

# Unidrive SP

## Options

### OVERVIEW

The Unidrive SP provides application and system designers with an incredibly flexible drive platform, which is easily modified by an extensive range of sophisticated SM option modules that can be used alone or in combination for economical and space saving solutions. SM option modules install easily into any of the three option slots on the SP, with no tools required. The I/O, feedback, memory, communication and application modules enable the Unidrive SP to provide an optimized solution regardless of the demands of the application.

A complete range of other accessories are available to simplify system integration and meet system design criteria.



### OPTIONS AT-A-GLANCE

Option	Description	Order Code
Base Drive Configuration and Programming	Cloning and Parameter Storage Card	Smart Card <sup>1</sup>
	Configuration Software	CTSoft <sup>1</sup>
	Communications Cable	CT Comms Cable
Operator Interface	No Keypad Option	No Order Code - Standard
	LED Keypad	SM-Keypad <sup>2</sup>
	Backlit LCD Keypad Plus	SM-Keypad Plus <sup>2</sup>
	Programmable HMI Panels	See Options and Accessories
Power Accessories	Zero-Space Brake Resistor	Based on Drive (read ahead)
	E-Stop Duty Braking Resistor	See Options and Accessories
	Cyclic Duty Braking Resistor	See Options and Accessories
	Zero Space EMC Filter	No Order Code - Standard
	External EMC Filters	See Options and Accessories
Feedback Solutions Modules	Add-On Universal Encoder Feedback	SM-Universal Encoder Plus
	Add-On Quadrature Only Encoder Feedback	SM-Encoder Plus
	Resolver Feedback	SM-Resolver
	Screw Terminal Connector	SM-ETC
I/O Solutions Modules	Extended Analog and Digital I/O	SM-I/O Plus
	Extra Analog and Digital I/O	SM-I/O Lite
	Extra I/O with RealTime Clock/Calendar	SM-I/O Timer
	120/240 Volt AC I/O	SM-I/O 120V
	Double Insulated Extended I/O	SM-PELV
	Remote Network I/O	See Options and Accessories

Option	Description	Order Code
Communications Solutions Modules	Modbus RTU (standard on drive)	SM-Applications <sup>3</sup>
	DeviceNet	SM-DeviceNet
	PROFIBUS-DP	SM-PROFIBUS
	Ethernet (Modbus TCP/IP)	SM-Ethernet
	INTERBUS-S	SM-Interbus
	CANopen	SM-CANopen
	CAN Interface	SM-CAN
	SERCOS	SM-SERCOS
	CTNet	SM-Applications
Pre-Programmed Solutions Modules	Dual Mode Winder Controller	SM-Winder
	Flying Shear Controller	SM-FSC
	Fan and Pump Duty Assist Controller	SM-DAC
Application Solutions Modules	Systems Programming (Distributed Control)	SM-Applications
	Systems Programming (Centralized Control)	SM-Applications Lite
	Dedicated Motion Control	SM-EZMotion <sup>4</sup>
Applications Module Programming Software	Ladder and Function Blocks	SyPTLite <sup>5</sup>
	IEC 61131-3 (Ladder, FB, and Text Based)	SyPTPro
Miscellaneous	Motion Made Easy Programming	PowerTools Pro
	Conduit Entry Plates	See Options and Accessories
	IP54 or IP55 Cooling Fans	Based on Drive (read ahead)

<sup>1</sup> Can be ordered separately, but comes standard with Unidrive SP

<sup>2</sup> These options can be ordered separately, but are normally part of the Unidrive SP Order Code

<sup>3</sup> Provides an additional Modbus RTU port (in addition to one on drive)

<sup>4</sup> Only one of these modules can be used in a Unidrive SP at a time

<sup>5</sup> Available via free website download only

## Operator Interface

### KEYPAD INTERFACE

The Unidrive SP can operate without a keypad, or with either the SM-Keypad or SM-Keypad Plus. The SM-Keypad is a full-function, 7-digit LED data display. The SM-Keypad Plus is a back-lit LCD display option that can be mounted on the drive or remote mounted. SM-Keypad Plus supports 5 languages, plus custom text database, on-line help, and HMI features. Both keypads are "hot-pluggable," enabling them to be moved from one drive to another without powering down.



SM-Keypad + No Keypad



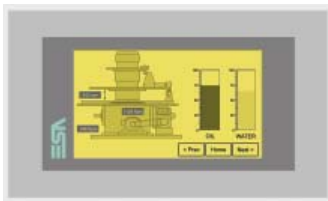
SM-Keypad Plus

### HUMAN MACHINE INTERFACE (HMI)

These operator interface units complement the CT product line by offering an impressive way of accessing parameters and adding more programming power to your application. The following features make these screens a simple and impressive solution for you... and your customers:

- Graphical full color and 4-tone monochrome touchscreen
- Menus, submenus, alarms, fault conditions,
- Realtime trends and graphs
- Scheduling and background programs
- Modbus RTU and Modbus TCP/IP
- Import pictures and graphics
- Advanced Recipe capabilities

For more information, refer to the Accessories Section.



VT155



VT525

## Power Accessories

### INTERNAL DYNAMIC BRAKING RESISTORS

During deceleration, the mechanical energy stored in the spinning mass of the motor and load is converted to electrical energy, which recharges the drive's DC bus. Dynamic braking resistors provide a means of rapidly dissipating that energy so that the drive does not fault from overcharging the DC bus. The ohmic value and power rating of the braking resistor is a function of the drive type and size.



Size 1 Unidrive SP heatsink shown

A zero-space braking resistor is available for heatsink mounting on Unidrive SP frame sizes 1 and 2. These resistors are designed for low-inertia loads commonly used in servo type applications. For higher-inertia loads, the heatsink mounted resistor may not have enough braking capacity, and a larger external resistor may be required. No thermal protection device is required with these heatsink-mounted resistor packages.

Unidrive SP Size	DC Resistance	Power Rating	Order Code
1	75 Ω	50W	SM-Heatsink DBR1
2	37.5 Ω	100W	SM-Heatsink DBR2

(Drives Larger than Size 2 do not have this option)

### E-STOP DUTY DYNAMIC BRAKING

Panel mounted DB resistors are designed for non-cyclic use where energy dissipation from an active drive is required. Resistors are supplied with mounting hardware unless otherwise noted.



See Options and Accessories section for details

### CYCLIC DUTY DYNAMIC BRAKING

These heavy-duty kits have been designed to provide dynamic braking for cyclic and continuous braking applications.



See Options and Accessories section for details

## EXTERNAL EMC FILTERS

EMC filters are used to minimize high frequency power supply line disturbances caused by PWM AC drives that may interfere with proper operation of sensitive electronic equipment. These specific filters have been assessed for conformance with the EMC directive by testing with the appropriate Control Techniques drives. The filters used with Unidrive SP have been designed to mount in either Footprint or Bookend dimensions, allowing the user to optimize panel space.



See *Options and Accessories* section for details

## IP54 AND IP55 FAN OPTIONS

For those applications using through-panel mounting, and located in demanding environments, Unidrive SP can be fitted with optional fans providing either IP54 or IP55 Ingress Protection Ratings. The chart below lists the available fan options.

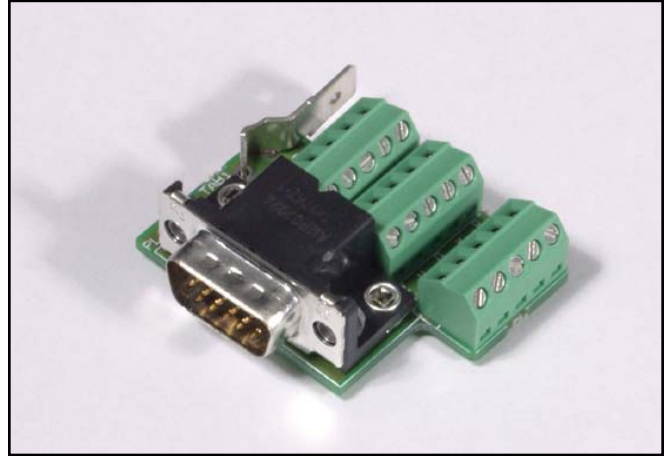


Unidrive SP Frame Size	IP54 Fan Option Order Code	IP55 Fan Option Order Code
1	3251-4824	3251-3824
2	3251-4824	3251-3824
3	N/A	3251-1224
4	3251-7824	N/A
5	Standard	N/A
6	Standard	N/A

Some additional parts are required for installation of these fans. Please contact Control Techniques Technical Support for details.

## ENCODER TERMINAL CONNECTOR

The 15 way D-Type Converter is used to simplify motor feedback wiring by "Breaking out" the 15-pin D-connector signals to screw terminals.



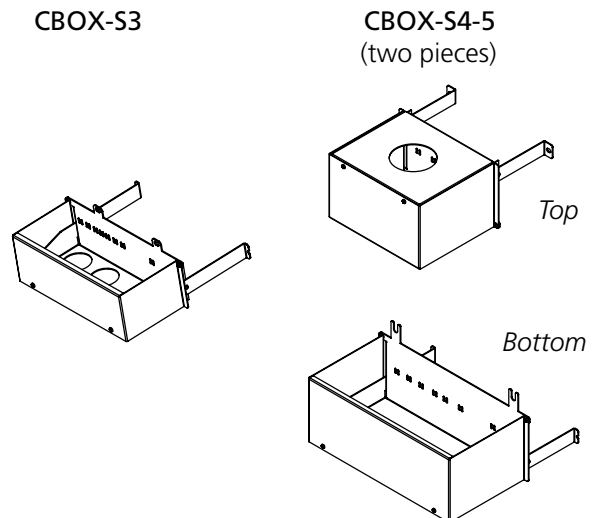
Description	Order Code
Encoder Screw Terminal connector	SM-ETC

## CONDUIT GLAND PLATES

New in 2005 and expanding in 2006 is the option of a conduit gland plate for Unidrive SP wall-mount drives. Currently, conduit mounting plates are available for Unidrive SP sizes 3, 4, and 5.

Unidrive SP	Model Number	Order Code
Size 3	CBOX-S3	960400-01
Size 4 and 5	CBOX-S4-5	960400-04

(Call factory for availability of conduit boxes for Unidrive SP sizes 1, 2 and 6.)



# Option Modules

## Feedback Modules

### SM-UNIVERSAL ENCODER PLUS

The SM-Universal Encoder Plus module provides the Unidrive SP with an additional feedback port that supports all of the same feedback types as the base drive, plus has a simulated encoder output that can be programmed to operate in the following modes:

- Quadrature Incremental
- Pulse and Direction
- SSI



The module also incorporates freeze inputs for applications requiring position capture.

### SM-ENCODER PLUS

The SM-Encoder Plus module provides an additional quadrature incremental encoder feedback port.



*Note: More than one SM-Encoder Plus and/or SM-Universal Encoder Plus module may be installed in a single drive.*

### SM-RESOLVER

This module enables the Unidrive SP to control the speed and position of motors fitted with resolvers. Because of their ruggedness, resolvers are often used in hot, demanding environments.

- Input Impedance:** >85 Ohms  
**Transformation Ratio:** 3:1 or 2:1  
**Excitation Frequency:** 6kHz



Maximum Motor Speed	Feedback Resolution	Quadrature Format
0-3,300 rpm	14 bit	4096
3,301-13,200 rpm	12 bit	1024
13,201-40,000 rpm	10 bit	256

This module also incorporates a simulated encoder output that can be sourced either from the resolver or the main drive encoder.

## Input / Output Modules

### SM-I/O PLUS

This module provides expanded digital and analog I/O for the Unidrive SP.

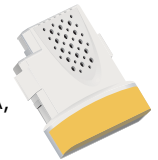
- 2 Analog Input (10-bit plus sign, ±10V)
- 1 Analog Output (10-bit plus sign, ±10V)
- 3 Digital Input/Output
- 3 Digital Input
- 2 Relay Contacts (2A @ 240VAC, 4A @ 30VDC)



### SM-I/O LITE

This module provides expanded digital and analog I/O for the Unidrive SP, in lower quantity than the SM-I/O PLUS above.

- 1 Analog Input (11-bit plus sign, ±10V, 4-20mA, or 0-20mA)
- 1 Analog Output (13-bit, 0-10V, 4-20mA, or 0-20mA)
- 3 Digital Input
- 2 Relay Contacts (2A @ 240VAC, 4A @ 30VDC)



### SM-I/O TIMER

As per SM-I/O LITE above, but with the addition of a Real Time Clock and Calendar for scheduling drive events.

- Access to Year, Month, Day, Hour, Minute, Second, and Daylight Savings Mode



### SM-I/O 120V

This module provides digital I/O rated for 120 or 240VAC for the Unidrive SP. These I/O conform to IEC 61131-2 120VAC standard.

- 6 Digital Input (120VAC or 3 Digital Inputs @ 240VAC)
- 2 Relay Contacts (2A @ 240VAC, 4A @ 30VDC)



### SM-I/O PELV

This module provides PELV (Protective Extra Low Voltage) double insulated digital and analog I/O to meet IEC 61131-2, Clause 3.3.1 Type as well as NAMUR NE37 specifications for chemical industry applications.

- 2 Analog Input (4-20mA or 0-20mA)
- 1 Analog Output (4-20mA or 0-20mA)
- 1 Digital Input
- 4 Digital Input/Output
- 2 Relay Contact (2A @ 50VAC, 4A @ 30VDC)



## Application / Programming Modules

### SM-APPLICATIONS

The SM-Applications module transforms your Unidrive SP drive into a powerful automation controller that adds PLC functionality and can connect to devices via our drive-to-drive network CTNet. This gives you all of the benefits of a fully distributed control system including better performance, reduced cost and smaller electrical panel sizes.



**Performance** – The SM-Applications module contains its own high performance microprocessor, leaving the drives own processor to give you the best possible motor performance. It contains 384K of user program memory, meaning that you are never likely to be limited by the program size or processing power of the module.

**Easy Powerful Configuration** – The PLC functionality is programmed using SyPTPro (System Programming Tool) allowing you to tackle automation problems from simple start and stop sequencing to more complex machine and motion control applications. The device is programmed within an IEC61131-3 environment with your choice of 3 languages; Ladder Logic, Function Blocks, and text based programming. SyPTPro provides a suite of diagnostic and debugging features for maintenance and to help you to get your solution into service faster.

**Real Time Control** – SM-Applications module gives you real-time access to all of the drives parameters plus access to data from I/O or other drives. The module uses a high-speed multi-tasking operating system with task update times as low as 250µs. Tasks are fully synchronized to the drives own control loop to give you the best possible performance for drive control and motion.

**Inputs/Outputs** – The module has two digital inputs and two digital outputs for high-speed I/O operations such as position capture or actuator firing. The module also features an optically isolated RS485 port, supporting standard protocols such as; Modbus for connection to external devices like Operator Interface panels, or CTSync which is a protocol used for synchronous communication between drives.

### SM-APPLICATIONS LITE

The SM-Applications Lite module is designed to solve your automation requirements where intelligence is needed on a standalone drive or a drive connected to a centralized controller via I/O or Fieldbus.



The Module provides many of the same functions of SM-Applications but may be programmed using either SyPTLite or SyPTPro. SM-Applications Lite with SyPTLite gives you an intermediate level automation solution that is suitable for a wide variety of applications, while SyPTPro and SM-Applications Lite will allow you to exploit the full power and performance of the option module in 'stand-alone' applications.

### SM-EZMOTION

The SM-EZMotion is ideal for all of your motion control applications whether simple or highly complex. Windows-based PowerTools Pro configuration software helps to simplify applications while maintaining flexibility and functionality.



The module is equipped with four high speed digital inputs and two digital outputs for external control. Simplify all of your motion applications by using the built-in High-Speed Capture, Queuing, Profile Summation, and Program Multi-tasking capabilities. Ease of use defines this multipurpose motion controller. Take advantage of all its features to quickly solve these applications:

- Simple Indexing
- Pick and Place
- Flying Shear
- High Speed Labeling
- Phase Synchronization
- Random Infeed Control
- Rotary Knife
- And many more...

See the Motion Control section of this catalog for more detail on PowerTools Pro Software, which features Motion Made Easy™ programming with Drag and Drop, Point and Click, and Fill in the Blank.

## Communication Modules

### SM NETWORK COMMUNICATION MODULES



DeviceNet

PROFIBUS

INTERBUS  
Certified! No. 197

CANopen

Ethernet

SERCOS interface

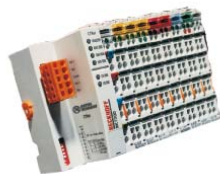
CTNET

Communications Protocol	System Configuration	Interface Module Order Code
Modbus RTU*	Master/Slave	SM-Applications
DeviceNet	Slave	SM-DeviceNet
PROFIBUS-DP	Slave	SM-PROFIBUS-DP
ModbusTCP/IP	Slave	SM-Ethernet
INTERBUS	Slave	SM-INTERBUS
CANopen	Slave	SM-CANopen
CAN Interface	Master/Slave	SM-CAN
SERCOS	Slave	SM-SERCOS
CTNet	Peer-to-Peer	SM-Applications

\* Modbus RTU is standard on Unidrive SP. An additional Modbus RTU port can be provided with an SM-Applications module.

### REMOTE NETWORK I/O

The high-quality Beckhoff I/O system is available for systems using the CNet communication network. A CNet port is standard on a SM-Applications module.



Beckhoff systems for CNet include an I/O bus coupler and a large variety of snap-on terminal blocks allowing up to 256 digital inputs or outputs and up to 100 analog inputs and outputs per bus coupler. Up to 64 Beckhoff I/O systems can be attached to a CNet network. I/O points can be easily read or written. Contact Control Techniques for details on the wide range of available Beckhoff Remote I/O options.

## Drive Configuration and Programming

### SMARTCARD

This is a standard feature that enables simple configuration of parameters in a variety of ways. The SmartCard can:

- 'Clone' a complete set of parameters for serial production
- Save multiple complete sets of parameters
- Set up an application as parameter differences from default
- Automatically save all user parameter changes for maintenance purposes
- Load complete motor map parameters
- Read/write SmartCard information from within SM-Applications and SM-Applications Lite programs.

The drive only communicates with the SmartCard when commanded to read or write, meaning the card may be "hot swapped".

Description	Order Code
Plug-In drive configuration card. Save/Copy complete drive parameter mapping.	SMARTCARD

### COMMUNICATION CABLE

Using a special RS232 to RS485 converter you can connect the PC to the RJ45 drive. A special pre-made cable is available from Control Techniques for this purpose – this CT Comms



Cable is used with other Control Techniques products that use a RJ45/RS485 connector such as the Commander SE and Commander SK.

The RJ45 socket is located under a small flap on the front of the Unidrive SP just below the keypad. The pin-out of this connector is described in the Unidrive SP User Guide.

Description	Order Code
PC-to-drive Comms Cable	CT Comms Cable

# Unidrive SP

## Software Overview

### DRIVE CONFIGURATION TOOLS (CTSOFT)

CTSoft is a free Windows based drive configuration tool designed to enable the complete control and display of all parameters within a Unidrive SP. Functions within CTSoft allow data to be uploaded, viewed and saved, or retrieved from disk, modified and printed. It can be used off-line in the office or on-line in the factory. CTSoft communicates with the Unidrive SP via the computer's serial port to the drive's RS485 port using a communications cable (CT Comms cable) or via SM-Ethernet module. For more information, refer to the Software Section.

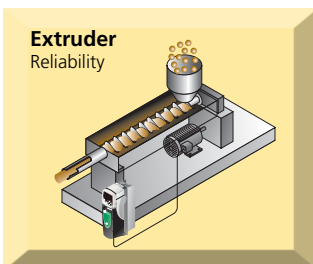
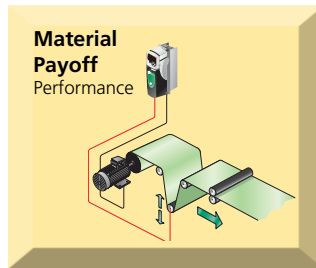
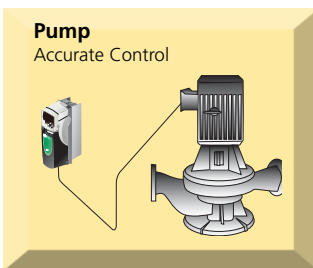
Some of CTSoft's capabilities include:

- Remote Upload/Download
- Parameter Saving
- Drive and SM-Application Reset
- Monitor Screens
- Multiple Window Display
- Block Diagram Animation



CTSoft IS SUPPLIED WITH THE DRIVE OR YOU CAN DOWNLOAD FROM [www.emersonct.com](http://www.emersonct.com) --go to downloads

### TYPICAL APPLICATIONS



## Application Programming Software

### SYPTLITE AND SYPTPRO

Control Techniques has developed a programming tool called SyPT (or System Programming Tool) for OEM's and End Users that allows engineers and machine designers to maximize the functionality of the Unidrive SP and other Control Techniques drives. Whether programming a simple single-drive application that requires Run and Stop controls, or fully networked multi-drive control systems for machine and process control applications, SyPT helps the user to solve the application.

To cover the wide range of application complexity, SyPT is available in two versions called SyPTLite and SyPTPro. SyPTLite is used to create simple or complex Ladder Logic programs that can be used to control the drive, and even to replace small PLC's that control machine I/O. SyPTPro is for the advanced machine programmer, and gives the user IEC-61131-3 style programming with Ladder Logic, Function Block, and DPL (text-based) editors. SyPTPro is used for complete machine control and/or motion control by configuring all drives and control modules, as well as replacing costly PLC's used just for machine I/O.

Scalable PLC capability is accomplished using Solution Modules, which provide added memory, I/O, and connectivity options, i.e., the SM-Applications Lite and SM-Applications module. (See Software section.)



YOU CAN DOWNLOAD SyPTLite FROM [www.syptlite.com](http://www.syptlite.com)

### POWERTOOLS PRO

PowerTools Pro is a Windows-based software program used to develop "Motion Made Easy"™ motion control applications, and is employed when an SM-EZMotion module is used with the Unidrive SP. PowerTools Pro is used to develop sophisticated motion programs in minutes instead of hours, and is ideal for solving a full range of axis and axis-and-a-half applications. (See the Motion Control section for details.)



YOU CAN DOWNLOAD PowerTools Pro FROM [www.emersonct.com](http://www.emersonct.com)

## Pre-packaged Solutions for Unidrive SP

“Solutions” for the Unidrive SP enable quick startup on some of the most common industrial applications.

### solutions Dual Mode Winder

The Dual Mode Winder Application Software is the result of over 35 years of programming successful winder applications for a wide variety of materials and industries. The term “Dual Mode” refers to the ability of the software to switch between torque and speed control modes, often a critical requirement in demanding applications such as high speed dual-turret, flying splice machines. The Dual Mode Winder Application Software supports over 95% of industrial winding applications. The addition of an SM module loaded with the Dual Mode Winder software provides a low cost flexible solution for a wide variety of winding applications.

#### Paper and Film Unwind and Rewinders

- Single or multi spindle
- Low tension high speed unwinds

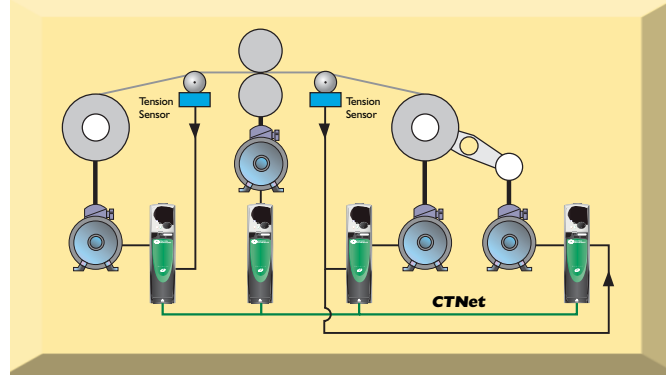
#### Metal Coilers and Uncoilers

- Speed based control for thin strip with precise tension control
- Torque based control for heavy strip without tension feedback
- Speed/Torque control switching on the fly
- Wire, Cable and Textile Spoolers
- Torque or speed controlled spoolers

#### Wire, Cable and Textile Spoolers

- Torque or speed controlled spoolers

Solutions Software	Order Code
Dual Mode Winder	SM-WINDER



#### Standard Features

- Torque Control Mode, including Constant Tension Center Wind
- Speed Control Mode
- Dancer Feedback
- Load Cell Feedback
- Dancer Air Loading Output
- Line Speed Input
- Diameter Calculator
- Inertia Compensation
- Taper Tension – linear or hyperbolic
- Unwind/Rewind Selection
- Web Break detection
- Stall Tension adjustment
- Multiple Preset Diameters
- Jog
- Torque Memory
- All data entry done using Engineering Units

#### Accessories

- Fieldbus communication options: Modbus, DeviceNet, CANopen, PROFIBUS DP, INTERBUS, Ethernet and CTNet
- Expanded I/O option
- CTNet Modular I/O
- Range of HMIs
- Dynamic Braking
- Regenerative Braking

## solutions Flying Shear Control

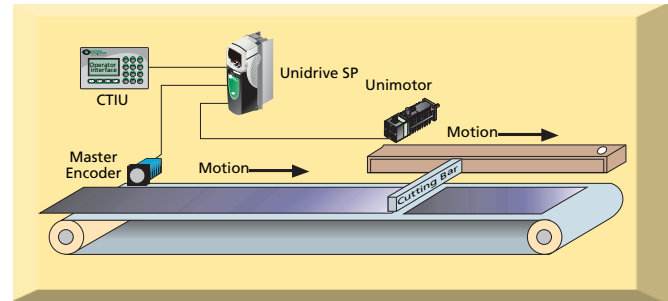
The Flying Shear is a common industrial application for cutting a continuous product to a set length while at line speed. This means that the main production process is not interrupted, and so machine productivity is maximized.

Typical applications include various types of cut to length machines, depositors, punches, product inspection, or any other process where synchronization at line speed is required.

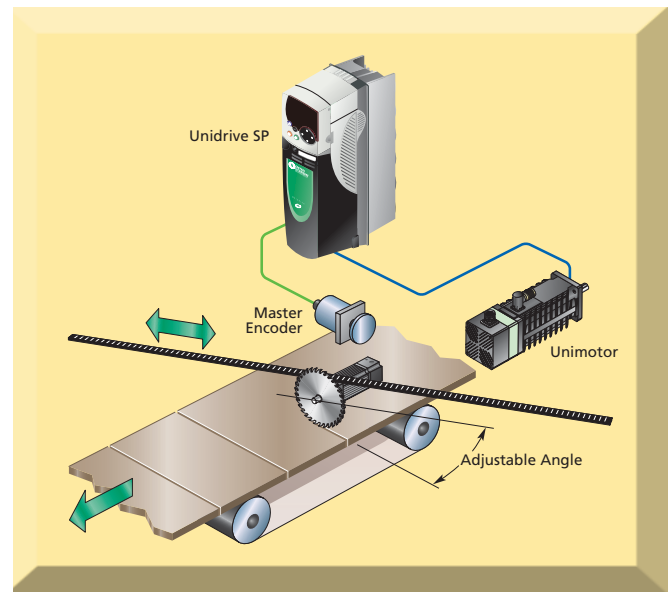
### Standard Features

- Easy configuration
- Hardware and software limits
- Manual jog functions
- Several homing modes
- High speed output is used to initiate the cut
- Registration capture
- Batch control functions
- Dynamic motion profile changes on the fly
- Engineering units are used for programming
- Units are defined for the master and slave axis as the number of encoder counts per unit. These are entered as a numerator and denominator to allow fractional values
- Resolution of the 'cut-length' may be entered to within 0.001 units
- Profile optimization reduces the machines mechanical stress: The return profile is calculated to operate at the slowest speed and acceleration rate, and yet with sufficient time to achieve the next cut, either triangular or trapezoidal profiles are used
- Parallel and angled carriage applications are handled

### Flying Shear - Incline



### Flying Shear - Angled



Solutions Software	Order Code
Flying Shear Control	SM-FSC

### Accessories

- Fieldbus communication options: Modbus, DeviceNet, CANopen, PROFIBUS DP, INTERBUS, Ethernet and CTNet
- Expanded I/O option
- CTNet Modular I/O
- Range of HMIs
- Dynamic Braking
- Regenerative Braking

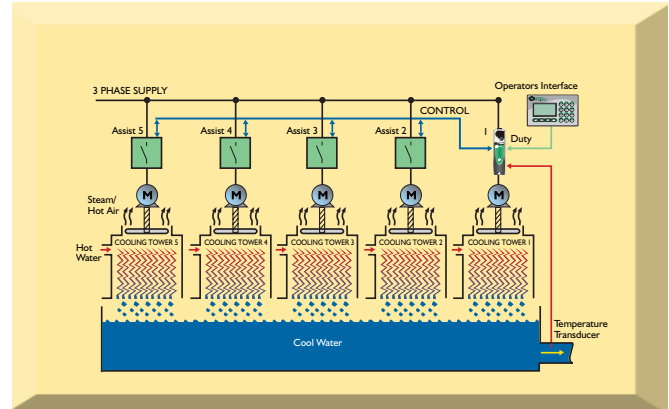
# solutions Fan & Pump Duty Assist

The Duty-Assist control is an effective method of controlling multiple pumps or fans in parallel to maintain the required process demand. Pumps and fans are often used in parallel banks to avoid motor overload, guarantee security of supply through system redundancy, reduce running costs due to system load cycles, and provide a wide range of control and flexibility.

The system consists of a 'Duty' Drive and assist starters. The assist starters can be of any type, (e.g, Contactor, Wye-Delta, Auto-Transformer, Soft Starter or Inverter); the choice is dependent on the system limits. The Duty drive can control one dedicated motor (Fixed Duty), or with additional external switchgear could be selected to control other motors within the parallel configuration (Flexible Duty).

### Standard Features

- Fixed Duty Motor – up to 4 assist starters can be controlled
- Flexible Duty Selection – up to 3 assist starters can be controlled
- Assist or Duty selection by Runtime (to ensure each pump/fan is equal used) or a set sequence
- Automatic reselection requested assist fails to start
- Local/Remote: Digital control from Unidrive SP terminal I/O or via fieldbus
- Stand-alone or system configurable
- Set-points and feedback can be derived as direct analog signals or by fieldbus
- 2 selectable process set points for use with day/night function
- Process High and Low trip thresholds (selectable)
- Inverse Speed characteristic (selectable)
- No Flow Protection (selectable)
- Wake/Sleep, Energy save function (selectable)
- Dynamic V/F, Energy save function (selectable)
- Cascade System Stop (selectable)



### More Features

- Auto-changeover to ensure starters are not continually running for long periods of time
- Assists number of starts per hour protection (selectable)
- Assist Override delay to react to peak demands (selectable)
- All data entry for set-up in engineering units

### Accessories

- Fieldbus communication options: Modbus, DeviceNet, PROFIBUS DP, INTERBUS and CTNet
- Expanded I/O option
- CTNet Modular I/O
- Range of HMIs
- Dynamic Braking
- Regenerative Braking

Solutions Software	Order Code
Fan and Pump Assist	SM-DAC

## "One Source" for AC products

Control Techniques can supply AC motors from 1/4hp to 1500hp. Motor enclosures include totally open drip proof, totally enclosed fan cooled, totally enclosed non-ventilated, and totally enclosed blower cooled. A variety of voltages are available along with mechanical and electrical modifications and accessories. Control Techniques can supply virtually any type of AC variable speed motor to meet your needs.

# ONE

## SOURCE

### General Purpose Motors

*Ideal for fans, pumps, conveyors, mixers, and other general purpose applications using the Unidrive SP and Commander series of drives.*



### High Performance Vector Motors

*For use with the Unidrive SP in converting, printing, metals, paper, film and foil where precision, speed, and/or motor feedback are required.*



### Washdown Motors

*For food and beverage and other clean applications, our washdown, and corrosion proof motors are a perfect match for our Commander SX NEMA 4X open or closed loop drive.*



### Other Speciality Motors

*From chemical and aggregate duty motors to explosion proof motors, the One Source programs means we can get you a complete solution at the best value for your motor needs from 200V to 690V.*

