



EMERSON
Industrial Automation

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Unidrive

Free Standing
Fully Engineered AC Drives

90kW to 1.6MW (150hp to 2470hp)
380 to 690V 3 phase



**CONTROL
TECHNIQUES**

www.controltechniques.com

Unidrive SP Free Standing

Unidrive SP Free Standing is a range of compact AC drives for high power motors in the range 90kW to 1.6MW. They inherit their reliability, performance and flexibility from the Unidrive SP modular range.

The hard work has been done

Unidrive SP Free Standing drives are fully engineered and tested drive cabinets for AC input AC motor output configurations. The whole enclosure is certified to comply with international standards such as CE and UL. Proven design and international approvals release your engineering resources to focus on your application.

Ideal for fans, pumps, extruders

Unidrive SP Free Standing drives are suitable for higher power applications, both commercial and industrial. Typical applications include:

- Energy saving with higher power fans and pumps
- Gas and refrigeration compressors
- Metal production and processing
- Conveying and handling of bulk materials
- Pulp and paper processing
- Marine applications

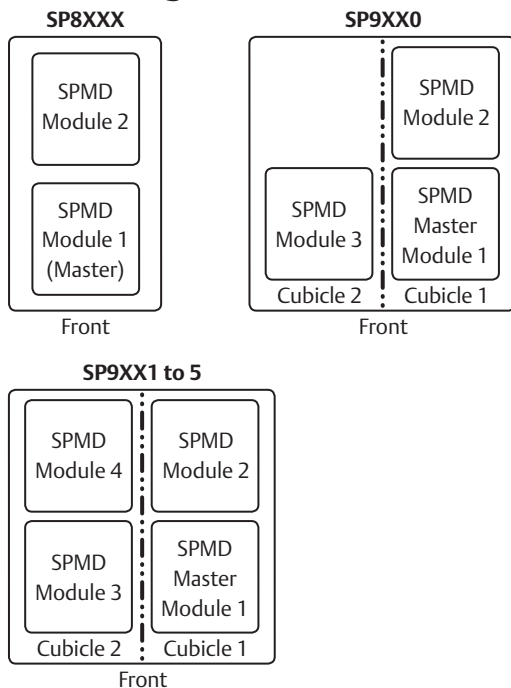




Much more compact

Unidrive SP Free Standing drives are up to 50% smaller and are significantly lighter than competitors' 'compact' drive cabinets. For example, a 355kW drive is only 400mm wide and a 675kW drive is only 800mm wide. This makes Unidrive SP Free Standing the obvious choice where space is a problem such as for new or retrofit energy saving applications. All drives are shipped in 400mm wide sections that can be connected quickly. This makes Unidrive SP Free Standing drives easy to handle and locate on site.

Drive configuration



Proven reliability

Unidrive SP Free Standing utilises mass produced modules of proven design and reliability. The modules and cabinets are assembled using a sequential build process that eliminates build variation and provides consistently high quality. Excellent thermal and electrical design and computer modelling has ensured the drives have a long and productive life with trouble free operation.

Easy to maintain

Compact size and innovative design enables the drive modules to be easily accessed and removed for servicing or replacement. Standard modules ensure ready availability of components.

Global service

We understand your needs. Control Techniques' 89 subsidiary Drive Centres and resellers in 65 countries ensure that service, support and expertise are just around the corner, all around the world.

A tradition of performance solutions

Unidrive SP Free Standing continues the Control Techniques tradition of high performance solutions, able to control virtually any type of AC motor including synchronous machines.

Complete solutions

A complete engineered drive, Unidrive SP Free Standing eliminates the need for drive panel building, saving you time and money, therefore allowing you to focus on your application. For applications where line-side equipment is required there are three possible approaches.





Factory engineered Incomer

Free Standing drives can be ordered from the factory with a built-in switch disconnecter for supply isolation. This means the drive is delivered to your site ready to be connected reducing your engineering effort and installation time. For size 6 and 7 Free Standing drives, the disconnecter is built into the 400mm drive cabinet. For size 8 and 9, the disconnecter is fitted within an additional 400mm cabinet.

Extended power range

Unidrive SP size 9 Free Standing configurations can be extended to give higher output power by adding additional extension enclosures to the standard master and slave enclosures. Up to three extension enclosures can be added to a standard Unidrive size 9 Free Standing drive, providing an ideal solution for creating higher power systems. All configurations consist of existing SP9XX5 (master and slave enclosures) together with one or more additional size 9 extension enclosures.

The resulting arrangement 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 Centre with in-house systems capability.

Drive Centre engineered Incomer

Where your application requires additional line-side equipment such as a contactor, or an EMC filter meeting a higher specification than the standard internal EMC filter, our Drive Centre network can design and build an incoming power section for your Free Standing drive.

User engineered Incomer

For users wishing to design and build their own incoming power section a range of accessories are available, including empty 400mm cabinets allowing you to install

your own line-side equipment along with any application specific equipment you have. Alternatively standardised cabinet colour and dimensions mean that Free Standing drives can be bayed to other manufacturers' cabinets.

Users designing incomers for size 8 and 9 Free Standing drives should order empty cabinet SP Incomer Shell 40-EXX. This incomer shell is supplied along with busbars to make the interconnection between the drive and incomer cabinets. Users designing incomers for size 6 and 7 Free Standing drives should order empty cabinet SP Systems Shell 40-EXX. This cabinet is supplied without interconnection busbars as cables are used to make the connection^[1].

Item	Description
SP Incomer Shell 40-EXX	Empty cabinet with 6 pulse interconnection busbar
SP Incomer Shell 40-P12-EXX	Empty cabinet with 12 pulse interconnection busbar
SP Systems Shell 40-EXX	Empty cabinet

Power quality

For applications requiring harmonic attenuation beyond that achieved by the internal filter choke we offer 12 pulse input versions of the size 8 and 9 Free Standing drives. The 12 pulse input option is simply specified as part of the drive order code. For 12 pulse drives the power connections can be made through existing busbars in the drive cabinet, or if required made within a separate incomer cabinet (SP-Incomer Shell 40- P12-EXX)^[2].

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 compliance with harmonics standards IEEE 519-1992, IEC 61000-2-2, IEC 61000-2-12 and G5/4-1.

Unidrive SP Free Standing ratings

			Normal Duty ^[3]			Heavy Duty ^[3]			
Compact width (mm)		Order Code	Max Continuous Current (A)	Typical Motor Output @ 400V (kW)	Typical Motor Output @ 460V (hp)	Max Continuous Current (A)	Typical Motor Output @ 400V (kW)	Typical Motor Output @ 460V (hp)	
Drive only	With switch disconnector								
380-480Vac +/-10-%	400	400	SP64x1	205	110	150	180	90	150
			SP64x2	236	132	200	210	110	150
			SP74x1	290	160	250	238	132	200
			SP74x2 ^[4]	350	200	300	290	160	250
		800	SP84x1	389	225	300	335	185	280
			SP84x2	450	250	400	389	225	300
			SP84x3	545	315	450	450	250	400
			SP84x4	620	355	500	545	315	450
	800	1200	SP94x0	690	400	600	593	315	500
			SP94x1	690	400	600	620	355	500
			SP94x3	900	500	800	790	450	700
			SP94x4	1010	560	900	900	500	800
			SP94x5	1164	675	1000	1010	560	900
	1200	Not Available	SP94x5 + 1 x SP94x5 Extension	1746	960	1480	1515	830	1280
	1600		SP94x5 + 2 x SP94x5 Extension	2328	1280	1980	2020	1110	1720
2000	SP94x5 + 3 x SP94x5 Extension		2910	1600	2470	2525	1380	2150	

Ratings shown are for IP21 at 40°C ambient or IP23 at 30°C ambient, 3kHz switching frequency and 1000m altitude.

Unidrive SP Free Standing ratings

			Normal Duty ^[3]			Heavy Duty ^[3]			
Compact width (mm)		Order Code	Max Continuous Current (A)	Typical Motor Output @ 690V (kW)	Typical Motor Output @ 575V (hp)	Max Continuous Current (A)	Typical Motor Output @ 690V (kW)	Typical Motor Output @ 575V (hp)	
Drive only	With switch disconnecter								
500-690Vac +/-10-%	400	400	SP66x1	125	110	125	100	90	100
			SP66x2	144	132	150	125	110	125
			SP76x1	168	160	150	144	132	150
			SP76x2	192	185	200	168	160	150
		800	SP86x1	231	200	250	186	185	200
			SP86x2	266	225	300	231	200	250
			SP86x3	311	315	350	266	250	250
			SP86x4	355	355	400	311	315	350
	800	1200	SP96x0	403	400	400	350	315	350
			SP96x1	400	400	450	347	355	350
			SP96x3	533	500	600	466	450	500
			SP96x4	616	560	700	533	500	600
			SP96x5	711	630	800	622	560	700
	1200	Not Available	SP96x5 + 1 x SP96x5 Extension	1067	960	1170	933	830	1020
	1600		SP96x5 + 2 x SP96x5 Extension	1422	1280	1570	1244	1120	1360
2000	SP96x5 + 3 x SP96x5 Extension		1778	1600	1960	1555	1380	1710	

Ratings shown are for IP21 at 40°C ambient or IP23 at 30°C ambient, 3kHz switching frequency and 1000m altitude.

Normal Duty	Suitable for most applications, current overload of 110% for 165 seconds is 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

Unidrive SP Free Standing - The fully engineered universal drive

More intelligent

Control Techniques is the market leader in intelligent drives. Unidrive SP has three option module slots that accept over 20 different options that supplement the drive's standard features. Fieldbus, Ethernet, I/O, additional feedback devices, and automation controllers allow you to customise the drive to match your needs and integrate with your control system.

Option modules

Fieldbus Connectivity



SM-Ethernet



SM-PROFIBUS-DP



SM-DeviceNet



SM-CANopen



SM-INTERBUS



SM-EtherCAT



SM-SERCOS



SM-LON



SM-CAN

Feedback



SM-Resolver



SM-Universal Encoder Plus



SM-Encoder Plus



SM-Encoder Output Plus

Automation Controllers



SM-Applications Lite V2



SM-Applications Plus

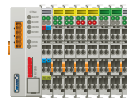


SM-EZ Motion



SM-Register

Extra I/O (external)



Remote I/O

Extra I/O (internal)



SM-I/O Timer



SM-I/O Plus



SM-I/O Lite



SM-I/O PELV



SM-I/O 120V



SM-I/O 32



SM-I/O 24V Protected

The Unidrive SP range

Unidrive SP Free Standing is a part of the Unidrive SP family of high performance drives.

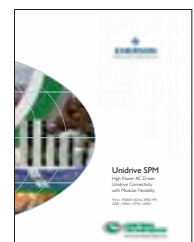
Unidrive SP Solutions Platform Overview & SP Panel Mount 0.37kW - 132kW

Unidrive SP main brochure. Featuring SP Panel Mount, flexible drive modules for integration into cabinets



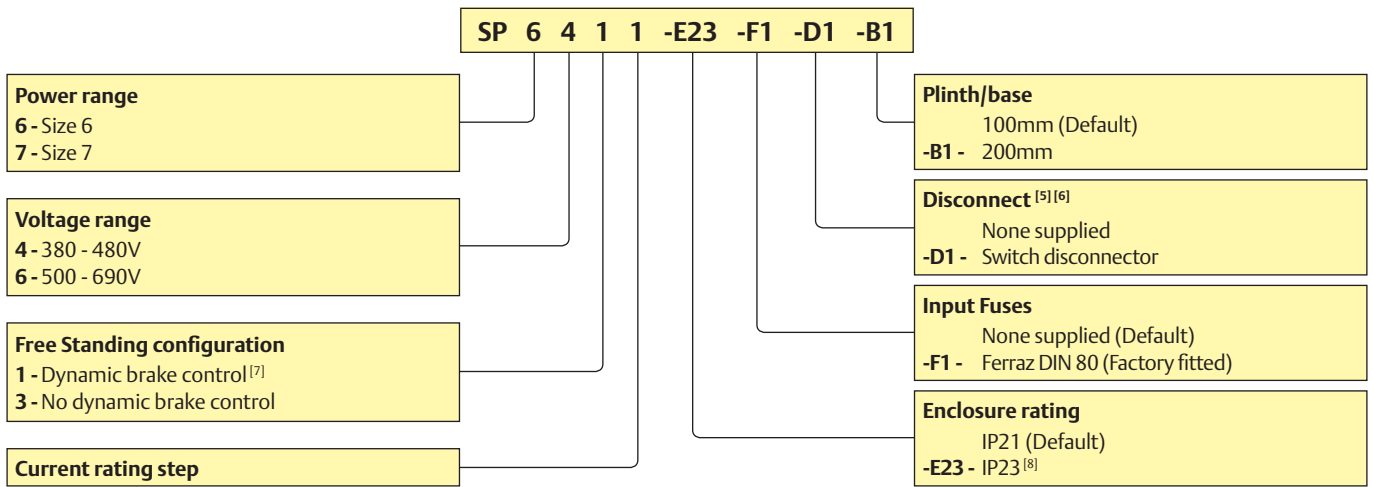
Unidrive SP Modular 45kW - 1.9MW

High Power drive modules for flexible multi-drive power systems, capabilities include active input and DC bus based systems.

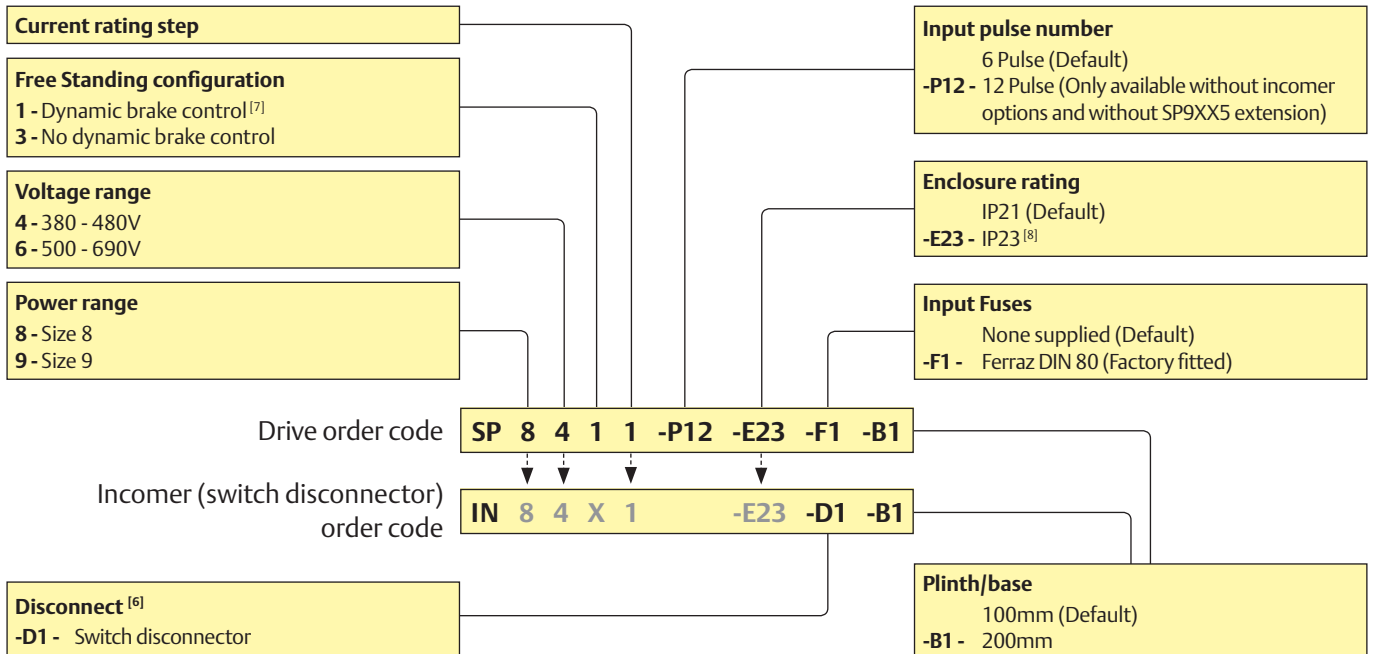


Unidrive SP Free Standing order codes

Size 6 & 7 Free Standing drives



Size 8 & 9 Free Standing drives



Unidrive SP Free Standing cable data and specifications

Cable entry and exit

Drive	Drive Only		Drive with optional disconnecter	
	Cable Entry	Cable Exit	Cable Entry	Cable Exit
SP6	Bottom	Bottom	Top	Bottom
SP7	Bottom	Bottom	Top	Bottom
SP8	Bottom	Bottom	Top or Bottom	Bottom
SP9	Bottom	Bottom	Top or Bottom	Bottom

For other cable entry/exit schemes, contact your supplier.

Cable installation accessories (Size 8 and 9 drives with disconnecter only)

Spreaders are available to facilitate the connection of the incoming power cables to the input terminals of the disconnecter. These installation accessories are suitable where power cable terminations are made with crimped lugs.

Cable Entry	Models	Cable Sizes	Item Codes
Top Entry	84x1, 84x2	Up to 4 x 185mm ² / 4 x 350kcmil	9500-0093
	84x3, 84x4, 94x1 through 94x5		9500-0091
	86x1 through 96x1		9500-0096
	96x3 through 96x5		9500-0091
	84x3, 84x4, 94x1 through 94x5	Up to 4 x 240mm ² / 4 x 500kcmil	9500-0092
	96x3 through 96x5		9500-0092
Bottom Entry	84x1, 84x2	Up to 4 x 185mm ² / 4 x 350kcmil	9500-0095
	84x3, 84x4, 94x1 through 94x5	Up to 4 x 240mm ² / 4 x 500kcmil	9500-0094
	96x3 through 96x5	Up to 4 x 240mm ² / 4 x 500kcmil	9500-0094

Specifications

Environmental Safety and Electrical Conformance

- Humidity 95% maximum (non condensing) at 40°C
- Altitude: 0 to 3000m, derate 1% per 100m between 1000m and 3000m
- Vibration: Drive Modules tested in accordance with IEC 60068-2-34
- Mechanical Shock Tested: Drive Modules in accordance with IEC 60068-2-27
- Storage temperature: -40°C to 50°C
- Electromagnetic Immunity complies with EN 61800-3 and EN 61000-6-2
- With on board EMC filter, complies with EN 61800-3 (2nd environment)
- EN61000-6-4 with optional EMC filter (contact the supplier of your drive)
- IEC 60146-1-1 General requirements
- IEC 61800-5-1 Safety of Power Drive Systems
- IEC 61131-2 I/O
- EN 60529 Ingress protection
- Safe Torque Off (Secure Disable) meets EN 954-1-cat3
- UL508C (except drives with switch disconnecter and IP23 drives)
- CSA C22.2 no 14-05
- IP21 cabinet design, optional IP23 (IP23 option not UL approved)

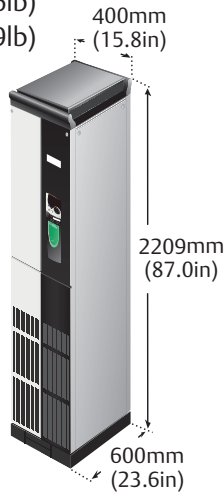
Unidrive SP Free Standing dimensions

Size 6/7

Max weight:

Size 6: 225kg (496lb)

Size 7: 240kg (529lb)

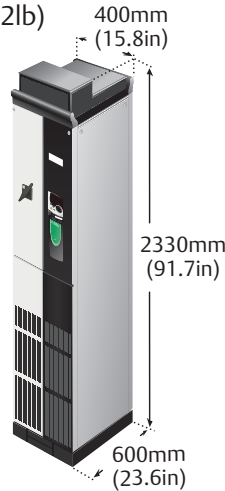


Size 6/7 with switch disconnector

Max weight:

Size 6: 240kg (529lb)

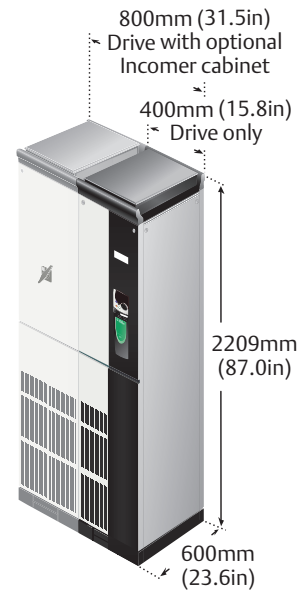
Size 7: 255kg (562lb)



Size 8

Max drive weight: 266kg (586lb)

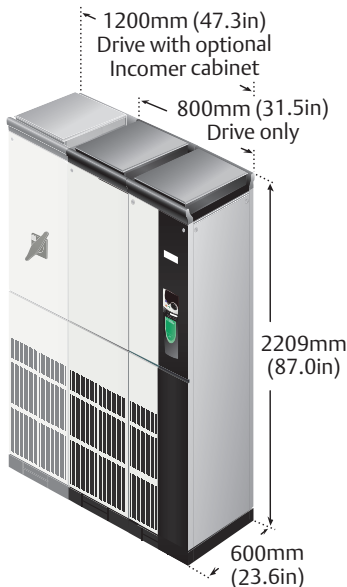
Max Incomer weight: 75kg (165lb)



Size 9

Max drive weight: 532kg (1173lb)

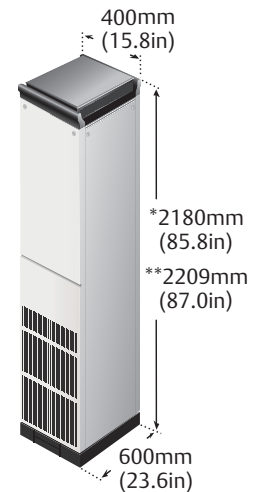
Max Incomer weight: 75kg (165lb)



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

*Max weight: 55kg (121lb)

**Max weight: 266kg (586lb)



Unidrive SP Free Standing accessories and fuse order codes

Separate Free Standing accessories

Order Code	Description
SM-Keypad	LED display for configuration and monitoring
SM-Keypad Plus	Enhanced multi-language LCD display for configuration and monitoring
SP Incomer Shell 40 (-B1)	Empty cabinet (400mm wide) with 6 pulse interconnection busbar
SP-Incomer Shell 40-E23 (-B1)	Empty cabinet (400mm wide, IP23 rated) with 6 pulse interconnection busbar
SP-Incomer Shell 40-P12 (-B1)	Empty cabinet (400mm wide) with 12 pulse interconnection busbar
SP-Incomer Shell 40-P12-E23 (-B1)	Empty cabinet (400mm wide, IP23 rated) with 12 pulse interconnection busbar
SP Systems Shell 40 (-B1)	Empty cabinet (400mm wide)
SP Systems Shell 40-E23 (-B1)	Empty cabinet (400mm wide) - IP23 rated
6771-0001-00	Mounting Rail (x2 required) – Enables user to mount their own incomer equipment when used in conjunction with mounting brackets
6541-0047-00	Left hand side mounting bracket - To attach equipment to the mounting rail on left side
6541-0048-00	Right hand side mounting bracket - To attach equipment to the mounting rail on right side
6541-0051-01	Baying bracket (x4 required) - To bay the drive with Rittal cabinets

-B1 = 200mm plinth; alternative to standard 100mm plinth

Fuse order codes

Internal AC Fuse Selection (Semi Conductor IEC class aR) DIN80									
380-480V					500-690V				
Drive	(A)	Quantity required	Order Code	Manufacturer Part No. (Ferraz) ^[9]	Drive	(A)	Quantity required	Order Code	Manufacturer Part No. (Ferraz) ^[9]
SP64x1/2	400A	3	4300-0400	E300177	SP66x1/2	400A	3	4300-0400	E300177
SP74x1/2					SP76x1/2				
SP84x1					SP86x1				
SP84x2/3/4	800A	3	4300-0800	L300183	SP86x2/3/4	800A	3	4300-0800	L300183
SP84x1/2/3/4-P12	400A	6	4300-0400	E300177	SP86x1/2/3/4-P12	400A	6	4300-0400	E300177
SP94x1					SP96x1/3/4/5	800A	6	4300-0800	L300183
SP94x3/4/5	800A	6	4300-0800	L300183	SP96x1/3/4/5-P12	400A	12	4300-0400	E300177
SP94x1/3/4/5-P12	400A	12	4300-0400	E300177					

Notes

- Power connection between size 6 and 7 drives and a user designed incomer should be made using 95mm² 105°C cabling.
- For 12-Pulse installations the supply must be from a dedicated double wound transformer with twin isolated secondaries phase shifted by 30 degrees. Contact the supplier for more information.
- All ratings given are for a maximum room temperature of 40°C. However when selecting the E23 protection rating the maximum external temperature is 33°C, except for SP9414 and SP9415 which is 30°C. Alternatively E23 cabinets can be operated at 40°C at reduced current, please see the User Guide for current ratings.
- SP7412 rating is 350A at a room temperature of 35°C, 335A at 40°C.
- Cabling to the drive cabinet is from above when this option is selected.
- When this option is selected the drive does not meet UL508C.
- Dynamic braking control does not include the braking resistor or associated components.
- IP23 is not UL approved.
- Ferraz fuses must be used for applications requiring UL approval.

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