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Unidrive SP

Universal AC Drive Solutions Platform

0.37kW to 1.9MW
200V / 400V / 575V / 690V

CONTROL TECHNIQUES
www.controltechniques.com

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The ultimate intelligent AC drive

Performance and flexibility allows you to do something new, creating opportunities to innovate, find better ways to control your application, increase speeds, improve processes and reduce the footprint of your system. Unidrive SP, Control Techniques' high-performance intelligent drive family allows you to achieve this. The ultimate AC drive.

One range, any power

Unidrive SP is a complete drive automation range that covers the power spectrum from 0.37kW to 1.9MW. All drives share the same flexible control interface regardless of the power rating. Drives are packaged in three formats: Panel Mount, Free Standing and Modular.

Panel Mount – Standard drive modules
0.37kW to 132kW
Unidrive SP panel mount drives are standard AC input, AC output modules for installation within a control panel. The modules are easy to install and commission and can be applied in a wide range of applications.

Unidrive SP size 0 is the latest member of the panel mount range. It reduces the drive size by 60% for motors from 0.37kW to 1.5kW. This model has the same parameter set, universal motor control and user interface as the rest of the Unidrive SP range.



Free Standing – Ready to run
90kW to 675kW
Unidrive SP Free Standing offers a fully engineered drive that is supplied within a standard sized cabinet. Free Standing can be ordered with input power equipment to facilitate immediate connection to the power supply and motor.

Unidrive SP Modular – Power system flexibility
45kW to 1.9MW
Unidrive SP Modular offers maximum power system design flexibility. Drive modules can be connected together in a variety of ways to create common DC bus systems, active input systems for returning excess energy to the power supply and parallel drives for high power motors. All drive modules are compact for easy handling.

N1652

E171230

Unidrive SP features

Smartcard for parameter, PLC and motion program storage

Drive identification marker rail

Optional Keypad, available as high brightness LED or multi-language LCD with plain text

Modbus communications port for PC programming and device interfacing

Terminal cover*

Sturdy cable management system providing an earthing point for shielded control and power cables



* Features and their locations vary on some drive sizes



- Terminal cover for DC bus, low voltage power supply and onboard EMC filter
- Power on / Drive status LED
- Aluminium heatsink: drive can be mounted on a flat surface, or through panel mounted so that the heat is dissipated outside the enclosure*
- 3 universal option module slots for communications, I/O, additional feedback devices and automation/motion controllers*
- Pluggable control connections with removable terminals
- Power connections with removable terminals*
- Universal encoder port supporting Incremental, SinCos, SSI, EnDAT and HIPERFACE encoder types

Panel Mount - Page 20

High performance AC & servo drive for standard power applications



Free Standing - Page 18

Fully engineered AC drive cabinet for higher power standard applications



Modular - Page 19

Modular high power performance AC drive for higher power custom applications



Voltage (V)	Power		
	Panel Mount	Free Standing	Modular
200 - 240 1Ph	0.37 - 1.5 kW	-	-
200 - 240 3Ph	0.37 - 45 kW	-	45 - 950 kW
380 - 480 3Ph	0.37 - 132 kW	90 - 675 kW	90 - 1900 kW
500 - 575 3Ph	2 - 150 HP	125 - 700 HP	125 - 1750 HP
500 - 690 3Ph	15 - 132 kW	90 - 660 kW	90 - 1800 kW

Any motor, any encoder

Unidrive SP provides high-performance motor control for induction motors, asynchronous servo and synchronous servo motors. The control mode is simply selected using the drive keypad.

- **Servo** – Precision, dynamic control supporting a wide range of rotary and linear motors
- **Closed Loop Vector** – Ultimate precision control of induction motors offering full motor torque at zero speed
- **RFC Mode (Rotor Flux Control)** – Superior dynamic performance and stability without a feedback device
- **Open Loop Vector** – Good open loop motor performance with minimum configuration
- **Open loop V/f Control** – A simple control algorithm that is ideal for parallel motors
- **Regenerative** – Active front end control mode for harmonic elimination and regeneration

Unidrive SP includes the hardware required to connect to virtually any feedback encoder type, allowing the designer to select the most appropriate technology for the application:

- **Incremental** - Offers a good balance of cost and performance
- **SinCos** - Provides increased position resolution for precision and low speed applications
- **SSI** - Provides absolute position feedback
- **EnDat & HIPERFACE** - These encoders transfer position data using a high speed communications network, often combined with SinCos technology



EtherCAT

Add the extra features you need

Click-in option modules allow you to customise the drive to suit your needs. Over 25 different options are available including Fieldbus, Ethernet, I/O, extra feedback devices and automation controllers.

Intelligently driven

Unidrive SP allows the drive system designer to embed automation and motion control within the drive. This eliminates communication delays that reduce performance while CTNet, a high performance drive-to-drive network, links the different parts of the system.

Reliability and innovation

Unidrive SP is designed using a well proven development process that prioritises innovation and reliability. This process has resulted in Control Techniques having a market leading reputation for both product performance and quality.

Global Support

Control Techniques' 53 Drive Centres located in 31 countries , backed up by a further 37 carefully selected and fully trained international distributors, ensure that service, support and expertise are just around the corner, all around the world. Our engineers are passionate about drives and are able to offer the level of service that you need, from advice on an application problem to providing a complete drive solution design.

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Unidrive SP functional safety

Control Techniques' drive based safety features provide an intelligent, programmable approach to meet modern functional safety standards. Machines can intelligently interact with people, increasing human protection and safety while enhancing the machine productivity.

Safety as standard

Unidrive SP's Safe Torque Off (STO) is a functional safety feature which complies with EN/IEC 61800-5-2 SIL 3 and is built in to the drive as standard. When the Safe Torque Off function is active, the drive output is disabled with a high degree of integrity.

- Certified by BGIA and TUV
- Allows the drive to become part of the machine safety system
- Reduces user cost in machine safety controller designs that must comply with EN/IEC 62061 up to SIL 3, EN ISO 13849-1 up to PL e, EN 954-1 category 3 and EN 81-1 for elevators
- Eliminates one or more power contactors
- Eliminates feedback checking arrangement
- Drive can be powered continuously

Safe Torque Off can form part of an EN 954-1 Category 4 system by adding control circuitry. Contact your local Drive Centre or Distributor.

For more information please refer to the Control Techniques Safe Torque Off Guide.
Also available for download from www.controltechniques.com/guides





Unidrive SP electrical and mechanical integration

Unidrive SP enables system designers to reduce costs. Standard features such as integrated EMC filters, through panel mounting and backup power supply inputs reduce cabinet size and eliminate external components.

Back-up power supply inputs for continuous operation

24VDC input - control
24VDC supply allows the control circuits of Unidrive SP to remain active when the AC supply is removed. This enables Fieldbus modules, application modules and encoders to continue to operate.

48-96VDC input - power
Allows the drive power output to control the motor, often used for emergency back-up situations such as for moving elevators to an exit during a power supply failure.

Easy compliance with global EMC standards

Unidrive SP features a built-in filter allowing the drive to comply with EN 61800-3. The filter can be easily removed if required such as when sensitive earth leakage protection is installed. External EMC Filters are available for compliance with EN 6100-6-4.

Integrated brake resistors

Unidrive SP frame sizes 0 to 2 feature an optional heatsink mounted brake resistor. This arrangement simplifies installation, requires no additional space and is self fusing with additional overload protection offered by the drive.



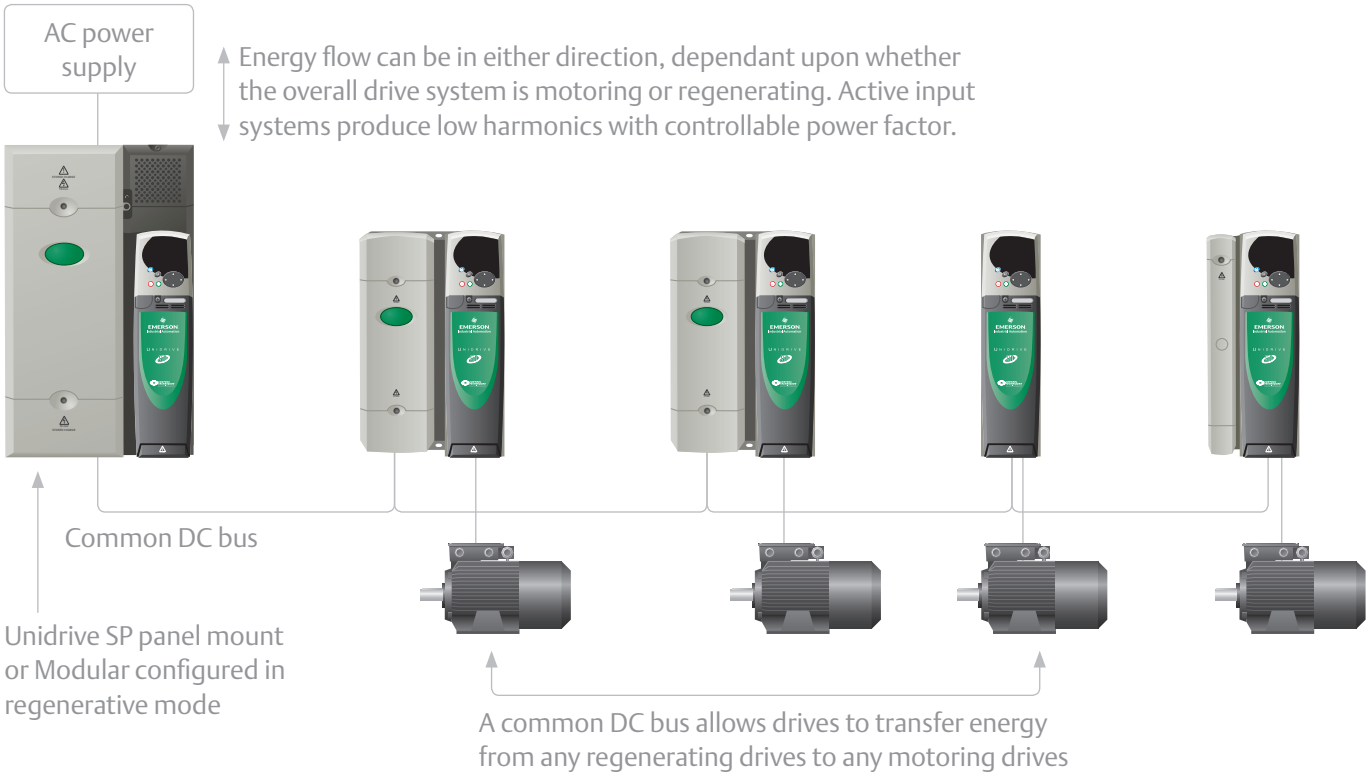
More compact drive systems

Unidrive SP panel mount sizes 1 – 6 and Unidrive SP Modular drives can be through panel-mounted to allow heat to be dissipated externally. This reduces the temperature rise inside the control panel. An IP54 mounting kit is included as standard and IP54 versions of the heatsink fan are available as an option. This mounting method allows smaller cabinet dimensions and reduces the need for ventilation.





Unidrive SP active input solution for improved energy efficiency



Energy saving and harmonic reduction

In most applications variable speed drives reduce energy consumption by matching the motor speed to the required load.

In applications where there is a significant amount of stored mechanical energy, the drive must be able to dissipate the energy to control the motor speed. This presents a further opportunity to reduce energy consumption by returning the excess energy to a shared DC bus or to the AC supply.

DC bus and active input systems can be configured using either Unidrive SP Modular or panel mount drives. DC bus systems reduce running costs by circulating energy between braking and motoring drives. Active input systems return excess braking energy to the mains supply. Benefits include:

- Energy saving
- Sinusoidal input current (low harmonic content)
- Unity or controllable input power factor

Unidrive SP set-up, configuration and monitoring

Unidrive SP is quick and easy to set-up. The drives may be configured using a removable keypad, Smartcard or the supplied commissioning software that guides the user through the configuration process.

User interface options

Unidrive SP benefits from a number of keypad choices to meet your application needs.

Keypad Options	Details
No Keypad	The drive is supplied as standard with no keypad. This is ideal for high volume applications or where you wish to prevent access to drive settings
SM – Keypad	Hot pluggable, high-brightness LED display
SM – Keypad Plus	Multi-lingual, hot pluggable, backlit LCD display. The display can be customised to provide application specific text
SP0 – Keypad	Hot Pluggable LED for the ultra compact Size 0





SM-Keypad



SM-Keypad Plus



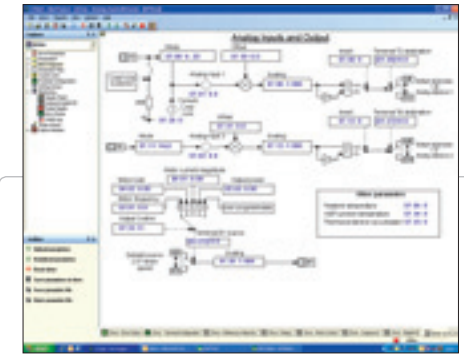
SP0-Keypad

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Software and Smartcard tools for rapid commissioning

Control Techniques software suite makes it easier to access the drive's full feature set. It allows you to optimize the drive tuning, back-up the configuration and set-up a communications network. The software tools can connect using Ethernet, Serial, USB or Control Techniques drive-to-drive network, CTNet.

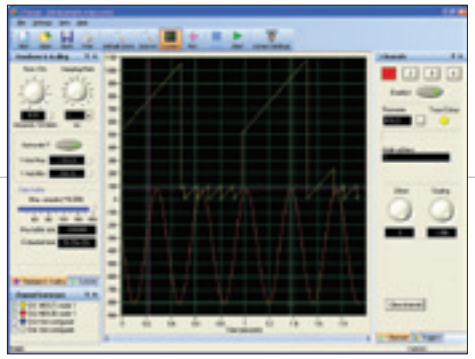
CTSoft



CTSoft is a drive configuration tool for commissioning, optimising and monitoring Control Techniques drives. It allows you to:

- Use the configuration wizards to commission your drive
- Read, save and load drive configuration settings
- Manage the drive's Smartcard data
- Visualise and modify the configuration with live animated diagrams

CTScope



CTScope is a full featured software oscilloscope for viewing and analysing changing values within the drive. The time base can be set to give high speed capture for tuning or for longer term trends. The user interface is based on a traditional oscilloscope, making it familiar and friendly to all engineers across the globe.

Try it, download the full version of CTSoft and CTScope software from www.controltechniques.com

FREE Software

CTOPCServer

CTOPCServer is an OPC compliant server which allows PCs to communicate with Control Techniques drives. The server supports communication using Ethernet, CTNet, RS485 and USB. OPC is a standard interface on SCADA packages and is widely supported within Microsoft® products. The server is supplied free of charge and may be downloaded from www.controltechniques.com.

Try it, download the full version of CTOPCServer from www.controltechniques.com

FREE Software

Smartcard



The Smartcard is a memory device that is supplied with every Unidrive SP, it can be used to back-up parameter sets and PLC programs and copy them from one drive to another.

- Parameter and program storage
- Simplify drive maintenance and commissioning
- Quick set-up for sequential build of machines
- Machine upgrades can be stored on a Smartcard and sent to the customer for installation

Easy performance tuning

Autotune features accessible through CTSoft or the keypad help you to get the best performance by measuring the motor and machine attributes and automatically optimising control parameters.

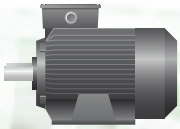


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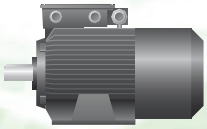
Unidrive SP - Unparalleled integration flexibility

Control Mode

Open loop motor



Closed loop motor



Servo motor



Linear motor



Regenerative Active Front End



Drive Programming and Operator Interface

Options | Standard

Operator Interface





LCD Keypad



LED Keypad



Smartcard



Input/Output

Standard | Options



5 Analog I/O
7 Digital I/O
1 Safe Torque Off

SM-I/O 32



SM-I/O Plus



SM-I/O Lite



SM-I/O Timer



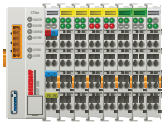
SM-I/O 120V



SM-I/O PELV

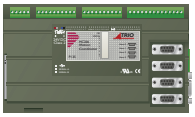


REMOTE I/O



Centralised PLC/Motion Control

Motion Controller



PLC



PC



DC Back up Power Supply

48 - 96V Power



24V Control







Applications with PLC or Motion functionality

Standard

Onboard PLC



Easy to use onboard ladder logic PLC at zero cost, ideal for simple applications requiring extra drive functionality

Options

SM-Applications Lite V2



Powerful automation controller using a dedicated microprocessor giving full drive parameter access

SM-Applications Plus



Powerful automation controller with drive to drive networking and full motion capability

SM-EZMotion



Motion made easy with intuitive step-by-step configuration

SM-Register



High speed motion and registration control

Communications

Standard

Modbus RTU



Options

SM-EtherCAT



SM-LON



SM-Profibus DP



SM-Interbus



SM-CAN



SM-DeviceNet



SM-Ethernet



SM-CANopen



SM-SERCOS



SM-PROFINET



Feedback

Standard

Incremental
SinCos high resolution
SSI Absolute
EnDat & HIPERFACE
Communications



Options

SM-Universal Encoder Plus



Accepts or replicates all standard feedback types, Input and output

SM-Encoder Plus



Incremental input

SM-Resolver



Resolver input
Incremental output

SM-Encoder Output Plus



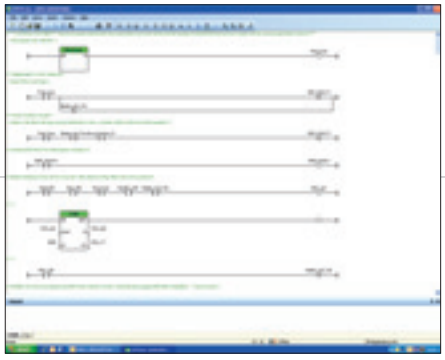
Incremental Encoder Output, Input and output

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Unidrive SP drive intelligence and system integration

Intelligent drives offer more compact, higher-performance and lower cost solutions in machinery automation applications. Over the past 20 years Control Techniques has pioneered the embedding of programmable automation, motion and communications features within drives.

SyPTLite and onboard automation

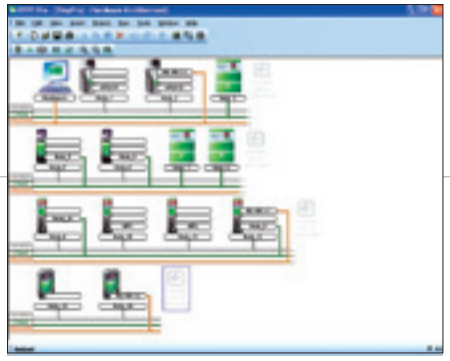


Unidrive SP has an inbuilt programmable controller. It is configured using SyPTLite, an easy-to-use ladder logic program editor, suitable for replacing relay logic or a micro PLC for simple drive control applications.

The software is supplied free of charge. For evaluation, download the full version from www.syptlite.com.

FREE Software

SyPTPro automation development environment



SyPTPro is a full featured automation development environment that can be used for developing tailored solutions for single or multiple drive applications. The programming environment fully supports three industry standard languages: Function Block, Ladder and Structured Text. Motion control is configured using the new PLCopen motion language, supporting multiple axes.

CTNet, a high-speed, deterministic drive-to-drive network links the drives, SCADA and I/O together to form an intelligent networked system, with SyPTPro managing both the programming and communications.

For evaluation, download a demonstration version from www.controltechniques.com.

FREE Software

High performance automation

All of Control Techniques automation option modules contain a high performance microprocessor, leaving the drive's own processor to give you the best possible motor performance.

SM-EZ Motion

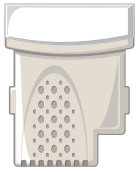


The SM-EZ Motion option module and PowerTools Pro software provides a user friendly environment for motion programming. The EZ-Motion approach is ideal for applications that are low volume and low engineering time.

- Simple drag & drop programming allows you to create programs "out of the box" without having to write a single line of code
- Programming completed in 5-steps, the software guides you through drive configuration, I/O configurations and programming steps
- Intuitive Windows environment with simple data entry

The module has four digital inputs and two digital outputs for high-speed I/O operations.

SM-Applications Lite V2



The SM-Applications Lite V2 module is designed to provide programmable control for standalone drive applications or when the drive is connected to a centralised controller via I/O or Fieldbus. SM-Applications Lite V2 may be programmed using ladder logic with SyPTLite or can make use of the full automation and motion capabilities contained within SyPTPro.

- Easy Powerful Configuration – SM-Applications Lite V2 can be used to tackle automation problems from simple start/stop sequencing with a single drive to more complex machine and motion control applications
- Real Time Control –The SM-Applications Lite V2 module gives you real-time access to all of the drives parameters plus access to data from I/O and other drives. The module uses a high speed multi-tasking operating system with task update times as low as 250µs. Tasks are synchronised to the drive's own control loops to give you the best possible performance for drive control and motion.

SM-Applications Plus



SM-Applications Plus offers all of the features of the SM-Applications Lite V2 module but with additional communications and high speed I/O. SM-Applications Plus is programmed using SyPTPro system programming tool.

- Inputs/Outputs – The module has two digital inputs and two digital outputs for high-speed I/O operations such as position capture and actuator firing
- High speed serial port - The module features a serial communications port supporting standard protocols such as Modbus for connection to external devices such as operator interface panels
- Drive-to-drive communications - SM-Applications Plus option modules include a high speed drive-to-drive network called CTNet, this network is optimised for intelligent drive systems offering flexible peer to peer communications. The bus has the capability to connect to remote I/O, operator panels, Mentor DC drives and PCs using an OPC server

Unidrive SP machine communications flexibility



PC for programming and monitoring using CTSoft, CTScope, SyPT or OPC. Connect using Serial, Ethernet, USB or CTNet



Fieldbus or Ethernet connection to main controller using a wide range of communications option modules



SP Control Platform

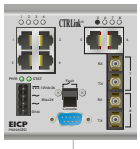


Experience has shown that the unique control flexibility of the Unidrive SP has led to many applications where it is being used solely for its option modules, with no motor connected. Examples include:

- Application as a protocol converter between a supervisory control system using one protocol and a drive system using another.
- Addition of an extra Unidrive SP to a system to accommodate additional option modules. Additional position feedback devices can also be added to a system in this way.

The SP Control Platform provides all the same functions as a Unidrive SP thus expanding the control flexibility without the ability to run a motor, eliminating a redundant power stage.

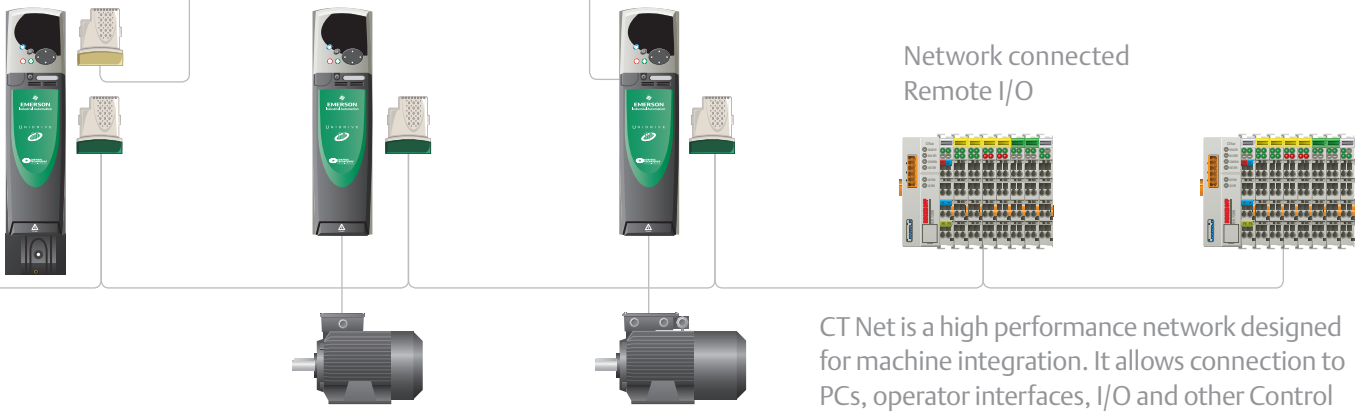
The SP Control Platform requires a 24Vdc power supply with a 3A, 50Vdc fuse.



Ethernet connection for remote access, wireless connectivity and asset management



Operator interface connected using serial, Fieldbus or Ethernet



Network connected Remote I/O

CT Net is a high performance network designed for machine integration. It allows connection to PCs, operator interfaces, I/O and other Control Techniques drives

Fieldbus communications

Option modules for all common Industrial Ethernet, Fieldbus networks such as Ethernet/IP and Profibus and Servo networks such as SERCOS and EtherCAT are available. We continually develop new modules as new technologies emerge.

Easy gateway

SM-Applications and CTNet allow machine designers to design an easy gateway into which customers are able to interface using their preferred Fieldbus or Ethernet interface. This solution improves the machine performance, simplifies the problem of being able to meet customer specifications for different Fieldbus communications and helps to protect your intellectual property.

	Onboard PLC	SM-Applications Lite V2	SM-Applications Plus
Intellectual property protection	✔	✔	✔
SyPTLite Programming	✔	✔	
SyPTPro Programming		✔	✔
Multi-tasking environment		✔	✔
Motion control capabilities		✔	✔
CTNet drive-to-drive network			✔
Serial port			✔
High Speed I/O			✔



Unidrive SP Free Standing 90kW – 675kW

Higher power performance AC drive

The Unidrive SP Free Standing drive range offers the same advanced feature set as the panel mount drives but in a convenient pre-engineered package.

The drive cabinets can be factory configured so that they are delivered ready to be connected directly to your supply, this eliminates the need for drive panel building saving you time and money whilst also allowing you to focus on your application.

The drive cabinets offer industry leading power / size ratios and are ordered using simple order codes.

Applications

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

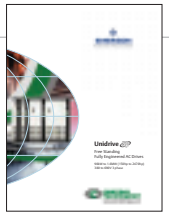
- Energy saving with higher power fans and pumps
- Metal production and processing
- Conveying and handling of bulk materials
- Pulp and paper processing
- Marine applications

Benefits

The Unidrive SP Free Standing drives enjoy the same advantages as our Panel Mounting drives with the following additional benefits:

- Standard AC in / AC out pre-engineered cabinet solution reduces design time, lowers project risk and allows you to focus on getting the application engineering right
- Simple order codes allow you to specify a factory fitted power input scheme for your Free Standing drive. This means your drive is delivered ready to be connected reducing your engineering effort and installation time.
- Matching empty cabinets and popular accessories are available to allow you to integrate your own power input scheme or control equipment alongside the drive
- Industry standard form factor and colour allow the cabinets to integrate with new and existing cabinets
- Available with and without braking transistors to optimise costs for your application
- IP21 and optional IP23 enclosures available
- Compact cabinet reduces the space requirement, especially important in retrofit applications: 350kW = 400mm wide & 675kW = 800mm wide

For more information
please refer to the Unidrive SP
Free Standing brochure.
Also available for download from
www.controltechniques.com







Unidrive SP Modular 45kW – 1.9MW

Modular high power performance AC drive

The Unidrive SP Modular Drives Range offers the same advanced feature set as the panel mount drives but with additional power system flexibility. Drive modules may be arranged to provide a common DC bus system with or without an active input (regenerative, 4 quadrant operation). Very high current motors may be controlled using a multi-drive modular arrangement.

Applications

The Unidrive SPM drives are suitable for applications in both commercial and industrial applications where power scheme flexibility and regenerative energy saving provides an operational advantage. Typical applications include:

- Automotive testing such as car, engine and gearbox dynamometers
- Web control and winding
- Conveying and processing of bulk materials
- Pulp and paper processing
- Marine applications
- Energy saving with high power fans and pumps
- Metal production and processing
- Large cranes
- Renewable energy systems such as photovoltaics

Benefits

Unidrive SP Modular drives enjoy the same advantages as the Panel Mounting drives but with the additional benefits of power system flexibility:

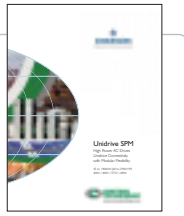
- Higher power motors are controlled using Unidrive SPM modules connected in parallel. This is an economic and compact solution that simplifies installation and improves serviceability
- Reduce running costs using a DC bus system to recycle energy between simultaneously braking and motoring drives such as in a winder / unwinder configuration
- Eliminate harmonics using an active front end
- Minimise harmonics with 12, 18 and 24 pulse operation to allow you to meet and exceed stringent supply regulations
- Modular approach can provide system redundancy, for example if a drive module was non operational in a multi-module installation it may still be possible to operate the application with the remaining modules
- Ultra compact modules allow high power systems to be constructed in non standard enclosures e.g. it is possible to implement a drive system of between 45kW to 1900kW in an enclosure no taller than 1m
- Operation with global power supplies 200V, 400V, 575V and 690V

Modular building blocks

The Unidrive SPM range comprises key modules that can be combined elegantly to achieve your design criteria with maximum economy.

SPMA	AC IN / AC OUT Drive Module
SPMD	DC IN / AC OUT Drive Module
SPMC	AC IN / DC OUT Rectifier
SM Control Master	Master control module for use with SPMA/D
SM Control Slave	Slave control module for use with SPMA/D
SPM Power Selector	Automatic selection/de-selection of drive modules

For more information and more configuration examples please refer to the Unidrive SPM brochure. Also available for download from www.controltechniques.com





Unidrive SP panel mounted 0.37kW – 132kW 200V 1ph / 200V 3ph / 400V / 575V / 690V

High performance AC & servo drive

Unidrive SP Panel Mount is a high performance drive module for system integration and stand alone applications.

Applications

Due to the inherent performance and flexibility of Unidrive SP, potential areas for its application are limitless, the drives' intelligence and dynamic response allow it to be applied in the most demanding applications.

Typical applications include:

- High speed machines
- Crane and hoist
- Lift and elevator controls
- Pulp and paper machines
- Metal production and processing
- Materials handling systems
- Marine applications
- Printing
- Textile machines
- Converting
- Energy saving with fans and pumps
- Plastics and rubber extrusion machines

Benefits

- Onboard programmable intelligence and generous connectivity allows the removal of external programmable logic controllers and motion controllers, reducing costs and the cabinet size. Unidrive SP features 5 analogue I/O and 7 digital I/O as standard
- Drive option module slots future proof your investment, it also means you only fit the functionality you need, reducing costs and removing complexity. Unidrive SP Sizes 1 to 6 benefit from three option slots with the ultra compact Size 0 featuring two slots
- Available option modules include advanced automation controllers, world-standard fieldbus connectivity options and a comprehensive range of digital and analogue I/O interfaces and feedback devices
- Optional Internal Brake Resistors for Unidrive SP Sizes 0, 1 and 2 reduce your space requirement
- The built in EMC filter is suitable for most applications and can be easily removed where required. Optional external footprint EMC Filters are available where more rigourous standards must be met
- Safe Torque Off, as standard, reduces system costs in machine safety designs
- IP54 through panel mount capability allows convenient heat dissipation and reduces cabinet size
- Operation with global power supplies 200V, 400V, 575V and 690V

Unidrive SP panel mount ratings and specifications

200-240VAC +/- 10% Single Phase (kW@220V) (HP@230V)

		Normal Duty			Heavy Duty		
Frame Size	Modules	Max Cont Current (A)	Typical Motor Output Power (kW)	(HP)	Max Cont Current (A)	Typical Motor Output Power (kW)	(HP)
0	SP0201	-	-	-	2.2	0.37	0.5
	SP0202	-	-	-	3.1	0.55	0.75
	SP0203	-	-	-	4	0.75	1
	SP0204	-	-	-	5.7	1.1	1.5
	SP0205	-	-	-	7.5	1.5	2

200-240VAC +/- 10% (kW@220V) (HP@230V)

		Normal Duty			Heavy Duty		
Frame Size	Modules	Max Cont Current (A)	Typical Motor Output Power (kW)	(HP)	Max Cont Current (A)	Typical Motor Output Power (kW)	(HP)
0	SP0201	-	-	-	2.2	0.37	0.5
	SP0202	-	-	-	3.1	0.55	0.75
	SP0203	-	-	-	4	0.75	1
	SP0204	-	-	-	5.7	1.1	1.5
	SP0205	-	-	-	7.5	1.5	2
1	SP1201	5.2	1.1	1.5	4.3	0.75	1
	SP1202	6.8	1.5	2	5.8	1.1	1.5
	SP1203	9.6	2.2	3	7.5	1.5	2
	SP1204	11	3	3	10.6	2.2	3
2	SP2201	15.5	4	5	12.6	3	3
	SP2202	22	5.5	7.5	17	4	5
	SP2203	28	7.5	10	25	5.5	7.5
3	SP3201	42	11	15	31	7.5	10
	SP3202	54	15	20	42	11	15
4	SP4201	68	18.5	25	56	15	20
	SP4202	80	22	30	68	18.5	25
	SP4203	104	30	40	80	22	30
5	SP5201	130	37	50	105	30	40
	SP5202	154	45	60	130	37	50

380-480VAC +/- 10% (kW@400V) (HP@460V)

		Normal Duty			Heavy Duty		
Frame Size	Modules	Max Cont Current (A)	Typical Motor Output Power (kW)	(HP)	Max Cont Current (A)	Typical Motor Output Power (kW)	(HP)
0	SP0401	-	-	-	1.3	0.37	0.5
	SP0402	-	-	-	1.7	0.55	0.75
	SP0403	-	-	-	2.1	0.75	1
	SP0404	-	-	-	3	1.1	1.5
	SP0405	-	-	-	4.2	1.5	2
1	SP1401	2.8	1.1	1.5	2.1	0.75	1
	SP1402	3.8	1.5	2	3	1.1	1.5
	SP1403	5	2.2	3	4.2	1.5	3
	SP1404	6.9	3	5	5.8	2.2	3
	SP1405	8.8	4	5	7.6	3	5
	SP1406	11	5.5	7.5	9.5	4	5
2	SP2401	15.3	7.5	10	13	5.5	7.5
	SP2402	21	11	15	16.5	7.5	10
	SP2403	29	15	20	25	11	20
	SP2404	29	15	20	29	15	20
3	SP3401	35	18.5	25	32	15	25
	SP3402	43	22	30	40	18.5	30
	SP3403	56	30	40	46	22	40
4	SP4401	68	37	50	60	30	50
	SP4402	83	45	60	74	37	60
	SP4403	104	55	75	96	45	75
5	SP5401	138	75	100	124	55	100
	SP5402	168	90	125	156	75	125
6	SP6401	205	110	150	180	90	150
	SP6402	236	132	200	210	110	150

500-575VAC +/- 10% (kW@575V) (HP@575V)

Frame Size	Modules	Normal Duty			Heavy Duty		
		Max Cont Current (A)	Typical Motor Output Power (kW)	(HP)	Max Cont Current (A)	Typical Motor Output Power (kW)	(HP)
3	SP3501	5.4	3	3	4.1	2.2	2
	SP3502	6.1	4	5	5.4	3	3
	SP3503	8.4	5.5	7.5	6.1	4	5
	SP3504	11	7.5	10	9.5	5.5	7.5
	SP3505	16	11	15	12	7.5	10
	SP3506	22	15	20	18	11	15
	SP3507	27	18.5	25	22	15	20
4	SP4603*	36	22	30	27	18.5	25
	SP4604*	43	30	40	36	22	30
	SP4605*	52	37	50	43	30	40
	SP4606*	62	45	60	52	37	50
5	SP5601*	84	55	75	63	45	60
	SP5602*	99	75	100	85	55	75
6	SP6601*	125	90	125	100	75	100
	SP6602*	144	110	150	125	90	125

500-690VAC +/- 10% (kW@690V) (HP@690V)

Frame Size	Modules	Normal Duty			Heavy Duty		
		Max Cont Current (A)	Typical Motor Output Power (kW)	(HP)	Max Cont Current (A)	Typical Motor Output Power (kW)	(HP)
4	SP4601	22	18.5	25	19	15	20
	SP4602	27	22	30	22	18.5	25
	SP4603	36	30	40	27	22	30
	SP4604	43	37	50	36	30	40
	SP4605	52	45	60	43	37	50
	SP4606	62	55	75	52	45	60
5	SP5601	84	75	100	63	55	75
	SP5602	99	90	125	85	75	100
6	SP6601	125	110	150	100	90	125
	SP6602	144	132	175	125	110	150

Notes: Select model on actual motor full load current. *The same model can be used on a 575V or a 690V supply, and has two different output ratings. For example: At Normal Duty, SP4603 is suitable for a 22kW output motor on a 575V supply and a 30kW output motor on a 690V supply. Can be used on IT supplies - all voltages, Grounded delta supplies - all voltages except 690V

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 175% for 40 seconds is available for frame size 0 - 5 in closed loop, 150% for 60 seconds in open loop. For frame size 6 current overload of 150% for 60 seconds is available in closed loop and 129% for 97 seconds in open loop. Where the motor rated current is less than the drive rated continuous current higher overloads (200% or greater) are achieved.

Environmental safety and electrical conformance

- IP20/Nema 1 rating, IP54 (NEMA 12) through panel mount
- Ambient temperature -15 to +40°C, 50°C with derating
- Humidity 95% maximum (non condensing) at 40°C
- Altitude: 0 to 3000m, derate 1% per 100m between 1000m and 3000m
- Vibration: Tested in accordance with IEC 60068-2-34
- Mechanical Shock Tested 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 onboard EMC filter, complies with EN 61800-3 (2nd environment)
- EN 61000-6-3 and EN 61000-6-4 with optional footprint EMC filter
- IEC 61000-3-4 Supply conditions
- IEC 60146-1-1 Supply conditions
- IEC 61800-5-1 (Power Drive Systems)
- IEC 61131-2 I/O
- EN 60529 Ingress protection
- EN 50178 / IEC 62103 Electrical safety
- Safe Torque Off (formally secure disable), independently assessed by BGIA to IEC 61800-5-2 SIL 3
- EN 81-1 assessed by TÜV
- EN 61000-6-2, EN 61000-6-4 EMC, UL508C, UL840

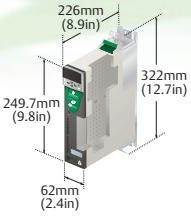
Dimensions and Options

For Unidrive SP Free Standing and Unidrive SP Modular drive dimensions and ratings please refer to the relevant brochures.

SP Control Platform
Weight:
1.5kg (3.3lbs)



SP0
Weight:
2.1kg (4.6lbs)



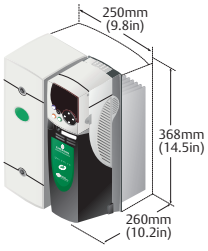
SP1
Weight: 5kg (11lbs)
SP1405 / SP1406:
5.8kg (13lbs)



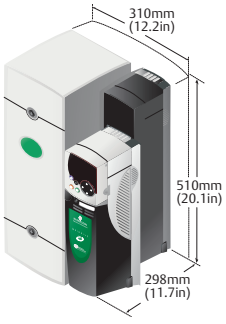
SP2
Weight:
7kg (15.5lbs)



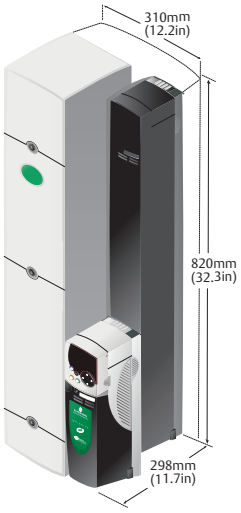
SP3
Weight:
15kg (33lbs)



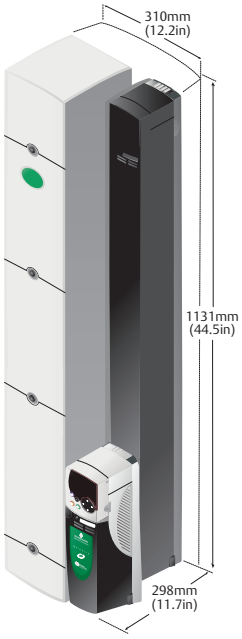
SP4
Weight:
30kg (66lbs)



SP5
Weight:
55kg (121lbs)



SP6
Weight:
75kg
(165.3lbs)



Options

Interfaces

Order Code	Details
SP Control Platform	Control platform without power stage
SM – Keypad	Low cost, hot pluggable, LED display
SM – Keypad Plus	Multi-lingual, hot pluggable, backlit LCD display. The display can be customised to provide application specific text.
SP0 – Keypad	Hot Pluggable LED for the compact Size 0

Braking Resistors

Braking Resistor	Order Code
SP0 Braking Resistor	1299-0001
SP1 Braking Resistor	1220-2756-01
SP2 Braking Resistor	1220-2758-01

EMC Filters

Unidrive SP built-in EMC filter complies with EN 61800-3, External EMC Filters are required for compliance with EN 61000-6-4.

Drive	Order Code	Drive	Order Code
SP0201 to SP0205 (1ph)	4200-6000	SP2401 to SP2404	4200-6210
SP0201 to SP0205	4200-6001	SP3401 to SP3403	4200-6305
SP0401 to SP0405	4200-6002	SP4401 to SP4403	4200-6406
SP1201 to SP1202	4200-6118	SP4601 to SP4606	4200-6408
SP1203 to SP1204	4200-6119	SP5401 to SP5402	4200-6503
SP2201 to SP2203	4200-6210	SP3501 to SP3507	4200-6309
SP3201 to SP3202	4200-6307	SP5601 to SP5602	4200-6504
SP4201 to SP4203	4200-6406	SP6401 to SP6402	4200-6603
SP1401 to SP1404	4200-6118	SP6601 to SP6602	4200-6604
SP1405 to SP1406	4200-6119		

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