Three PC Control Solutions using Think & Do

1 Think & Do 8.0

PC-TD8-USB <--->
USB key Development and Runtime key

PC-TD8-WEB4-USB <--->
Four concurrent with USB key with 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

2 Think & Do Live!™

Completely compatible with original Think&Do Development Software applications

Think & Do Live!

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

PC-WPLC-LIVE <--->
WinPLC programming pack (HMI creator and external I/O drivers not included)

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

3

The WinPLC is our lowest cost PC control solution

The WinPLC, a hybrid PC/PLC solution

H2-WPLC3-EN <--->
Development/run-time license
For Think & Do Live! 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 Live! 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

Think & Do Live! for WinPLC Programming Pack (PC-WPLC-LIVE)

Just the programming features needed for the WinPLC at a low price. Includes flowchart logic, reusable subcharts, PID functions, serial drivers, Modbus TCP/IP and a free OPC/DDE server.

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)

PLC Runtime Target

H2-WINPLC3

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.

Business System

Uplink to Office LAN

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

Ethernet Base Controller's [TIH-EBC(100)] on-board serial port provides a link to label printer/applicator or another serial device.

Dedicated I/O LAN

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

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

Fail-safe mode choices:

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

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

Ethernet link to production databases

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

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

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

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

Industrial modem connection supplies machine support data to OEM

Third-party PC card interface to Ethernet vision inspection system

SE-SW8U Stride industrial Ethernet switch

GPIB/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 catalog

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,Think & Do Live!, or the low cost Live! programming pack for the WinPLC (PC-WPLC-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 Live!

8 MB ROM/ 8 MB RAM

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

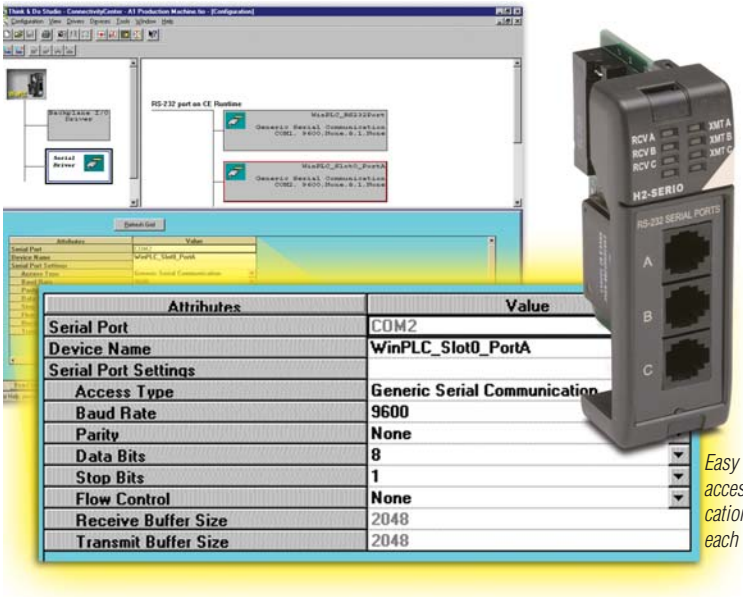
WINPLC Starter Kit

WinPLC Starter Kit for building a PC-based control system with the WinPLC. Includes Think & Do Live! WinPLC Programming Pack software, a DL205 4-slot base with power supply, H2-WPLC3-EN WinPLC, a 10 ft. Ethernet connecting cable, an Ethernet Adapter card for your PC, a DL205 8-point input simulator module, and a DL205 8-point relay output module.

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

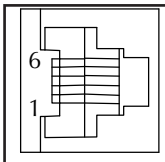
PC-WPLC-START ....<--->

Serial Communications via EBC or WinPLC



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

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 baud - 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)

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 Think & Do 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 Think & Do products include advanced string and array functions that make manipulating serial data a snap.

Both Think & Do Studio and Think & Do Live! support easy point-&-click access to set baud rate, parity, data bits, and stop bits for each port. Think & Do 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.

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 EBC (Ethernet Base Controller) to control larger amounts of I/O or to distribute your I/O for more convenient wiring. Both Think & Do Studio and Think & Do Live! support the H2-ERM module.

The H2-ERM connects to your control network using a Category 5 UTP cable for cable runs up to 100 meters. Use repeaters to extend distances.

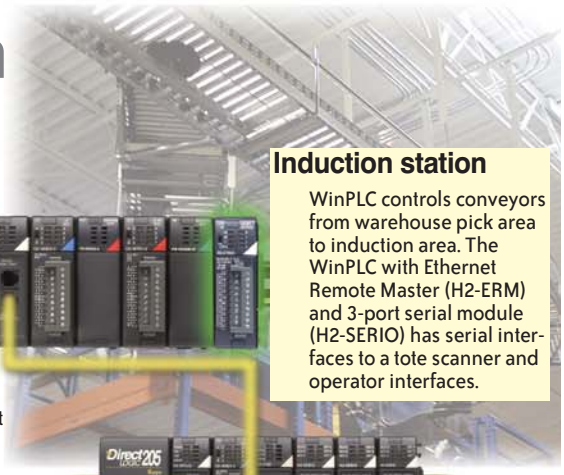
Our fiber optic version uses industry standard 62.5/125 ST-style fiber optic cables and can be run up to 2,000 meters.

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	

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, default support for the H2–ERM product is one H2–ERM with one H2–EBC.

A PC with WinPLC System

A great material handling solution



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.

Data flows between control system and order processing system

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

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

Terminator I/O on Ethernet for fastest response

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

Serial link to tote scanner

Touch panel

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

SE-SW8U Stride industrial Ethernet switch

Data tag links between WinPLC and PC systems

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! or Studio V8.0

Add packaging station modules as required

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.

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	<--->
F2-04AD-1L	4-pt in 4-20mA, 12 bit, ext 12VDC pwr	<--->
F2-04AD-2L	4-pt in voltage, 12 bit, ext 12VDC pwr	<--->
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	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