

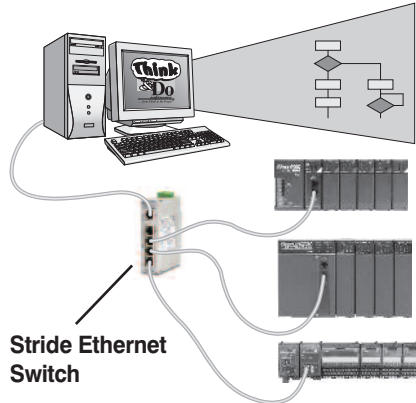
# Ethernet Base Controller Modules

## Ethernet Base Controller Modules (EBC)

H2-EBC100 <---->  
H2-EBC-F <---->



Specifications	H2-EBC100	H2-EBC-F
<b>Communications</b>	10/100Base-T Ethernet	10Base-FL Ethernet
<b>Data Transfer Rate</b>	100 Mbps max.	10 Mbps max.
<b>Link Distance</b>	100 meters (328 ft)	2,000 meters (6,560 ft)
<b>Ethernet Port / Protocols</b>	RJ45, TCP/IP, IPX, Modbus TCP/IP, DHCP, HTML configuration	ST-style fiber optic , TCP/IP, IPX
<b>Serial Port / Protocols</b>	RJ12, K-Sequence, ASCII IN/OUT Modbus RTU	None
<b>Power Consumption</b>	300 mA	640 mA
<b>Manufacturer</b>	Host Automation Products, L.L.C.	



Stride Ethernet Switch

## Software developers

For programmers developing custom drivers for our I/O, we offer a free Ethernet Software Development Kit (SDK). The SDK, developed and offered by Host Automation Products, L.L.C., provides a simplified API for interfacing with the H2-EBC100 or H2-EBC-F. The software interface libraries are provided for WIN32, WIN16, and DOS operating systems. The source code is available to developers under a non-disclosure agreement. Visit the technical support link at our Web site, or go to [www.hosteng.com](http://www.hosteng.com) for more information.

## Off-the-shelf solutions

You can purchase PC-based control software that is ready to use with the H2-EBC100 or H2-EBC-F module. PC-based control packages are equipped with compatible I/O device drivers, program development tools, and runtime environments. For a single-source integrated PC-based control solution that ships with everything you need to make your PC into an industrial controller, see the PC-based Control section of this catalog. Most of the software packages listed below allow you to connect serial devices, such as barcode readers, to the H2-EBC100's serial port.

**The chart below identifies vendors that have PC-based Control products ready to control DirectLOGIC I/O, or have products to be released in the immediate future.**

```

READ I/O
int HEIReadIO
(
    HEIDevice *pDevice,
    Byte *pBuffer,
    WORD BuffSize
);

WRITING I/O
int HEIWriteIO
(
    HEIDevice *pDevice,
    BYTE *pData,
    WORD SizeofData,
    BYTE *pReturnData,
    WORD
    *pSizeofReturnData
);
    
```



## Easy to use, reliable and fast

The H2-EBC100 and H2-EBC-F module plugs into the CPU slot of any DL205 I/O base and supports all DL205 discrete and analog I/O modules, the H2-SERIO(-4) and H2-CTRIO specialty modules. All EBC modules can be configured using NetEdit3, a free Windows software utility. The H2-EBC100 also supports HTML configuration.

## Use EBCs for PC-based control and for H\*-ERM remote I/O slaves

The H2-EBC100 and H2-EBC-F Ethernet Base Controller modules provide a low-cost, high-performance Ethernet link between DL205 I/O and your PC-based control system or WinPLC/DL205/ DL405 CPUs using the H\*-ERM module for remote I/O. The H2-EBC100 can also be used to connect your DL205 I/O to a Modbus TCP/IP client (master). The H2-EBC100 supports industry standard 10/100BaseT Ethernet communications, and the H2-EBC-F module supports 10BaseFL (fiber optic) Ethernet communications standards. The EBC modules are compatible with TCP/IP, IPX and Modbus TCP/IP (H2-EBC100 only) protocols for flexible PC communications. EBC modules offer:

- Lower cost on your *DirectLOGIC* I/O system when compared to competitive I/O
- Virtually unlimited number of I/O points
- Deterministic I/O updates on dedicated networks
- Fast I/O updates (< 1 ms per base)
- On board serial port for possible operator panel, ASCII In/Out, etc. (serial port not supported when used with ERM module)

Vendor	Product	Web Address
AutomationDirect	KEPDirect EBC I/O Server	<a href="http://www.automationdirect.com">www.automationdirect.com</a>
Phoenix Contact	Think & Do Live!, Think & Do Studio	<a href="http://www.phoenixcon.com/software">www.phoenixcon.com/software</a>
KEPware	KEPServerEX	<a href="http://www.kepware.com">www.kepware.com</a>
Wonderware	InControl	<a href="http://www.wonderware.com">www.wonderware.com</a>
MDSI	OpenCNC	<a href="http://www.mdsi2.com">www.mdsi2.com</a>

The D2-INST-M installation and I/O Manual covers information about DL205 I/O modules, power budgeting, and installation and wiring. This catalog does not cover CPU-slot controllers.

# Ethernet Vs. Serial Remote I/O

## I/O throughput

I/O throughput is defined as the time it takes from when an output is set in the ladder logic to when its corresponding input value is equal. This includes the PLC scan time, I/O backplane update time, and I/O module response times.

## Testing I/O throughput times

A test was performed by our partner, Host Automation Products, to compare the difference between H2-ERM Ethernet remote I/O and D2-RSM serial remote I/O throughput times. Host Automation Products supplies the H2-ERM, H2-EBC, H2-ECOM, etc. as well as *DirectSOFT* and *DSDData Server* software.

Note: Since this test was conducted, the H2-EBC and H2-ECOM modules have been replaced by the H2-EBC100 and H2-ECOM100 modules. Test results would be similar.

### I/O groups tested

**Discrete I/O** - D2-16TD1-2 discrete outputs of slot 2 are tied to the D2-16ND3-2 discrete inputs of slot 0.

**Analog I/O** - F2-02DAS-2 analog output channel 1 is tied to the F2-04AD-2 analog input channel 1 of slot 3. The analog values were scaled from the full 16-bit range down to 12 bit range.

Each group was run independently through the following cycle 256 times:

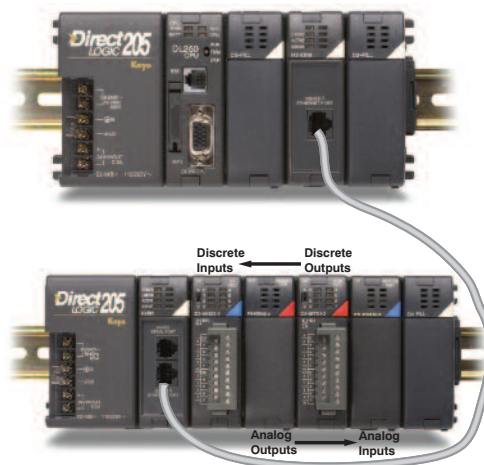
- Step 1: Set all outputs to OFF for a random number of scans
- Step 2: Set all outputs to a random value for a random number of scans
- Step 3: Set all outputs to ON for a random number of scans
- Step 4: Set all outputs to a random value for a random number of scans

Since these four steps are repeated 256 times, there are actually 1,024 samples of I/O throughput.

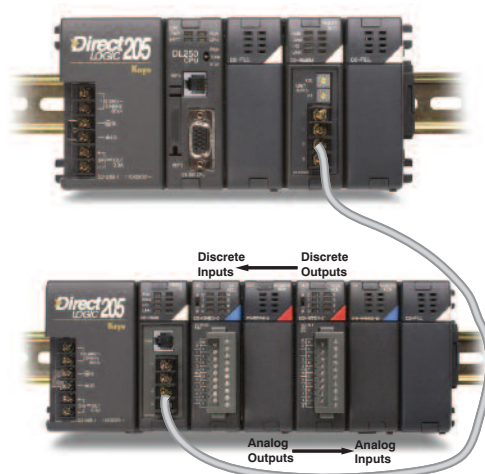
## Test results

The results are listed in the tables at the right. As the number of H2-ERM slaves and I/O points increase, the I/O throughput times will remain flat until 64 analog inputs, 64 analog outputs, or 1,024 discrete I/O points are exceeded. As the number of D2-RSM slaves and I/O points increase, the I/O throughput times increase proportionally.

## H2-ERM / H2-EBC Ethernet Remote I/O System



## D2-RSM / D2-RSSS Serial Remote I/O System



Discrete I/O Test	I/O Throughput Times			
Remote I/O System	Min.	Max.	Avg.	Std. Dev.
H2-ERM / H2-EBC	45ms	71ms	53.32ms	6.14ms
D2-RSM / D2-RSSS	36ms	56ms	42.29ms	5.81ms

Analog I/O Test	I/O Throughput Times			
Remote I/O System	Min.	Max.	Avg.	Std. Dev.
H2-ERM / H2-EBC	46ms	113ms	62.94ms	14.48ms
D2-RSM / D2-RSSS	64ms	321ms	117.38ms	37.44ms

# Power Requirements

## These charts help determine your power requirements

This section shows the amount of power supplied by each of the base power supplies and the amount of power consumed by each DL205 device. The Power Consumed charts list how much INTERNAL power from each power source is required for the DL205 devices. Use this information when calculating the power budget for your system.

In addition to the internal power sources, the DL205 bases offer a 24 VDC auxiliary power supply with external power connections. This auxiliary power supply can power external devices.

## Use ZIPLinks to reduce power requirements

If your application requires a lot of relay outputs, consider using the ZIPLink AC or DC relay output modules. These modules can switch high current (10A) loads without putting a load on your base power budget. Refer to the Terminal Blocks and Wiring Solutions section in this catalog for more information.

This logo is placed next to the I/O modules that are supported by the ZIPLink connection systems. See the I/O module specifications at the end of this section.



Power Consumed		
Device	5V(mA)	24V Auxiliary
<b>Operator Interface</b>		
DV-1000	150	0
C-more Micro-Graphic	210	0

Power Supplied							
Device	Price	5V(mA)	24V Auxiliary	Device	Price	5V(mA)	24V Auxiliary
<b>Bases</b>				<b>Bases</b>			
D2-03B-1	<--->	2600	300	D2-06BDC1-1	<--->	2600	None
D2-03BDC1-1	<--->	2600	None	D2-06BDC2-1	<--->	2600	300
D2-04B-1	<--->	2600	300	D2-09B-1	<--->	2600	300
D2-04BDC1-1	<--->	2600	None	D2-09BDC1-1	<--->	2600	None
D2-06B-1	<--->	2600	300	D2-09BDC2-1	<--->	2600	300

Power Consumed		
Device	5V(mA)	24V Auxiliary
<b>CPUs</b>		
D2-230	120	0
D2-240	120	0
D2-250-1	330	0
D2-260	330	0
H2-WPLC**	680	0
<b>DC Input Modules</b>		
D2-08ND3	50	0
D2-16ND3-2	100	0
D2-32ND3	25	0
D2-32ND3-2	25	0
<b>AC Input Modules</b>		
D2-08NA-1	50	0
D2-08NA-2	100	0
D2-16NA	100	0
<b>Input Simulator Module</b>		
F2-08SIM	50	0
<b>DC Output Modules</b>		
D2-04TD1	60	20
D2-08TD1	100	0
D2-08TD2	100	0
D2-16TD1-2	200	80
D2-16TD2-2	200	0
F2-16TD1P	70	50
F2-16TD2P	70	50
D2-32TD1	350	0
D2-32TD2	350	0
<b>AC Output Modules</b>		
D2-08TA	250	0
F2-08TA	250	0
D2-12TA	350	0
<b>Relay Output Modules</b>		
D2-04TRS	250	0
D2-08TR	250	0
F2-08TR(S)	670	0
D2-12TR	450	0
<b>Combination In/Out Module</b>		
D2-08CDR	200	0

Power Consumed		
Device	5V(mA)	24V Auxiliary
<b>Analog Modules</b>		
F2-04AD-1	100	5
F2-04AD-2	110	5
F2-08AD-1	100	5
F2-08AD-2	100	5
F2-02DA-1	40	60 (note 1)
F2-02DA-1L	40	70 @ 12V (note 1)
F2-02DA-2	40	60
F2-02DA-2L	40	70 @ 12V
F2-02DAS-1	100	50 / channel
F2-02DAS-2	100	60 / channel
F2-08DA-1	30	50 (note 1)
F2-08DA-2	60	140
F2-4AD2DA	60	80 (note 1)
F2-8AD4DA-1	35	100 (note 1)
F2-8AD4DA-2	35	80 (note 1)
F2-04RTD	90	0
F2-04THM	110	60
<b>Specialty Modules</b>		
D2-CTRINT	50*	0
D2-CM / D2-EM	100/130	0
H2-CTRIO	400	0
D2-DCM	300	0
F2-DEVNETS	160	0
F2-SDS-1	160	0
H2-PBC	530	0
H2-EBC100	300	0
H2-EBC-F	640	0
H2-ECOM100	300	0
H2-ECOM-F	640	0
F2-CP128	235	0
<b>Remote I/O</b>		
H2-ERM(-F)	320, (450)	0
D2-RMSM	200	0
D2-RSSS	150	0
<b>Programming Devices</b>		
D2-HPP	200	0

\*requires external 5VDC for outputs  
Note 1: Add an additional 20 mA per output loop.