

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 Entivity PC Control. Entivity, 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
- Online productivity tools to analyze and improve the performance of your process

It requires Entivity PC Control!

Why is Entivity PC control so much easier?

With Entivity, 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. Entivity 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 Entivity to seamlessly support a variety of specialty motion, vision systems, and field network interface PC cards. The PC and Windows allow Entivity to provide simple communication links on serial or Ethernet networks. Entivity 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
Entivity PC
control.**

THREE PC CONTROL SOLUTIONS FROM ENTIVITY

1
entivitystudio™
 Powered by
Visio

Supports Windows NT, 2000 and XP
 Now with Visio 2002

Entivity Studio

- 1) Studio Development/run-time license (PC-ENT-SDD)
- Runtime licenses
- 2) Studio Runtime License (PC-ENT-SDR)
- 3) Remote Screen Node (PC-ENT-SRN)

Includes:

- Advanced Visio graphics
- Flowchart logic
- Superior HMI features
- Easy SQL interface
- Linked flowchart libraries
- Remote screen development
- Importing screens
- Project Sync, multi-user development environment support
- 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
- Productivity analysis tools
- WinPLC support
- EZTouch/EZText support
- Supports Windows NT, 2000 and XP

Choose Studio when you need:

1. to communicate to a SQL database
2. a superior HMI with animation and advanced Visio graphics
3. multiple developers on same projects or sharing flowcharts on many projects

System requirements:

Recommended:
 700+MHz PIII CPU, 256 MB RAM, 32 MB VRAM, 625 MB(NT)/2.56 GB (W2K) UDMA/SCSI HDD [560MB (additional 180 MB during install) for Studio & Visio, not including OS]
Minimum:
 128 MB RAM, 4 MB VRAM

2
Think & Do Live!
 from entivity™

Completely compatible with original Think&Do Development Software applications
 Supports Windows NT, 2000 and XP

Think & Do Live!

Development/run-time license (PC-ENT-LIVE)

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
- EZTouch/EZText support
- Supports Windows NT, 2000 and XP

Choose Live! when:

- 1) HMI requirements are moderate
- 2) No SQL is required
- 3) Projects are created by a single developer
- 4) Hardware costs must be minimal

System requirements:

Pentium 133 MHz CPU, 2 MB VRAM, 64 MB (32 MB min with NT) RAM, 500 MB(NT)/2.31 GB (W2K) UDMA/SCSI HDD [300 MB (additional 130MB during install) for Live!, not including OS]



The WinPLC is our lowest cost PC control solution

The WinPLC, a hybrid PC/PLC solution

The WinPLC is a truly unique hybrid solution providing Entivity PC control programming benefits on a PLC-style device. Develop applications with either Entivity Studio or Think&Do Live! and download them to the WinPLC. Like PLCs, one development license serves unlimited WinPLC applications.

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 full power or priced PC

*WinPLCs have no native HMI visualization

Download projects to the WinPLC just like you would with a PC!

WinPLC CPU Modules		
For both Entivity Studio and Think & Do Live!		
WPLC	Memory	Speed
H2-WPLC2-EN	4 MB ROM/2 MB RAM	(100MHz)
H2-WPLC3-EN	8 MB ROM/8 MB RAM	(100MHz)

Entivity DataPak (PC-ENT-DAP)

Entivity's Data Acquisition Pack toolkit enables programmers to create applications that acquire real-time data from an Entivity runtime system. Interfaces include OPC, DDE, and VB/C++ programming control. For the WinPLC (or other CE-based platform), this kit allows monitoring, starting/stopping a station, and up/downloading existing project files. No runtime licenses required. The PC-ENT-DAP is compatible with all versions of Entivity Studio, Think & Do Live!, and Think & Do version 5.2 or later

Check out <http://www.entivity.com> for more details

SOFTWARE



PC CONTROL: ENTIVITY STUDIO



Supports Windows NT, 2000 and XP,
with Visio 2002

Powered by



Entivity Studio

- 1) Studio Development/Run-time License (PC-ENT-SDD)
- Runtime license
- 2) Studio Run-time License (PC-ENT-SDR)
- 3) Remote Screen Node(PC-ENT-SRN)

Our customers report they have reduced their development time by 30-70% when compared to traditional solutions.

Entivity Studio products:

- 1) Entivity Studio Development & Runtime License (PC-ENT-SDD): The complete development product. It includes a Studio development, runtime and Screen Node license. Use this license to develop or modify an Entivity Studio project on a PC or WinPLC. A development station can run not only the control portion of the project but also any remote HMI screens developed for the project.
- 2) Entivity Studio Run-time License (PC-ENT-SDR): A run-time-only license for operating systems. Once a project has been developed, the run-time license is required for each PC acting as a controller with the project. A run-time station can run local HMI screens but not those designated as remote screens. Stacking a development parallel port key on a run-time key will allow complete development capabilities for modifications/debugging on a run-time-only PC controller.
- 3) Entivity Studio Remote Screen Node (PC-ENT-SRN): Runtime License for remote HMI screens. Remote screens are developed under Entivity Studio (PC-ENT-SDD). This license allows one PC to attach across a LAN to the remote screens from one or more Studio projects running on a PC or WinPLC. Remote screens may be identical copies of local screens or entirely new HMI screens.

Entivity Studio Features:

Enhanced from

Think & Do Live!

- Superior HMI features— now a best-in-class HMI creator
- SQL Interface — easy, direct ODBC communication integration
- Linked flowchart libraries
- Remote screen Development
- Includes screen Node Runtime License*
- Importing screens
- Project Sync, multi-user development environment support
- MODBUS Plus, MODBUS TCP and MODBUS RTU communication
- Integrated vision control
- Context sensitive Help

**Remote Screen Node (PC-ENT-SRN) required on each remote HMI PC.*

Retained from

Think & Do Live!

- Common database for HMI, logic and motion
- Integrated motion control — support for multiple motion vendors
- Powerful debugging tools — debug your program in real-time
- Offline logic testing — debug your logic wherever you are
- Integrated serial communication — built-in serial block easily captures serial data
- Supports Fieldbus I/O using Ethernet, MODBUS TCP, MODBUS RTU, DeviceNet, Profibus and more
- PID (64 loops) — easy fill-in-the-blank loop control
- Productivity analysis tools — easy tools to improve your profitability
- Develop unlimited applications for the WinPLC
- EZTouch/EZText support
- Includes Runtime License

Entivity Studio system requirements:

Recommended:

700+MHz PIII CPU, 256 MB RAM, 32 MB VRAM, 625 MB(NT)/2.56 GB (W2K) UDMA/SCSI HDD [560 MB (Studio & Visio), 740 MB (for install) not including OS]

Minimum:

128 MB RAM, 4 MB VRAM

All Studio packages include a parallel port hardware key.

Let Entivity show you how Studio can work for you.

Call them at 1-800-PC CNTRL, or visit their Web site at www.entivity.com for application testimonials and more detailed product information.

For details on product support and upgrades, check out

Entivity Support Subscription (ESS) at

<http://www.entivity.com/ess.htm>

SOFTWARE

PC CONTROL: THINK & DO LIVE! FROM ENTIVITY



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.

Entivity's 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 re-use it on multiple projects
- Online changes are supported with graphical debugging to simplify troubleshooting your application
- Develop for Windows 2000, NT and CE platforms in the same environment

Built-in HMI with same database

- Full screen editor with over 2000 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

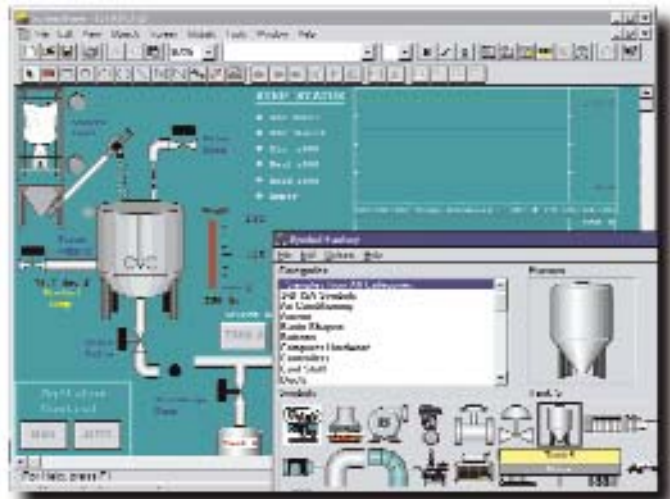
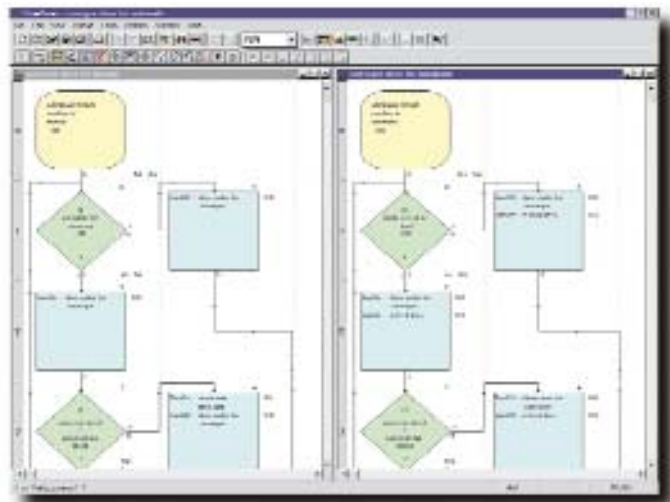
Communicate to business systems

- 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
- OCX allows direct connections to Visual Basic® and C++ user programs
- Easy serial communication and string manipulation

Visit www.entivity.com for XP support availability

Choose Live! when:

- 1) HMI requirements are moderate
- 2) Hardware costs must be kept low
- 3) SQL communications are not required



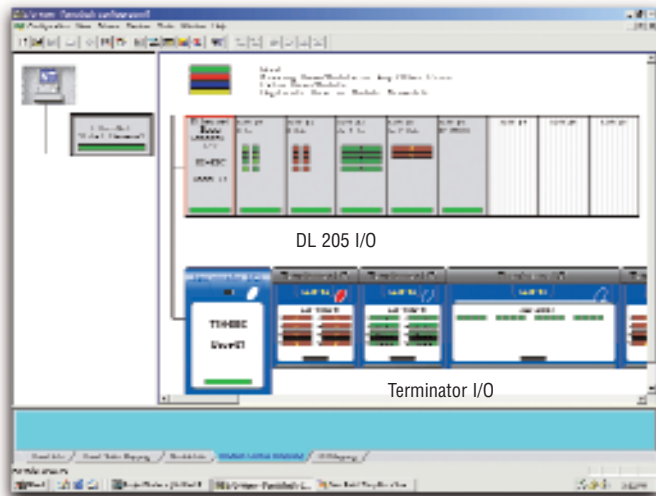
System requirements

- Pentium 133 MHz CPU or better
- 64 MB RAM
- 260 MB HDD (not including OS)

PC CONTROL: THINK & DO LIVE! FROM ENTIVITY



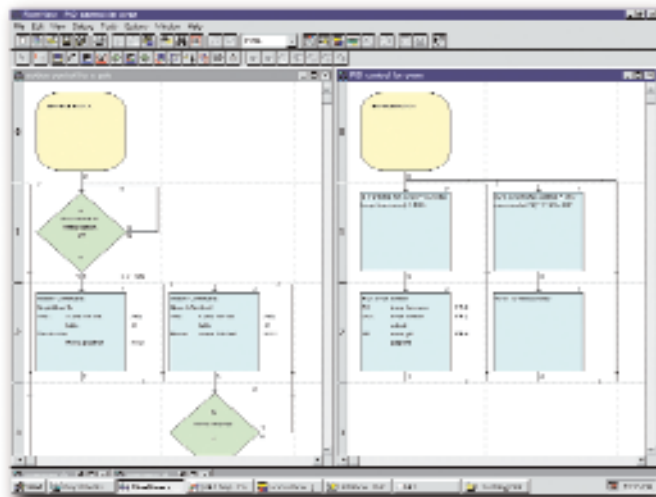
Lots of features for a little price



Easy connection to I/O and serial devices

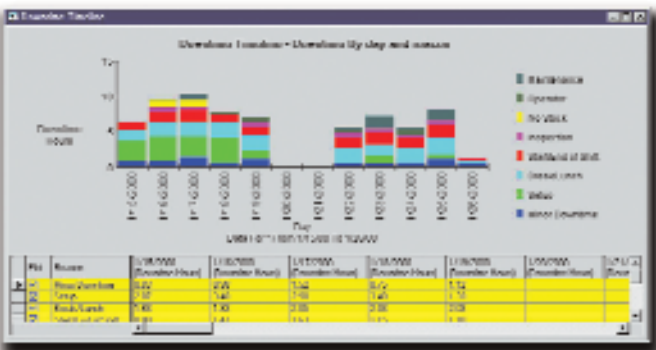
- All I/O drivers are included, with virtually no limit on I/O tags including Ethernet, Profibus, DeviceNet and SDS
- Built-in serial communication block within the flowchart environment allows easy communication to barcode readers, drives, and other smart devices
- All motion drivers are included for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

SOFTWARE



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 Entivity 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
- Cycletime 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.entivity.com for full details

PC CONTROL WITH FIELD I/O

PC control by Entivity with your choice of I/O is a powerful, flexible solution for all your automation needs.

The example below uses Ethernet, but Entivity PC Control supports DeviceNet, Profibus, and other popular fieldbus networks as well.

Business System



Uplink to Office LAN



Ethernet Base Controller's (TIH-EBC) on-board serial port provides a link to label printer/appliator

Terminator I/O distributes small groups of I/O at control points throughout the process

Dedicated I/O LAN



Control PCs use separate Ethernet ports to isolate the control networks from the business LAN(s)

Main factory floor PC coordinates production, manages product database, and controls material handling systems

Fail-safe mode choices:

- 1) All I/O off
- 2) Timer-based I/O hold
- 3) Pre-set pattern

(For all distributed I/O mastered from a PC.)

Ethernet link to production databases

Data tags from other PCs are shared over LAN for HMI and control

LCD touch monitor FPM-180-TS



Industrial modem connection supplies machine support data to OEM

Think&Do Live! controls automated grinding machine. Local HMI with touchscreen replaces pushbuttons

DL205 I/O on Ethernet supports a wide range of I/O, including the H2-CTRIO counter module

Third-party PC motion card controlling three-axis servo system for grinding heads.

LCD touch monitor FPM-170-TS



E-SW05U industrial Ethernet switch

Third-party PC card interface to Ethernet vision inspection system

GPB/IEEE488 to legacy Laser Surface Analyzer

Think & Do Live! controls application of specialty surfaces in oven using complex flow calculations. Also performs visual inspection of finished product

All industrial hardware shown is available in this desk reference

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 revolutionary 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 the 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 Entivity Studio or Think & Do Live! Or, for qualified OEMs or software developers, the WinPLC comes in a CE-only version for VB and C++ programmers to develop their own control code. Entivity versions of the WinPLC and its development software can be purchased from AUTOMATIONDIRECT. If you are interested in the CE-only version, visit www.hosteng.com for details.



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 Entivity PC Control Software's HMI graphics, SQL communications, productivity analysis, and some motion control features.*

WinPLC features

- Fits into DL205 CPU slot
- Backplane communications to DL205 I/O
- 40 Mhz or 100 Mhz CPU models
- 4 MB ROM/2 MB RAM (WPLC1 and WPLC2)
- 8 MB ROM/8 MB RAM (WPLC3)
- Microsoft® Windows® CE operating system
- 10 Mbps Ethernet port and RS232 serial port



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 CPUs

For both Entivity Studio and Think & Do Live!

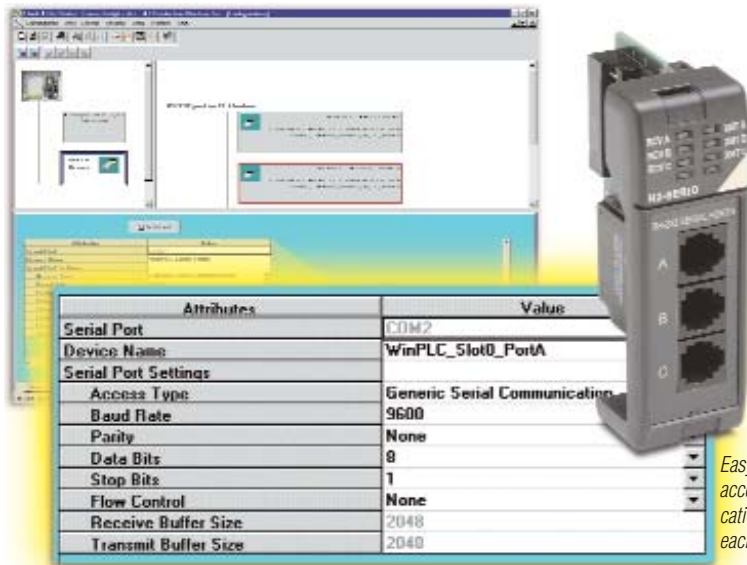
4 MB ROM/2 MB RAM

H2-WPLC2-EN (100MHz)

**CPU with extra memory
8 MB ROM/ 8 MB RAM**

H2-WPLC3-EN (100 MHz)

SERIAL COMMUNICATIONS IN AN EBC OR WINPLC BASE



Easy point-and-click access to set communication parameters for each port individually

H2-SERIO

In addition to the built-in serial port on the WinPLC or EBC, you can also add as many as nine additional serial ports for Entivity applications. Install up to three H2-SERIO modules into a WinPLC base or an H2-EBC base, and you have “PC-like” serial ports to communicate to multiple serial devices, such as barcode scanners. All Entivity products include advanced string and array functions that make manipulating serial data a snap.

Both Entivity and Think & Do Live! support easy point-&-click access to set baud rate, parity, data bits, and stop bits for each port. Entivity allows each port to be designated as a MODBUS slave or a generic serial device. Each port on the H2-SERIO module is capable of full hardware handshaking.

H2-SERIO Specifications	
Module Type	Intelligent module for use with H2-EBC and all WinPLCs
Number of Modules Supported per WinPLC	3
Connector	RJ12 jack
Power Consumption	210mA @ 5VDC
Operating Environment	0 to 60°C (32°F to 140°F), 5% to 95% RH (non-condensing)
Baud Rates	300 - 57.6 Kbaud

RJ12 (6P6C) female modular connector

H2-SERIO port pin assignments

- 1 0V Power (-) connection (GND)
- 2 CTS Clear to Send
- 3 RXD Receive Data (RS232C)
- 4 TXD Transmit Data (RS232C)
- 5 RTS Request to Send
- 6 0V Signal Ground (GND)

Note: While the H2-SERIO will support virtually any serial device, processing large amounts of serial data will increase system response time. This is important to consider when using multiple H2-SERIO modules, especially in a WINPLC local base that also includes an H2-ERM, H2-CTRIO or other specialty modules.

Due to the large amount of data inherent with serial devices, the H2-SERIO module is not supported across an H2-ERM - H2-EBC link. The H2-SERIO module is supported in a WinPLC local base and in H2-EBC bases connected to a PC system master.

ETHERNET I/O FROM A WINPLC BASE



H2-ERM
H2-ERM-F

H2-ERM(-F)

The Ethernet Remote Master H2-ERM (-F) allows a WinPLC solution to expand beyond a single I/O base, over a high-speed Ethernet link. Add an H2-ERM to a WinPLC local base and connect it with one or more EBCs (Ethernet Base Controller) to control larger amounts of I/O or to distribute your I/O for more convenient wiring. Both Entivity Studio and Think & Do Live! support the H2-ERM module.

The H2-ERM connects to your control network using Category 5 UTP cables for cable runs up to 100 meters. Use repeaters to extend distances and expand the number of nodes.

Specifications	H2-ERM	H2-ERM-F
Communications	10BaseT Ethernet	10BaseFL Ethernet
Data Transfer Rate	10Mbps	
Link Distance	100 meters (328 ft.)	2K meters (6560 ft.)
Ethernet Port	RJ45	ST-style fiber optic
Ethernet Protocols	TCP/IP, IPX	
Power Consumption	530mA @5VDC	670mA @5VDC
Usage	One ERM per WinPLC system	

Our fiber optic version uses industry standard 62.5/125 ST-style fiber optic cables and can be run up to 2,000 meters.

The WinPLC with the H2-ERM can be configured in complex systems with any of several specialty modules. Therefore, to ensure reliable performance on any system, Entivity's default support for the H2-ERM product is one H2-ERM with one H2-EBC. If more than one EBC is desired, please call Entivity technical support to discuss your application. Entivity technical support can be reached at 734-205-5000 or send an e-mail to info@entivity.com

A PC WITH WINPLC SYSTEM

A great material handling solution

Data flows between control system and order processing system



Multi-port Ethernet card(s) save the cost of a managed switch (IP-forwarding must be enabled)

PC controls sortation machine and has HMI and motion control. Tracks packages from induction to diverting location

Think & Do Live! v5.5 with H2-SERIO and H2-ERM support



DL205 remote I/O base with Counter module (H2-CTRIO) for counting and pulse output



Terminator I/O on Ethernet for fastest response



Terminator I/O combines I/O modules with a terminal block base for very compact I/O enclosures along sortation system



Data tag links between WinPLC and PC systems

E-SW05U industrial Ethernet switch



EZ-S6C-FS touch panel



WinPLC used here for local logic. Don't need local logic? Use an H2-EBC for the same I/O and serial functionality with Live! version 5.5 or Studio



Add packaging station modules as required

Induction station

WinPLC controls conveyors from warehouse pick area to induction area. The WinPLC with Ethernet Remote Master (H2-ERM) and 3-port serial module (H2-SERIO) has serial interfaces to a tote scanner and operator interfaces.

Serial link to tote scanner



EZ-S8C-FS touch panel

EZ-420 text panel



Packing stations

WinPLC with local I/O for indicator lights, packing station sensors and interlocks to take-away conveyors. H2-SERIO 3-port serial modules provide links to packing station devices. Operators pack and weigh the packages, and apply and scan each label before sending packages to the shipping area.

Up to 10 serial ports per WinPLC base

Note: Large volumes of serial data will impact WinPLC I/O scan time.

SOFTWARE

WINPLC AND PC CONTROL STARTER KITS

Ready-to-go embedded control

The WinPLC gives you the power, performance and packaging of a PLC, with the communications of a PC.

Despite all of its advantages, AUTOMATIONDIRECT recognizes that you want to “test the waters” before you jump to the WinPLC. So, we created this convenient starter kit and priced it to entice you. We are confident that once you try the WinPLC, you will see how it overcomes many of the shortcomings you’ve experienced with traditional PLCs.

Look at all you get:

- Full copy of Think & Do Live! Development Software by Entivity
- WinPLC preloaded with WinCE and run-time kernel
- Ethernet PC adapter card and cable to communicate from your PC to the WinPLC
- DL205 4-slot base with power supply, 8-pt. input simulator and 8-pt. relay output
- “Getting Started” booklet to step you through your first project
- Example project to get you running immediately

Everything you need to experience the power of the WinPLC, without having to work hard to get it. And if you try it within 30 days and are not satisfied, you can return it for a full refund.

The starter kit parts (except the simulator module) can be used on an actual project, or it can make a great development kit too.



Limit one PC-WPLC-START starter kit per customer.



Ready-to-go PC control

PC control can offer significant advantages over PLC control, but we realize “new and different” often means you want us to “show me it works” before you embrace it. As a direct seller, we can’t come show you, but we’ve made this convenient starter kit so you can experience PC control for yourself without having to hassle with any details up front. The starter kit makes it convenient; the products will do the convincing. If you decide it’s not for you, just send it back within 30 days for a full refund.

Here’s what you get:

- Full copy of the Think & Do Live! Development Software by Entivity
- Ethernet PC adapter card and cable to communicate from your PC to the I/O bases
- DL205 4-slot base with power supply, Ethernet-base controller module, 8-pt. input simulator and 8-pt. relay output
- “Getting Started” booklet to step you through your first project
- Example project to get you running immediately

Just install Think & Do Live! software and the Ethernet card (or use yours) in your PC and you’re ready to go. Seminars and sales pitches just can’t give you the experience you’ll get from a little “hands-on” test drive. The starter kit parts (except the simulator module) can be used on an actual project, or it makes a great development kit too.

Limit one PC-505-START starter kit per customer.



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

DL405 Discrete Input Modules		
D4-08ND3S	8-pt 12-24VDC source	check
D4-16ND2	16-pt 12-24VDC source	check
D4-16ND2F	16-pt 12-24VDC input, fast response	check
D4-32ND3-1	32-pt 24VDC sink/source	check
D4-32ND3-2	32-pt 5-12VDC sink/source	check
D4-64ND2	64-pt 20-28VDC source	check
D4-08NA	8-pt 110-220VAC	check
D4-16NA	16-pt 110VAC	check
D4-16NA-1	16-pt 220VAC	check
D4-16NE3	16-pt 12-24VAC/VDC sink/source	check
F4-08NE3S	8-pt 90-150VAC/DC sink/source isolated	check
DL405 Discrete Output Modules		
D4-08TD1	8-pt 12-24VDC sink	check
D4-16TD1	16-pt 5-24VDC sink	check
D4-16TD2	16-pt 12-24VDC source	check
D4-32TD1	32-pt 5-24VDC, sink	check
D4-32TD1-1	32-pt 5-15VDC, sink	check
D4-32TD2	32-pt 12-24VDC, source	check
D4-64TD1	64-pt 5-24VDC sink	check
D4-08TA	8-pt 18-220VAC	check
D4-16TA	16-pt 18-220VAC	check
D4-08TR	8-pt relay 5-30VDC or, 5-250VAC	check
F4-08TRS-1	8-pt relay 12-30VDC or, 12-250VAC	check
F4-08TRS-2	8-pt relay 12-30VDC or, 12-250VAC	check
D4-16TR	16-pt relay 5-30VDC or, 5-250VAC	check
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	check
F4-04ADS	4-ch isolated analog voltage/current	check
F4-08AD	8-ch analog input, voltage/current	check
F4-16AD-1	16-ch analog input, current, 12-bit	check
F4-16AD-2	16-ch analog input, voltage, 12-bit	check
D4-02DA	2-ch analog output, voltage/current, 12-bit	check
F4-04DA	4-ch analog output, voltage/current, 12-bit	No
F4-04DA-1	4-ch analog output, current, 12-bit	check
F4-04DA-2	4-ch analog output, voltage, 12-bit	check
F4-04DAS-1	4-ch isolated, 16-bit analog out, 4-20mA	check
F4-04DAS-2	4-ch isolated 16-bit analog output, voltage	check
F4-08DA-1	8-ch analog output, current	check
F4-08DA-2	8-ch 0-5VDC or 0-10V/DC, 12-bit analog out	check
F4-16DA-1	16-ch analog output, current	check
F4-16DA-2	16-ch 0-5VDC or 0-10V DC 12-bit analog out	check

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

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



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