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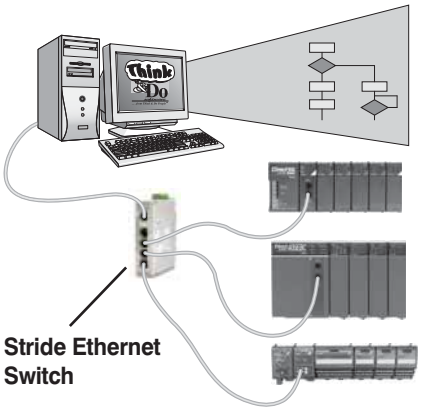
# Ethernet Base Controller Modules

## Ethernet Base Controller Modules (EBC)

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



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

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

## 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 run-time 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.

| Vendor | Product | Web Address |
|---|---|---|
| AutomationDirect | KEPDirect EBC I/O Server | www.automationdirect.com |
| Phoenix Contact | Think & Do Live!, Think & Do Studio | www.phoenixcon.com/software |
| KEPware | KEPServerEX | www.kepware.com |
| Wonderware | InControl | www.wonderware.com |
| MDSI | OpenCNC | www.mdsi2.com |

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.



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# 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-RMSM serial remote I/O throughput times. Host Automation Products supplies the H2-ERM, H2-EBC, H2-ECOM, etc. as well as *Direct*SOFT and DSData 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

Step2: 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-RMSM slaves and I/O points increase, the I/O throughput times increase proportionally.

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




## D2-RMSM / 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-RMSM / 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-RMSM / D2-RSSS | 64ms | 321ms | 117.38ms | 37.44ms |



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# 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 *ZIP*Links to reduce power requirements

If your application requires a lot of relay outputs, consider using the *ZIP*Link 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 *ZIP*Link connection systems. See the I/O module specifications at the end of this section.




| Power Supplied | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Device** | **Price** | **5V(mA)** | **24V Auxiliary** | **Device** | **Price** | **5V(mA)** | **24V Auxiliary** |
| ***Bases*** | | | | ***Bases*** | | | |
| 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** |
| ***Operator Interface*** | | |
| DV-1000 | 150 | 0 |
| *C-more* Micro-Graphic | 210 | 0 |

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

| Power Consumed | | |
|---|---|---|
| **Device** | **5V(mA)** | **24V Auxiliary** |
| ***Analog Modules*** | | |
| 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<br>F2-02DAS-2 | 100<br>100 | 50 / channel<br>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 |
| ***Specialty Modules*** | | |
| 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 |
| ***Remote I/O*** | | |
| H2-ERM(-F) | 320, (450) | 0 |
| D2-RMSM | 200 | 0 |
| D2-RSSS | 150 | 0 |
| ***Programming Devices*** | | |
| D2-HPP | 200 | 0 |

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



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