

PC Control: The Smart Way to a Complete Solution

Why should I use PC control?

PLCs provide a great solution for many applications, but when your application goes beyond straight-forward ladder logic controlling simple I/O, PC control can be the smarter way to go.

When you have a PLC system that includes an HMI with motion control and/or a vision system, you not only spend time developing and debugging each system independently, you also have to spend significant effort integrating the separate controllers. The result is often difficult to support. Even small changes require editing multiple databases and complex debugging. Add coprocessor modules for communications, complex math algorithms or string/array data manipulation and you start to wonder why there isn't an easier way.

Well, there is, and it's called Think & Do PC Control. Think & Do, America's leading PC control software, brings you all the tools you need to easily handle complex applications.



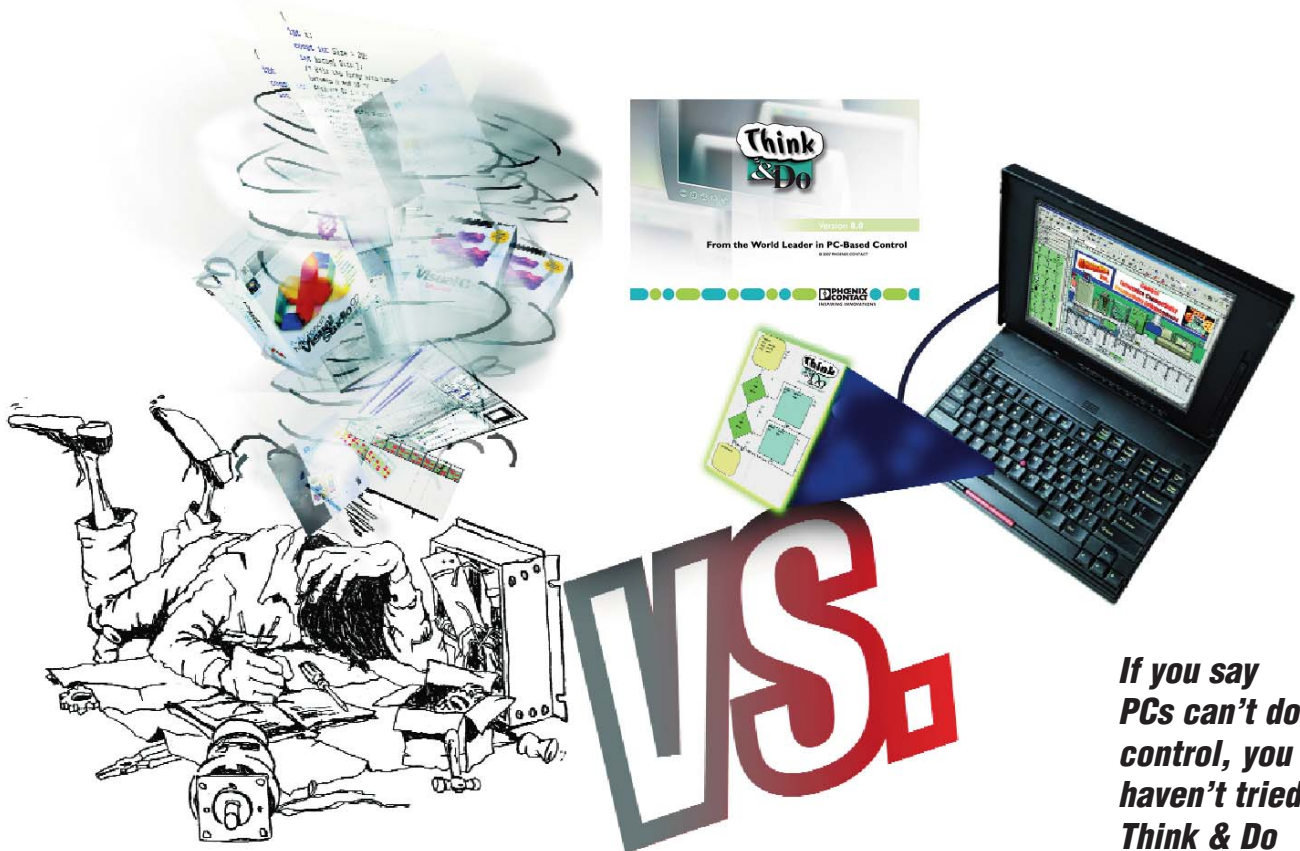
If your application requires:

- HMI as well as control
- Advanced data manipulation (even string arrays) and advanced math functions
- Data exchange with business applications (from spreadsheets to ERP systems)
- One or more third-party PC cards, such as those for motion control or vision systems
- Communication with serial or networked field devices
- Storage or access to large amounts of data
- Large number of PID loops (up to 64)
- Open architecture for C/C++ or VisualBasic

It requires Think & Do PC Control!

Why is Think & Do PC control so much easier?

With Think & Do, your HMI and control share the same database, so there is no duplication. Intuitive flowcharting makes coding the control logic as easy as sketching out the control algorithm. The powerful graphics tools and readily-accessible data tags enable you to create a quality HMI so fast you'll have to experience it to truly believe it. Think & Do includes the math functions and data types found in high-level programming languages, so complex algorithms and data management are a snap. PC architecture allows Think & Do to seamlessly support a variety of specialty motion, vision systems, and field network interface PC cards. The PC and Windows allow Think & Do to provide simple communication links on serial or Ethernet networks. Think & Do simplifies connecting everything from SQL databases to barcode readers with your control application.



***If you say
PCs can't do
control, you
haven't tried
Think & Do
PC control.***

Three PC Control Solutions using Think & Do



1 Think & Do 8.0

PC-TD8-USB <---->

Keyless Development and USB Runtime key; non-keyed environment provides free WinPLC programming.

PC-TD8-WEB4-USB <---->

Full development package plus four concurrent runtime sessions with USB key; Web viewing capability

ESS-BASIC <---->

Extended service and support; Basic 1 year

ESS-PREMIUM <---->

Extended service and support; Premium 1 year

Includes:

- Flowchart logic
- Superior HMI features
- Easy SQL interface
- Web view capable (requires web view version)
- Importing screens
- Integrated serial communication
- Modbus TCP, Modbus RTU and Modbus Plus support
- Integrated motion control
- Integrated vision control
- PID process control (64 loops)
- Powerful debugging tools
- Offline logic testing
- Common database for HMI, logic and motion

Choose Think & Do 8.0 when you need

1. to communicate to an SQL database
2. a superior HMI with animation and advanced graphics

System requirements

Development System

Windows 2000 (SP4), XP (SP2), Vista
Pentium IV compatible processor
256 MB RAM (512 MB or higher recommended),
750 MB available hard disk space
CD-ROM drive
64 MB or higher video adapter
Color monitor (min resolution 800 x 600),
Ethernet adapter

Windows 2000/XP/Vista Runtime Target

Windows 2000 (SP4), XP (SP2), Vista
Pentium IV compatible processor
256 MB RAM (512 MB or higher)
500 MB available hard disk space
CD-ROM drive
64 MB or higher video adapter
Color monitor or flat panel display for HMI
min resolution 800x600)
Ethernet adapter

PLC Runtime Target

H2-WINPLC3



Completely compatible with original Think&Do Development Software applications

Think & Do Live!

PC-ENT-LIVE <---->
Development/run-time license

Includes:

- Flowchart logic
- HMI creator
- Reuseable subcharts
- Integrated serial communication
- Integrated motion control
- OPC Client and Server
- Modbus TCP & Modbus RTU Support
- PID process control (64 loops)
- Powerful debugging tools
- Offline logic testing
- Common database for HMI, logic and motion
- Productivity Analysis tools
- WinPLC support

Choose Live! when

- 1) HMI requirements are moderate
- 2) no SQL is required
- 3) projects are created by a single developer

System requirements

Development System

Windows NT/2000/XP-Certified Pentium 133
Windows NT/2000/XP Operating System
Ram Requirements:
Windows NT - 32 MB
Windows 2000- 64 MB
Windows XP - 128 MB
450 MB available hard disk space
CD-ROM drive
Color monitor (min resolution 800 x 600)

Windows Runtime Target

Windows NT/2000/XP-Certified Pentium 300 (or higher)
Windows NT/2000/XP Operating System
128 MB RAM
300 MB available hard disk space
CD-ROM drive (optional)
Color monitor or flat-panel display for HMI
(min resolution 640 x 480)
I/O scanner or network card

PLC Runtime Target

H2-WINPLC3



The WinPLC is our lowest cost PC control solution

The WinPLC, a hybrid PC/PLC solution

H2-WPLC3-EN <---->

CPU module for Think & Do,
8 MB ROM/8 MB RAM

The WinPLC is a truly unique hybrid solution providing Think & Do PC control programming benefits on a PLC-style device. Develop applications with Think & Do and download them to the WinPLC.

Use a WinPLC when you need:

1. The advantages of PC control: complex math, data manipulation and connectivity
2. A PLC's rugged industrial form, non-volatile memory and standard PLC I/O

Or when:

1. A standard OI will suffice for your HMI
2. You don't need a PC

System requirements

Think & Do Live! for WinPLC Programming (PC-TD8-USB)

The non-keyed development environment for Think & Do 8.0 provides FREE programming for the WinPLC. Includes flowchart logic, reusable subcharts, PID functions, serial drivers, Modbus TCP/IP and a free OPC/DDE server.

Development System

Windows NT/2000/XP-Certified Pentium 133
Windows NT/2000/XP Operating System

RAM Requirements:

Windows NT - 32 MB
Windows 2000- 64 MB
Windows XP - 128 MB
450 MB available hard disk space
CD-ROM drive

Color monitor (min resolution 800 x 600)

PLC Runtime Target

H2-WINPLC3

Note: PC Runtime Target not supported

Think & Do Live! Overview



Think & Do Live! (PC-ENT-LIVE) is a full-featured control and Human Machine Interface (HMI) development tool. A common tag database and built-in HMI make Live! a great low cost PC-based control solution. Live! contains these features:

Flowcharts for control

- Easy- to-use and easy-to-read flowcharts for control let you program like your machine or process operates, rather than one device at a time
- Subcharts (subroutine flowcharts) let you develop your logic once and reuse it on multiple projects
- Online changes are supported with graphical debugging to simplify troubleshooting your application
- Develop for Windows 2000, Windows XP and Windows CE platforms in the same environment

Built-in HMI with same database

- Full screen editor with over 2,000 bitmapped graphic symbols, such as buttons, lights, pumps, motors, conveyors, and tanks
- Single database for HMI and control functions means there are no communication errors
- Text, numeric display, messaging, and trend charts
- Import any bit map or metafile format graphics to display CAD drawings, company logos, or digital photographs
- Function key and touch screen support to give you flexibility in design

Communicate to business systems

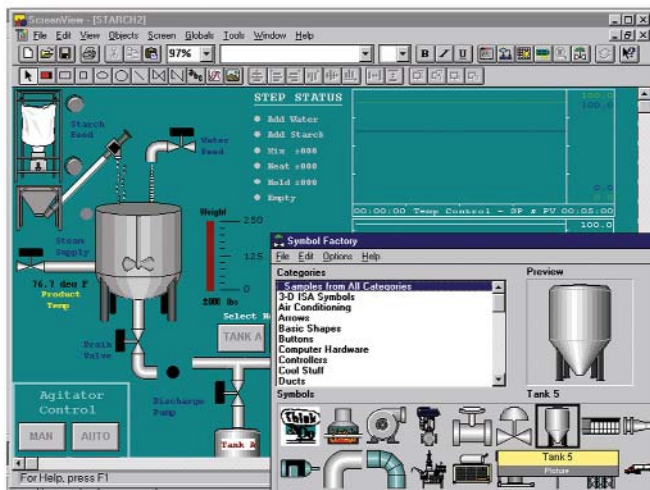
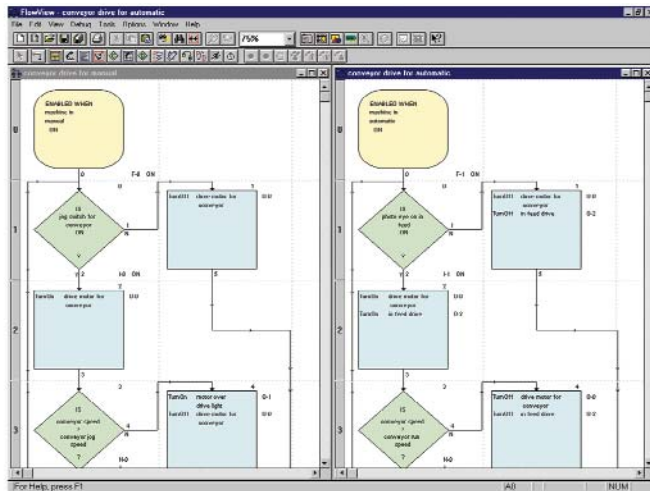
- OPC (OLE for process control) support allows easy connectivity to other standard software applications at host and ERP levels
- DCOM/COM for communications to other programs or for network communications
- OXC allows direct connections to Visual Basic® and C++ user programs
- Easy serial communication and string manipulation

For control, HMI, motion, PID, and serial communications

Chances are you think your application out in flowcharts, so why not use them to program the control logic? Think & Do Live! is completely compatible with original Think & Do Development Software applications.

Choose Live! when:

- You do not currently use or do not plan to use Windows Vista Operating System
- HMI requirements are moderate
- Hardware costs must be kept low
- SQL communications are not required



System requirements

Development System

Windows NT/2000/XP-Certified Pentium 133
Windows NT/2000/XP Operating System

RAM Requirements:

Windows NT - 32 MB
Windows 2000- 64 MB
Windows XP - 128 MB
450 MB available hard disk space
CD-ROM drive
Color monitor (min resolution 800 x 600)

Windows Runtime System

Windows NT/2000/XP-Certified Pentium 300 (or higher)
Windows NT/2000/XP Operating System
128 MB RAM
300 MB available hard disk space
CD-ROM drive (optional)
Color monitor or flat-panel display for HMI (min resolution 640 x 480)
I/O scanner or network card

PLC Runtime Target

H2-WINPLC3

NOT Vista operating system compatible

Think & Do Live! Overview



Lots of features for a little price

Think & Do Live! Development & Runtime Licenses

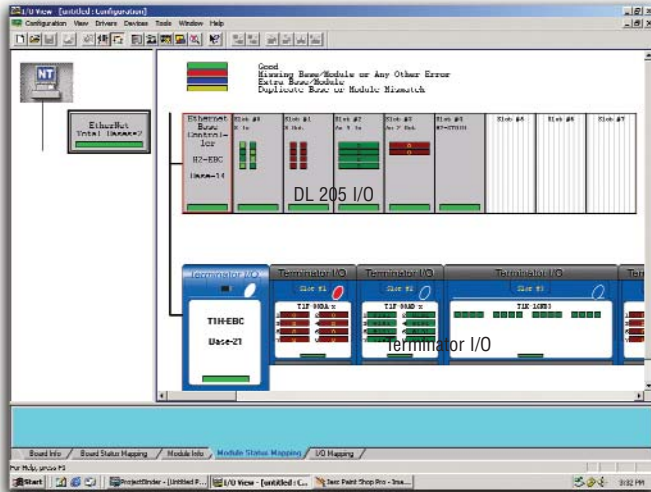
PC-ENT-LIVE <--->

Includes one Live! development and runtime license. Use to develop or modify a Think & Do Live! project on a PC.

Think & Do Live! Extended Service Support

ESS-ENT-LIVE <--->

One-year extended service support subscription for Think & Do Live!, including telephone support, email support, software maintenance updates and discounts on training seminars.

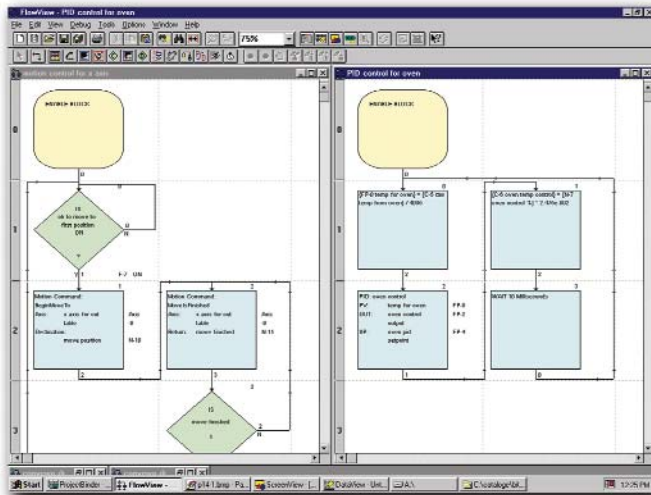


Easy connection to I/O and serial devices

- All I/O drivers are included, with virtually no limit on I/O tags including Ethernet, Profibus, DeviceNet and SDS
- Built-in serial communication block within the flowchart environment allows easy communication to barcode readers, drives, and other smart devices
- All motion drivers are included for both serial and PC-card based motion

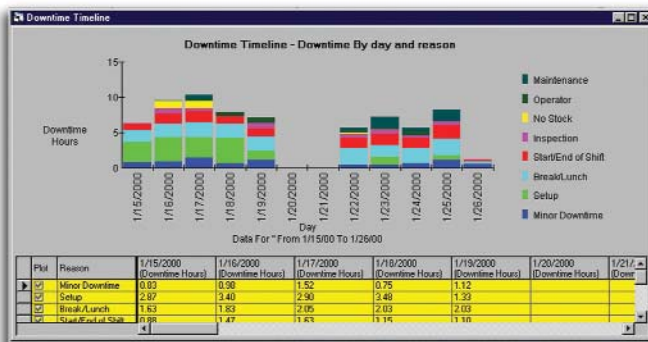
Integrated motion and PID control with easy-to-use flowchart blocks

- Common flowchart language for motion control independent of the motion card you choose
- All motion parameters accessible to flowcharts and screens
- Several motion drivers supported; check the Phoenix Contact Web site for the latest list
- Easy to synchronize motion and control with your flowchart logic
- 64 full function PID loops
- Advanced PID functions like cascaded loops, bumpless transfer, anti-windup and wildflow variables allow you to perform complex process control applications



Productivity analysis tools

- Downtime analysis — monitor machine downtime by reason codes to identify production bottlenecks
- Cyclotime analysis — View machine cycle time by hour, shift or operator to enable you to increase machine and production yield
- Capacity analysis — compare production yield versus maximum capacity to determine maintenance schedules, identify supply problems, or to justify new equipment purchases



Also includes

Powerful debugging and offline logic testing tools

Check out

www.phoenixcon.com/software for full details

I/O Selection Guide for PC Control

Our PC-based control architecture allows you to choose I/O from our most complete and flexible I/O families. AUTOMATIONDIRECT I/O also supports the most popular control networks, such as Ethernet, Profibus and DeviceNet. Check out this chart to see most of the available options. Refer to I/O specifications in the PLC or Field I/O section for a complete list.

DL205 Discrete Input Modules			DL405 Discrete Input Modules			DL405 Temperature Modules		
D2-08ND3	8-pt 12-24VDC sink/source	<--->	D4-08ND3S	8-pt 12-24VDC source	<--->	F4-08RTD	8-ch RTD	<--->
D2-16ND3-2	16-pt 24VDC sink/source	<--->	D4-16ND2	16-pt 12-24VDC source	<--->	F4-08THM	8-ch thermo F/type, (J,E,K,R,S,T,B,N,C)	<--->
D2-32ND3	32-pt 24VDC	<--->	D4-16ND2F	16-pt 12-24VDC input, fast response	<--->	DL405 Specialty Modules		
D2-32ND3-2	32-pt 5-15VDC	<--->	D4-32ND3-1	32-pt 24VDC sink/source	<--->	D4-HSC	DL405 high speed counter	<--->
D2-08NA-1	8-pt 110VAC	<--->	D4-32ND3-2	32-pt 5-12VDC sink/source	<--->	D4-16SIM	8/16 pt input simulator	<--->
D2-08NA-2	8-pt 170-265VAC, 2 commons	<--->	D4-64ND2	64-pt 20-28VDC source	<--->	Terminator I/O Discrete Input Modules		
D2-16NA	16-pt 110VAC	<--->	D4-08NA	8-pt 110-220VAC	<--->	T1K-08ND3	8-pt 12-24VDC sink/source	<--->
DL205 Discrete Output Modules			D4-16NA	16-pt 110VAC	<--->	T1K-16ND3	16-pt 12-24VDC sink/source	<--->
D2-04TD1	4-pt 12-24VDC sink	<--->	D4-16NA-1	16-pt 220VAC	<--->	T1K-08NA-1	8-pt 110VAC	<--->
D2-08TD1	8-pt 12-24VDC sink	<--->	D4-16NE3	16-pt 12-24VAC/VDC sink/source	<--->	T1K-16NA-1	16-pt 110VAC	<--->
D2-08TD2	8-pt 12-24VDC source	<--->	F4-08NE3S	8-pt 90-150VAC/DC sink/source isolated	<--->	Terminator I/O Discrete Output Modules		
D2-16TD1-2	16-pt 12-24VDC sink, 0.1A/pt 1.6A/mod	<--->	DL405 Discrete Output Modules			T1K-08TD1	8-pt 12-24VDC sink	<--->
D2-16TD2-2	16-pt 12-24VDC source, 0.1A/pt 1.6A/mod	<--->	D4-08TD1	8-pt 12-24VDC sink	<--->	T1K-08TD2-1	8-pt 12-24VDC source	<--->
D2-32TD1	32-pt 24VDC sinking	<--->	F4-08TD1S	8-pt 24-150VDC sink/source isolated out	<--->	T1H-08TDS	8-pt 12-24VDS isoated sink/source	<--->
D2-32TD2	32-pt 24VDC sourcing	<--->	D4-16TD1	16-pt 5-24VDC sink	<--->	T1K-16TD1	16-pt 12-24VDC sink	<--->
D2-08TA	8-pt 18-220VAC	<--->	D4-16TD2	16-pt 12-24VDC source	<--->	T1K-16TD2-1	16-pt 12-24VDC source	<--->
D2-12TA	12-pt 18-110VAC	<--->	D4-32TD1	32-pt 5-24VDC, sink	<--->	T1K-08TA	8-pt 110-240VAC	<--->
D2-04TRS	4-pt isolated relay 5-30VDC or 5-250VAC	<--->	D4-32TD1-1	32-pt 5-15VDC, sink	<--->	T1K-08TAS	8-pt 110-240VAC isolated commons	<--->
D2-08TR	8-pt relay, 5-30VDC or 5-240VAC	<--->	D4-32TD2	32-pt 12-24VDC, source	<--->	T1K-16TA	16-pt 110-240VAC	<--->
F2-08TR	8-pt relay, 10A/com, 5-30VDC or 5-240VAC	<--->	D4-64TD1	64-pt 5-24VDC sink	<--->	T1K-08TR	8-pt relay 5-30VDC or 5-240VAC	<--->
F2-08TRS	8-pt relay 12-28VDC, or 12-250VAC	<--->	D4-08TA	8-pt 18-220VAC	<--->	T1K-16TR	16-pt relay 5-30VDC or 5-240VAC	<--->
D2-12TR	12-pt relay, 5-30VDC or 5-250VAC	<--->	D4-16TA	16-pt 18-220VAC	<--->	T1K-08TRS	8-pt isolated relay 5-30VDC or 5-240VAC	<--->
DL205 Combination Discrete Modules			D4-08TR	8-pt relay 5-30VDC or, 5-250VAC	<--->	Terminator I/O Analog Modules		
D2-08CDR	Combo 4-pt 24VDC in and, 4-pt relay out	<--->	F4-08TRS-1	8-pt relay 12-30VDC or, 12-250VAC	<--->	T1F-08AD-1	8-ch analog input 4-20mA 14-bit res	<--->
DL205 Analog Modules			F4-08TRS-2	8-pt relay 12-30VDC or, 12-250VAC	<--->	T1F-08AD-2	8-ch analog input voltage 14-bit res	<--->
F2-04AD-1	4-ch input, 4-20mA 12 bit res	<--->	D4-16TR	16-pt relay 5-30VDC or, 5-250VAC	<--->	T1F-08DA-1	8-ch analog output 4-20mA 12-bit res	<--->
F2-04AD-2	4-ch input, voltage 12 bit res	<--->	Network Bus Interfaces and I/O Bases			T1F-08DA-2	8-ch analog output voltage 12-bit res	<--->
F2-08AD-1	8-ch input 4-20mA, 12-bit res	<--->	DL205 and DL405 bases, Terminator I/O power supplies and terminal bases, Bus adapter modules for PC control: DL205 (Ethernet, Profibus, DeviceNet, SDS), DL405 (Ethernet); Terminator I/O (Ethernet, Profibus, DeviceNet)			T1F-16AD-1	16-ch analog input 4-20mA 14-bit res	<--->
F2-08AD-2	8-ch input voltage, 12-bit res	<--->	DL405 Analog Modules			T1F-16AD-2	16-ch analog input voltage 14-bit res	<--->
F2-02DA-1	2-ch output 4-20mA, 12-bit res	<--->	F4-04AD	4-ch analog input voltage/current	<--->	T1F-16DA-1	16-ch analog output 4-20mA 12-bit res	<--->
F2-02DA-2	2-ch output voltage, 12-bit res	<--->	F4-04ADS	4-ch isolated analog voltage/current	<--->	T1F-16DA-2	16-ch analog output voltage 12-bit res	<--->
F2-02DA-1L	2-ch 4.20 mA out 12-bit, ext 12VDC pwr	<--->	F4-08AD	8-ch analog input, voltage/current	<--->	T1F-14THM	14-ch thermocouple 16-bit res	<--->
F2-02DA-2L	2-ch voltage out 12-bit, ext 12VDC pwr	<--->	F4-16AD-1	16-ch analog input, current, 12-bit	<--->	T1F-8AD4DA-1	I/O 8-ch analog input 4-ch analog output, current	<--->
F2-02DAS-1	Isolated, 2-ch 4-20mA 16-bit out	<--->	F4-16AD-2	16-ch analog input, voltage, 12-bit	<--->	T1F-8AD4DA-2	I/O 8-ch analog input 4-ch analog output, voltage	<--->
F2-02DAS-2	Isolated, 2-ch voltage 16-bit out	<--->	F4-04DA-1	4-ch analog output, current, 12-bit	<--->	Terminator I/O Specialty Modules		
F2-08DA-1	8-ch, 4-20mA, 12-bit out	<--->	F4-04DA-2	4-ch analog output, voltage, 12-bit	<--->	T1H-CTRIO	High-speed counter with pulse out	<--->
F2-08DA-2	8-ch, 0-5VDC or 0-10V, DC, 12-bit out	<--->	F4-04DAS-1	4-ch isolated, 16-bit analog out, 4-20mA	<--->			
F2-4AD2DA	4-ch in /2-ch out, 4-20mA 12-bit res.	<--->	F4-04DAS-2	4-ch isolated 16-bit analog output, voltage	<--->			
F2-8AD4DA-1	8-ch in/4-ch out, current, 16-bit	<--->	F4-08DA-1	8-ch analog output, current	<--->			
F2-8AD4DA-2	8-ch in/4-ch out, voltage, 16-bit	<--->	F4-08DA-2	8-ch 0-5VDC or 0-10VDC, 12-bit analog out	<--->			
F2-04RTD	4-channel RTD, 0.1 DEG C res	<--->	F4-16DA-1	16-ch analog output, current	<--->			
F2-04THM	4 ch thermocouple or, 16-bit volt. input	<--->	F4-16DA-2	16-ch 0-5VDC or 0-10V DC 12-bit analog out	<--->			
DL205 Specialty Modules								
H2-CTRIO	DL205 high speed counter with pulse out	<--->						
F2-08SIM	8-pt input simulator	<--->						
H2-SERIO	3-port serial for Win PLC	<--->						

Note: All networked I/O has fail-safe mode choices 1. All I/O off 2. Leave I/O in last state 3. Fail-safe pattern