4I33 MANUAL

PRELIMINARY V1.0

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Table of Contents

GENERAL

DESCRIPTION

The 4I33 is a low cost NE2000 compatible Ethernet card for the PC/104 bus that includes an RS-232/RS-485 serial port and 24 parallel I/O bits.

The 4I33 Ethernet is NE2000 compatible and uses the RTL8019AS chipset. It supports both EEPROM configuration and Plug-and-Play modes of operation. 10BaseT, 10Base2 (BNC), and AUI interfaces are provided.

The 4I33 also supports external panel mount 10BaseT or BNC connectors. The panel mount BNC tranceiver (MAU) connects to the 4I33's AUI connector. The panel mount 10BaseT connector has link and activity LEDS.

The serial port is a standard COMX compatible port using a 16550 compatible FIFOed UART. The serial port is available with either RS-232 or RS-485 level shifters. The serial port has 4 selectable I/O locations and can use IRQ 2, 3, 4, 5, 7, 9, 10, 11, 12, or 15.

The parallel port uses a 82C55 and provides 24 general purpose I/O bits. All I/O bits are provided with pullup resistors to simplify connection to switches, sensors, etc. The parallel port has 4 selectable I/O port locations.

HARDWARE CONFIGURATION

GENERAL

Hardware setup jumper positions assume that the 4I33 card is oriented in an upright position, that is, with the PC/104 connectors towards the person doing the configuration.

LOCAL TRANSCEIVER POWER

The on card BNC transceiver power can be enabled or disabled via jumper block W2. BNC Tranceiver power should only be disabled when an external BNC transceiver such as MESAs MAU is used. ***Make sure that local transceiver power is disabled if a MESA MAU is used. If left enabled when a MAU is used, an overload will occur and power supply damage may result!***

It is not necessary to disable transceiver power to save current consumption in 10BaseT mode, since the Ethernet chip will automatically disable the DC-DC converter when the 10BaseT interface is used.

Moving W2 to the UP position enables local transceiver power, moving W2 to the DOWN position disables local transceiver power.

BNC TERMINATION

The local BNC port can be terminated on card if desired. This can be useful to avoid the space used by a BNC terminator where space is at a premium. It must not be enabled unless the 4I33 card is at one end of the BNC cable run. JumperW3 is set to the UP position to enable termination, and the DOWN position to disable termination.

SERIAL PORT LOCATION

The optional on-card serial port can be located at 4 different I/O addresses, COM3, COM4,COM5, or COM6. These locations are determined by a PAL and can be changed if needed.. Jumpers W4 and W5 (labeled SLOC on card) set the serial port locations as follows:

W4	W5	LOCATION
DOWN	DOWN	COM3 = 3E8H
DOWN	UP	COM4 = 2E8H
UP	DOWN	COM5 = 100H
UP	UP	COM6 = 108H

HARDWARE CONFIGURATION

PARALLEL PORT LOCATION

The optional on-card parallel port can be located at 4 different I/O addresses, 204H,208H,224H and 228H. These locations are determined by a PAL and can be changed if needed. Jumpers W6 and W7 (labeled PLOC on card) set the parallel port locations as follows:

W6	W7	LOCATION
DOWN	DOWN	204H
DOWN	UP	208H
UP	DOWN	224H
UP	UP	228H

SERIAL PORT INTERRUPT

The optional serial port can select from 8 interrupts. The interrupt is selected by placing a jumper on one of the jumper locations from W8 through W15. These jumpers are labeled with the IRQ number on the card. Interrupts are selected as follows:

W8	W9	W10	W11
IRQ9	IRQ3	IRQ4	IRQ5

W12	W13	W14	W15
IRQ7	IRQ10	IRQ11	IRQ12

RS-485 RE OPTION

If the RS-485 option is installed, jumper W16 can be used to select whether the RS485 receiver is enabled when transmitting. This can be useful for ‘collision detection’ schemes. The disadvantage of having receive always enabled is that all transmitted characters must be dumped from the receive buffer when done transmitting.

When W16 is in the DOWN position, receive enable is always on. When W16 is in the UP position, receive enable is off when transmitting.

HARDWARE CONFIGURATION

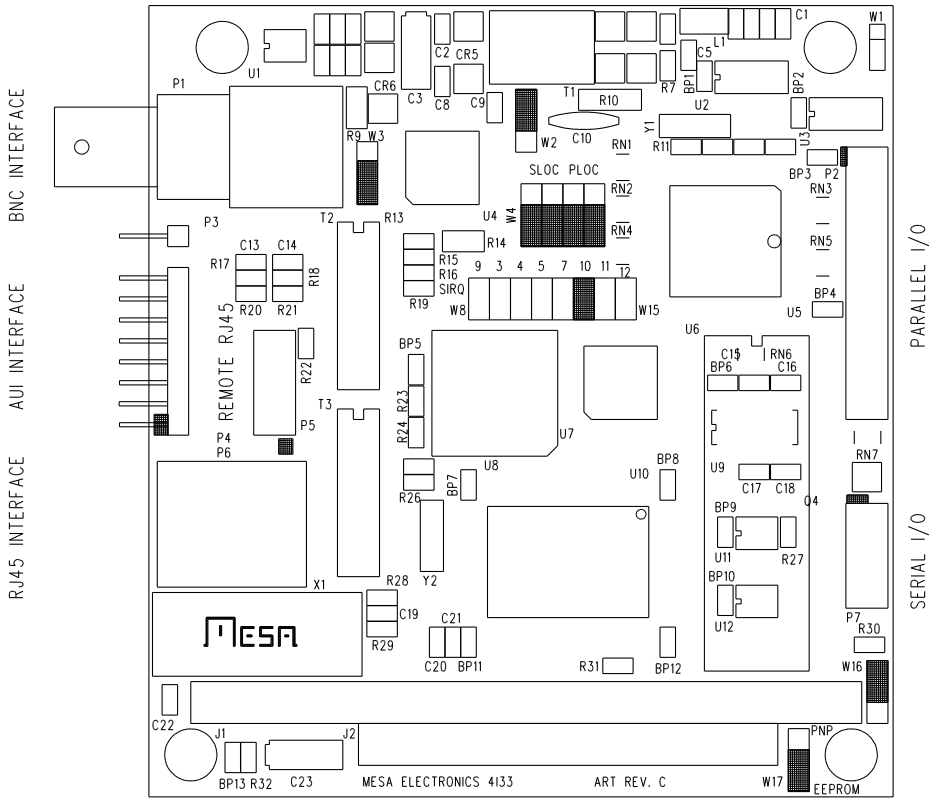
PNP/EEPROM SETUP SELECT

The 4I33 can operate in 2 different configuration modes: Plug and Play (PNP) where the system BIOS sets up the I/O location and interrupts, and EEPROM mode, where the on card EEPROM determines the I/O location and interrupts. If the system BIOS does not support Plug and Play, you must use the EEPROM configuration mode.

W17 determines the configuration mode. When W17 is in the UP position, PNP mode is selected, When W17 is in the DOWN position, EEPROM setup mode is selected.

CONNECTORS

CONNECTOR LOCATIONS AND DEFAULT JUMPER POSITIONS



CONNECTORS

PARALLEL CONNECTOR

P2 is the parallel connector. P2 is a 26 pin .1" header that provides access to the 4I33s 82C55 based 24 bit parallel I/O. The 26 pin connector uses the ISO standard pinout.The parallel connector pinout is as follows:

PIN	FUNCTION	PIN	FUNCTION	PIN	FUNCTION	PIN	FUNCTION
1	PA0	2	VCC	3	PA1	4	PA2
5	PA3	6	PA4	7	PA5	8	PA6
9	PA7	10	PB0	11	PB1	12	PB2
13	PB3	14	PB4	15	PB5	16	PB6
17	PB7	18	PC0	19	PC1	20	PC2
21	PC3	22	PC4	23	PC5	24	PC6
25	PC7	26	GND				

AUI CONNECTOR

P4 is AUI connector. P4 is a 16 pin connector. When P4 is terminated with a 15 pin female IDC DSUB connector (with cable conductor pin unused), that connector will have the standard Ethernet AUI pinout. P4 gets its +12 volt transceiver power from the PC/104 bus so +12V must be supplied if using and external transceiver. It is suggested that the cable connecting P4 to the DSUB female connector be 12 inches or shorter in length, as the flat cable creates an impedance mis-match.

P4 is also used for connecting to MESA's MAU external BNC adapter. This adapter gets its isolated transceiver power from the 4I33s on card DC-DC converter, and so does not require +12V on the PC/104 bus.

CONNECTORS

EXTERNAL 10BASET CONNECTOR

P5 Is a connector for an external, panel mount RJ45 connector. P5 is a 10 pin .1" header. MESA can supply the panel mount adapter (The TAU).

SERIAL CONNECTOR

P7 standard. P7 is a 10 pin .1" header that matches a standard AT type DB9 pin serial ports when terminated to IDC type 9 pin connector. In this case pin 10 is not used. Pin 10 is connected to +5V to support RS232-RS422 adapters etc. P7 pinout is as follows:

HEADER PIN	DB9 PIN	RS-232 FUNCTION	RS-485 FUNCTION
1	1	DCD	
2	6	DSR	
3	2	RXD	
4	7	RTS	
5	3	TXD	
6	8	CTS	485-A
7	4	DTR	
8	9	RI	485-B
9	5	GND	
10	XX	VCC	

4I33 OPERATION

CONFIGURATION

If not used in PNP mode, an on card EEPROM is used to store the 4I33 configuration parameters. A supplied DOS program: RSET8019 is used to change these parameters.

CONFIGURATION OPTIONS

RSET8019 allows setting of the following options:

I/O ADDRESS

200H 220H 240H 260H 280H 2A0H 2C0H 2E0H

300H 320H 340H 360H 380H 3A0H 3C0H 3E0H

Note that some of these addresses will be unavailable due to conflicts with existing peripherals.

IRQ

2/9 3 4 5 10 11 12 15

MEDIA

10Base2 10Base5 10BaseT Auto

If MESAs external panel mount transceiver (MAU) is used, the 10 Base2 mode should be selected. This is because the MAU gets its isolated transceiver power from the 4I33s DC-DC converter and 10Base5 mode will disable on DC-DC converter.

4I33 OPERATION

CONFIGURATION OPTIONS

BOOT PROM ENABLE/DISABLE

BOOT PROM ADDRESS/SIZE:

C000H/64K	**D000H/64K**		
C000H/32K	**C800H/32K**	**D000H/32K**	**D800H/32K**
C000H/16K	**C400H/16K**	**C800H/16K**	**CC00H/16K**
D000H/16K	**D400H/16K**	**D800H/16K**	**DC00H/16K**
C000H/PAGE	**C400H/PAGE**	**C800H/PAGE**	**CC00H/PAGE**
D000H/PAGE	**D400H/PAGE**	**D800H/PAGE**	**DC00H/PAGE**

AUTO MEDIA DETECT

The configuration program lets you select an ‘auto’ mode for media type. The auto media detect mode operates as follows: At power up, the RTL8019 MAC chip starts up in 10BaseT mode and senses the 10BaseT link status. If the link status is good, it remains in 10BaseT mode, if the link status is bad, it will switch to BNC mode. It only does this at startup, so it will never switch back to 10BaseT even if the link becomes operational some time after power up.

DEFAULT CONFIGURATION

The default 4I33 configuration as shipped from MESA is as follows:

IO ADDRESS	IRQ	MEDIA
300H	**5**	**AUTO**

The default 4I33T configuration as shipped from MESA is as follows:

IO ADDRESS	IRQ	MEDIA
300H	**5**	**10BASET**

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