



EMERSON[™]
Industrial Automation

Unidrive SP

Free Standing
Fully Engineered AC Drives

125 - 2,450hp (90kW - 1.6MW)
380 - 480V / 575V - 690V



Unidrive SP Free Standing, Ready to Run Large Drives

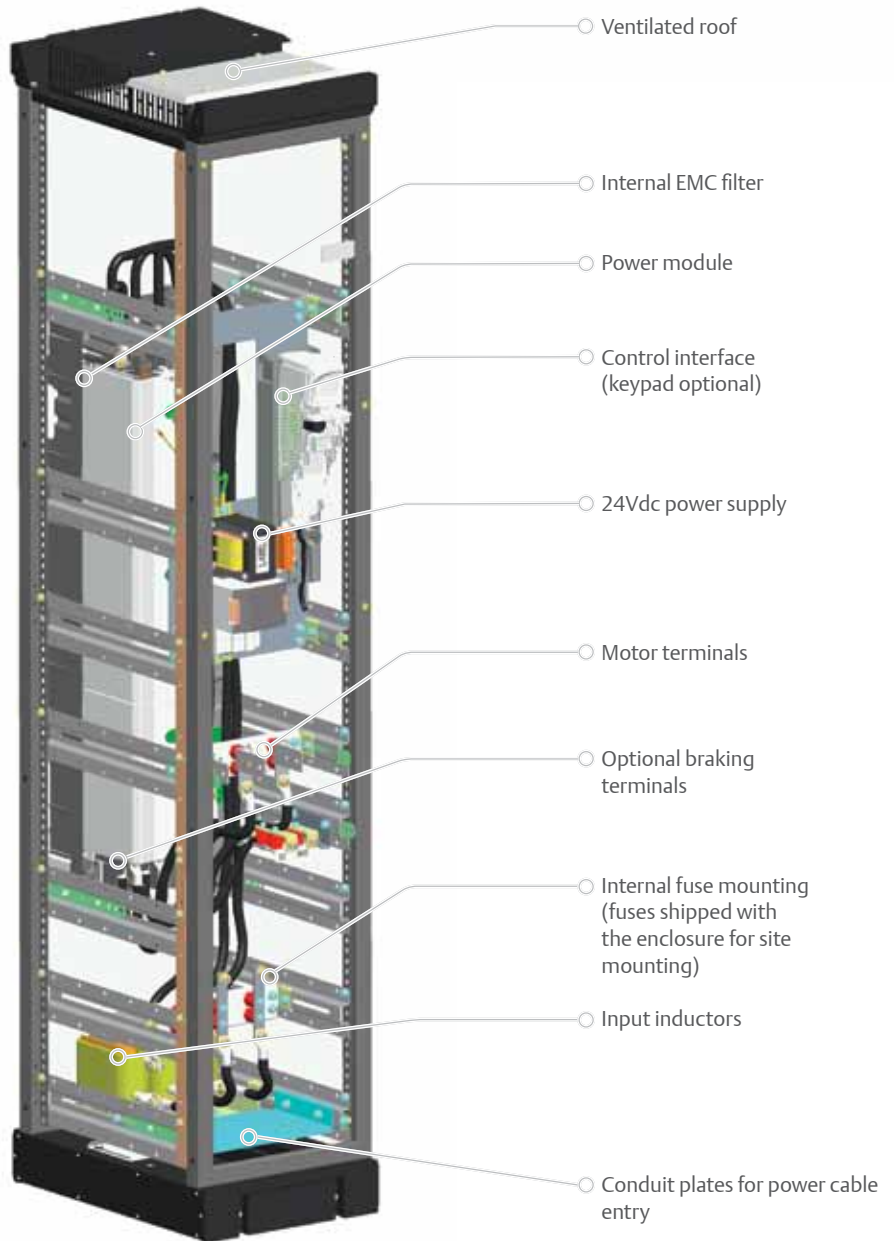
Unidrive SP Free Standing is a range of AC drives for high-power motors in the 125 to 2,450hp range. They inherit their easy commissioning, reliability, performance and flexibility from the Unidrive SPM family.

Compact Size

Unidrive SP Free Standing drives are up to 50% smaller and are significantly lighter than other 'compact' drive enclosures. For example, a 500hp drive is only 15.8in (400mm) wide and a 1,000hp drive is only 31.5in (800mm) wide. This makes Unidrive SP Free Standing an excellent choice where space is at a premium such as new or retrofit energy saving applications. All drives are shipped in 15.8in (400mm) wide sections that can be connected quickly. This makes Unidrive SP Free Standing drives easy to handle and locate on site.

The Hard Work Has Been Done

Unidrive SP Free Standing drives are fully engineered and tested drive enclosures. The entire enclosure is certified to comply with international standards including CE and UL. This proven design and third-party approval allows engineering resources to focus on applications, not the hardware.



Panel Mount - Standard Drive Modules 0.5 - 200hp (0.37 - 132kW)

For more information please refer to the Unidrive SP Panel Mount brochure.
(BRO-USP-1107)



Extended Power Range and Incoming Power Options

Extended Power Range

Unidrive SP size 9 Free Standing configurations can be extended to give higher output power by adding extension enclosures to the standard enclosures. Up to three extension enclosures can be added to a standard Unidrive SP size 9 Free Standing drive, providing an ideal solution for creating higher power systems. All configurations consist of existing SP9xx5 (master and follower enclosures) together with one or more additional size 9 extension enclosures.



The resulting configuration will require modifications to the standard Free Standing enclosures supplied from the factory. This must be undertaken in accordance with the technical conditions outlined in the supplied Installation Guide by a Control Techniques Drive Center with in-house systems capability.

Factory Engineered Incoming (Incomer) Enclosure

Free Standing drives can be ordered from the factory with a built-in circuit breaker for supply isolation. This means the drive is delivered to your site ready to be connected reducing engineering effort and installation time. The circuit breaker is installed in an 15.8in enclosure which can be added to Free Standing units sizes 6 to 9.

User Engineered Incoming Enclosure Option

For users wishing to design and build their own incoming power section, a range of accessories is available (including empty 15.8in enclosures) allowing you to install your own line-side equipment along with any application specific equipment you have. Standard enclosure color and dimensions mean that Free Standing drives can be combined with other manufacturers' enclosures.

Users requiring this design for size 8 and 9 Free Standing drives should order empty enclosure SP Incomer Shell 40. This shell is supplied along with busbars to make the interconnection between the drive and incomer enclosures. Users requiring this design for size 6 and 7 Free Standing drives should order empty enclosure SP Systems Shell 40. This enclosure is supplied without interconnection busbars as cables are used to make the connection.

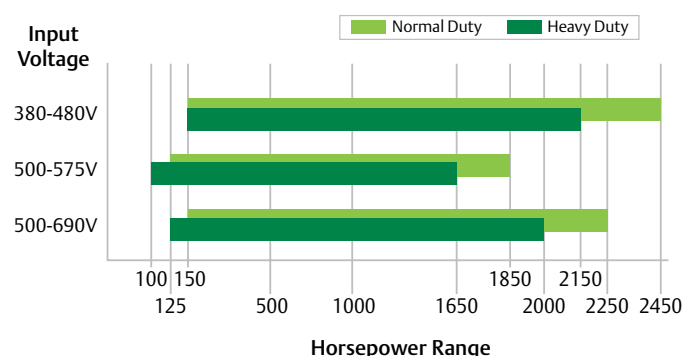
| Order Code | Description |
|-------------------------|--|
| SP-INCOMER-SHELL-40 | Empty enclosure with 6-pulse interconnection busbar |
| SP-INCOMER-SHELL-40-P12 | Empty enclosure with 12-pulse interconnection busbar |
| SP-SYSTEMS-SHELL-40 | Empty enclosure |
| CB-KIT-SPxxxx | Enclosure with circuit breaker |

Power Quality

For applications requiring harmonic attenuation beyond that achieved by the internal filter choke, 12-pulse input versions of the size 8 and 9 Free Standing drives are available. The 12-pulse input option is specified as part of the drive order code. For 12-pulse drives the power connections can be made through existing busbars in the drive enclosure or, if required, made within a separate enclosure (SP Incomer Shell 40 P12).

Engineered solutions to further reduce supply harmonics (such as passive in-line filters and active input modules) are available through your Control Techniques drives supplier. These aid in complying with harmonics standards IEEE 519-1992, IEC 61000-2-2 and IEC 61000-2-12.

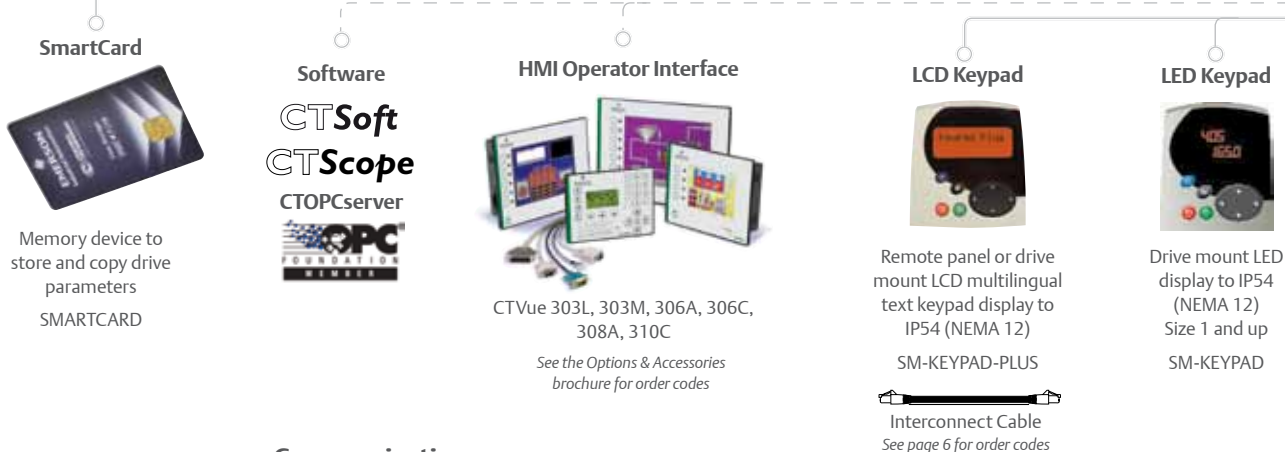
Ratings



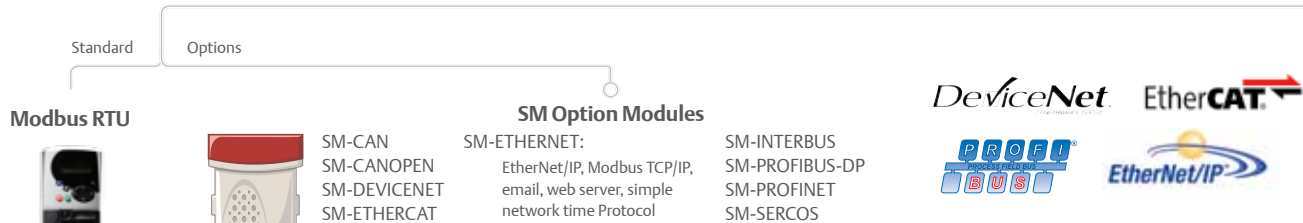
Unidrive SP, Fast and Easy Integration Flexibility



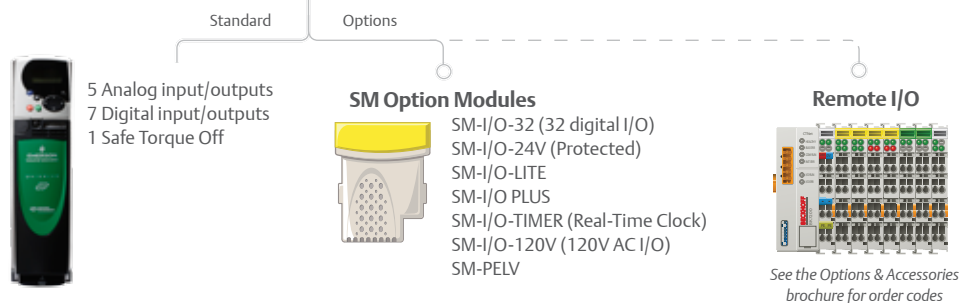
Operator Interface Options



Communications



Input / Output



Additional Enclosure Options



SP-INCOMER-SHELL-40
Includes 6-pulse interconnect busbar



SP-INCOMER-SHELL-40-P12
Includes 12-pulse interconnect busbar



SP-SYSTEM-SHELL-40
Empty enclosure



CB-KIT
Includes circuit breaker

Dynamic Braking Options

Filters

Standard
Internal EMC Filter

Options
External EMC Filter



See the Options & Accessories brochure for order codes

External Dynamic Braking Resistor



See the Options & Accessories brochure for order codes

Feedback

Standard
Sin/Cos
Quadrature
Frequency/Direction
Clockwise/Counter Clockwise



SM Option Modules



SM-UNI-ENCODER*
SM-ENCODER-OUT**
SM-ENCODER-PLUS**
SM-RESOLVER

* Accepts and replicates incremental and absolute feedback types; recommended for Servo and positioning applications

** For use with Induction motors and incremental feedback devices

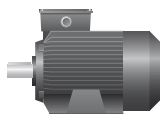
DC Back-up Power Supply

24Vdc Control

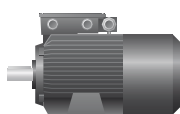


Motor Control Modes

Open-loop Induction Motor



Closed-loop Induction Motor



Servo Motor



Linear Motor



Specifications and Dimensions

Specifications

Environment

| | |
|---------------------------|--|
| Ambient temperature | 32 to 104 °F (0 to 40 °C) |
| Cooling method | Forced ventilation |
| Humidity | 95% maximum (non-condensing) at 104 °F (40 °C) |
| Storage temperature | -40 to 122 °F (-40 to 50 °C) |
| Altitude | 0 to 9,900ft (3000m), derate 1% per 328ft (100m) between 3,280ft (1000m) and 9,842ft (3000m) |
| Vibration | Tested in accordance with IEC 60068-2-34 |
| Mechanical shock | Tested in accordance with IEC 60068-2-27 |
| Enclosure | NEMA 1 (IP21) enclosure design, optional IP23 (max. IP23 ambient is 91°F (33°C)) |
| Electromagnetic immunity | In compliance with IEC 61000-4-2, 3,4,5,11, IEC61000-6-1,2 and IEC 61800-3 |
| Electromagnetic emissions | IEC 61800-3 with built-in filter, compliance category depends on installation conditions, external filters are available |

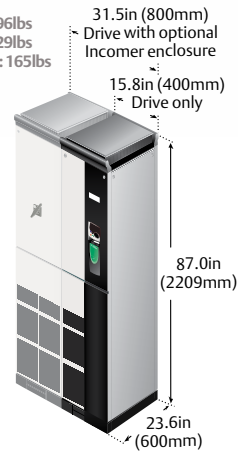
Approvals and Listings

| | |
|---------|--|
| UL, cUL | UL508C file # E171230 |
| IEC | IEC 60146-1-1 general requirements IEC 61800-5-1 safety of power drive systems IEC 61131-2 I/O |
| EN | EN 60529 ingress protection Safe Torque Off (secure disable) meets EN 954-1-cat3 |
| ISO | ISO 9001 quality management system ISO 14001 environment management |

Dimensions

Size 6/7

Weight
Size 6: 496lbs
Size 7: 529lbs
Incomer: 165lbs



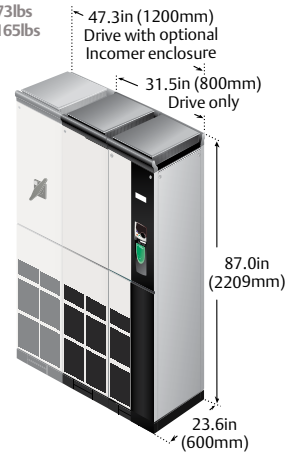
Size 8

Weight
Drive: 586lbs
Incomer: 165lbs



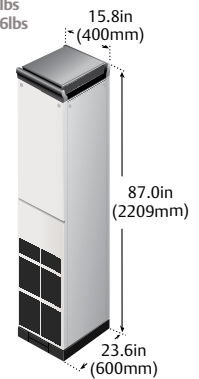
Size 9

Weight
Drive: 1,173lbs
Incomer: 165lbs



SP Incomer Shell 40* / SP System Shell 40* / SP9xx5 Extension **

Weight
*121lbs
**586lbs



Order Code

SP 6 4 1 1

Power Range

6 - Size 6
7 - Size 7
8 - Size 8
9 - Size 9

Voltage Range

4 - 380 - 480V
6 - 500 - 690V

Free Standing Configuration

1 - Dynamic brake control*
3 - No dynamic brake control

Current Rating Step

Interconnect Cable Order Codes

| Description | Order Code |
|---|----------------|
| USB 485 communications cable | CT-USB-CABLE |
| Keypad to drive cable, 5ft | SP-LCD-485-005 |
| Keypad to drive cable, 10ft | SP-LCD-485-010 |
| Keypad to drive cable, 15ft | SP-LCD-485-015 |
| Keypad to drive cable, 25ft | SP-LCD-485-025 |
| Keypad to drive cable, 50ft | SP-LCD-485-050 |
| Keypad to drive cable, xxx is cable length in 5ft increments (max length 100ft) | SP-LCD-485-xxx |

* Does not include braking resistor or associated components.

Ratings

| Width Drive Only | Width with Switch Disconnector | 380-480Vac +/- 10% (kW@400V, hp@460V) | Normal Duty | | | Heavy Duty | | |
|------------------|--------------------------------|---|----------------------------|------------------|---------------------|----------------------------|------------------|---------------------|
| | | | Max Continuous Current (A) | Motor Power (hp) | Typical Output (kW) | Max Continuous Current (A) | Motor Power (hp) | Typical Output (kW) |
| | | Order Code | | | | | | |
| 15.8in | 31.5in | SP64x1 | 205 | 150 | 110 | 180 | 150 | 90 |
| | | SP64x2 | 236 | 200 | 132 | 210 | 150 | 110 |
| | | SP74x1 | 290 | 250 | 160 | 238 | 200 | 132 |
| | | SP74x2 | 335 | 250 | 185 | 290 | 150 | 160 |
| | | SP84x1 | 389 | 300 | 225 | 335 | 250 | 185 |
| | | SP84x2 | 450 | 400 | 250 | 389 | 300 | 225 |
| | | SP84x3 | 545 | 450 | 315 | 450 | 400 | 250 |
| 31.5in | 47.5in | SP84x4 | 620 | 500 | 355 | 545 | 450 | 315 |
| | | SP94x1 | 690 | 600 | 400 | 620 | 500 | 355 |
| | | SP94x3 | 900 | 800 | 500 | 790 | 700 | 450 |
| | | SP94x4 | 1010 | 900 | 560 | 900 | 800 | 500 |
| 47.5in | N/A | SP94x5 | 1164 | 1000 | 675 | 1010 | 900 | 560 |
| 63in | | SP94x5 +1x SP94x5 Extension | 1746 | 1500 | 960 | 1515 | 1250 | 830 |
| 79in | | SP94x5 +2x SP94x5 Extension | 2328 | 2000 | 1280 | 2020 | 1750 | 1110 |
| | | SP94x5 +3x SP94x5 Extension | 2910 | 2450 | 1600 | 2525 | 2150 | 1380 |

| Width Drive Only | Width with Switch Disconnector | 500-690Vac +/- 10% (kW@690V, hp@575V) | Normal Duty | | | Heavy Duty | | |
|------------------|--------------------------------|---|----------------------------|------------------|---------------------|----------------------------|------------------|---------------------|
| | | | Max Continuous Current (A) | Motor Power (hp) | Typical Output (kW) | Max Continuous Current (A) | Motor Power (hp) | Typical Output (kW) |
| | | Order Code | | | | | | |
| 15.8in | 31.5in | SP66x1 | 125 | 125 | 110 | 100 | 100 | 90 |
| | | SP66x2 | 144 | 150 | 132 | 125 | 125 | 110 |
| | | SP76x1 | 168 | 150 | 160 | 144 | 150 | 132 |
| | | SP76x2 | 192 | 200 | 185 | 168 | 150 | 160 |
| | | SP86x1 | 231 | 250 | 200 | 186 | 200 | 185 |
| | | SP86x2 | 266 | 300 | 225 | 231 | 250 | 200 |
| | | SP86x3 | 311 | 350 | 315 | 266 | 250 | 150 |
| 31.5in | 47.5in | SP86x4 | 355 | 400 | 355 | 311 | 350 | 315 |
| | | SP96x1 | 400 | 450 | 400 | 347 | 350 | 355 |
| | | SP96x3 | 533 | 500 | 500 | 466 | 450 | 450 |
| | | SP96x4 | 616 | 600 | 560 | 533 | 500 | 500 |
| 47.5in | N/A | SP96x5 | 711 | 700 | 630 | 622 | 600 | 560 |
| 63in | | SP96x5 +1x SP96x5 Extension | 1067 | 1000 | 960 | 933 | 900 | 830 |
| 79in | | SP96x5 +2x SP96x5 Extension | 1422 | 1500 | 1280 | 1244 | 1250 | 1120 |
| | | SP96x5 +3x SP96x5 Extension | 1778 | 1850 | 1600 | 1555 | 1500 | 1380 |

Ratings shown are for NEMA 1 IP21 at 40°C ambient or IP23 at 30°C ambient, 3kHz switching frequency and 1000m altitude. Select model based on motor full load current. hp and kW ratings are for general guide only.

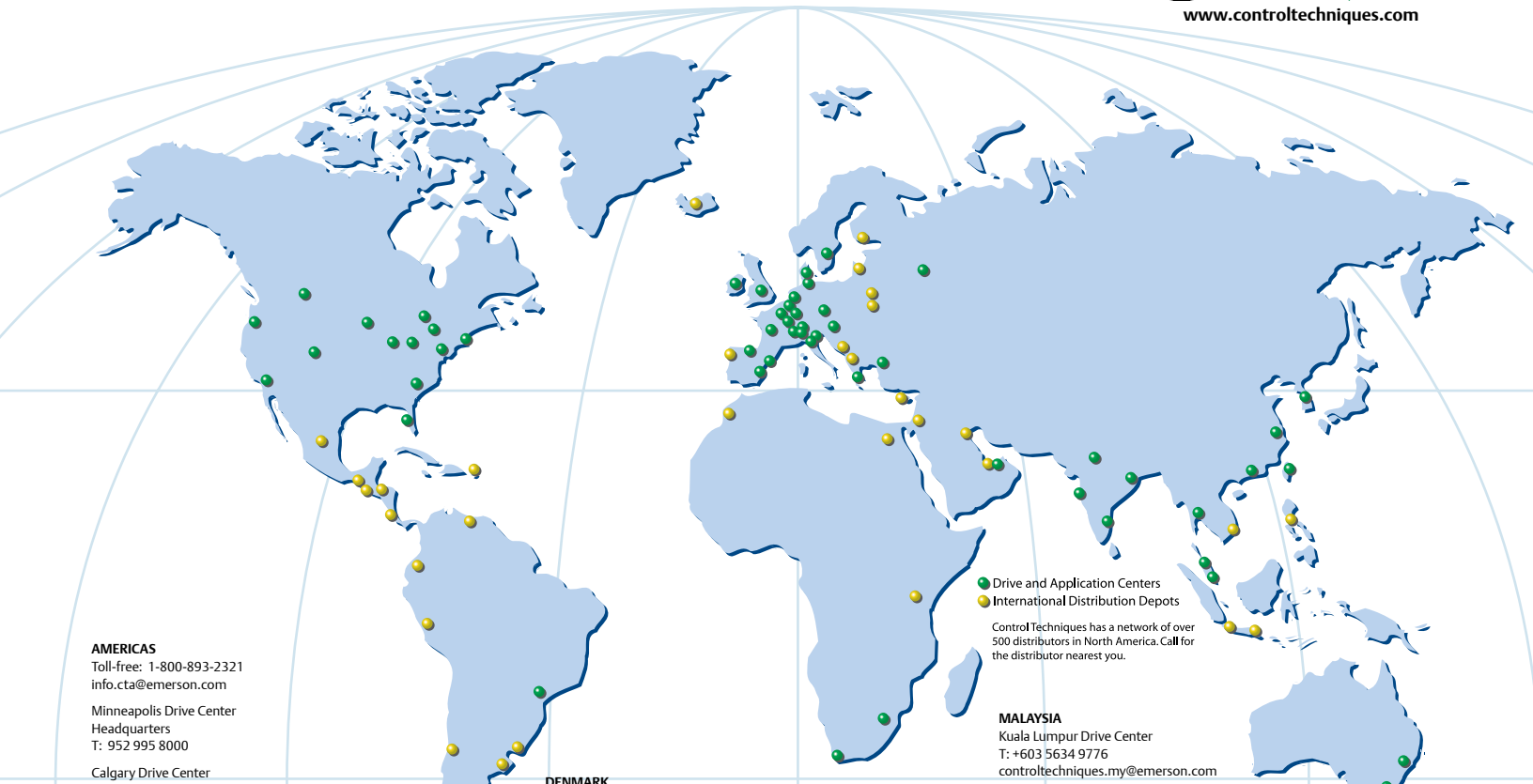
Normal Duty

Suitable for most applications; current overload of 110% for 165 seconds available. Where motor rated current is less than the drive rated continuous current, higher overloads are achieved.

Heavy Duty

Suitable for demanding applications; current overload of up to 150% for 60 seconds.

Driving Technology...



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● International Distribution Depots

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