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.

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

The WinPLC is a low-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

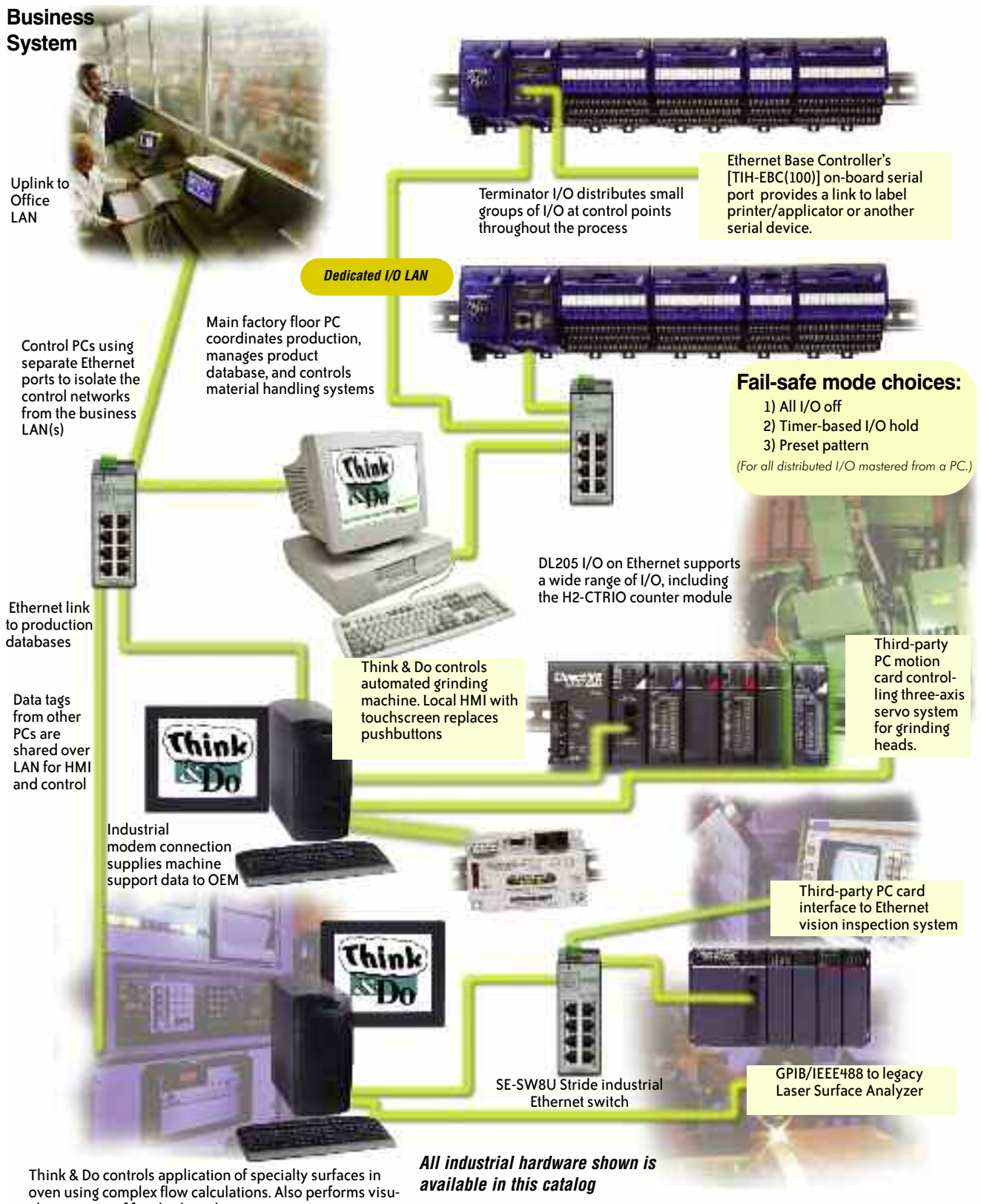
Think & Do 8.0! for WinPLC Programming (PC-TD8-USB)

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.

Note: PC Runtime Target not supported

PC Control with Field I/O

Think & Do, with your choice of I/O, is a powerful, flexible solution for all your automation needs.The example below uses Ethernet, but Think & Do PC Control supports DeviceNet, Profibus, and other popular fieldbus networks as well.



PC Control on a WinPLC

The WinPLC has open PC functionality and maintains what you love about PLCs, including the PLC package and price.

The WinPLC is a product that brings the best of the PC control and the PLC worlds to a common platform. PLCs control more automation than any other form of controller. However, it often isn't enough just to control I/O for today's business-aware applications. From the proprietary operating system and ladder logic programming to the hardware design, PLCs were not designed for handling string or array data, complex math, or network collaboration with other software applications and intelligent devices. For success with these applications, use the WinPLC.

The WinPLC module fits into the CPU slot of the popular DL205 series PLC bases for fast, convenient control of DL205 I/O modules. Programs are downloaded on the WinPLC just like a PLC. However, the WinPLC uses Windows CE, a real time operating system, with the advantages of PC software such as OPC, ActiveX® and other Microsoft communication tools. The WinPLC offers both deterministic control and PC connectivity. Control, data management, communication and integration with business systems are easy with the WinPLCs advanced software development tools.

Develop projects for the WinPLC with Think & Do 8.0 (non-keyed environment provides free WinPLC programming) or Think & Do Live!, which includes flowchart logic, reusable subcharts, PID functions, serial drivers, Modbus TCP and a free OPC/DDE server.

Or, for qualified OEMs or software developers, the WinPLC comes in a CE-only version *(available from Host Engineering directly)* for VB and C++ programmers to develop their own control code. If you are interested in the CE-only version,visit **www.hosteng.com** for details.

WinPLC features

- Fits into DL205 CPU slot
- Backplane communications to DL205 I/O
- 100 MHz CPU
- 8 MB ROM/8 MB RAM
- Microsoft® Windows® CE operating system
- 10 Mbps Ethernet port and RS232 serial port

Best of the PC world

- Easily handles complex math algorithms and string or array data
- Easy serial communications
- Built-in Ethernet port
- Standard Windows (Win CE)
- Seamless integration with HMI, SCADA and Enterprise systems
- Advanced software development tools

**** The WinPLC does not support Think & Do PC Control Software's HMI graphics, SQL communications, productivity analysis, and some motion control features.***

Best of the PLC world

- Direct backplane access to I/O
- Standard micro PLC form factor
- Diskless operation
- Non-volatile program and data memories
- Logic control independent of HMI
- Low cost

It's more than a PLC, it's a WinPLC !

WinPLC CPU

For Think & Do

8 MB ROM/ 8 MB RAM

H2-WPLC3-EN (100 MHz)....<--->

WINPLC Starter Kit

WinPLC Starter Kit for building a PC-based control system with the WinPLC. Includes a DL205 4-slot base with power supply, H2-WPLC3-EN WinPLC, 10 ft. Ethernet connecting cable, PC Ethernet Adapter card, DL205 8-point input simulator module, and DL205 8-point relay output module. Develop flowchart programs for the WinPLC with the FREE PC-TD8-USB Think & Do Demo download, which operates as a fully functioning software with no restrictions or timed limitations when targeting the WinPLC.

NOTE: WinPLC Starter Kit orders are limited to one per customer.

PC-WPLC-START ....<--->

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		
D2-08ND3	8-pt 12-24VDC sink/source	<--->
D2-16ND3-2	16-pt 24VDC sink/source	<--->
D2-32ND3	32-pt 24VDC	<--->
D2-32ND3-2	32-pt 5-15VDC	<--->
D2-08NA-1	8-pt 110VAC	<--->
D2-08NA-2	8-pt 170-265VAC, 2 commons	<--->
D2-16NA	16-pt 110VAC	<--->
DL205 Discrete Output Modules		
D2-04TD1	4-pt 12-24VDC sink	<--->
D2-08TD1	8-pt 12-24VDC sink	<--->
D2-08TD2	8-pt 12-24VDC source	<--->
D2-16TD1-2	16-pt 12-24VDC sink, 0.1A/pt 1.6A/mod	<--->
D2-16TD2-2	16-pt 12-24VDC source, 0.1A/pt 1.6A/mod	<--->
D2-32TD1	32-pt 24VDC sinking	<--->
D2-32TD2	32-pt 24VDC sourcing	<--->
D2-08TA	8-pt 18-220VAC	<--->
D2-12TA	12-pt 18-110VAC	<--->
D2-04TRS	4-pt isolated relay 5-30VDC or 5-250VAC	<--->
D2-08TR	8-pt relay, 5-30VDC or 5-240VAC	<--->
F2-08TR	8-pt relay, 10A/com, 5-30VDC or 5-240VAC	<--->
F2-08TRS	8-pt relay 12-28VDC, or 12-250VAC	<--->
D2-12TR	12-pt relay, 5-30VDC or 5-250VAC	<--->
DL205 Combination Discrete Modules		
D2-08CDR	Combo 4-pt 24VDC in and, 4-pt relay out	<--->
DL205 Analog Modules		
F2-04AD-1	4-ch input, 4-20mA 12 bit res	<--->
F2-04AD-2	4-ch input, voltage 12 bit res	<--->
F2-08AD-1	8-ch input 4-20mA, 12-bit res	<--->
F2-08AD-2	8-ch input voltage, 12-bit res	<--->
F2-02DA-1	2-ch output 4-20mA, 12-bit res	<--->
F2-02DA-2	2-ch output voltage, 12-bit res	<--->
F2-02DA-1L	2-ch 4.20 mA out 12-bit, ext 12VDC pwr	<--->
F2-02DA-2L	2-ch voltage out 12-bit, ext 12VDC pwr	<--->
F2-02DAS-1	Isolated, 2-ch 4-20mA 16-bit out	<--->
F2-02DAS-2	Isolated, 2-ch voltage 16-bit out	<--->
F2-08DA-1	8-ch, 4-20mA, 12-bit out	<--->
F2-08DA-2	8-ch, 0-5VDC or 0-10V, DC, 12-bit out	<--->
F2-4AD2DA	4-ch in /2-ch out., 4-20mA 12-bit res.	<--->
F2-8AD4DA-1	8-ch in/4-ch out, current, 16-bit	<--->
F2-8AD4DA-2	8-ch in/4-ch out, voltage, 16-bit	<--->
F2-04RTD	4-channel RTD, 0.1 DEG C res	<--->
F2-04THM	4 ch thermocouple or, 16-bit volt. input	<--->
DL205 Specialty Modules		
H2-CTRIO	DL205 high speed counter with pulse out	<--->
F2-08SIM	8-pt input simulator	<--->
H2-SERIO(-4)	3-port serial for Win PLC	<--->

DL405 Discrete Input Modules		
D4-08ND3S	8-pt 12-24VDC source	<--->
D4-16ND2	16-pt 12-24VDC source	<--->
D4-16ND2F	16-pt 12-24VDC input, fast response	<--->
D4-32ND3-1	32-pt 24VDC sink/source	<--->
D4-32ND3-2	32-pt 5-12VDC sink/source	<--->
D4-64ND2	64-pt 20-28VDC source	<--->
D4-08NA	8-pt 110-220VAC	<--->
D4-16NA	16-pt 110VAC	<--->
D4-16NA-1	16-pt 220VAC	<--->
D4-16NE3	16-pt 12-24VAC/VDC sink/source	<--->
F4-08NE3S	8-pt 90-150VAC/DC sink/source isolated	<--->
DL405 Discrete Output Modules		
D4-08TD1	8-pt 12-24VDC sink	<--->
F4-08TD1S	8-pt 24-150VDC sink/source isolated out	<--->
D4-16TD1	16-pt 5-24VDC sink	<--->
D4-16TD2	16-pt 12-24VDC source	<--->
D4-32TD1	32-pt 5-24VDC, sink	<--->
D4-32TD1-1	32-pt 5-15VDC, sink	<--->
D4-32TD2	32-pt 12-24VDC, source	<--->
D4-64TD1	64-pt 5-24VDC sink	<--->
D4-08TA	8-pt 18-220VAC	<--->
D4-16TA	16-pt 18-220VAC	<--->
D4-08TR	8-pt relay 5-30VDC or, 5-250VAC	<--->
F4-08TRS-1	8-pt relay 12-30VDC or, 12-250VAC	<--->
F4-08TRS-2	8-pt relay 12-30VDC or, 12-250VAC	<--->
D4-16TR	16-pt relay 5-30VDC or, 5-250VAC	<--->
Network Bus Interfaces and I/O Bases		
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)		
DL405 Analog Modules		
F4-04AD	4-ch analog input voltage/current	<--->
F4-04ADS	4-ch isolated analog voltage/current	<--->
F4-08AD	8-ch analog input, voltage/current	<--->
F4-16AD-1	16-ch analog input, current, 12-bit	<--->
F4-16AD-2	16-ch analog input, voltage, 12-bit	<--->
F4-04DA-1	4-ch analog output, current, 12-bit	<--->
F4-04DA-2	4-ch analog output, voltage, 12-bit	<--->
F4-04DAS-1	4-ch isolated, 16-bit analog out, 4-20mA	<--->
F4-04DAS-2	4-ch isolated 16-bit analog output, voltage	<--->
F4-08DA-1	8-ch analog output, current	<--->
F4-08DA-2	8-ch 0-5VDC or 0-10VDC, 12-bit analog out	<--->
F4-16DA-1	16-ch analog output, current	<--->
F4-16DA-2	16-ch 0-5VDC or 0-10V DC 12-bit analog out	<--->

DL405 Temperature Modules		
F4-08RTD	8-ch RTD	<--->
F4-08THM	8-ch thermo F/type, (J,E,K,R,S,T,B,N,C)	<--->
DL405 Specialty Modules		
D4-HSC	DL405 high speed counter	<--->
D4-16SIM	8/16 pt input simulator	<--->
Terminator I/O Discrete Input Modules		
T1K-08ND3	8-pt 12-24VDC sink/source	<--->
T1K-16ND3	16-pt 12-24VDC sink/source	<--->
T1K-08NA-1	8-pt 110VAC	<--->
T1K-16NA-1	16-pt 110VAC	<--->
Terminator I/O Discrete Output Modules		
T1K-08TD1	8-pt 12-24VDC sink	<--->
T1K-08TD2-1	8-pt 12-24VDC source	<--->
T1H-08TDS	8-pt 12-24VDS isoated sink/source	<--->
T1K-16TD1	16-pt 12-24VDC sink	<--->
T1K-16TD2-1	16-pt 12-24VDC source	<--->
T1K-08TA	8-pt 110-240VAC	<--->
T1K-08TAS	8-pt 110-240VAC isolated commons	<--->
T1K-16TA	16-pt 110-240VAC	<--->
T1K-08TR	8-pt relay 5-30VDC or 5-240VAC	<--->
T1K-16TR	16-pt relay 5-30VDC or 5-240VAC	<--->
T1K-08TRS	8-pt isolated relay 5-30VDC or 5-240VAC	<--->
Terminator I/O Analog Modules		
T1F-08AD-1	8-ch analog input 4-20mA 14-bit res	<--->
T1F-08AD-2	8-ch analog input voltage 14-bit res	<--->
T1F-08DA-1	8-ch analog output 4-20mA 12-bit res	<--->
T1F-08DA-2	8-ch analog output voltage 12-bit res	<--->
T1F-16AD-1	16-ch analog input 4-20mA 14-bit res	<--->
T1F-16AD-2	16-ch analog input voltage 14-bit res	<--->
T1F-16DA-1	16-ch analog output 4-20mA 12-bit res	<--->
T1F-16DA-2	16-ch analog output voltage 12-bit res	<--->
T1F-14THM	14-ch thermocouple 16-bit res	<--->
T1F-8AD4DA-1	I/O 8-ch analog input 4-ch analog output, current	<--->
T1F-8AD4DA-2	I/O 8-ch analog input 4-ch analog output, voltage	<--->
Terminator I/O Specialty Modules		
T1H-CTRIO	High-speed counter with pulse out	<--->

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