

# 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.



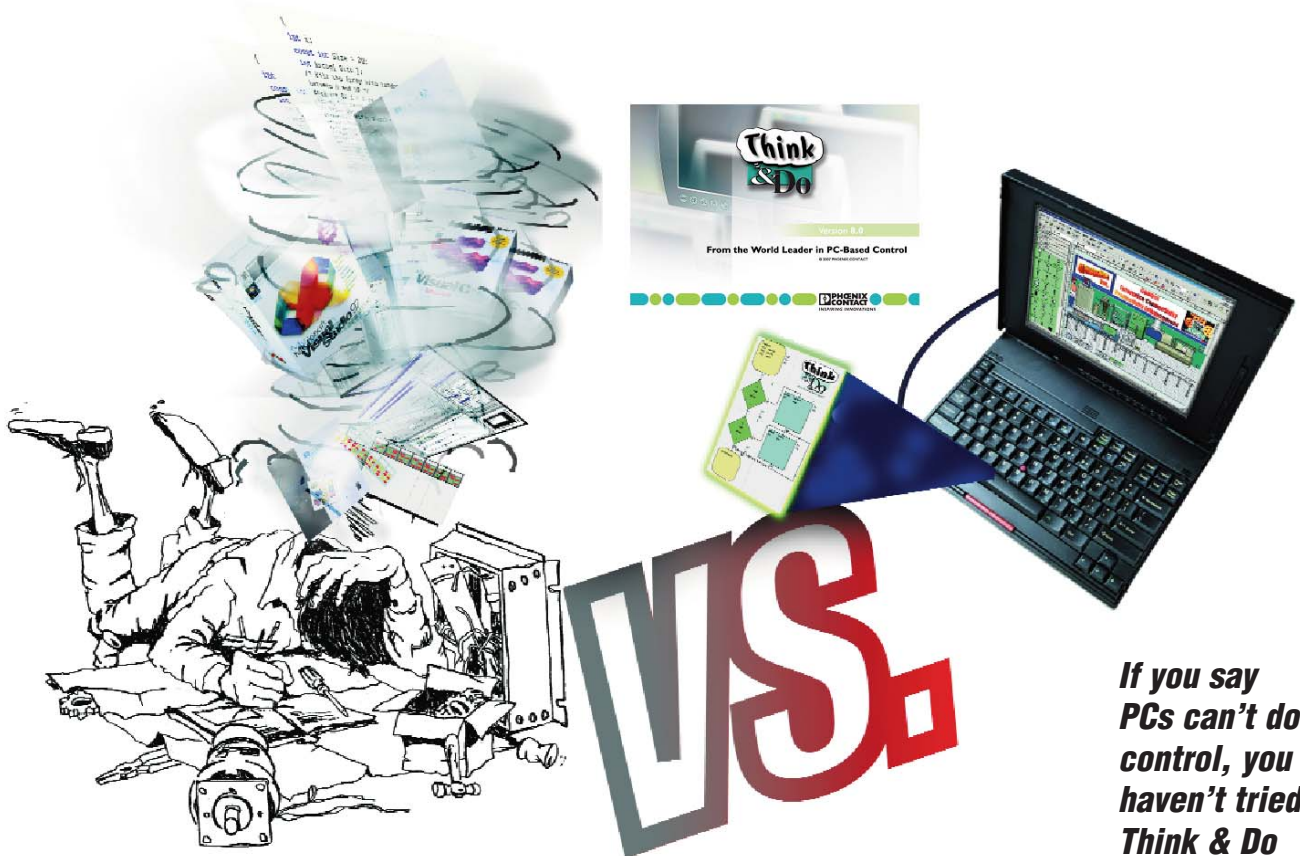
## If your application requires:

- 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



## 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

# 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	<--->	<b>DL405 Specialty Modules</b>		
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	<--->	<b>Terminator I/O Discrete Input Modules</b>		
D2-16NA	16-pt 110VAC	<--->	D4-08NA	8-pt 110-220VAC	<--->	T1K-08ND3	8-pt 12-24VDC sink/source	<--->
<b>DL205 Discrete Output Modules</b>			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	<--->	<b>Terminator I/O Discrete Output Modules</b>		
D2-16TD1-2	16-pt 12-24VDC sink, 0.1A/pt 1.6A/mod	<--->	<b>DL405 Discrete Output Modules</b>			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-16TAS	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	<--->
<b>DL205 Combination Discrete Modules</b>			D4-08TR	8-pt relay 5-30VDC or, 5-250VAC	<--->	<b>Terminator I/O Analog Modules</b>		
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	<--->
<b>DL205 Analog Modules</b>			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	<--->	<b>Network Bus Interfaces and I/O Bases</b>			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	<--->	<b>DL405 Analog Modules</b>			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	<--->	<b>Terminator I/O Specialty Modules</b>		
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	<--->			
<b>DL205 Specialty Modules</b>								
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