systems deliver exceptional performance and versatility in all applications where space is at a premium, including positioning, indexing, master-slave, complex profile shapes, electronic ratios and cams and many others.

Don't let the small size fool you. DeltaMax is packed with the latest features and performance: a pair of 32-bit RISC processors for fast program execution...all digital electronics...

SMT boards...status displays...RS-232 ports...optically isolated inputs and outputs...analog inputs and output...expansive memory features. An optional DeviceNet port allows for a very simple connection to your factory network.

Easy to program too, with our friendly MacroProgramming™ language and powerful new MacroPro II™ for Windows™ PC software tools.



DeltaMax Features

- 1 axis system
- 1-1/2 axis follower
- Standard fiber optic follower input
- Optional accessories: RFC-100 resolver to fiber optic, EFC-100 encoder to fiber optic, AFC-100 analog to fiber optic
- Compact, high power density motors from 120 W to 6500 W are ideal for tight spaces
- Two 32-bit RISC processors for fast program execution
- Optional DeviceNet connection
- SMT design circuit boards save space, increase reliability
- High visibility 5-digit driver status display, 1-digit controller status display
- Two RS-232 ports for operator interface and PC control and programming
- 16 optically isolated inputs
- 8 optically isolated outputs
- Analog inputs and output
- 8 programmable limit switch software functions
- Flash ROM and NOVRAM memory
- Friendly BASIC-like MacroProgramming language for fast, easy programming
- Powerful PC software tools, MacroProII for Windows, allow drive tuning, PC oscilloscope functions
- All digital electronics eliminates drift
- All motors available with mechanical holding brake

DeltaMax Specifications

- Processor: Two 32-bit RISC
- Communications port: Two RS-232
- Driver operating temperature 0-50°C
- Analog inputs: 10-bit A/D
- Analog range: Two 0-5 VDC inputs; one 0-5 VDC output; one 5 VDC/5 mA analog reference
- Optically isolated inputs: 16 @ 24 VDC/5 mA
- Optically isolated outputs: 8 @ 24 VDC/500 mA
- Peak current available for 3 sec.
- Internal regen resistor on DMax-35 thru DMax-115 sizes
- Current, velocity and position loops closed digitally
- Feedback: resolver standard; encoder or absolute available
- Resolver feedback resolution: 4,096 bits/rev
- Encoder feedback resolution: encoder dependent
- Output form: PWM 3Ø sine wave
- Motor ripple frequency: DMax8.5-50A=20 kHz, DMax70-115A=10kHz

| DeltaMax Part Number | Peak Current(3 sec) | Continuous Driver Current | Supply Voltage Maximum Range |
|----------------------|---------------------|---------------------------|-----------------------------------|
| DMax-8.5/RA | 8.5 A rms | 3.4 A rms | 170-264 VAC 50/60 Hz Single Phase |
| DMax-8.5/RB | 8.5 A rms | 2.1 A rms | 85-126 VAC 50/60 Hz Single Phase |
| DMax-17.5/RA | 17.5 A rms | 5.7 A rms | 170-264 VAC 50/60 Hz Single Phase |
| DMax-35/RA | 35.0 A rms | 14.1 A rms | 170-264 VAC 50/60 Hz 3 Phase |
| DMax-50/RA | 50.0 A rms | 16.3 A rms | 170-264 VAC 50/60 Hz 3 Phase |
| DMax-70/RA | 70.0 A rms | 24.8 A rms | 170-264 VAC 50/60 Hz 3 Phase |
| DMax-115/RA | 115.0 A rms | 53.0 A rms | 170-264 VAC 50/60 Hz 3 Phase |



A wide variety of options are available, including a selection of operator interfaces and a choice of encoder or resolver feedback.



Typical DeltaMax systems include controller, motor, operator interface, PC or compatible for programming, and appropriate cables.

Fast, Simple Programming With Our MacroProgramming Language

Application programs for DeltaMax are written using MacroProgramming, our powerful, easy to use BASIC-like language. MacroProII for Windows, a full suite of PC-based application development tools running in the Windows environment, includes a powerful editor, compiler and real-time analyzer.

MacroProgramming Language delivers leading edge motion control instructions with the familiar syntax of BASIC, allowing you to create robust application programs quickly and simply. The English-like instructions are easy to learn. Extensive hypertext Help and Examples are

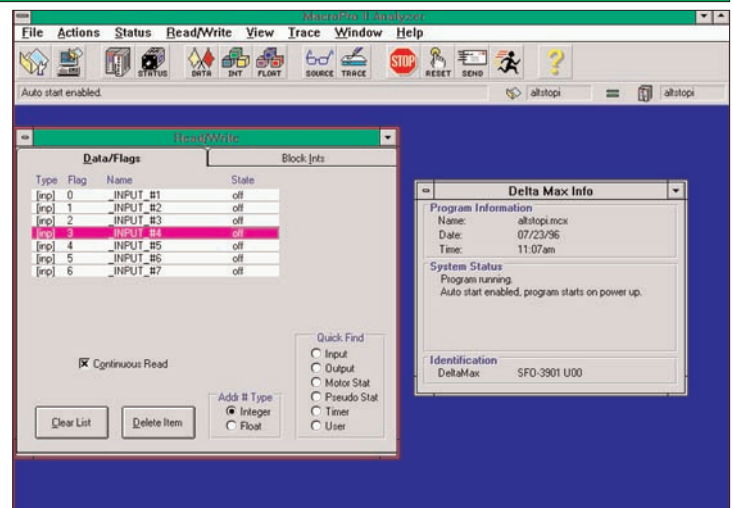
available at the click of your mouse in the MacroProII Software Tools, so you can concentrate on program development instead of language syntax.

Labels, flags, variables and I/O are all user-definable, and provide a consistent reference for the editor, compiler and real-time analyzer. User-definable symbols and English language instructions make the final application program easy to read and virtually self-documenting - a big time-saver when those inevitable modifications have to be made. Built-in features include drive tuning capability and PC scope functions so you can analyze

performance visually.

And the language - including BASIC like commands, 32-bit and floating point variables, hardware and software interrupts and full mnemonic support - is compiled. That means lightning fast program execution to meet the needs of today's high speed machines. The hardware and software interrupts make prioritizing tasks by response speed quick and easy.

MacroProgramming from IIS. Powerful, fast, easy to learn, easy to use. That's what you'd expect from the leader in motion control.



Cables and Accessories

Feedback and motor power cables are available in standard 20, 50 and 100-foot lengths. Various I/O cables, DIN rail I/O blocks and communications

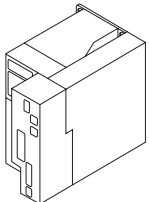
cables can be supplied. For master slave applications, resolver, encoder and analog

fiber optic converters and feedback components are available as part of the system.

Mechanical brake power supply, dynamic brake and external regen resistor are available options.

DeltaMax DMax-8.5 Motor and Integrated Drive/Controller Packages

| DeltaMax Package | Motor Part Number | DeltaMax Part Number | Power Output Watts | Rated Speed RPM | Max Speed RPM | Rated Torque | | | Peak Torque | | | Rotor Inertia | | |
|------------------|-------------------|----------------------|--------------------|-----------------|---------------|--------------|-------|-------|-------------|-------|-------|--------------------|------------------------|------------------------|
| | | | | | | N-M | Lb-in | Lb-ft | N-M | Lb-in | Lb-ft | Kg-cm ² | Lb-in-sec ² | Lb-ft-sec ² |
| DeltaMax-120HRA | DBM-120/30R | DMax-8.5/RA | 120 | 3000 | 4000 | 0.38 | 3.36 | 0.28 | 1.03 | 9.12 | 0.76 | 0.103 | 0.000091 | 0.0000076 |
| DeltaMax-120HRB | DBM-120/30R | DMax-8.5/RB | 120 | 3000 | 4000 | 0.38 | 3.36 | 0.28 | 1.03 | 9.12 | 0.76 | 0.103 | 0.000091 | 0.0000076 |
| DeltaMax-200HRA | DBM-200/30R | DMax-8.5/RA | 200 | 3000 | 4000 | 0.64 | 5.66 | 0.47 | 1.76 | 15.58 | 1.30 | 0.148 | 0.000131 | 0.0000109 |
| DeltaMax-200HRB | DBM-200/30R | DMax-8.5/RB | 200 | 3000 | 4000 | 0.64 | 5.66 | 0.47 | 1.76 | 15.58 | 1.30 | 0.148 | 0.000131 | 0.0000109 |
| DeltaMax-400LRA | DBM-400/15R | DMax-8.5/RA | 400 | 1500 | 2000 | 2.55 | 22.57 | 1.88 | 7.35 | 65.05 | 5.42 | 0.760 | 0.000673 | 0.0000561 |
| DeltaMax-400HRA | DBM-400/30R | DMax-8.5/RA | 400 | 3000 | 4000 | 1.27 | 11.24 | 0.94 | 3.53 | 31.24 | 2.60 | 0.233 | 0.000206 | 0.0000172 |
| DeltaMax-500HRA | DBM-500/30R | DMax-8.5/RA | 500 | 3000 | 4000 | 1.59 | 14.07 | 1.17 | 4.20 | 37.17 | 3.10 | 0.470 | 0.000416 | 0.0000347 |

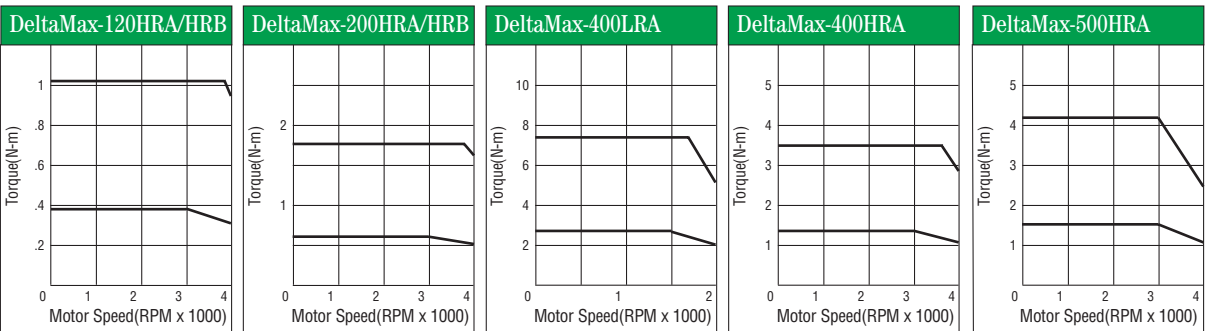


Dimensions

| | in. | (mm.) |
|-----------------|------|-------|
| Panel height | 6.70 | 170 |
| Panel width | 4.65 | 118 |
| Depth off panel | 8.00 | 203 |

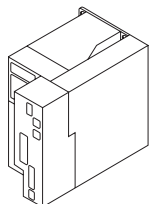
| DeltaMax Package | Motor Part Number | Motor Length | | Mounting Face (Sq) | | Shaft Length | | Shaft Diameter | | Motor Weight | | Resolver Cable | Motor Cable |
|------------------|-------------------|--------------|------|--------------------|------|--------------|------|----------------|-------|--------------|-----|----------------|-------------|
| | | mm | in | mm | in | mm | in | mm | in | kg | lbs | | |
| DeltaMax-120HRA | DBM-120/30R | 105 | 4.13 | 60 | 2.36 | 30 | 1.18 | 14 | 0.551 | 1.0 | 2.2 | C-245YYY | C-686YYY |
| DeltaMax-120HRB | DBM-120/30R | 105 | 4.13 | 60 | 2.36 | 30 | 1.18 | 14 | 0.551 | 1.0 | 2.2 | C-245YYY | C-686YYY |
| DeltaMax-200HRA | DBM-200/30R | 122 | 4.80 | 60 | 2.36 | 30 | 1.18 | 14 | 0.551 | 1.3 | 2.9 | C-245YYY | C-686YYY |
| DeltaMax-200HRB | DBM-200/30R | 122 | 4.80 | 60 | 2.36 | 30 | 1.18 | 14 | 0.551 | 1.3 | 2.9 | C-245YYY | C-686YYY |
| DeltaMax-400LRA | DBM-400/15R | 190 | 7.48 | 95 | 3.74 | 45 | 1.77 | 19 | 0.748 | 4.5 | 9.9 | C-246YYY | C-687YYY |
| DeltaMax-400HRA | DBM-400/30R | 156 | 6.14 | 60 | 2.36 | 30 | 1.18 | 14 | 0.551 | 1.9 | 4.2 | C-245YYY | C-686YYY |
| DeltaMax-500HRA | DBM-500/30R | 158 | 6.22 | 95 | 3.74 | 35 | 1.38 | 14 | 0.551 | 3.2 | 7.1 | C-246YYY | C-687YYY |

All specifications are at nominal line voltage



DeltaMax DMax-17.5 Motor and Integrated Drive/Controller Packages

| DeltaMax Package | Motor Part Number | DeltaMax Part Number | Power Output Watts | Rated Speed RPM | Max Speed RPM | Rated Torque | | | Peak Torque | | | Rotor Inertia | | |
|------------------|-------------------|----------------------|--------------------|-----------------|---------------|--------------|-------|-------|-------------|--------|-------|--------------------|------------------------|------------------------|
| | | | | | | N-M | Lb-in | Lb-ft | N-M | Lb-in | Lb-ft | Kg-cm ² | Lb-in-sec ² | Lb-ft-sec ² |
| DeltaMax-800LRA | DBM-800/15R | DMax-17.5/RA | 800 | 1500 | 2000 | 5.10 | 45.14 | 3.76 | 11.00 | 97.36 | 8.11 | 1.890 | 0.001673 | 0.0001394 |
| DeltaMax-800HRA | DBM-800/30R | DMax-17.5/RA | 800 | 3000 | 4000 | 2.55 | 22.57 | 1.88 | 7.80 | 69.04 | 5.75 | 0.760 | 0.000673 | 0.0000561 |
| DeltaMax-1000LRA | DBM-1000/15R | DMax-17.5/RA | 1000 | 1500 | 2000 | 6.37 | 56.38 | 4.70 | 15.40 | 136.30 | 11.36 | 2.570 | 0.002275 | 0.0001896 |
| DeltaMax-1000HRA | DBM-1400/30R | DMax-17.5/RA | 1000 | 3000 | 4000 | 3.10 | 27.44 | 2.29 | 7.14 | 63.19 | 5.27 | 1.890 | 0.001673 | 0.0001394 |

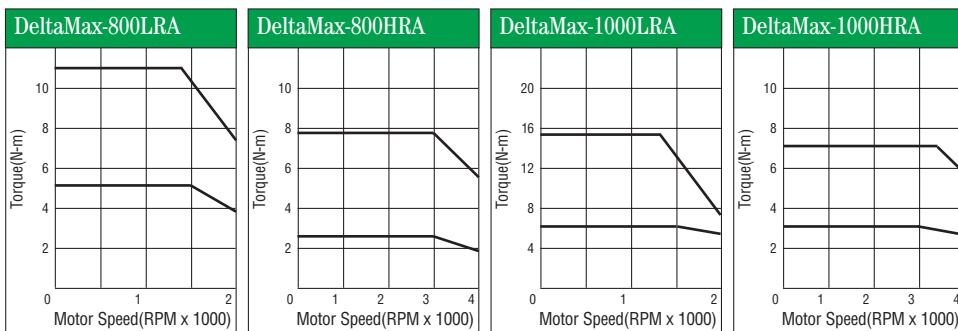


Dimensions

| | in. | (mm.) |
|-----------------|------|-------|
| Panel height | 6.70 | 170 |
| Panel width | 6.12 | 156 |
| Depth off panel | 8.00 | 203 |

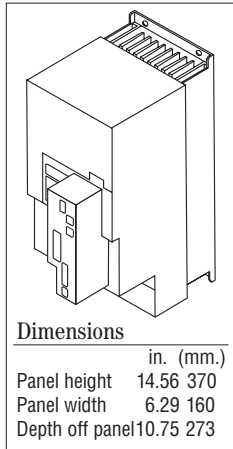
| DeltaMax Package | Motor Part Number | Motor Length | | Mounting Face (Sq) | | Shaft Length | | Shaft Diameter | | Motor Weight | | Resolver Cable | Motor Cable |
|------------------|-------------------|--------------|------|--------------------|------|--------------|------|----------------|-------|--------------|------|----------------|-------------|
| | | mm | in | mm | in | mm | in | mm | in | kg | lbs | | |
| DeltaMax-800LRA | DBM-800/15R | 178 | 7.01 | 130 | 5.12 | 45 | 1.77 | 19 | 0.748 | 6.2 | 13.7 | C-246YYY | C-688YYY |
| DeltaMax-800HRA | DBM-800/30R | 190 | 7.48 | 95 | 3.74 | 45 | 1.77 | 19 | 0.748 | 4.5 | 9.9 | C-246YYY | C-687YYY |
| DeltaMax-1000LRA | DBM-1000/15R | 196 | 7.72 | 130 | 5.12 | 45 | 1.77 | 19 | 0.748 | 7.8 | 17.2 | C-246YYY | C-688YYY |
| DeltaMax-1000HRA | DBM-1400/30R | 178 | 7.01 | 130 | 5.12 | 45 | 1.77 | 19 | 0.748 | 6.2 | 13.7 | C-246YYY | C-688YYY |

All specifications are at nominal line voltage



DeltaMax DMax-70 Motor and Integrated Drive/Controller Packages

| DeltaMax Package | Motor Part Number | DeltaMax Part Number | Power Output Watts | Rated Speed RPM | Max Speed RPM | Rated Torque | | | Peak Torque | | | Rotor Inertia | | |
|------------------|-------------------|----------------------|--------------------|-----------------|---------------|--------------|--------|-------|-------------|--------|-------|--------------------|------------------------|------------------------|
| | | | | | | N-M | Lb-in | Lb-ft | N-M | Lb-in | Lb-ft | Kg-cm ² | Lb-in-sec ² | Lb-ft-sec ² |
| DeltaMax-3700LRA | DBM-3700/15R | DMax-70/RA | 3700 | 1500 | 2000 | 23.60 | 208.88 | 17.41 | 60.00 | 531.05 | 44.25 | 22.300 | 0.019737 | 0.0016448 |
| DeltaMax-3700HRA | DBM-3700/30R | DMax-70/RA | 3700 | 3000 | 4000 | 11.80 | 104.44 | 8.70 | 29.80 | 263.75 | 21.98 | 15.200 | 0.013453 | 0.0011211 |
| DeltaMax-4300HRA | DBM-5500/30R | DMax-70/RA | 4300 | 3000 | 4000 | 13.76 | 121.79 | 10.15 | 36.15 | 319.95 | 26.66 | 22.300 | 0.019737 | 0.0016448 |

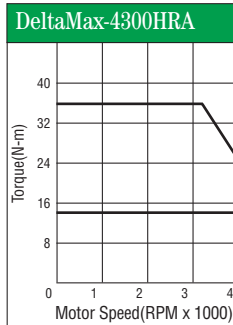
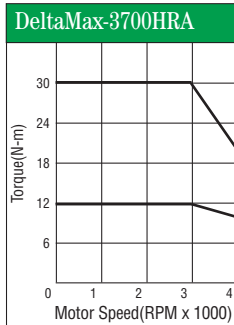
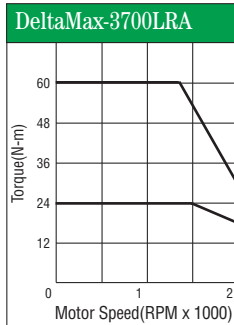


Dimensions

| | in. | (mm.) |
|-----------------|-------|-------|
| Panel height | 14.56 | 370 |
| Panel width | 6.29 | 160 |
| Depth off panel | 10.75 | 273 |

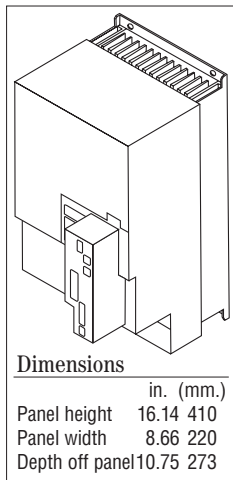
All specifications are at nominal line voltage

| DeltaMax Package | Motor Part Number | Motor Length | | Mounting Face (Sq) | | Shaft Length | | Shaft Diameter | | Motor Weight | | Resolver Cable | Motor Cable |
|------------------|-------------------|--------------|-------|--------------------|------|--------------|------|----------------|-------|--------------|------|----------------|-------------|
| | | mm | in | mm | in | mm | in | kg | lbs | | | | |
| DeltaMax-3700LRA | DBM-3700/15R | 288 | 11.34 | 180 | 7.09 | 79 | 3.11 | 35 | 1.378 | 27.0 | 59.5 | C-246YYY | C-691YYY |
| DeltaMax-3700HRA | DBM-3700/30R | 236 | 9.29 | 180 | 7.09 | 79 | 3.11 | 35 | 1.378 | 20.0 | 44.1 | C-246YYY | C-691YYY |
| DeltaMax-4300HRA | DBM-5500/30R | 288 | 11.34 | 180 | 7.09 | 79 | 3.11 | 35 | 1.378 | 27.0 | 59.5 | C-246YYY | C-692YYY |



DeltaMax DMax-115 Motor and Integrated Drive/Controller Packages

| DeltaMax Package | Motor Part Number | DeltaMax Part Number | Power Output Watts | Rated Speed RPM | Max Speed RPM | Rated Torque | | | Peak Torque | | | Rotor Inertia | | |
|------------------|-------------------|----------------------|--------------------|-----------------|---------------|--------------|--------|-------|-------------|--------|-------|--------------------|------------------------|------------------------|
| | | | | | | N-M | Lb-in | Lb-ft | N-M | Lb-in | Lb-ft | Kg-cm ² | Lb-in-sec ² | Lb-ft-sec ² |
| DeltaMax-5000LRA | DBM-5000/15R | DMax-115/RA | 5000 | 1500 | 2000 | 31.80 | 281.45 | 23.45 | 76.00 | 672.66 | 56.05 | 30.000 | 0.026552 | 0.0022127 |
| DeltaMax-5500HRA | DBM-5500/30R | DMax-115/RA | 5500 | 3000 | 4000 | 17.50 | 154.89 | 12.91 | 47.00 | 415.99 | 34.67 | 22.300 | 0.019737 | 0.0016448 |
| DeltaMax-6500HRA | DBM-6500/30R | DMax-115/RA | 6500 | 3000 | 4000 | 20.70 | 183.21 | 15.27 | 60.00 | 531.05 | 44.25 | 30.000 | 0.026552 | 0.0022127 |

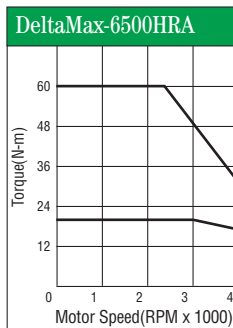
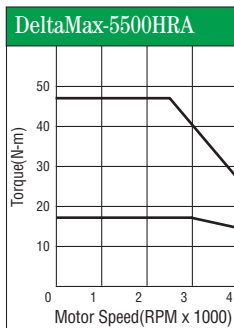
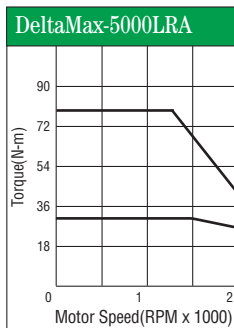


Dimensions

| | in. | (mm.) |
|-----------------|-------|-------|
| Panel height | 16.14 | 410 |
| Panel width | 8.66 | 220 |
| Depth off panel | 10.75 | 273 |

All specifications are at nominal line voltage

| DeltaMax Package | Motor Part Number | Motor Length | | Mounting Face (Sq) | | Shaft Length | | Shaft Diameter | | Motor Weight | | Resolver Cable | Motor Cable |
|------------------|-------------------|--------------|-------|--------------------|------|--------------|------|----------------|-------|--------------|------|----------------|-------------|
| | | mm | in | mm | in | mm | in | kg | lbs | | | | |
| DeltaMax-5000LRA | DBM-5000/15R | 338 | 13.31 | 180 | 7.09 | 79 | 3.11 | 35 | 1.378 | 34.0 | 75.0 | C-246YYY | C-692YYY |
| DeltaMax-5500HRA | DBM-5500/30R | 288 | 11.34 | 180 | 7.09 | 79 | 3.11 | 35 | 1.378 | 27.0 | 59.5 | C-246YYY | C-692YYY |
| DeltaMax-6500HRA | DBM-6500/30R | 338 | 13.31 | 180 | 7.09 | 79 | 3.11 | 35 | 1.378 | 34.0 | 75.0 | C-246YYY | C-692YYY |



We produce a wide range of motion control products and services, and we specialize in factory-floor systems for demanding industrial applications. We support our systems completely,

and guarantee system-level performance in writing. If you have a tough motion control problem, give us a call. We're very easy to do business with.



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Need Help With Your Motion Control?

These products are a small portion of our offerings. Choose pre-engineered systems including controller, motor, drive, feedback devices, power supply and cables, in single or multi-axis versions, either pre-programmed

or user-programmable. Or choose individual components like motors, controllers, drives, power supplies, operator interfaces, NEMA enclosures and cabling. For tough applications, we can custom engineer a system to your exact specifications.

And all IIS systems are pre-tested so they're ready to go, and all include comprehensive troubleshooting and wiring documentation for simple installation and quick start-up.