

# DL05/06 Ethernet Communications Modules

## Ethernet Communications Modules

H0-ECOM100 <--->



### 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
- 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 your favorite HMI/SCADA, data historian, MES or ERP software to **DirectLOGIC** PLCs. Our Lookout**Direct** 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 which can be run up to 100 meters between nodes. Use repeaters to extend distances and expand the number of nodes.

Our HA-TADP (10/100BaseT) PC network adapter card is compatible with the H0-ECOM100. See the Communications Products section for information on the adapter card.

### Choose your slot

The H0-ECOM100 module plugs into any option module slot of any DL05 PLC or DL06 PLC. 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.

Specifications	H0-ECOM100
<b>Communications</b>	10/100 BaseT Ethernet
<b>Data Transfer Rate</b>	100 Mbps
<b>Link Distance</b>	100 meters
<b>Ethernet Port</b>	RJ45
<b>Ethernet Protocols</b>	TCP/IP, IPX, Modbus TCP/IP, DHCP, HTML Configuration
<b>Power Consumption</b>	300mA @ 5 VDC
<b>Manufacturer</b>	Host Automation Products, LLC

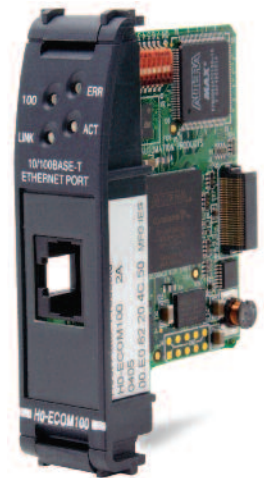
CPU	Firmware Required	DirectSOFT Required
<b>DL05</b>	ECOM100: Version 4.90 or later ECOM (retired): Version 4.60 or later	Version 3.0c or later
<b>DL06</b>	ECOM100: Version 1.80 or later ECOM (retired): Version 1.40 or later	Version 4.0, Build 16 or later

### H0-ECOM100 IBox communications instructions

Over 25 Communications IBox instructions are available when using the H0-ECOM100 with a DL05/06 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 H0-ECOM100 supports the Industry Standard Modbus TCP Client/Server Protocol



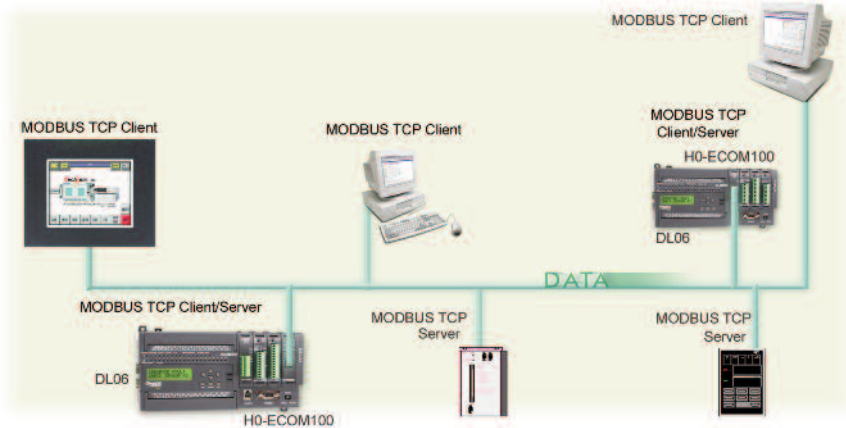
See the Communications section for details on the Stride Ethernet Switch

# DL05/06 Ethernet Communications Modules

## Modbus TCP support

The H0-ECOM100 supports the industry standard Modbus TCP Client/Server protocol in addition to the standard IP and IPX protocols. This allows the DL06/06 PLC with an H0-ECOM100 module to serve as a client (master) or as a server (slave) on a Modbus TCP Ethernet network. The H0-ECOM100 can actively issue Modbus commands to other nodes or devices on the Modbus TCP network or simply respond to connected Modbus TCP clients.

## ModbusTCP 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 (all DL05/06 PLCs, all H0 series ECOMs and all *DirectSOFT* versions). If you're using our *DirectSOFT5* programming software, a DL05 or DL06 PLC and an H0-ECOM100, you can use fill-in-the-blank *IBox* instructions to simplify your communications programming. The H0-ECOM100 supports the ECOM100 Configuration *IBox* for use with the ECRX and ECWX *IBox* instructions to read/write to other ECOM100s. All H0 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 *DirectSOFT5* is required). The Communications *IBox* instructions execute with built-in interlocking to greatly simplify communications programming.

### ECOM100 Configuration IBox

ECOM100 Config	
ECOM100 #	K0
Slot	K1
Status	V2000
Workspace	V2100
Msg Buffer (65 WORDS)	V2000

### ECOM100 Read Network IBox

ECOM100 RX Network Read	
ECOM100 #	K0
Workspace	V2200
Slave ID	K0
From Slave Element (Src)	C0
Number Of Bytes	K1
To Master Element (Dest)	V2000
Success	C0
Error	C0

## H0-ECOM100 has e-mail capability!

The H0-ECOM100 Send Email (ECEMAIL) *IBox* instruction will allow 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. *DirectSOFT5* is required to use the *IBox* instructions.

## 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.

### ECOM100 Send Email IBox

ECOM100 Send Email	
ECOM100 #	K0
Workspace	V2200
Success	C0
Error	C1
Error Code	V2100
To	docteam@work.com
Subject	Team Busy
Body	"Machine # V5010:B "went offline at" _time:24 "on" _date:us

# Power Budgeting for the DL06

The DL06 has four option module slots. To determine whether the combination of modules you select will have sufficient power, you will need to perform a power budget calculation.

## Power supplied

Power is supplied from two sources: the internal base unit power supply and, if required, an external supply (customer furnished). The D0-06xx (AC powered) PLCs supply a limited amount of 24 VDC power. The 24 VDC output can be used to power external devices.

For power budgeting, start by considering the power supplied by the base unit. All DL06 PLCs supply the same amount of 5 VDC power. Only the AC units offer 24 VDC auxiliary power.

Be aware of the trade-off between 5 VDC power and 24 VDC power. The amount of 5 VDC power available depends on the amount of 24 VDC power being used, and the amount of 24 VDC power available depends on the amount of 5 VDC power consumed. Determine the amount of internally supplied power from the table to the right.

## Power required by base unit

Because of the different I/O configurations available in the DL06 family, the power consumed by the base unit itself varies from model to model. Subtract the amount of power *required* by the base unit from the amount of power *supplied* by the base unit. Be sure to subtract 5 VDC and 24 VDC amounts.

## Power required by option modules

Next, subtract the amount of power required by the option modules you are planning to use. Again, remember to subtract both 5 VDC and 24 VDC.

If your power budget analysis shows surplus power available, you should have a workable configuration.

DL06 Power Supplied by Base Units		
Part Number	5 VDC (mA)	24 VDC (mA)
D0-06xx	1500mA	300mA
	2000mA	200mA
D0-06xx-D	1500mA	none

DL06 Base Unit Power Required		
Part Number	5 VDC (mA)	24 VDC (mA)
D0-06AA	800mA	none
D0-06AR	900mA	none
D0-06DA	800mA	none
D0-06DD1	600mA	280mA*
D0-06DD2	600mA	none
D0-06DR	950mA	none
D0-06DD1-D	600mA	none
D0-06DD2-D	600mA	none
D0-06DR-D	950mA	none

\* Only if auxiliary 24VDC power is connected to V+ terminal.

DL06 Power Consumed by Other Devices		
Part Number	5 VDC (mA)	24 VDC (mA)
D0-06LCD	50mA	none
D2-HPP	200mA	none
DV-1000	150mA	none
C-more Micro-Graphic	210mA	none

Power Budgeting Example		
Power Source	5VDC power (mA)	24VDC power (mA)
D0-06DD1 (select row A or B)	A	1500mA
	B	2000mA
		300mA
		200mA
<b>Current Required</b>	<b>5VDC power (mA)</b>	<b>24VDC power (mA)</b>
D0-06DD1	600mA	280mA*
D0-16ND3	35mA	0
D0-10TD1	150mA	0
D0-08TR	280mA	0
F0-4AD2DA-1	100mA	0
D0-06LCD	50mA	0
<b>Total Used</b>	1215mA	280mA
<b>Remaining</b>	A	285mA
	B	785mA
		20mA
		note 1

\* Auxiliary 24 VDC used to power V+ terminal of D0-06DD1 sinking outputs.

**Note 1: If the PLC's auxiliary 24 VDC power source is used to power the sinking outputs, use power choice A, above.**

DL05/06 Power Consumed by Option Modules		
Part Number	5 VDC (mA)	24 VDC (mA)
D0-07CDR	130mA	none
D0-08CDD1	100mA	none
D0-08TR	280mA	none
D0-10ND3	35mA	none
D0-10ND3F	35mA	none
D0-10TD1	150mA	none
D0-10TD2	150mA	none
D0-16ND3	35mA	none
D0-16TD1	200mA	none
D0-16TD2	200mA	none
F0-04TRS	250mA	none
F0-08NA-1	5mA	none
F0-04AD-1	50mA	none
F0-04AD-2	75mA	none
F0-08ADH-1	25mA	25mA
F0-08ADH-2	25mA	25mA
F0-04DAH-1	25mA	150mA
F0-08DAH-1	25mA	220mA
F0-04DAH-2	25mA	30mA
F0-08DAH-2	25mA	30mA
F0-2AD2DA-2	50mA	30mA
F0-4AD2DA-1	100mA	40mA
F0-4AD2DA-2	100mA	none
F0-04RTD	70mA	none
F0-04THM	30mA	none
D0-DEVNETS	45mA	none
H0-PSCM	530mA	none
H0-CTRIO	250mA	none
H0-ECOM100	300mA	none
F0-08SIM	1mA	none
D0-DCM	250 mA	none
F0-CP128	150 mA	none
F0-08SIM	1 mA	none