

# Ethernet Communications Modules

## Ethernet Communications Module

- H2-ECOM <---->
- H2-ECOM100 <---->
- H2-ECOM-F <---->



### Overview

Ethernet Communications Modules offer features such as:

- High-speed peer-to-peer networking of PLCs
- Fast updates with **DirectSOFT** Programming Software
- High-performance access for Human Machine Interface (HMI), ERP, MES or other Windows-based software
- Industry standard Modbus TCP Client/Server Protocol (H2-ECOM100)
- Free SDK for custom drivers
- Easy setup

The Ethernet Communication (ECOM) Modules represent a price breakthrough for high-speed peer-to-peer networking of PLCs. No longer are you forced to designate a single PLC to be the network master. Any PLC can initiate communications with any other PLC. Link your PLCs with PCs using industry standard Modbus TCP protocol connected through standard cables, hubs, and repeaters. Or, use our **KEPDirect** I/O Server to link to your favorite HMI/SCADA, data historian, MES or ERP software to **DirectLOGIC** PLCs. Our **LookoutDirect** HMI and our **DataWorx** data collection software include ECOM drivers. **DirectSOFT** Programming Software

can be used to monitor or update the program in any **DirectLOGIC** PLC on the network.

### Simple connections

Use Category 5 UTP cables or 62.5/125 ST-style fiber optic cables depending on the requirements of your application. Inexpensive UTP cables can be run up to 100 meters between nodes, and fiber optic cables can be run up to 2,000 meters. Fiber optic cables virtually eliminate electrical noise problems. Use repeaters to extend distances and expand the number of nodes.

Our HA-TADP (10/100Base-T) PC network adapter card and E-SW05U Ethernet switch is compatible with the ECOM modules. See the Communications Products section for information on these items.

### ECOM starter kit

The H2-ECOM-START gives you everything you need to make your first Ethernet network simple to build. It contains an H2-ECOM module and instruction manual, a network adapter card (PCI) for your PC, a crossover cable, and a Software Product Showcase Demo CD. The CD contains demo versions of our software products that support the ECOM Modules. See the Software Products section for information on the available software packages.

### H2-ECOM100 IBox communications instructions

Over 25 Communications IBox instructions are available when using the H2-ECOM100 with a DL250-1 or DL260 PLC and **DirectSOFT5** programming software. These easy-to-use instructions allow you to:

- Enable/disable module DHCP
- Read/write module IP, Gateway and Subnet Mask addresses
- Read/write module ID, Name and Description
- Send E-mail messages
- Read/Write PLC memory to networked Hx-ECOM100 modules
- Read/Write PLC memory to networked Hx-ECOM(-F) modules

See the following page for example Communications IBox instructions.

The H2-ECOM100 supports the Industry Standard Modbus TCP Client/Server Protocol



See the Communications section for details on Ethernet Switches

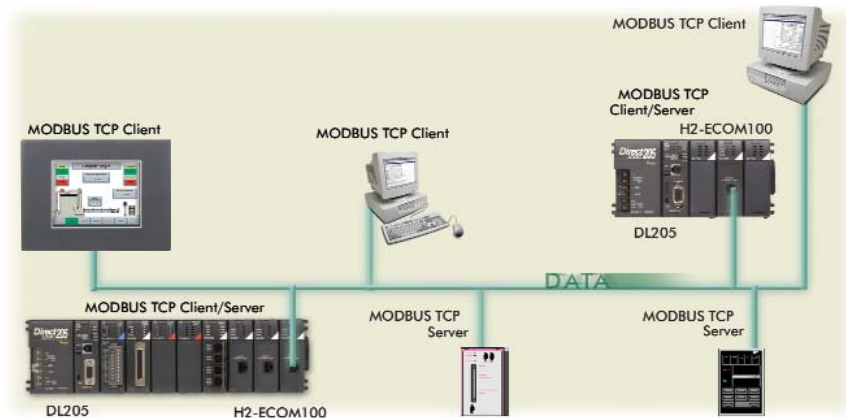
| Specifications            | H2-ECOM                          | H2-ECOM100  | H2-ECOM-F               |
|---------------------------|----------------------------------|---|-------------------------|
| <b>Communications</b>     | 10Base-T Ethernet                | 10/100Base-T Ethernet                             | 10Base-FL Ethernet      |
| <b>Data Transfer Rate</b> | 10 Mbps max.                     | 100 Mbps max.                                     | 10 Mbps max.            |
| <b>Link Distance</b>      | 100 meters (328 ft)              | 100 meters (328 ft)                               | 2,000 meters (6,560 ft) |
| <b>Ethernet Port</b>      | RJ45                             | RJ45  | ST-style fiber optic    |
| <b>Ethernet Protocols</b> | TCP/IP, IPX                      | TCP/IP, IPX, Modbus TCP, DHCP, HTML configuration | TCP/IP, IPX             |
| <b>Power Consumption</b>  | 450 mA @ 5VDC                    | 300 mA @ 5 VDC                                    | 640 mA @ 5 VDC          |
| <b>Manufacturer</b>       | Host Automation Products, L.L.C. |   |                         |

# Ethernet Communications Modules

## Modbus TCP support

The H2-ECOM100 supports the industry standard Modbus TCP Client/Server protocol in addition to the standard IP and IPX protocols. This allows the DL205 PLC with an H2-ECOM100 module to serve as a client (master) or as a server (slave) on a Modbus TCP Ethernet network. The H2-ECOM100 can actively issue Modbus commands to other nodes or devices on the Modbus TCP network or simply respond to connected Modbus TCP clients.

### Modbus TCP communications architecture



## PLC-to-PLC communications

PLC-to-PLC or PLC to a Modbus TCP device communications can be accomplished using standard Read from Network (RX) and Write to Network (WX) instructions (DL240/250-1/260, all H2 series ECOMs and all *DirectSOFT* versions). If you're using our *DirectSOFT5* programming software, a DL250-1 or DL260 PLC and an H2-ECOM100, you can use fill-in-the-blank *IBox* instructions to simplify your communications programming. The H2-ECOM100 supports the ECOM100 Configuration *IBox* for use with the ECRX and ECWX *IBox* instructions to read/write to other ECOM(100)s. All H2 series ECOM modules support the NETCFG Configuration *IBox* for use with the NETRX and NETWX *IBox* instructions to read/write to other ECOM modules (remember DL250-1/260 and DSOFT5 required). The Communications *IBox* instructions execute with built-in interlocking to greatly simplify communications programming.

#### ECOM100 Configuration IBox

| ECOM100 Config        |      | IB-710 |
|-----------------------|------|--------|
| ECOM100 #             | K0   |        |
| Slot                  | K1   |        |
| Status                | V400 |        |
| Workspace             | V400 |        |
| Msg Buffer (65 WORDS) | V400 |        |

#### ECOM100 Read Network IBox

| ECOM100 RX Network Read  |      | IB-740 |
|--------------------------|------|--------|
| ECOM100 #                | K0   |        |
| Workspace                | V400 |        |
| Slave ID                 | K0   |        |
| From Slave Element (Src) | C0   |        |
| Number Of Bytes          | K1   |        |
| To Master Element (Dest) | TA0  |        |
| Success                  | C0   |        |
| Error                    | C0   |        |

#### ECOM100 Send EMail IBox

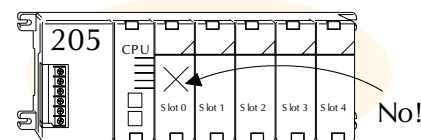
| ECOM100 Send EMail |  | IB-711 |
|--------------------|--|--------|
| ECEMAIL            |  |        |
| ECOM100 #          | K0   |        |
| Workspace          | V400   |        |
| Success            | C0   |        |
| Error              | C1   |        |
| Error Code         | V400   |        |
| To                 | steve@work.com   |        |
| Subject            | Machine Offline  |        |
| Body               | "Machine #" V5010:B "went offline at" _time:24 "on" _date:us |        |

## NetEdit3 software

NetEdit3 Software ships free with the ECOM User Manual. Use NetEdit3 to configure the ECOM modules for your network. Flexible addressing allows you to use your choice of protocols and identifying methods. Assign each module a number or a name or both. You don't have to use an IP address, but you can if it's necessary for your network. NetEdit3 uses two protocols for PC-to-PLC communications: IPX and TCP/IP. The NetEdit3 screen displays all identifiers and troubleshooting information for each module on the network. You can use NetEdit3 to adjust parameters for PLC-to-PLC communications by clicking on Advanced Settings. The network identifiers can also be changed from *DirectSOFT* Programming Software.

## Choose your slot

The ECOM modules plug into any I/O slot (excluding slot 0) of any local DL205 I/O base. The module maintains identification data, descriptive information, and communication parameters for PLC-to-PLC communications in flash memory. Disconnect power before installing or removing any PLC module.



**Note:** Use D2-240, D2-250, D2-250-1 or D2-260 CPUs with the ECOM modules. The D2-230 CPU and D2-CM bases do not support the ECOM modules.

## H2-ECOM100 has e-mail capability!

The H2-ECOM100 Send EMail (ECEMAIL) *IBox* instruction allows the module to behave as an e-mail client and send an SMTP request to your SMTP Server to send a specified e-mail message to the e-mail addresses in the *IBox*'s To: field. The Body: field allows you to embed real-time data in your e-mail message. The DL50-1/260 CPU and *DirectSOFT5* are required to use the *IBox* instructions.

# 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-EBC(-F)                 | 450, (640) | 0                 |
| H2-ECOM(-F)                | 450, (640) | 0                 |
| H2-ECOM100                 | 300        | 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.