*Direct*SOFT5 Programming for PLCs

Programming versions

With *Direct*SOFT5 Programming Software, selecting which software package you need is a snap! You can select the fully loaded package at its great low price, or you may choose the FREE package. It has all of the same programming functions as the full package. However, it will only download a program up to 100 words long.

The fully-loaded version (PC-DSOFT5) will program all of our *Direct*LOGIC PLCs, some GE Series One Plus PLCs, and TI305/405 SIMATIC PLCs. Refer to the chart below to verify compatibility.

The FREE *Direct*SOFT5 package (PC-DS100) was designed to provide a more streamlined choice. You can see from the table below that the FREE version has the same support and same great features, but will only allow you to open or download a program up to 100 words long.

Also, you cannot open an offline project larger than 100 words. You can create a project as large as you want and save it to disk, but you cannot reopen or download it to a PLC without unlocking the full version (PC-DSOFT5) by purchasing a key.

PLC compatibility

If you're using our *Direct*LOGIC products, then compatibility is not an issue. All *Direct*SOFT5 packages support all *Direct*LOGIC CPUs. Our software also supports many compatible products that were offered by previous vendors of the Koyo-designed PLCs. If you're buying the software to program a compatible CPU, check the following table to make sure your CPU is supported. (Sorry, but if your CPU is not shown, then it is not supported.)

Family	CPU	*Direct*SOFT5 (full version) PC-DSOFT5	*Direct*SOFT5 (free version) PC-DS100*	CPU Firmware Version Needed to Use IBox Instructions
DL05	All	✔	✔	✔ CPU v5.10 or Later
DL06	All	✔	✔	✔ CPU v2.10 or Later
DL105	All	✔	✔	
DL205	DL-230	✔	✔	
	D2-240	✔	✔	
	D2-250	✔	✔	
	D2-250-1	✔	✔	✔ CPU v4.60 or Later
	D2-260	✔	✔	✔ CPU v2.40 or Later
DL305	D3-330**, D3-330P**	✔	✔	
	D3-340	✔	✔	
	D3-350	✔	✔	
DL405	D4-430	✔	✔	
	D4-440	✔	✔	
	D4-450	✔	✔	✔ CPU v3.30 or Later
GE® Series 1 PLUS	IC610CPU105**	✔	✔	
	IC610CPU106**	✔	✔	
TI305™/ SIMATIC® TI305™	325-07**, PPX:325-07**	✔	✔	
	330-37**, PPX:330-37**	✔	✔	
	325S-07** (or 325 with Stage Kit)	✔	✔	
	330S-37**, PPX:330S-37**	✔	✔	
	335-37, PPX:335-37	✔	✔	
TI405™/ SIMATIC® TI405™	425-CPU, PPX:425-CPU	✔	✔	
	PPX:430-CPU	✔	✔	
	435-CPU, PPX:435-CPU	✔	✔	

* PC-DS100 is only available by download from our Website. This FREE, full-featured software package will download a program limited to 100 words.

** Requires Data Communications Unit (D3-232-DCU).

Direct SOFT5 Programming for PLCs

PC system compatibility

Following are the recommended system requirements for running *Direct*SOFT5 on a PC:

- 1 GHz CPU
- CD-ROM for loading software
- Windows 2000/XP (Home and Pro)
  No DOS, OS/2, MacIntosh, LINUX or UNIX versions, or 16-bit versions available
- 512 MB RAM and 20 MB free hard disk space
- At least one unused serial communications port or USB port using our USB-RS232, USB-to-serial adapter and/or 10-Base-T or 10/100-Base-T Ethernet network card
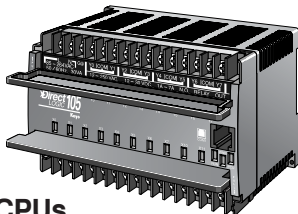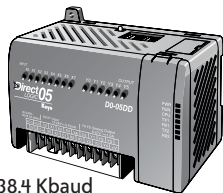- Color SVGA monitor (1024 x 768)

NOTES:
Laptops: *Direct*SOFT5 is perfectly suitable for use with laptop computers as long as they meet the require-ments shown above. Most laptops can be ordered with a serial port as an option, which will allow a direct con-nection to our *Direct*LOGIC PLCs. If your laptop has a USB port, consider using our USB to serial adapter, USB-RS232. If your laptop has an Ethernet port and you are considering a DL05, DL06, DL205 or DL405 PLC, consider using the H*-ECOM or ECOM100 Ethernet Communications Module to connect your PC to the PLC (The D2-230 does not support the ECOM).
Monitors: Any size monitor will work, however, larger, higher resolution, monitors enhance the features of *Direct*SOFT5.
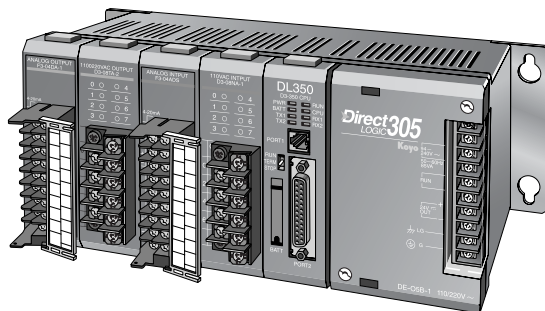
Connecting to *Direct*LOGIC PLCs

DL06 CPUs
Port 1: 9.6 Kbaud
Port 2: 300 baud - 38.4K baud

DL05 CPUs
Port 1: 9.6 Kbaud
Port 2: 300 baud-38.4 Kbaud

DL105 CPUs
Port 1: 9.6 Kbaud

DL205 CPUs
D2-230: Port 1: 9.6 Kbaud

D2-240: Port 2: 9.6 Kbaud
          Port 2: 300 baud - 19.2 Kbaud

D2-250-1: Port 1: 9.6 Kbaud
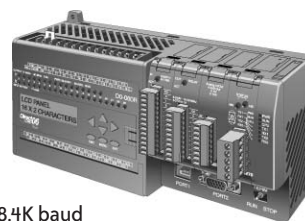& D2-260 Port 2: 300 baud - 38.4 Kbaud

DL305 CPUs
D3-330 (requires D3-232-DCU): 300 - 19.2 Kbaud

D3-340: Port 1/2: 300 baud - 38.4 Kbaud

D3-350: Port 1: 9.6 Kbaud
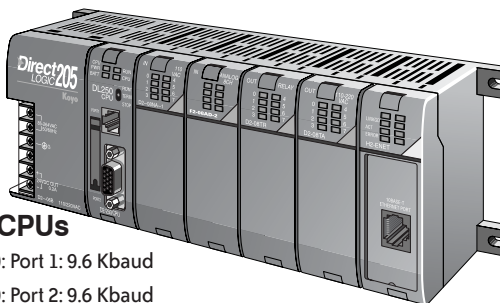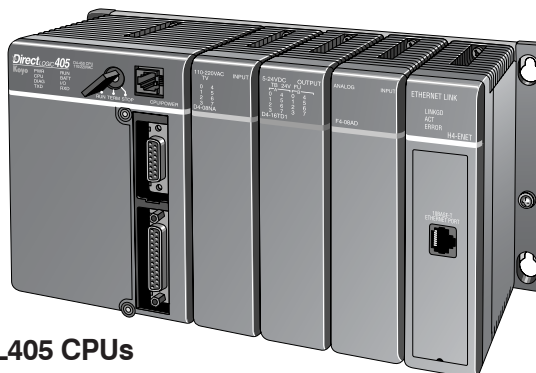   Port 2: 300 baud - 38.4 Kbaud

DL405 CPUs
D4-430: Port 1: 9.6 Kbaud
&D4-440: Port 2: 300 baud - 19.2 Kbaud

D4-450: Port 0: 9.6 Kbaud
          Port 1: 300 baud - 38.4 Kbaud
          Port 2: 300 baud - 38.4 Kbaud

Or use an ECOM module in the DL05, DL06, DL205 (except D2-230) or DL405 local base to program over a high-speed Ethernet link.

PLC Overview

DL05/06 PLC

DL105 PLC

DL205 PLC

DL305 PLC

DL405 PLC

Field I/O

Software

C-more HMIs

Other HMI

AC Drives

Motors

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

TB's & Wiring

Power

Enclosures

Appendix

Part Index

PLC Programming Cables

Since CPUs provide many different communication port possibilities, it is helpful to know exactly which communications cable is required. Use the table below to choose the proper cable:

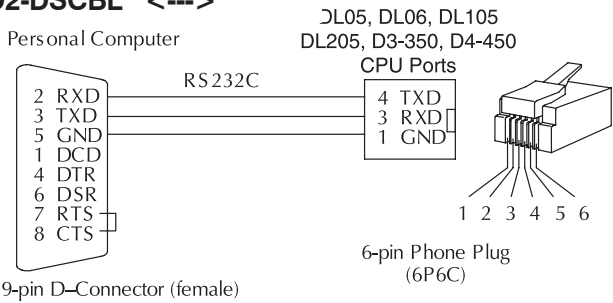| Family	CPU (or other device)	Port	Cable
DirectLOGIC DL05	All versions	Port 1	D2-DSCBL
		Port 2	D2-DSCBL
	H0-ECOM / ECOM100 (modules)	Only one	**
	D0-DCM (module)	Port 1	D2-DSCBL
		Port 2	D2-DSCBL-1
DirectLOGIC DL06	All versions	Port 1	D2-DSCBL
		Port 2	D2-DSCBL-1
	H0-ECOM / ECOM100 (modules)	Only one	**
	D0-DCM (module)	Port 1	D2-DSCBL
		Port 2	D2-DSCBL-1
DirectLOGIC DL105	F1-130 (all versions)	Only one	D2-DSCBL
DirectLOGIC DL205	D2-230	Only one	D2-DSCBL
	D2-240	Top port	D2-DSCBL
		Bottom port	D2-DSCBL
	D2-250(-1)	Top port	D2-DSCBL
		Bottom port	D2-DSCBL-1
	D2-260	Top port	D2-DSCBL
		Bottom port	D2-DSCBL-1
	D2-DCM (module)	Only one	D3-DSCBL-2
	H2-ECOM (-F) / ECOM100	Only one	**
DirectLOGIC DL305	D3-330/D3-330P	Requires DCU*	D3-DSCBL-2
	D3-340	Top port	D3-DSCBL-1
		Bottom port	D3-DSCBL-1
	D3-350	Top port	D2-DSCBL
		Bottom port	D3-DSCBL-2
	D3-DCM (module)	Only one	D3-DSCBL-2
DirectLOGIC DL405	D4-430/D4-440	Top port (15-pin)	D4-DSCBL
		Bottom port (25-pin)	D3-DSCBL-2
	D4-450	Phone jack	D2-DSCBL
		Top port (15-pin)	D4-DSCBL
		Bottom port (25-pin)	D3-DSCBL-2
	D4-DCM (module)	Only one	D3-DSCBL-2
	H4-ECOM (-F) / ECOM100	Only one	**
	Slice I/O (module)	Only one	D4-DSCBL
GE® Series 1	IC610CPU105/106	Requires DCU*	D3-DSCBL-2
TI305™/SIMATIC® TI305™	325-07, PPX:325-07	Requires DCU*	D3-DSCBL-2
	330-37, PPX:330-37	Requires DCU*	D3-DSCBL-2
	325S-07 (or 325 with stage kit)	Requires DCU*	D3-DSCBL-2
	330S-37, PPX:330S-37	Requires DCU*	D3-DSCBL-2
	335-37, PPX:335-37	Phone jack	D3-DSCBL-1
		If DCU is used*	D3-DSCBL-2
TI405™/SIMATIC® TI405™	425-CPU, PPX:425-CPU	If DCU is used*	D4-DSCBL
	N/A, PPX:430-CPU	Top port (15-pin)	D4-DSCBL
		Bottom port (25-pin)	D3-DSCBL-2
	435-CPU, PPX:435-CPU	Top port (15-pin)	D4-DSCBL
		Bottom port (25-pin)	D3-DSCBL-2
	Smart slice	Only one	D4-DSCBL

*** Requires RS232 Data Communications Unit (D3-232-DCU).**
****Requires standard Ethernet twisted pair cable (HX-ECOM) or standard fiber optic cable (HX-ECOM-F).**
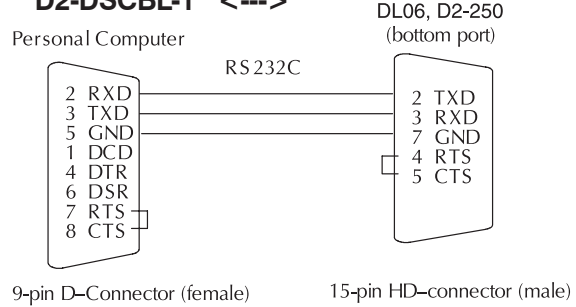
PLC Programming Cables
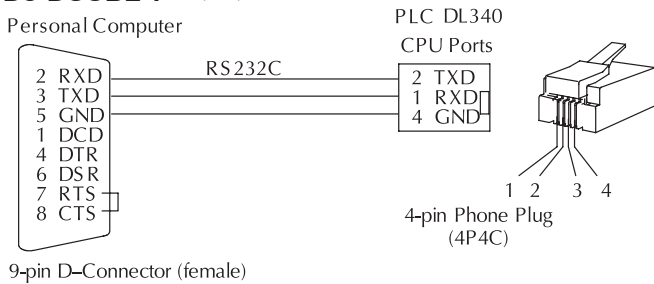
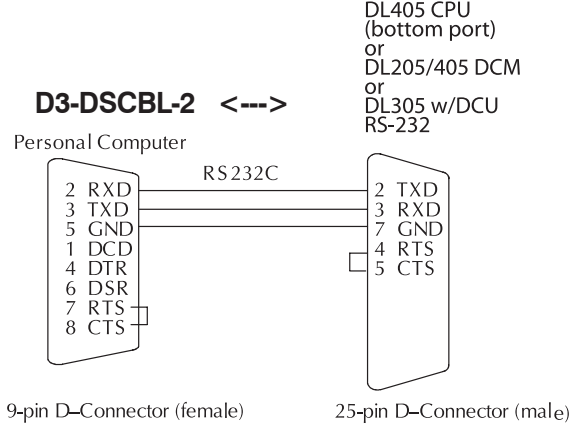Pin labeling conforms to IBM DTE and DCE standards

D2-DSCBL <--->

Personal Computer

DL05, DL06, DL105
DL205, D3-350, D4-450
CPU Ports

RS232C

2	RXD
3	TXD
5	GND
1	DCD
4	DTR
6	DSR
7	RTS
8	CTS

4	TXD
3	RXD
1	GND

9-pin D–Connector (female)

1 2 3 4 5 6

6-pin Phone Plug
(6P6C)

D2-DSCBL-1 <--->

Personal Computer

DL06, D2-250
(bottom port)

RS232C

2	RXD
3	TXD
5	GND
1	DCD
4	DTR
6	DSR
7	RTS
8	CTS

2	TXD
3	RXD
7	GND
4	RTS
5	CTS

9-pin D–Connector (female)

15-pin HD–connector (male)

D3-DSCBL-1 <--->

Personal Computer

PLC DL340
CPU Ports

RS232C

2	RXD
3	TXD
5	GND
1	DCD
4	DTR
6	DSR
7	RTS
8	CTS

2	TXD
1	RXD
4	GND

9-pin D–Connector (female)

1 2   3 4

4-pin Phone Plug
(4P4C)

D3-DSCBL-2 <--->

Personal Computer

DL405 CPU
(bottom port)
or
DL205/405 DCM
or
DL305 w/DCU
RS-232

RS232C

2	RXD
3	TXD
5	GND
1	DCD
4	DTR
6	DSR
7	RTS
8	CTS

2	TXD
3	RXD
7	GND
4	RTS
5	CTS

9-pin D–Connector (female)

25-pin D–Connector (male)

D4-DSCBL <--->

Personal Computer

DL405 CPU
DL405 Slice I/O
programming port

RS232C

2	RXD
3	TXD
5	GND
1	DCD
4	DTR
6	DSR
7	RTS
8	CTS

1	YOP
2	TXD
3	RXD
4	ONLINE
7	CTS
8	YOM
13	0V
14	0V
15	0V

9-pin D–Connector (female)

15-pin D–Connector (male)

Straight-through Patch Cable (Ethernet)

TD+	1	OR/WHT		OR/WHT	1	TD+
TD–	2	OR		OR	2	TD–
RD+	3	GRN/WHT		GRN/WHT	3	RD+
	4				4	
	5				5	
RD–	6	GRN		GRN	6	RD–
	7				7	
	8				8	

RJ45   RJ45

1 2 3 4 5 6 7 8

8-pin RJ45 Connector
(8P8C)
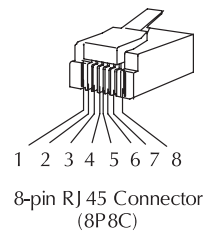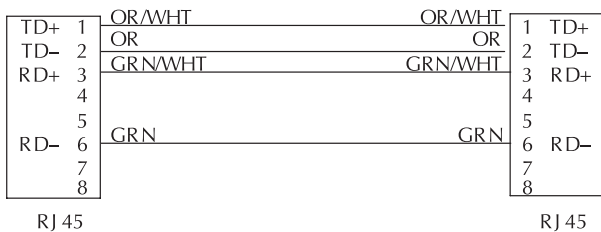
Crossover Cable (Ethernet)

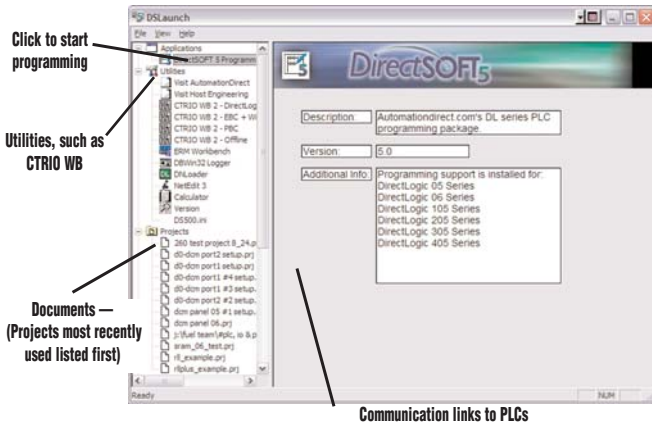| TD+ | 1 | OR/WHT | | GRN/WHT | 1 | TD+ |
TD–	2	OR		GRN	2	TD–
RD+	3	GRN/WHT		OR/WHT	3	RD+
	4				4	
	5				5	
RD–	6	GRN		OR	6	RD–
	7				7	
	8				8	

RJ45   RJ45
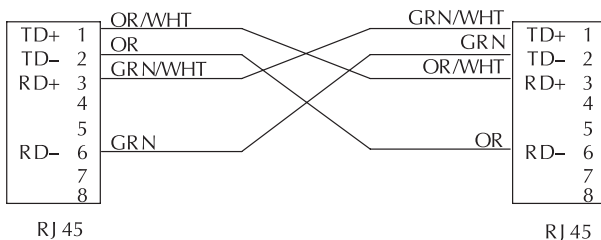
All Ethernet and ECOM patch cables should be Category 5,
UTP Cable. The diagram illustrates the appropriate wire
position in the RJ45 connector.

PLC Overview

DL05/06 PLC

DL105 PLC

DL205 PLC

DL305 PLC

DL405 PLC

Field I/O

Software

C-more HMIs

Other HMI

AC Drives

Motors

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

TB's & Wiring

Power

Enclosures

Appendix

Part Index

DirectSOFT5 Functions

Click to start programming

Utilities, such as CTRIO WB

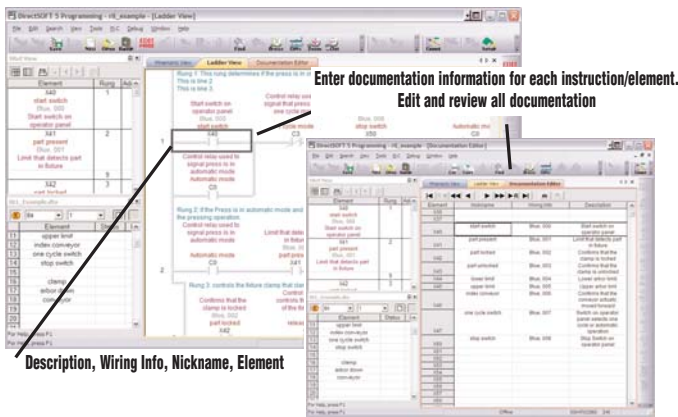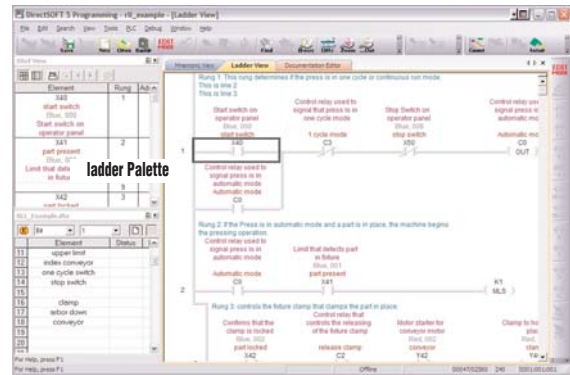Documents — (Projects most recently used listed first)

Communication links to PLCs

The Launch Window

The Launch Window is a centralized location to view not only all of your *Direct*SOFT5 applications and projects, but also any additional applications such as NetEdit, DN Loader, CTRIO WB, ERM WB, etc. This window is also used to create and manage PLC programs and the communications between your PC and the PLC.

Point and click editing

Once you have started a new project, there are a few different ways to start building your program. The Ladder Palette, which is attached to the right border by default, can be resized and repositioned anywhere on your desktop. This contains most of the instructions you will need. Simply click on the icon or use the Hot Key associated with that icon. Some instructions have to be accessed through one of the Browser icons. The Browsers contain all of the necessary information from various boxes, coils, and contacts. You can now customize the Ladder Palette tool bar to fit your programming style and needs.

ladder Palette

Enter documentation information for each instruction/element. Edit and review all documentation

Description, Wiring Info, Nickname, Element

Documentation

Documentation is the text associated with the components and structure of your program. It helps to clarify the representation of elements by assigning four different fields: Description, Wiring Info, Nickname, and Element.

Onscreen views

*Direct*SOFT5 defaults to a new Tab view to give you the most optimized viewing area. You still have the option to view multiple windows in the original "MDI" format by simply hitting the Restore button in the upper right of the active tabbed window, or go to Windows menu and select one of the tile or cascade options. You can have multiple windows open to view such things as all of the addresses used in the program, a mnemonic view of the program instructions, and all of the instructions used.
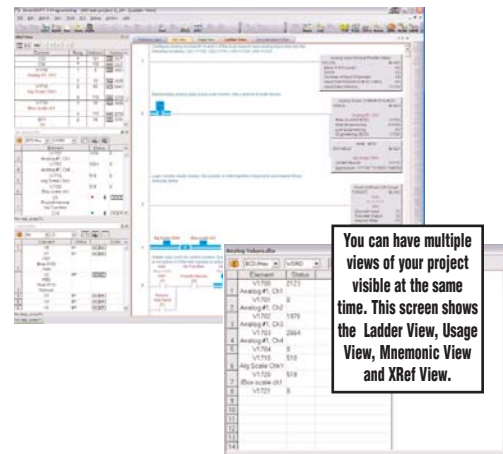
You can have multiple views of your project visible at the same time. This screen shows the Ladder View, Usage View, Mnemonic View and XRef View.
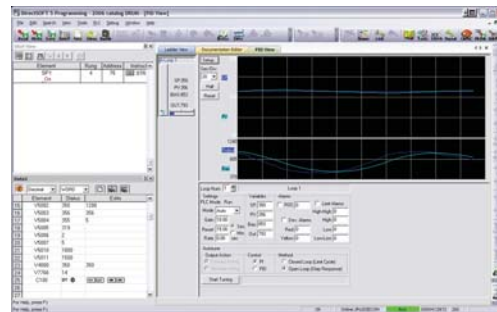
DirectSOFT5 Functions
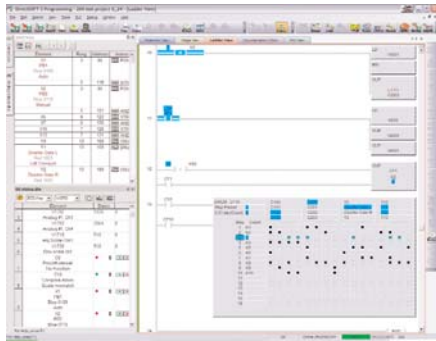
Support for drum instructions

If your PLC supports Drum instructions, you will like this feature of the programming software. Simply fill in the top of the drum with outputs and configure each step with an event and/or time-based element. Then click on the output boxes to choose the proper output states for each step and you are finished.

PID view

*Direct*SOFT5 offers an excellent PID feature. The loop and trending screens are very easy to configure. This feature has all of the views, trending, and tuning that you need to easily and successfully set up your PID loop.

NEW! *I-Box* Instructions

The most notable new feature in *Direct*SOFT5 is the addition of the parameterized *IBox* instructions. These fill-in-the-blank instructions were designed to make your programming experience quicker and easier than ever before. Within these *IBoxes* you will find some complicated and some simple, everyday ladder code tasks made easy and fast. You will find 6 new categories, including Memory, Discrete Helper, Analog Helpers, Math, Communications & Counter I/O, with 66 new instructions to choose from. Here are a few examples of *IBox* instructions in *Direct*SOFT5 …

MOVED - moves a double word to two consecutive memory locations

OFFDTMR - Off Delay Timer will delay the "turning off" of the Output parameter by the specified Off Delay Time

PONPOFF - Push ON/Push OFF Circuit toggles an output state whenever its input power flow transitions from off to on

ANLGCMB - Analog Input/Output Combo Module Pointer Setup generates the logic to configure the pointer method for one analog input/output combo module on the first PLC scan following a Program to Run transition.

MATHBCD - Math - BCD Format lets you enter complex mathematical expressions like you would in Visual Basic, Excel, or C++

SUMBCD - Sum BCD Numbers sums up a list of contiguous 4-digit WORD BCD numbers into an 8-digit DWORD BCD result.

ECEMAIL - ECOM100 Send EMail, on a leading edge transition, will behave as an e-mail client and send an SMTP request to your SMTP Server to send the e-mail message to the e-mail addresses in the To: field

(* requires an Hx-ECOM100 100MBit communications module, capable of accessing an SMTP server, in the PLC)

CTREDRL - CTRIO Edit Preset Table Entry and Reload, on a leading edge transition to this *IBox*, will perform this dual operation to a CTRIO Output resource in one CTRIO command.

(* requires a Hx-CTRIO counter I/O module in the PLC)

PID

PLC Overview

DL05/06 PLC

DL105 PLC

DL205 PLC

DL305 PLC

DL405 PLC

Field I/O

Software

C-more HMIs

Other HMI

AC Drives

Motors

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

TB's & Wiring

Power

Enclosures

Appendix

Part Index