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EMERSON
Industrial Automation

Drives, Servos and Motors

Product Overview



**CONTROL
TECHNIQUES**

www.controltechniques.com

CONTROL TECHNIQUES - A UNIQUE SET OF BENEFITS

Control Techniques, a division of Emerson, designs, manufactures and sells drives for controlling motors. Using innovative technologies, Control Techniques offers a premium product range, backed-up by a global sales and technical network with expertise and support in over 60 countries. Control Techniques brings a unique set of benefits to OEMs, System Integrators and end-users alike.

1 A long and productive life

To achieve premium reliability and build quality, Control Techniques drives are designed using advanced design and simulation methods together with comprehensive type testing, they are manufactured using high quality materials and components, ensuring the robustness and performance of your drive over a long and productive life.

2 Drive performance is in our DNA

The Unidrive, Mentor and Commander brands are synonymous with motor performance. Control Techniques have an established reputation for unbeatable closed loop and servo drive technology. Our Rotor Flux Control (RFC) algorithm gives near closed loop performance with open loop AC motor installations.

3 Easy to use

Control Techniques products are designed to be easy to fit, connect and configure. Auto tune algorithms take the time and complexity out of tuning to give great performance with minimal effort. Easy to use software tools provide a friendly and functional user interface for configuration, troubleshooting and backing up drive settings.

4 Integrated Intelligence

Control Techniques drives are intelligent, for example, Unidrive SP features an integrated programmable controller. Onboard intelligence can significantly increase the overall system performance and often allows the removal of external programmable logic controllers and motion controllers, reducing costs and the cabinet size.

5 Twenty four - seven

Our fieldbus connectivity options allow the drives to integrate seamlessly with virtually any new or existing automation system. Ethernet allows remote drive access for configuration, monitoring and troubleshooting across the globe 24/7.

6 Always small enough to fit

Control Techniques products are among the most compact on the market. The Commander SK and Unidrive SP ranges employ an SMC thermo-setting plastic chassis to reduce the size and weight and increase the mechanical strength of the drive.

7 All around the world, just around the corner

Control Techniques is a global player with manufacturing and research and development facilities in Europe, America and Asia. Our Drive and Application Centres in 54 locations in 31 countries offer local technical sales, service and design expertise, many also offer a comprehensive system design, build and commissioning service. A network of distributors covers a further 38 countries.

8 Engineers like to talk to engineers

Market research has shown that customers choose Control Techniques because they have confidence in our ability to provide solutions where product performance and quality support are most highly valued. Our approach to the market via Drive Centres and highly skilled Distributors gives us a unique insight into your requirements for a wide range of drive applications and industries. This also ensures a skilled engineer is always on hand to speak with.

THE FLEXIBLE DRIVES RANGE FOR EVERY APPLICATION

Selecting your Control Techniques Drive could not be easier, every product family spans a wide power range and product flexibility allows the drives to be applied in a wide range of applications.

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Commander SK
General Purpose AC Drive

Voltage	Typical Power	
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200 / 240 Volts 1 Phase	0.25kW - 3kW	
200 / 240 Volts 3 Phase	1.1kW - 45kW	
380 / 480 Volts 3 Phase	0.37kW - 132kW	
500 / 575 Volts 3 Phase	2.2kW - 110kW	
500 / 690 Volts 3 Phase	15kW - 132kW	



Unidrive SP Panel Mounting
High Performance AC and Servo Drive

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380 / 480 Volts 3 Phase	0.75kW - 132kW	
500 / 575 Volts 3 Phase	2.2kW - 110kW	
500 / 690 Volts 3 Phase	15kW - 132kW	



Unidrive SP Free Standing
Higher Power Performance AC Drive

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Unidrive SP Modular
High Power Modular AC Drive

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Intelligence, Communications and Software
Unlock the performance

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COMMANDER SK 0.25kW – 132kW

100V / 200V / 400V / 575V / 690V

General Purpose AC Drive

Overview

Commander SK is easy-to-drive and great value. The drive modules are ultra compact and offer excellent motor control. With onboard intelligence, I/O, Ethernet and fieldbus communications options, Commander SK allows you to do much more than you would expect from a general purpose drive.

Applications

Commander SK is ideal for a wide range of applications, including:

- Pumps
- Fans
- Conveying
- Mixing
- Chemical dosing
- Centrifuges
- Door and barrier opening systems
- Food and beverage applications

In these applications energy efficiency and productivity improvements often result in a rapid return on project investments.

Benefits

- Ultra-compact modules, resulting from advanced thermal design, state-of-the-art power technologies and the use of a rigid SMC plastic chassis
- Optimised for both heavy duty and fan and pump applications
- Can be easily integrated within an automation system using Control Techniques click-in fieldbus option modules including Profibus, DeviceNet and CanOpen
- Ethernet connectivity allows global drive access for monitoring, configuring and troubleshooting
- Optional SmartStick allows the drive configuration to be stored and replicated, ideal as a parameter back up and for mass/batch production applications





- Optional LogicStick adds program memory for onboard PLC functionality, adding intelligence to the drive. This can remove the need for external PLCs and reduces size and costs
- Easy to use remote mounting keypad with IP66 protection
- Operation with global power supplies – 100V, 200V, 400V, 575V and 690V



IP66 Remote Keypad

- The built in EMC filter is suitable for most applications and can be easily switched in or out of circuit. When more arduous EMC standards must be met, such as for residential environments a range of compact footprint mounting filters are available
- The drive has an RS485 serial port as standard and is supplied with software and documentation CD for easy configuration and monitoring
- Low power drives may be mounted on DIN-rail for quick and easy installation
- The drive has an integrated keypad with all the parameters you need for typical applications detailed on the drive
- Worldwide product expertise and support
- Worldwide certifications including CE and UL

For more information please refer to the Commander SK brochure, part number 0175-0349





UNIDRIVE ^{SP} PANEL MOUNTING 0.75kW – 132kW

200V / 400V / 575V / 690V

High Performance AC & Servo Drive

Overview

Unidrive SP is the market leader in intelligent drives; the Panel Mounting version is a standard drive module for system integration and standalone applications. It is extremely flexible, with five modes of operation:

- Open loop V/Hz AC drive
- Open loop Vector AC drive
- Closed loop AC drive
- AC servo amplifier for rotary and linear motors
- Regenerative (Active) power supply

Three Control Techniques click-in option module slots allow the drive to be uniquely customised to your application allowing you to select the level of intelligence, connectivity and I/O you need.

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 while the compact dimensions make it ideal in new and retrofit energy saving installations. Typical applications include:

- High speed machines
- Crane and hoist

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





Benefits

- Universal drive and option module flexibility future proofs your investment, it also means you only fit the features you need, reducing costs, removing complexity and increasing spares availability
- The same control philosophy through the whole drives range reduces the learning curve
- Unidrive SP can be easily configured to operate as a regenerative, active front end with power factor control - eliminating harmonics and returning excess braking energy to the supply, further reducing your energy costs
- Scalable intelligence reduces the required cabinet size and increases system performance, especially with high speed machines and motion applications
- Unidrive SP can easily be integrated in an automation system using one or more click-in fieldbus option modules. Profibus, DeviceNet, Ethernet/IP, CanOpen, SERCOS, LonWorks and Interbus are fully supported and certified
- Rotor Flux Control (RFC), a standard feature on Unidrive SP, is a step forward in open loop motor control resulting in near closed loop performance with no feedback device
- Compact design and reduced weight achieved through advanced thermal design, the use of low loss IGBTs and a rigid SMC plastic chassis
- Secure disable feature reduces system costs in machine safety designs
- Ethernet connectivity allows global drive access for monitoring, configuring and troubleshooting
- Product performance and reliability has been proven in hundreds of thousands of applications
- Operation with global power supplies – 200V, 400V, 575V and 690V
- Worldwide product expertise and support
- Worldwide certifications including CE and UL

For more information please refer to the
Unidrive SP brochure,
part number 0175-0339





UNIDRIVE ^{SP} FREE STANDING 90kW – 675kW

Higher power performance AC drive

Overview

The Unidrive SP Free Standing drives range offers the same advanced feature set as the panel mount drives but in a pre-engineered convenient package, which can be connected to industry standard cabinets. The drives offer industry leading power / size ratios.

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 solution reduces design time, lowers project risk and allows you to focus on getting the application engineering right
- Compact cabinet reduces the space requirement, especially important in retrofit applications:
355kW = 400mm wide & 675kW = 800mm wide
- Industry standard form factor and colour allows the cabinets to integrate with new and existing cabinets
- Optional Incomer and System Shell cabinets allow you to integrate your power and control equipment alongside the drive
- Available with and without braking transistors to optimise costs for your application
- IP21 and optional IP23 enclosures enable more compact cabinet dimensions

For more information please refer to the Unidrive SP Free Standing brochure, part number 0175-0346





UNIDRIVE ^{SP} MODULAR 90kW – 1.9MW

Modular high power performance AC drive

Overview

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

Applications

The Unidrive SP Modular 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:

- Energy saving with very high power fans and pumps
- Metal production and processing
- Large cranes
- 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

Benefits

Unidrive SP Modular drives enjoy the same advantages as the Panel Mounting drives with the following additional benefits:

- Higher power motors are controlled using Unidrive SP modules connected in parallel. This is an economic and compact solution that simplifies installation and improves servability
- Allows you to use a DC bus system to recycle energy between simultaneously braking and motoring drives such as in a winder / unwinder configuration
- Minimise harmonics with 12, 18 and 24 pulse operation to allow you to meet and exceed stringent supply regulations
- Eliminate harmonics using an active front end



For more information please refer to the Unidrive SPM brochure, part number 0175-0345





UNIMOTOR FM 0.75Nm - 73Nm

Performance AC Brushless Servo Motor

Overview

Unimotor FM is a brushless AC servo motor range performance matched for use with Control Techniques Servo drives. FM is an acronym for Flexible Motor, designed to accommodate a wide range of applications. The motors are available in six frame sizes with various mounting arrangements and motor lengths.

Applications

Unimotor FM is suitable for applications where precision motion and/or dynamic control is required. Typical applications include:

- High speed machinery
- Flying shear and rotary knife applications
- Pick and place
- Materials handling
- Printing
- Textile machinery

Benefits

- Unimotor FM allows various feedback devices to be used. As standard an incremental encoder is fitted as this offers an optimum balance of cost and performance. SinCos and Control

Techniques advanced SLM feedback can be selected for increased resolution. Resolver feedback is available for increased reliability in extreme environments

- High peak torque values allow smaller motors to be used where the RMS value is low but the maximum torque is high
- A wide selection of ready made cables are available for quick and easy connection to Control Techniques drives
- High inertia versions are available to allow the motor inertia to be more closely matched to the load inertia for increased performance and stability
- IP65 environmental protection is standard and ATEX protection available as an option
- Motor brakes may be integrated within the motor, a choice of parking brake or high energy dissipation brake is available
- Flexibility of the Unimotor range ensures the best fit for your application, as well as the various physical sizes and feedback devices available, options extend to the type of connectors fitted

For more information please refer to the Unimotor FM brochure, part number IM/0143/M1





SLM TECHNOLOGY SERVO DRIVES

Precision Servo Amplifiers

Overview

SLM (Speed Loop Motor) Technology forms the basis for Control Techniques range of Precision servo amplifiers, based on a digital high-speed communication system that links the controller, motor and amplifier. The feedback resolution provides over 8 million counts per revolution and the speed, current and position loops are updated every 125ms to provide optimum performance. The amplifier range consists of three drive types:

- **M'Ax** provides a single high performance SLM axis for motors of up to 20Nm
- **MultiAx** integrates three high performance SLM axes in one module for servo motors of up to 23Nm
- **Unidrive SP** utilises a Control Techniques click-in SLM option module to provide a single high performance SLM axis for use with higher power and higher speed motors

Applications

SLM Technology has been applied in a wide range of applications where high-fidelity motor control is a requirement. Typical applications include:

- Machine tool application
- High-speed printing
- Precision packaging
- Woodworking machinery
- Robotics

Benefits

- The high speed SLM digital link requires only 4 wires between the motion controller, motor and amplifier greatly reducing the number of connections and increasing system reliability
- High resolution encoder and the fast digital link allow the system to operate with higher gains than would usually be possible, this greatly increases the dynamic response of the system
- SLM technology utilises an SLM encoder, to reduce the effect of noise, the analogue signals are converted to a digital position value on the back of the motor; this greatly improves feedback quality and increases positioning accuracy
- A wide range of third party motion and CNC controllers are available for connection to SLM amplifiers and motors
- Motor data is stored digitally during the manufacturing process within the motor encoder; this removes the need to input motor information, simplifies tuning and removes the need to re-configure the system if the motor is changed
- Compact Amplifier modules reduce the cabinet space required

For more information please refer to the M'Ax Brochure, part number 0175-0152 and MultiAx brochure, part number 0175-0153





MENTOR II 25A - 1850A (75kW - 750 kW)

208V - 660V

High performance DC drive

Overview

Mentor II is the world's favourite DC drive, installed in hundreds of thousands of applications across the world, providing the reliability, power and control to increase productivity for both new machines and applications where DC motors are already installed.

Applications

Many DC drive applications are for retrofit systems to improve the performance and prolong the life of existing plant and machinery. New applications for DC drives include:

- High Power applications
- Pulp and Paper processing
- Ski lifts
- Winding and unwinding
- Metal Rolling and processing

Benefits

- Powerful onboard intelligence allows the drives functionality to be finely customised to the application and allows the removal of troublesome analogue control circuits
- Standard winder and flying shear software allow Mentor to be integrated quickly and easily
- Modular approach to high power drives allows multiple Mentor II drives to be connected in parallel or series to economically achieve the required motor current and voltage rating
- MentorSoft, a windows based software provides an intuitive environment for configuring the drives functionality
- Our knowledge and experience in DC drive systems allows us to recommend the best solution for your individual circumstances
- Mentor II integrates closely with the Control Techniques AC drives using CTNet, drive-to-drive communications
- Regenerative and non-regenerative modules available to suit your application
- Fieldbus options including Profibus and DeviceNet allow Mentor to be integrated within an automation system
- Worldwide expertise and support

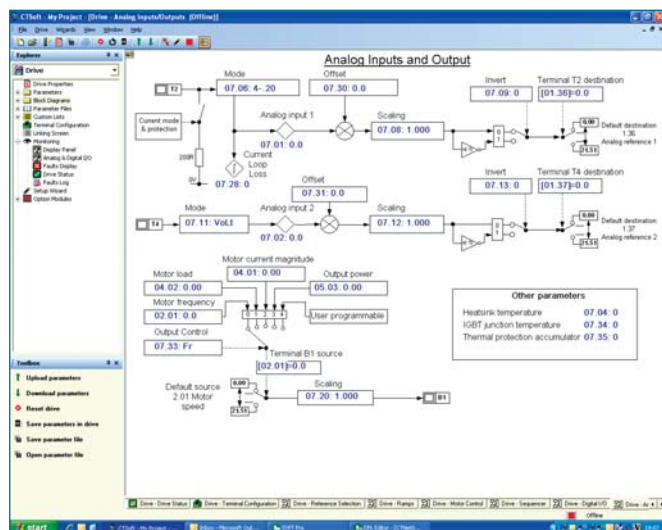
For more information please refer to the Mentor II Brochure, part number 0175-0106



INTELLIGENCE, COMMUNICATION & SOFTWARE

Unlock the potential

Control Techniques drive configuration tools make it easy to access the drives feature set, they allow you to optimise the drive tuning, back-up the configuration set and they allow you to troubleshoot more quickly. All of the software tools including SyPT use the same communication component allowing them to run simultaneously using, Ethernet, CTNet, RS485 or USB communications.

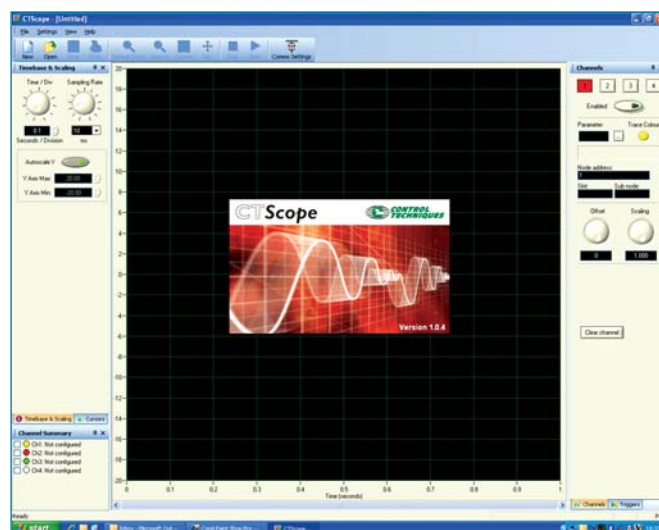


CTSoft

CTSoft is the main configuration tool for Control Techniques AC drives, it allows you to:

- Use the configuration wizard to commission your drive
- Save, load and download drive configuration settings
- Visualise the configuration using live, animated logic diagrams
- Modify the configuration from within an intuitive, user friendly environment

For evaluation, download
the full version from
www.controltechniques.com



CTScope

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

For evaluation, download
the full version from
www.controltechniques.com



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.

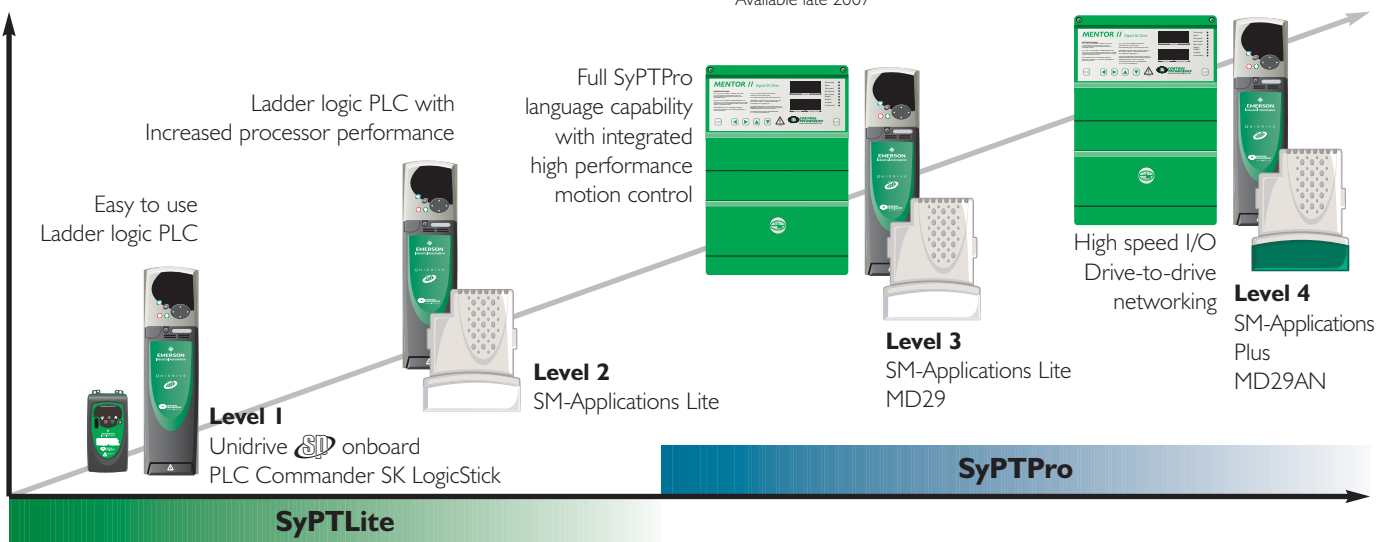
Integrate | Automate | Communicate

Control Techniques drives support a wide range of click-in option modules that allow them to integrate seamlessly with existing automation systems and other vendor supplied equipment. These include communications, I/O, feedback devices and onboard PLCs. Unidrive SP uses a high speed parallel bus between the drive and option modules, this removes delays, improving the drives reaction time. Communications interfaces are independently certified for conformance with the relevant standards to ensure performance and interoperability.

Control Techniques is the market leader in intelligent drives. Optional SM-Applications modules for Unidrive SP and MD29 for Mentor add a high performance automation controller that is integrated within the drives footprint. It is capable of providing real time control in dynamic applications such as motion and elevator controls, and can be networked for applications such as printing, process lines and production machines. The following diagram illustrates the different levels of intelligence that can be integrated within Control Techniques drives.

	Option / Standard	Commander SK	Unidrive SP	Mentor II
Profibus	Option	✓	✓	✓
DeviceNet	Option	✓	✓	✓
Interbus	Option	✓	✓	✓
CanOpen	Option	✓	✓	
Ethernet HTTP, SNTP, SMTP, FTP	Option	✓	✓	
EtherCAT*	Option	✓	✓	
Ethernet/IP	Option	✓	✓	
Modbus TCP/IP	Option	✓	✓	
Modbus RTU	Standard	✓	✓	Option
LON	Option	✓	✓	
CTNet	Option		✓	✓
SERCOS	Option		✓	
SLM Technology	Option		✓	
USB	Option	✓	✓	

*Available late 2007



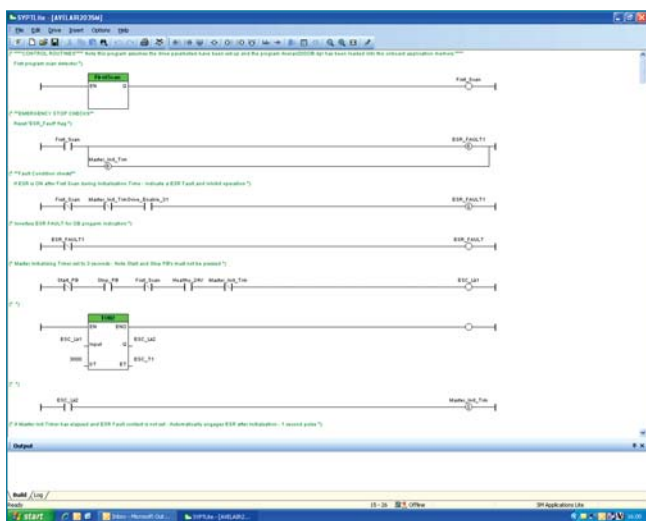
Intelligence drives your productivity

Control Techniques AC and DC drives have the capability to be intelligent; this means they can be programmed using industry standard languages such as ladder, function block and structured text. The programming environment is called SyPT meaning System Programming Tool:



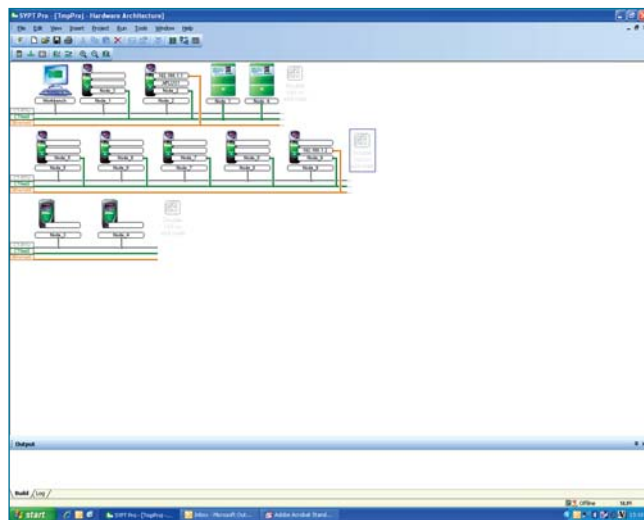
An easy-to-use ladder logic program editor, suitable for simple drive applications, SyPT Lite is ideal for controlling basic logic and sequencing within Commander SK and Unidrive SP products.

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



SyPTPro is a full featured automation development environment that can be used for developing 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 up to 1.5 axes. CTNET, a high-speed, deterministic drive-to-drive network links the drives, SCADA and I/O together to form an intelligent networked system, SyPTPro manages both the programming and communications.

Download an evaluation version from www.syptpro.com.



For more information please refer to SyPTPro brochure, part number 0175-0334

