Ethernet Remote I/O Master Modules

Ethernet remote I/O master

The Ethernet Remote Master H4-ERM (-F) connects DL430, DL440 and DL450 CPU systems to slave I/O over a high-speed Ethernet link.

Need a lot of I/O?

Each ERM module can support up to 16 H2-EBC systems, 16 Terminator I/O EBC systems, or 16 fully expanded H4-EBC systems (see next page for more information). Of course, combinations are fine, too. The ERM also supports Edrives. See the Drives section for details.

Note: Applications requiring an extremely large number of T1H-EBC analog I/O or H4-EBC 16-channel analog I/O, could exceed the buffer capacity of a single H4-ERM module. In these cases, an additional H4-ERM may be required.

Simple connections

The 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. 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 CPU, ERM and EBC slave modules work together to update the remote I/O points. These three scan cycles are occurring at the same time, but asynchronously. It is recommended that critical I/O points that must be monitored every scan be placed in the CPU base.

Networking ERMs with other Ethernet devices

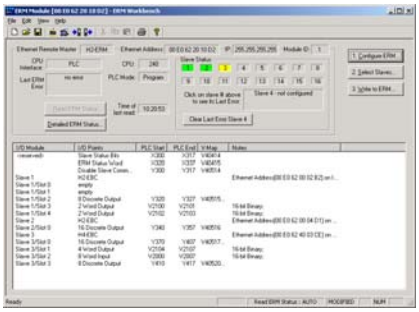
It is required that a dedicated Ethernet remote I/O network be used for the ERM and its slaves. While Ethernet networks can handle a very large number of data transactions, and normally handle them very quickly, heavy Ethernet traffic can adversely affect the reliability of the slave I/O and the speed of the I/O network. Keep ERM networks, multiple ERM networks and ECOM/office networks isolated from one another.

Software configuration

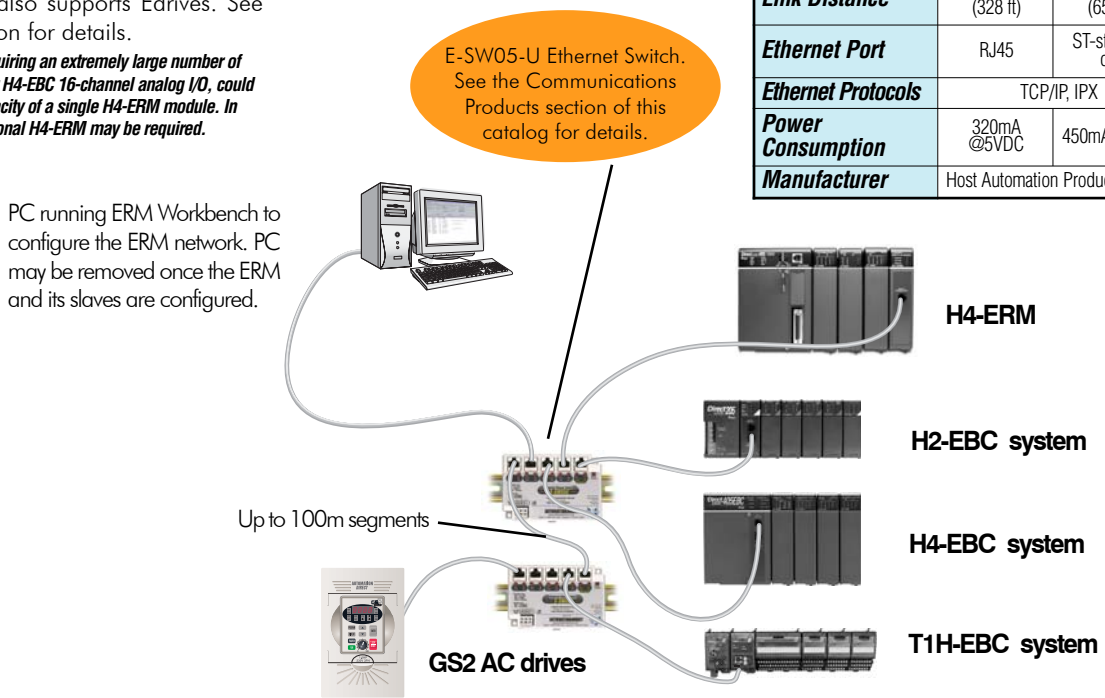
ERM Workbench is a software utility that must be used to configure the ERM and its remote Ethernet slaves. ERM workbench supports two methods of configuring the ERM I/O network:

- ERM Workbench PLC Wizard - greatly simplifies the configuration procedure when a PLC is used as the CPU interface.
- ERM Workbench - configures the I/O network whether the CPU interface is a PLC or WinPLC, and allows access to all ERM I/O network parameters.

ERM Workbench Software



Specifications	H4-ERM	H4-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	320mA @5VDC	450mA @5VDC
Manufacturer	Host Automation Products, L.L.C.	

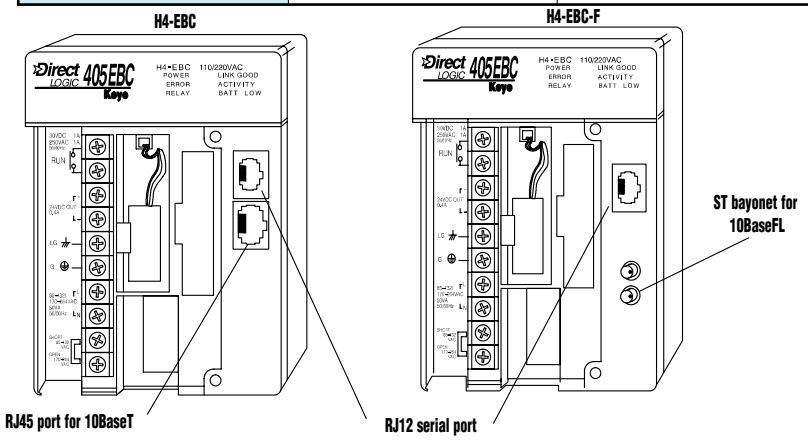


Ethernet Base Controller Modules

Ethernet Base Controller Module

H4-EBC <--->
H4-EBC-F <--->

Specifications	H4-EBC	H4-EBC-F
Communications	10Base-T Ethernet	10Base-FL Ethernet
Data Transfer Rate	10Mbps	10Mbps
Link Distance	100 meters (328 ft)	2,000 meters (6,560 ft)
Ethernet Port	RJ45	ST-style fiber optic
Ethernet Protocols	TCP/IP, IPX	TCP/IP, IPX
Serial Port	RJ12, K-sequence, ASCII IN/OUT	RJ12, K-sequence, ASCII IN/OUT
Power Supplied	3470mA @ 5VDC 400mA @ 24VDC	3300mA @ 5VDC 400mA @ 24VDC
Manufacturer	Host Automation Products, L.L.C.	Host Automation Products, L.L.C.



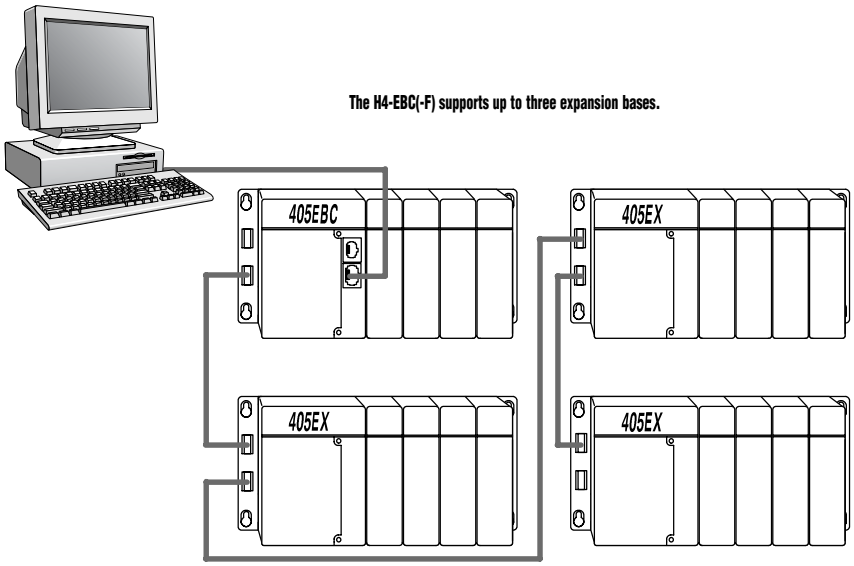
Use EBCs for PC-based control and for H4-ERM remote I/O slaves

The H4-EBC and H4-EBC-F Ethernet Base Controller modules provide a high-performance, low-cost Ethernet link between your PC-based control system or H4-ERM Ethernet remote I/O system and DL405 I/O. The H4-EBC module supports industry standard 10Base-T Ethernet communications, and the H4-EBC-F module supports 10Base-FL (fiber optic) Ethernet standards. Both modules offer 10Mbps transfer rates between your PC application and your DL405 I/O base. The EBC modules are compatible with TCP/IP and IPX protocols for flexible PC communications. Four addressing schemes make it easy to identify the module on the network using the method that works best for you. EBCs also offer:

- Virtually unlimited number of I/O points
- I/O updates on dedicated networks
- Use off-the-shelf networking components to connect to your existing network
- Fast I/O updates (<1ms per base possible based on IO)
- On-board serial port for operator interface, etc. when used with a PC-based program like Think and Do Live. (serial port not supported when used with the Hx-ERM module).

Easy to use, reliable and fast

The H4-EBC(-F) module plugs into the CPU slot of any DL405 I/O base. The 10Base-T or 10Base-FL port can be networked using commercially available cabling, hubs, and repeaters. The H4-EBC(-F) module supports all DL405 discrete and analog I/O modules. The H4-EBC module also supports the H4-CTRIO and D4-HSC, but no other intelligent modules are supported.



The H4-EBC(-F) supports up to three expansion bases.

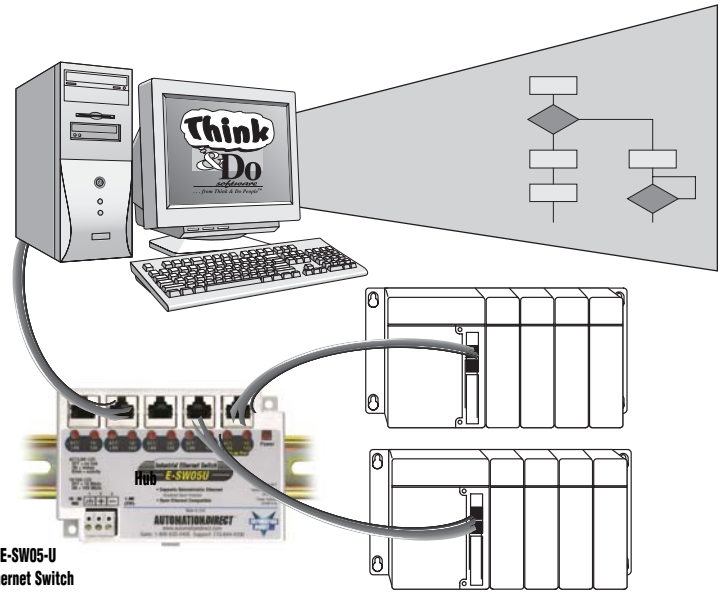
Ethernet Base Controller Modules

Off-the-shelf solutions

You can purchase PC-based control software that is ready to use with the H4-EBC(-F) module. PC-based control packages are equipped with compatible I/O device drivers, program development tools, and run-time environments. See the PC-based Control Products section for a integrated PC-based Control solution to make your PC into an industrial controller.

Software developers

For programmers developing custom drivers for our I/O, we offer a free Ethernet Software Development Kit (SDK). The SDK provides a simplified API for interfacing with the H4-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 for more information.



The following vendors have PC-based Control products ready to control our I/O, or they have compatible products to be released in the future.

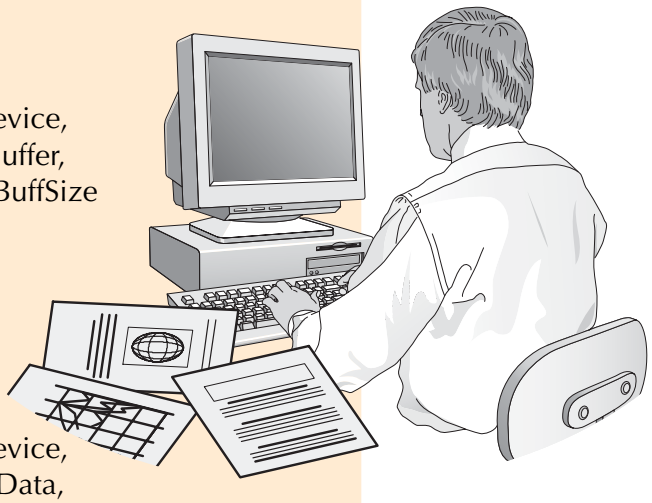
Vendor	Product	Web Address
AUTOMATIONDIRECT	KEP*Direct* EBC I/O Server	www.automationdirect.com
Phoenix Contact	Think & Do Live! Think & Do Studio	www.phoenixcon.com/software
KEPware	KEPServerEX	www.kepware.com
Wonderware	InControl	www.wonderware.com

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
        );
```



Ethernet Remote I/O Kits

Overview

The DL405 PLC Ethernet Remote I/O system is available at prices that are better than many Serial (master/slave) Remote I/O combinations. This means you can make the switch from Serial PLC Remote I/O to Ethernet Remote I/O and gain all the ease-of-use, diagnostics, and performance of Ethernet connectivity, for little or no additional installation cost.

Additionally, the Ethernet Remote I/O kits are offered at a considerable savings when compared to purchasing the Ethernet Remote Master (ERM) and Slaves (EBC) separately.

The Ethernet Remote I/O kits are offered to provide an easy way to choose the Ethernet Remote I/O products that best fit your application.

T14-ERKIT-x Ethernet Remote I/O Kits

A T14-ERKIT-x Ethernet Remote I/O Kit includes one H4-ERM Ethernet Remote Master module and up to "x" number of T1H-EBC Ethernet Base Controller modules by adding -1, -2, -3, etc. as the part number suffix. (See the table below.) A T14-ERKIT-2 is shown below, which includes one H4-ERM and two T1H-EBC modules. All other necessary hardware, including the CPU, I/O modules, bases, cables and Ethernet hub (if required), is sold separately.

Example kit: T14-ERKIT-2 includes one H4-ERM and two T1H-EBCs.

T14-ERKIT-x Ethernet Remote I/O Kits		
Kit Number	***Kit Contents***	***Price***
T14-ERKIT-1	1 H4-ERM + 1 T1H-EBC	<--->
T14-ERKIT-2	1 H4-ERM + 2 T1H-EBCs	<--->
T14-ERKIT-3	1 H4-ERM + 3 T1H-EBCs	<--->
T14-ERKIT-4	1 H4-ERM + 4 T1H-EBCs	<--->
T14-ERKIT-5	1 H4-ERM + 5 T1H-EBCs	<--->
T14-ERKIT-6	1 H4-ERM + 6 T1H-EBCs	<--->
T14-ERKIT-7	1 H4-ERM + 7 T1H-EBCs	<--->
T14-ERKIT-8	1 H4-ERM + 8 T1H-EBCs	<--->
T14-ERKIT-9	1 H4-ERM + 9 T1H-EBCs	<--->
T14-ERKIT-10	1 H4-ERM + 10 T1H-EBCs	<--->

Example of an Ethernet remote I/O system using a T14-ERKIT-2. CPU, bases, I/O modules, Ethernet hub, etc. are sold separately.