

## Accessories

### *Quick and Smart* **Software**

Complete Industrial Automation Solutions require a multitude of components for a wide range of applications. Control Techniques offers an extensive line of accessories designed to easily integrate our high performance drives into your equipment, systems, and/or process line.

Unisoft, CTSoft, SESoft and MentorSoft make all of our drives easy to program and simple to setup. Our Windows based configuration tools make start-up fast.

### *Distributed Control* **Networking**

Our programming and utility tools include SyPT, a multi-drive Integrated Development Environment (IDE) allowing the designer to code, download and debug distributed applications from a single workstation attached to the CTNet network.

### *Easy Interface* **Control**

With the multitude of communication protocols available today, CT allows you to work in the language of your choice. Our coprocessor option modules interface directly with most standard industrial networks including DeviceNet, Profibus DP, InterBus-S, CANOpen, and others.

### *Drive Protection* **Power**

To maximize your equipment performance or process automation system, CT provides connectivity from SCADA through remote keypads and all points in-between. Our unique open communication platform allows drive-to-drive, drive-to-PLC, drive-to-I/O and drive-to-operator interface communication.

Control Techniques provides DB Resistors, isolation transformers, filters, and line and load reactors that protect your drive system and enhance safe operation.

# Software

## Drive Configuration Tools

### UniSoft, CTSoft, MentorSoft, SESoft

UniSoft, CTSoft, MentorSoft and SESoft are complimentary Windows based drive configuration tools designed to enable the complete control and display of all parameters within a drive. The "Softs" provide valuable drive data storage, retrieval and programming functions. These Softs can be used off-line in the office or on-line on the plant floor.

Parameter programming and monitoring may be done using the menu list screens or dynamic graphical flow diagrams. Like the drives, parameters are grouped into logical menus of related parameters. Help menus and parameter descriptions are accessible by simply double clicking on the parameter of interest.

In addition to the parameter programming screens, function specific screens are provided. These include Drive Terminal Connector Configuration, Parameter Compare Functions (to disk or default files), and a User Defined Screen that allows up to 15 parameters from various menus to be displayed on a single screen.

CTSoft, the newest member of the Softs family, has a Drive Set-up Wizard that walks you through the basic set-up of a Unidrive or Unidrive SP, and includes a Motor Database that may be modified to include the customer's motors. CTSoft conveniently provides a method to save multiple drive setups in one project group. Its multiple window viewing capability makes CTSoft the ideal commissioning tool.



Some of its many features include:

- Built-in reference manuals and search functions that provide extensive "Help" files for both the drive and the Soft.
- Graphical and dynamic illustrations of analog and digital I/O and internal signal flow.
- Drive can be Reset, set back to factory defaults and configurations stored via the Soft.

PC Specifications:

- Microsoft Windows 3.1X, Windows 95 / 98 / 2000 / Windows NT 4.0 / XP; CTSoft requires Windows 98 or higher.
- 486 processor (minimum); Pentium processor or higher recommended.
- 8MB RAM, 4MB free hard disk space, RS232 port.

### PC / Drive Communication

Drive	"Soft" Catalog Number	Drive / Cable Connection	Serial Communication*	Catalog Number**
Unidrive SP	CTSoft	Direct to Drive	2-wire RS485	CT Comms Cable
Unidrive, Commander GP	UniSoft	UD71 option module	RS232	CTD-PC-232-XXX
Unidrive	UniSoft	UD7X option module	RS485	CTD-PC-485-XXX
Quantum III / Mentor II	MentorSoft	Direct to drive or MD29 / AN	RS485	CTD-PC-485-XXX
Commander SE	SESoft	Direct to drive (RJ45 port)	2-wire RS485	CT Comms Cable

\* For operational distances beyond 8 feet, when establishing a permanent serial connection, or when communicating with multiple drives, RS485 communication is required.

\*\*XXX=ft

## Sample Screen Views

### Commissioning

*Commissioning Screen* – displays motor map parameters

▼ *Unidrive*



▼ *MentorSoft*



▲ *CTSoft*

### Flow Control

▼ *Menu Screen* – displays parameters associated with a specific function



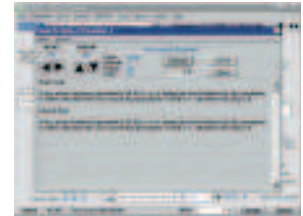
▲ *Connector Details*  
– displays all digital and analog inputs

▼ *General Flow Control* – displays all I/O and associated parameters



### User Details

▼ *User Defined Screen* – 15 key parameters chosen from various menus displayed on one screen



▲ "Help" file  
– typical parameter definition screen

### SESoft

Additional features of SESoft:

▼ *Set-up Wizard* – seven screens that walk through the basic set-up process of the Commander SE



▲ *Monitor Screen*  
– displays six key motor / drive values in real-time

### CTSoft

Additional features of CTSoft:

▼ *Project Management*



▲ *Multiple Window Display*

# Software

## Programming and Utility Tools

### System Programming ToolKit (SyPT)

SyPT (System Programming ToolKit), a multi-drive Integrated Development Environment (IDE), allows the designer to code, download and debug distributed applications from a single workstation attached to the CTNet network.

SyPT provides three ways to fashion an application. Drive Programming Language (DPL) is a simple computer language patterned after BASIC with drive extensions. IEC 61131-3 compatible ladder logic and function block diagram editors provide industry-standard graphical programming for those who prefer those methods.

SyPT applications are real-time and the designer can debug over the network with full control of each task including start / stop, breakpoints and single stepping. The graphical programming editors support animation features similar to PLC systems. A network-cognizant watch window feature allows the designer to track variables and parameters in real-time anywhere on the CTNet network.

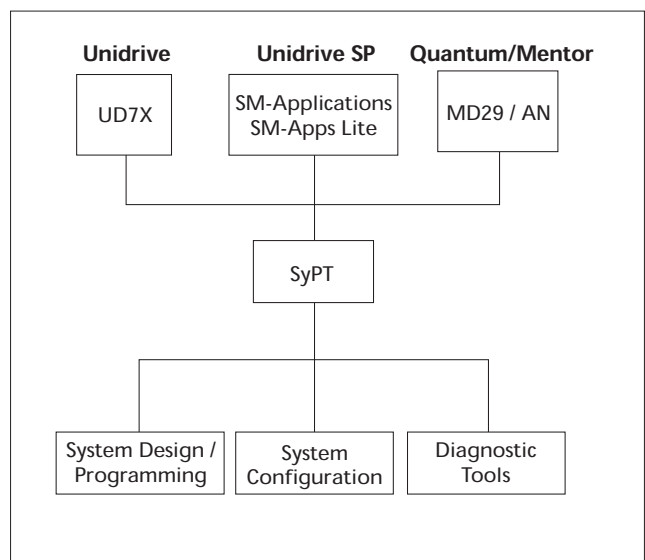
### Option Module Connection Requirements

SyPT is used in the Unidrive (UD7X), Unidrive SP (SM-Applications and SM-Apps Lite) and Quantum / Mentor (MD29 / AN) coprocessors. These powerful coprocessors can significantly extend the range of applications of the Unidrive AC and Quantum / Mentor DC Drive families. The coprocessors employ a 32-bit RISC microprocessor that executes under a multi-tasking run-time kernel.

Intimacy makes our coprocessors superior to external PLC process controllers. They achieve high-speed drive interaction by virtue of dual port RAM access into drive memory space. This feature, in combination with the powerful embedded multi-tasking real-time kernel and high-speed math execution, provide the ultimate platform to achieve "closed-loop real-time" control without communication delays between the drive and the process controller.



Using these coprocessors, true distributed control can be achieved, enabling the system designer to accomplish complex algorithms for demanding time-critical process control system requirements typical of today's industrial needs.



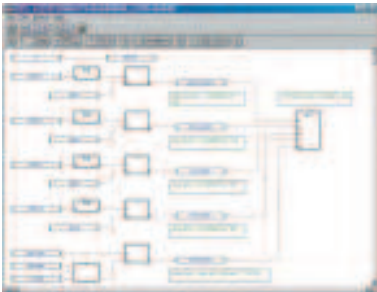
## SyPT (System Programming Toolkit)

### System Design

#### Program Editors:

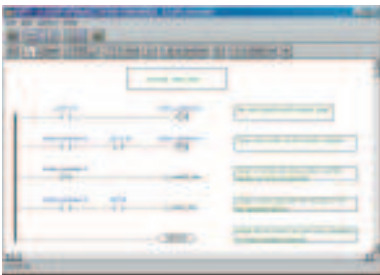
**Function Block Diagram (FBD)** – performs math or processes signals

- >140 mathematics, Boolean, and communication function blocks
- User defined and created function blocks
- Signal processing: 32-bit integer or 64-bit floating point math operations



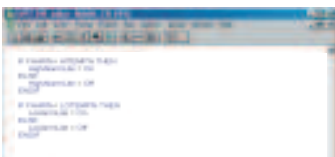
**PLC Ladder Diagram (LD)** – used for logical decision making

- >2000 rungs of executable ladder logic
- Rung annotation supported
- Chroma coding indicates contact / coil / rung activity during run-time



**Drive Programming Language (DPL)** – manipulates communication data

- Enhanced BASIC-like language provides easy access to drive parameters
- Built-in real-time operating system for seamless execution



#### Diagnostic Tools:

Powerful on-line debugging tools permit single step execution and setting of breakpoints

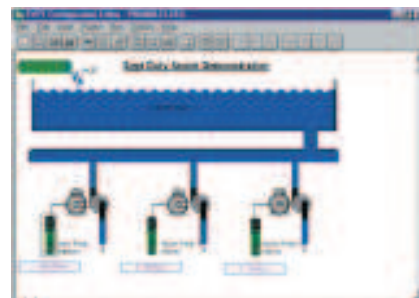
**Watch Window** – monitors any node's parameters and program variables in real-time. Provides graphical tools, including dynamic bar graphing and multiple trend plots, to allow the user to create a vivid view of code "in-action"

**Task Manager** – allows the single stepping of individual tasks in a node



#### System Configuration:

This tool is used to create customized single or multi-drive applications

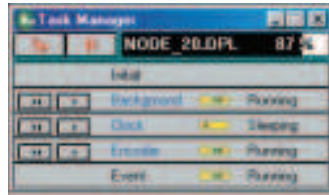


- provides a convenient project container for housing the applications

Software	Catalog Number
SyPT with parallel port hardware key (dongle)	SYPT-STD
SyPT with USB port hardware key	SYPT-USB
SyPT-Lite for the Unidrive SP (Limited Functionality)	SYPT-LITE

### Multi-tasking Architecture

SyPT's multi-tasking architecture allows easy implementation and segmentation to simplify "real-time" process control algorithms and fixed-time base calculations. The designer can select those jobs that require highest attention and those that only need occasional attention in order to optimize coprocessor utilization.



User programmable tasks listed in order of execution priority:

*Initial* – runs system variable initialization and pre-calculations at reset and power-up

*Event* – similar to hardware interrupt. Can be triggered by a high-speed digital input, counter/time unit, or fieldbus-synchronizing message.

*Speed (Unidrive family only)* – synchronized task to the internal drive speed loop.

*Clock* – runs from a User-assigned time clock, selectable 5 – 100 mSec. High priority clocked tasks can be set as short as 1 mSec.

*Background* – runs when no other tasks are dispatched (asynchronous)

*Error* – runs when an error occurs, for recovery processing

#### PC Specifications:

- Single-user license with hardware key
- Microsoft Windows 3.1x, 9x, NT, 2000, ME and XP compatible
- 486 processor (minimum); Pentium processor or higher recommended
- 8 MB RAM, 20 MB of free hard disk space
- RS232 port

#### SyPT Interface:

- Multi-drive connection through CTNet network via ISA or PCMCIA network interface card
- Single-drive connection through an RS232 link (cable: #CTD-PC-232-008) with Unidrive / Mentor / Quantum. RS485 link (cable: CT Comms Cable) with Unidrive SP.

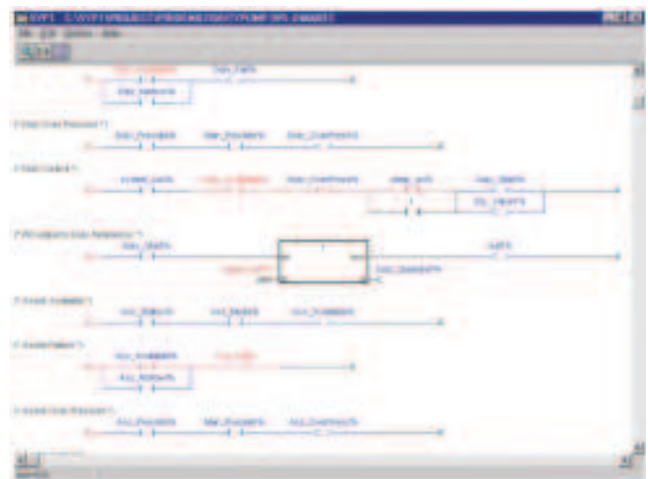
### SyPT Lite Programming (Unidrive SP only)

SyPT Lite is a single-drive programming tool designed for simple and intermediate level programming of custom applications. SyPT Lite can be used to program the built-in PLC controller in a base Unidrive SP or a Unidrive SP equipped with an SM-Apps Lite option module.

#### Specifications

Hardware	Tasks	Executable Memory	Number of Downloads
Base Drive PLC	Background	4k	100
SM-Apps Lite	Background or clock	10k	100,000

#### PLC Ladder Diagram

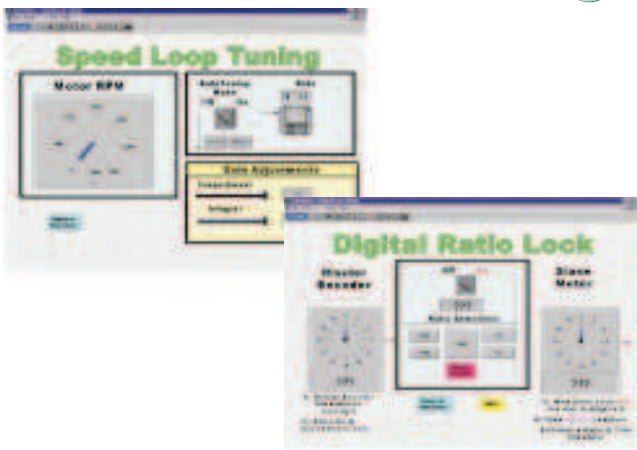


### Visualization Tool (System Wise)

SystemWise is a Windows based visualization tool for the Mentor II, Quantum III and Unidrive / VTC drives. It enables the drive technician to create remote control screens for drive system monitoring and setup. SystemWise provides a variety of adjustable virtual tools such as meters, dials, sliders, LEDs, and pushbuttons that can be used to create custom displays and control panels. The control panels can then be placed over a customized graphic background that depicts the system process. Using SystemWise, the drive technician can create customized screens that greatly facilitate drive setup, tuning and general remote monitoring for each drive section or machine process.

SystemWise Interface:

- Single-drive connection through an RS232 link (cable #CTD-PC-232-008)
- Multi-drive connection through an RS485 link
- Network-wide connection through CNet via ISA or PCMCIA network interface card



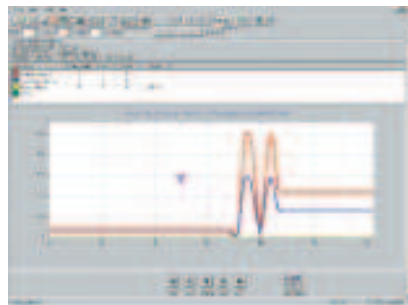
### Energy Saving Tool (CTSave)

CTSave is a complimentary Windows based software designed to display the energy and money saved by users who utilize CT drives instead of conventional products. Information collected by the program includes the cost/kW-hour, maximum power in kW or HP, annual consumption rate, and type of application (disc throttle, inlet guide vanes, dampers with forward or backward curve centrifugal fan). As the user enters or modifies the data, the savings at various flow rates are displayed graphically alongside the financial detail of savings, including the payback period. Both the data used in calculations and the results may be saved, recalled, edited and printed as required.



### Maintenance Tool (CT Browser)

CT Browser is a stand-alone parameter maintenance tool intended for field engineers and customers who wish to do their own system maintenance. Offered to customers at no charge, CT Browser is a Windows application that provides a spreadsheet view of drive parameters. CT Browser makes it easy to modify parameters and save and restore them to disk. Other handy features include bar graphs, a real-time oscilloscope, a transient recorder and an automatic archiving system. The CT Browser is ideal for those customers who wish to maintain their CT systems without incurring the expense of the SyPT system programming toolkit.



# Networking Communications

## Fieldbus / Protocol

Communication networks allow large amounts of data to be transferred quickly to and from network nodes. Using a network fieldbus can significantly reduce system wiring requirements and installation costs, while enhancing wiring integrity.

The CT fieldbus interface modules and cards provide high-speed communications with the popular networks and protocols. Each interface uses RS485 isolated communications for inter-drive voltage isolation and noise immunity.



## Network / CT Drive Compatibility

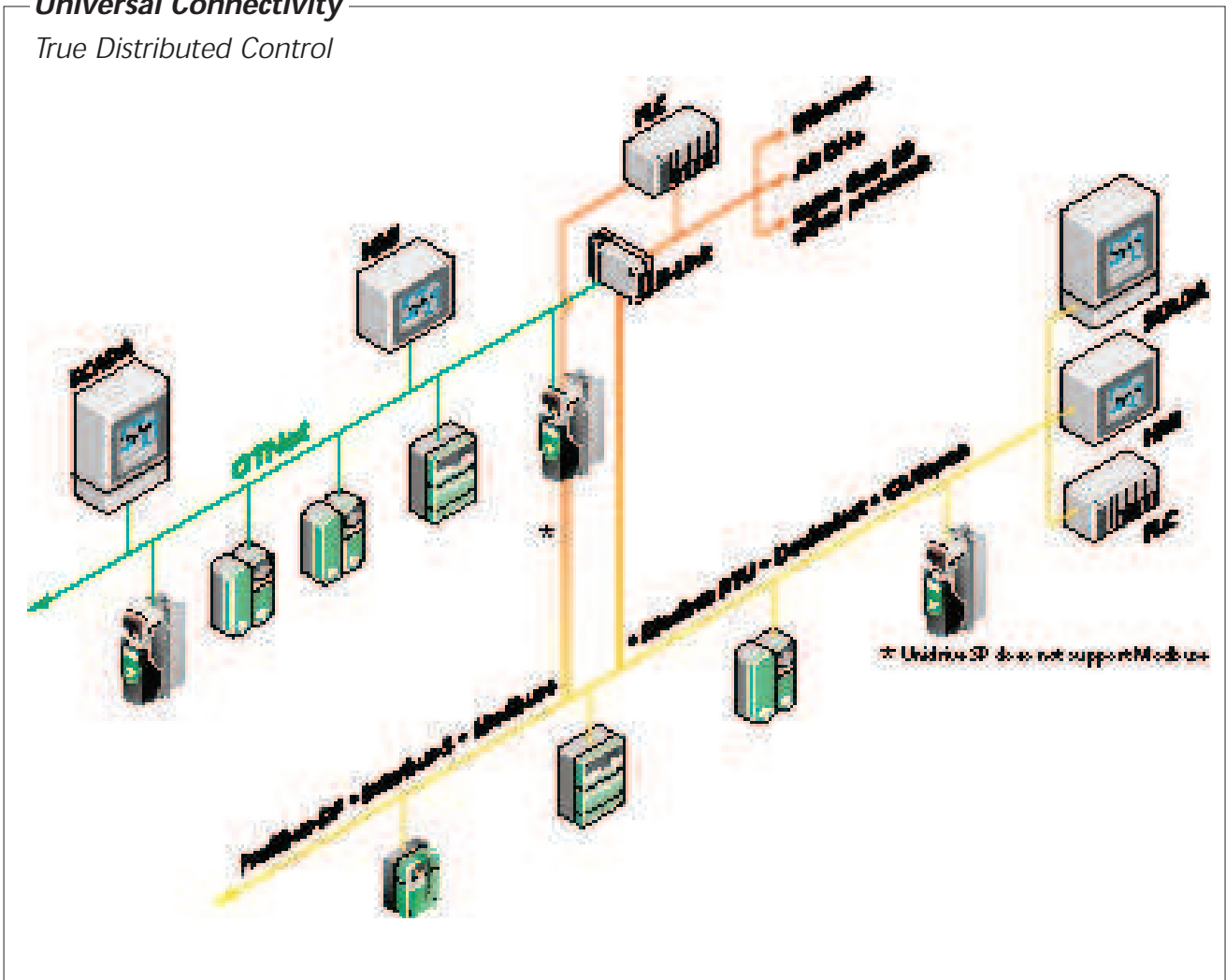
Communications Network	Unidrive	Quantum III / Mentor II	Commander SE	Unidrive SP	Node Configuration
Profibus-DP	UD73, UD73-COM <sup>①</sup>	MD-24	SE73	SM-Profibus	Slave
Interbus-S	UD74, UD74-COM <sup>①</sup>	MDIBS	SE74	SM-Interbus	Slave
CTNet	UD75-RevD	MD-29AN	③	SM-Applications <sup>②</sup>	Peer-to-peer
Modbus+	UD76, UD76-COM <sup>①</sup>	9500-9100	N / A	N/A	Peer-to-peer
DeviceNet	UD77, UD77DN-COM <sup>①</sup>	MD-25	SE77DN	SM-DeviceNet	Slave
CANopen	UD77CO, UD77CO-COM	N / A	SE77CO	SM-CANOpen	Slave
Modbus RTU <sup>④</sup>	UD70	9729-9000	Standard	Standard/SM-Applications <sup>②</sup>	Slave

- ① Network communications only. RS232 port and 32-bit coprocessor are not available.
- ② SM-Applications module includes coprocessor.
- ③ Connects to CTNet via RS485 to the Unidrive.
- ④ Modbus RTU's are available on all UD7X modules except for UD71 and UD78.



**Universal Connectivity**

*True Distributed Control*



**Networks**

Communications Network	Node Configuration	Max. Data Rate / Trunk Length (bps / m)	Selectable Rate (bps)	Max. # Nodes per Network	Max. # Nodes w/o Repeaters
Profibus-DP	Slave	1.5M / 200	9.6K – 12M <sup>①</sup>	125	31
Interbus-S	Slave	500K / 400	500K	32	32
CTNet	Peer-to-peer	2.5M / 200	1.25 – 5M	255	20
Modbus+	Peer-to-peer	1M / 450	1M	64	32
DeviceNet	Slave	500K / 100	125 – 500K	64	N / A
CANopen	Slave	500K / 100	125 – 500K	64	N / A
Modbus RTU	Slave	N / A	300 – 38.4K	N / A	N / A

<sup>①</sup> UD73 and UD73COM maximum bps = 1.5M