

LCD Micro Ethernet Interface Module for Alpha LCD Panels

IES-ABB-ETHERNET-01

Product Overview

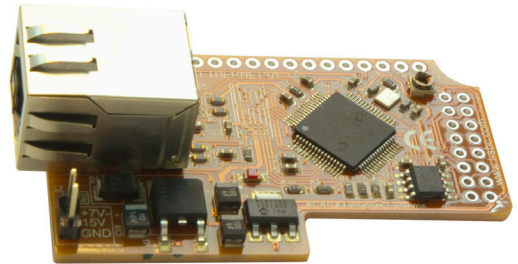
The IES-ABB-ETHERNET-01 module provides a simple means of connecting any Ethernet (10Base-T) network to a Liquid Crystal Display (LCD) module of 16 x 2, 20 x 2, 40 x 2 or 20 x 4 character/lines.

The IES-ABB-ETHERNET-01 provides an integrated web server and SNMP registers to ensure that your application is up-and-running in a fraction of the time necessary to implement the standard LCD control protocol.

The integrated web server provides HTML pages that allow real-time LCD messages to be displayed, backlight brightness to be adjusted and programming of forty [40] 20x4 LCD screens that can be manually triggered over SNMP or on an individually timed basis.

A Management Information Bases [MIB] file is provided that can be imported into any SNMP management software to provide control of the display or access the integrated functions.

The IES-ABB-ETHERNET-01 also features on-board supply regulation for both the LCD supply and backlight, Ethernet activity indicators and module status indicator.



Features :

- Supports 16x2, 20x2, 40x2 & 20x4 LCD panels.
- Plugs directly into any 10Base-T Ethernet network using CAT5 cable.
- Micro size (59 x 35mm) to piggy-back on the LCD panel and form a compact solution.
- Integrated Web Server HTML pages and SNMP registers (MIB supplied) for simple screen display and backlight brightness setup.
- Simple SNMP register transfer of characters to the LCD and backlight brightness setup.
- Store and replay (timed or SNMP triggered) up to 40 20x4 screens with programmable backlight brightness.
- LCD contrast variable with on-board control.
- Low power operation from 7-15V supply using on-board regulation.
- No learning curve to get characters on the LCD

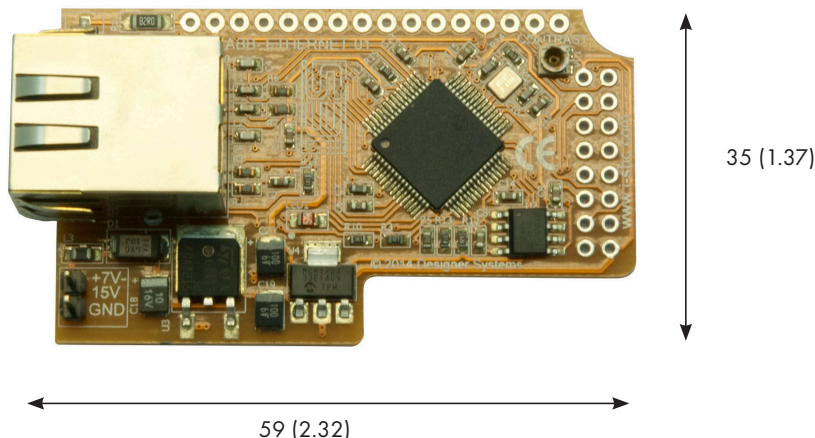
Product table

Description	Part Number
LCD Interface Module with Ethernet control	IES-ABB-ETHERNET-01

Technical Drawings

Units millimetres (inches)

Design subject to change without notice.



Power requirements

The IES-ABB-ETHERNET-01 & LCD module require an external 7-15Volt un-regulated supply. The supply can be derived from a mains adaptor or a battery pack. Current consumption is approx. 150mA excluding backlight, or from 150-200mA including back-light (colour/brightness dependant).

The two (2) pin header is used to connect to the supply by connecting between +7-15V & GND and is fully polarity protected.

LCD Contrast

The IES-ABB-ETHERNET-01 has a 'CONTRAST' control which is provided to set the display contrast to the desired level.

Note: This control should not be continually adjusted as this may lead to malfunction.

LCD Connections

The IES-ABB-ETHERNET-01 features two LCD connections to support both Single-In-Line (SIL) and Dual-In-Line (DIL) LCD panels. Both connections are easily soldered to the required LCD panel using an 18 pin SIL pin header, 18 pin (9+9) DIL pin header or alternatively a flexible wire connection.

Note: Incorrect connection may damage the DS-LCDD or LCD panel.

Ethernet connection

The IES-ABB-ETHERNET-01 supports Ethernet 10Base-T (10 Mbit) network connections.

Connection to the module is through a standard RJ45 (CAT5) socket, pinned as follows:

RJ45 pin	Connection Designation
1	TX+ (Transmit +)
2	TX- (Transmit -)
3	RX+ (Receive +)
4	NC
5	NC
6	RX- (Receive -)
7	NC
8	NC

Note: Most 100Base-TX and 1000Base-TX networks are downward compatible

First power-up

Once an LCD panel has been attached, a network cable connected and power is applied the IES-ABB-ETHERNET-01 STATUS LED should start to flash and an initial message shown on the display, the first line showing 'IES-ABB-ETHERNET-01 VX.XX.XX' (where X.XX.XX is the firmware version), the second line the IP address allocated to the IES-ABB-ETHERNET-01 by the network using DHCP.

If DHCP is not active on the network you are attached to the default IP address of 169.254.1.1 will be displayed and will not change.

The IES-ABB-ETHERNET-01 webserver is now online and ready to be accessed.

Webserver

The IES-ABB-ETHERNET-01 internal webserver can be accessed using any standard browser such as Internet Explorer, Chrome, Firefox, Safari etc.

Open the browser and enter the IP address displayed on the LCD panel into the URL bar at the top of the window eg. if the IP address displayed is 192.168.1.10 then enter this set of numbers and full stops into the URL bar and hit return.

It is also possible to use the DNS name for the module if you are only connecting one IES-ABB-ETHERNET-01 to your network, so instead of entering the IP address enter `http://IES-ABB-ETHERNET-01` into the URL bar and hit return.

You should then be presented with an authentication window asking for a username and password. Enter User for the username and User for the password.

At this point the IES-ABB-ETHERNET-01 initial information page is displayed along with five [5] buttons on the right-hand side.

Information page

The Information page (see Figure 1.0) provides a quick overview of the IES-ABB-ETHERNET-01 configuration including a friendly Site name, LCD panel location name and its IP address.

Display Control page

Clicking on the 'Display Control' button takes you to the display control page (see Figure 1.1) where the text on the LCD panel and the back-light brightness can be updated in real-time or multiple screens can be programmed for playback.

To change the text and backlight brightness in real-time (changes are immediate) edit the 'Panel line' text boxes with what you would like displayed (Note: The type of LCD panel attached will determine if you can use all four lines eg. for a 16x2 panel on lines 1 & 2 can be used or for a 20x4 panel all lines can be used) change the backlight level from 0 (OFF) to 255 (maximum) and click on the 'Update panel' button.

To program a set of screens and backlight brightness's to be played back over a period of time start by selecting screen 1 from the 'Select screen' drop-down box, check the Program enable box, enter the text, backlight brightness and the period of time you wish the screen

to be displayed and click 'Save Screen'. Continue with additional screens by selecting the next, editing and saving and then on the last +1 screen enter a value of zero [0] into the Display time box and save the screen. This zero value will make the IES-ABB-ETHERNET-01 display to the first screen programmed so you have a continually rotating display.

IES-ABB-ETHERNET-01 Setup page

Clicking on the 'IES-ABB-ETHERNET-01 Setup' button takes you to the setup page (see Figure 1.2) where the friendly names and location can be defined, the user authentication be changed, the firmware versions can be seen and the IES-ABB-ETHERNET-01 can be restored to its factory defaults.

To change the site name and panel location edit the text in the boxes and click on 'Save Changes'.

To change the authentication username and password edit the Username box, enter the current password into the 'Current Password' box (default User) and enter the new password into the 'New password' and 'Confirm password' boxes before clicking 'Save Changes'. On the next entry into the webserver the new username and password will be required.

The Controller information section shows the IES-ABB-ETHERNET-01 firmware version and webpage version information.

To restore the IES-ABB-ETHERNET-01 to its factory defaults click on the 'Activate' button. This will reboot the IES-ABB-ETHERNET-01 and the factory defaults will be set.

Network Setup page

Clicking on the 'Network Setup' button takes you to the network set-up page (see Figure 1.3) where the network IP address, DHCP configuration and other network setting can be configured.

DHCP mode should normally be set unless a static IP address is required for the network to which the IES-ABB-ETHERNET-01 is connected.

Note: Configuring incorrect network settings may make the IES-ABB-ETHERNET-01 lose network connectivity and will require the unit to be returned to IGS for re-programming.

SNMP Setup page

Clicking on the 'SNMP Setup' button takes you to the SNMP setup page where the SNMP read and write community names can be re-configured.

Control CGI command line

The IES-ABB-ETHERNET-01 supports a control CGI command line to allow the LCD panel to be updated without actually using the webserver.

The following command line can be written into the URL bar of any browser to update the LCD panel:

```
http://User:User@IES-ABB-ETHERNET-01/control.cgi?line1=Line 1 text&line2=Line 2 text&line3=Line 3 text&line4=Line 4 text&level=100
```

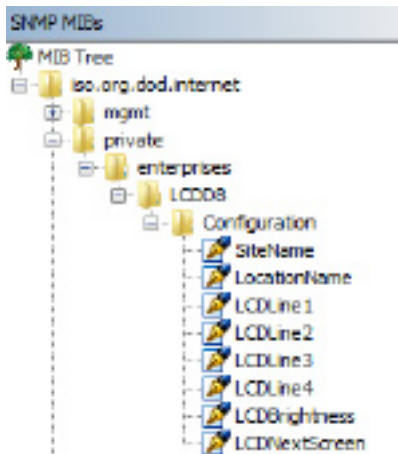
where User:User is the authentication username and password for the IES-ABB-ETHERNET-01, Line in text is the text to write to the display line and 100 is the backlight brightness.

Note: It is important not to use commas ',' or ampersand '&' symbols within this command line. The IES-ABB-ETHERNET-01 address can be replaced with the IP address for

SNMP control

The IES-ABB-ETHERNET-01 is provided with a MIB (Management Information Bases) file that can be imported into any SNMP manager software such as the iReasoning MIB browser, see here <http://ireasoning.com/mibbrowser.shtml> to allow the LCD panel text and brightness to be controlled and monitored using SNMP SET & GET commands.

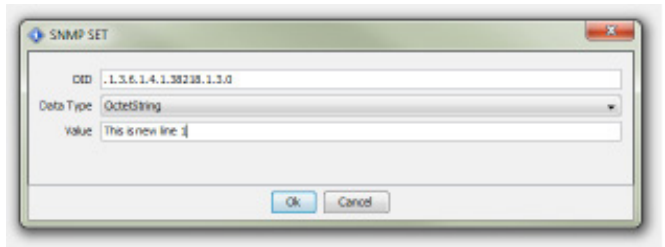
After importing the MIB file, IES-ABB-ETHERNET-01.mib, into the iReasoning MIB browser the OID list should look similar to this:



Ensure that the Address is set to the IP address of the IES-ABB-ETHERNET-01 and then right-click on the 'Configuration' folder above and select 'Get Sub-tree'. A list of information should then appear under 'Result Table' which should look similar to this:

Name/OID	Value	Type
SiteName.0	My Site	OctetString
LocationName.0	My Location	OctetString
LCDLine1.0	LCD08 V1.00.00	OctetString
LCDLine2.0	192.168.1.58	OctetString
LCDLine3.0		OctetString
LCDLine4.0		OctetString
LCDBrightness.0	100	Integer
LCDNextScreen.0	0	Integer

Right click on LCDLine1.0 above and select 'Set', the following dialog will appear:



Add new text to the Value field and click OK, the new text will appear on the LCD panel. This process can be used to set any of the lines and the backlight brightness.

The LCDNextScreen OID can be used to trigger the display of the next screen when screens have been saved and Program mode enabled.



LCDD8 LCD Driver information

Site name	My Site
LCD Panel location	My Location
IP Address	192.168.1.39

Information
Display Control
LCDD8 Setup
Network Setup
SNMP Setup

Figure 1.0



LCDD8 LCD Display Control

The LCD Panel can be updated in real-time below:

Panel line 1	LCDD8 V1.00.00
Panel line 2	192.168.1.58
Panel line 3	
Panel line 4	
Backlight level	100 <small>Range 0-255, 0-OFF</small>

Use lines 1&3 and 2&4 for 40 character lines.

Update panel

Information
Display Control
LCDD8 Setup
Network Setup
SNMP Setup

Up to 40 LCD screens may be programmed and played back with individual time periods below:

Select screen	1 <input type="checkbox"/> Program enabled
Panel line 1	Line 1
Panel line 2	Line 2
Panel line 3	Line 3
Panel line 4	Line 4
Backlight level	100 <small>Range 0-255, 0-OFF</small>
Display time	0 <small>Range 1-3000S, 0-Loop</small>

Use lines 1&3 and 2&4 for 40 character lines.

Save Screen

Figure 1.1

LCDD8 LCD Driver Setup

The LCD Panel name and location setup. Enter the name of the site where the LCD panel is located e.g. Designer Systems Main Offices and the LCD Panel location e.g. Meeting room 1.

Site name: My Site
LCD Panel location: My Location
Save Changes

Information
Display Control
LCDD8 Setup
Network Setup
SNMP Setup

Login setup. Enter a username and password combination used to log into this web server interface.

Username: User
Current Password:
New password:
Confirm password:
Save Changes

Controller information.

Firmware version: 1.00.00
Web page version: 1.00.00

To restore factory defaults click on the Activate button below. The LCDD8 will reboot on completion.

Restore defaults: Activate

Figure 1.2

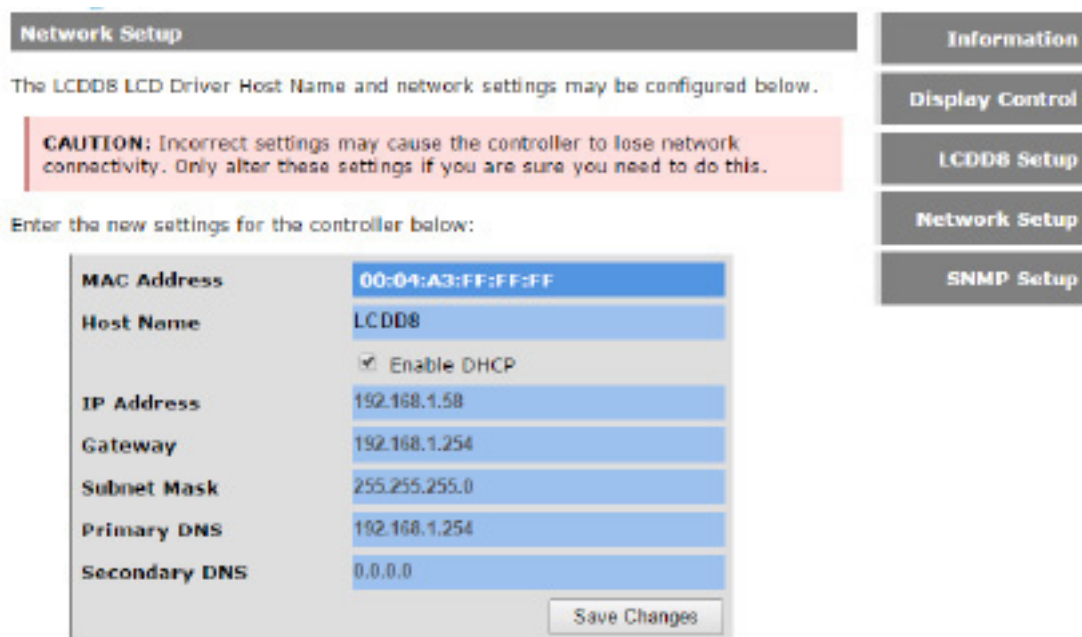
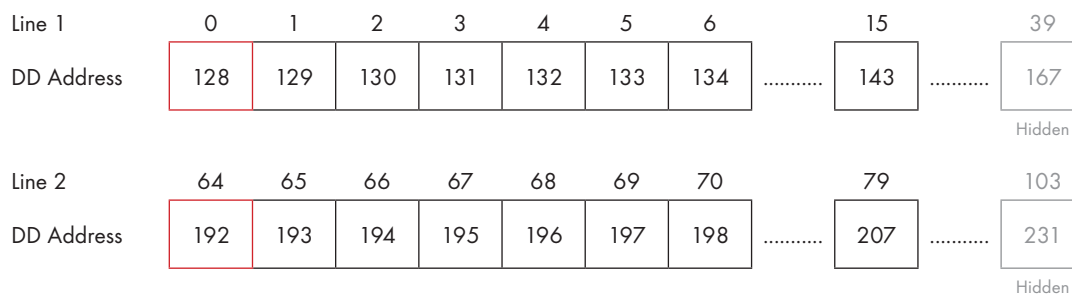


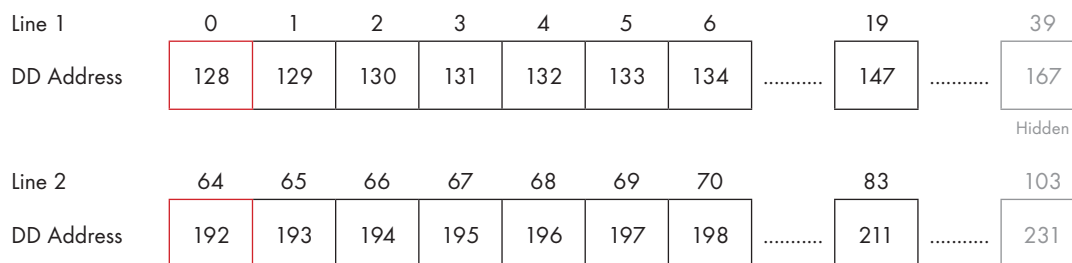
Figure 1.3

LCD Display Addresses

16 characters x 2 lines:



20 characters x 2 lines:



40 characters x 2 lines:

Line 1	0	1	2	3	4	5	6		39
DD Address	128	129	130	131	132	133	134	.....	167
Line 2	64	65	66	67	68	69	70		103
DD Address	192	193	194	195	196	197	198	.....	231

20 characters x 4 lines:

Line 1	0	1	2	3	4	5	6		19
DD Address	128	129	130	131	132	133	134	.....	147
Line 2	64	65	66	67	68	69	70		83
DD Address	192	193	194	195	196	197	198	.....	211
Line 3	20	21	22	23	24	25	26		39
DD Address	148	149	150	151	152	153	154	.....	167
Line 4	84	85	86	87	88	89	90		103
DD Address	212	213	214	215	216	217	218	.....	231

Note : RED boxed values denote line start addresses

Electrical Characteristics (TA = 25 °C Typical)

Parameter	Minimum	Maximum	Units	Notes
Supply Voltage	7	15	V	
Supply Current	150	160	mA	1
Ethernet speed		10	Mbits	

Absolute Maximum Ratings

Parameter	Minimum	Maximum	Units
Supply Voltage	-0.5	16V	V

Environmental

Parameter	Minimum	Maximum	Units
Operating Temperature	-5	70	oC
Storage Temperature	-10	80	oC
Humidity	0	80	%
Immunity & emissions	EMC compliance to 2004/108/EC		

Notes:

1. Value given does not include backlight current.

LCD Connections

The IES-ABB-ETHERNET-01 features two types of LCD connector, SIL (Single In Line) and DIL (Dual In Line), these being pinned as follows:

16	●	Backlight-			16		
	●	Backlight+	Backlight+	●	●	Backlight-	
	●	Data bit 7	Data bit 6	●	●	Data bit 7	
	●	Data bit 6	Data bit 4	●	●	Data bit 5	
	●	Data bit 5	Data bit 2	●	●	Data bit 3	
	●	Data bit 4	Data bit 0	●	●	Data bit 1	
	●	Data bit 3	Ground	●	●	Enable	
	●	Data bit 2	Contrast	●	●	Date/Instruction	
	●	Data bit 1	Ground	●	●	VCC	
	●	Data bit 0					
	●	Enable					
	●	Ground					
	●	Data/Instruction					
	●	Contrast					
	●	VCC					
1	●	Ground					

WEEE Consumer Notice

This product is subject to Directive 2002/96/EC of the European Parliament and the Council of the European Union on Waste of Electrical and Electronic Equipment (WEEE) and, in jurisdictions adopting that Directive, is marked as being put on the market after August 13, 2005, and should not be disposed of as unsorted municipal/public waste. Please utilise your local WEEE collection facilities in the disposition and otherwise observe all applicable requirements. For further information on the requirements regarding the disposition of this product in other languages please visit www.i-sbc.com

RoHS Compliance

This product complies with Directive 2002/95/EC of the European Parliament and the Council of the European Union on the Restriction of Hazardous Substances (RoHS) which prohibits the use of various heavy metals (lead, mercury, cadmium, and hexavalent chromium), polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE).

For further information please contact IES

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.