

# 100BASE -T Ethernet Expansion Module

## User Guide

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## Introduction

The heart of the Ethernet Expansion module is LAN8710A, a low-power 10BASE-T/100BASE-TX physical layer (PHY) transceiver. LAN8710A supports communication with Ethernet MAC layer via standard MII (IEEE 802.3u) interface. LAN8710A full-duplex 10-BASE-T/100BASE-TX transceiver and supports 10Mbps (10BASE-T) and 100Mbps (100BASE-TX) operation. LAN8710A implements auto-negotiation to automatically determine the best possible speed and mode of operation. HP Auto-MDIX support allows the use of direct connect or cross-over LAN cables. Ethernet Expansion Module also has Microchip 24AA02E48 2Kbit EEPROM with built in unique MAC address. This MAC address can be read from the EEPROM and used for the Ethernet interface.

## Applications

- Product Prototype Development
- Network appliance development
- Embedded Telecom Applications
- Digital Media Adapters /Servers
- Development and testing of custom Projects

## Board features

- Three 2×6 pin Expansion connectors
- High-Performance 10/100 Ethernet Transceiver
- Single-Chip Ethernet Physical Layer Transceiver (PHY)
- 2 Kbit Electrically Erasable PROM (24AA02E48) for MAC Address
- Dimension: 61.5mm X 61.5mm

## How to use the module

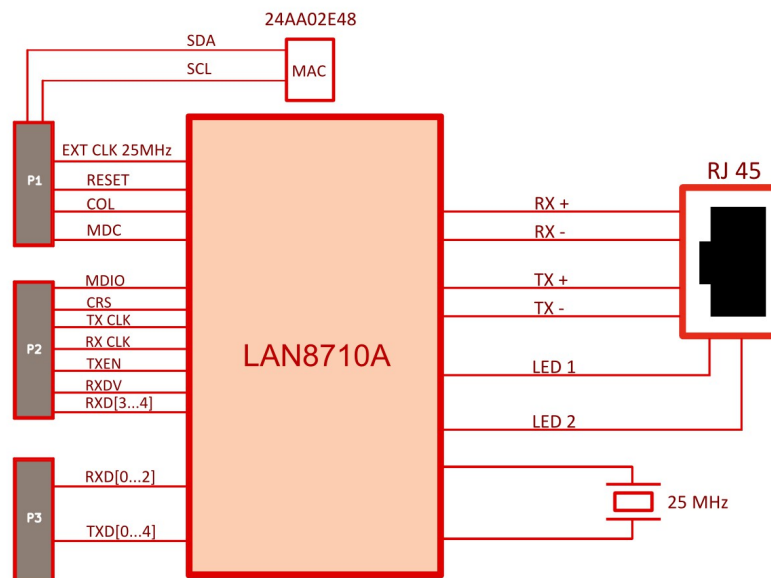
The following section describes how to use this module.

### Components/Tools required

Along with the module, you may need the items in the list below for easy and fast installation.

1. Any FPGA/Micro-controller board featuring a 2×6 pin Expansion connector (recommended to use with Saturn expansion connector on P8-P9-P10 header)
2. 5-7V DC Power supply (Optional).

### Connection Diagram



This diagram should be used as a reference only. For detailed information, see the schematics at the end of this document. Details of individual connectors are as below.

To use this module, directly attach the 2×6 expansion connectors to the FPGA/Micro-controller development board where corresponding female headers are available. If 2×6 female headers are not available, manually make the connections as per the connection details below.

## Connection Details

### Header P1

Header Pin No.	Pin Details
1	-
2	-
3	MAC_SDA
4	MAC_SCL
5	RESET
6	EXT CLK 25MHz
7	COL
8	MDC
9	GND
10	GND
11	VCC3V3
12	VCC3V3

### Header P2

Header Pin No.	Pin Details	Trace Length (mm)
1	CRS	-
2	MDIO	-
3	TXCLK	51.946
4	RXCLK	51.982
5	RXDV	-
6	TXEN	-
7	RXD3	52.034
8	RXD4	52.033
9	GND	-
10	GND	-
11	VCC3V3	-
12	VCC3V3	-

## Header P3

Header Pin No.	Pin Details	Trace Length (mm)
1	RXD2	52.028
2	RXD1	51.953
3	RXD0	52.042
4	TXD0	51.984
5	TXD1	51.973
6	TXD2	51.965
7	TXD3	51.921
8	TXD4	51.963
9	GND	-
10	GND	-
11	VCC3V3	-
12	VCC3V3	-

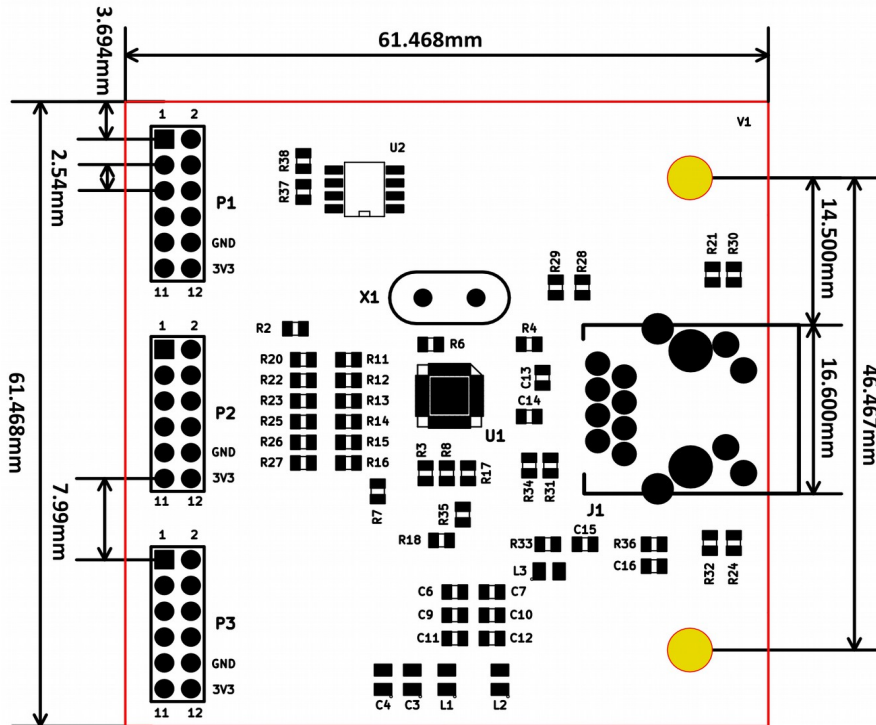
For more information, refer the schematics below.

## Technical Specifications

Parameter *	Value	Unit
<b>Basic Specifications</b>		
Power supply voltage	3.3	V
Current drawn by the circuit	70	mA
<b>LAN8710A</b>		
Supply Voltage (VDDIO, VDD1A, VDD2A)	3.3	V
Current Consumption (100BASE-T/W TRAFFIC)	54	mA

\* All parameters considered nominal. Numato Systems Pvt Ltd reserve the right to modify products without notice.

## Physical Dimensions



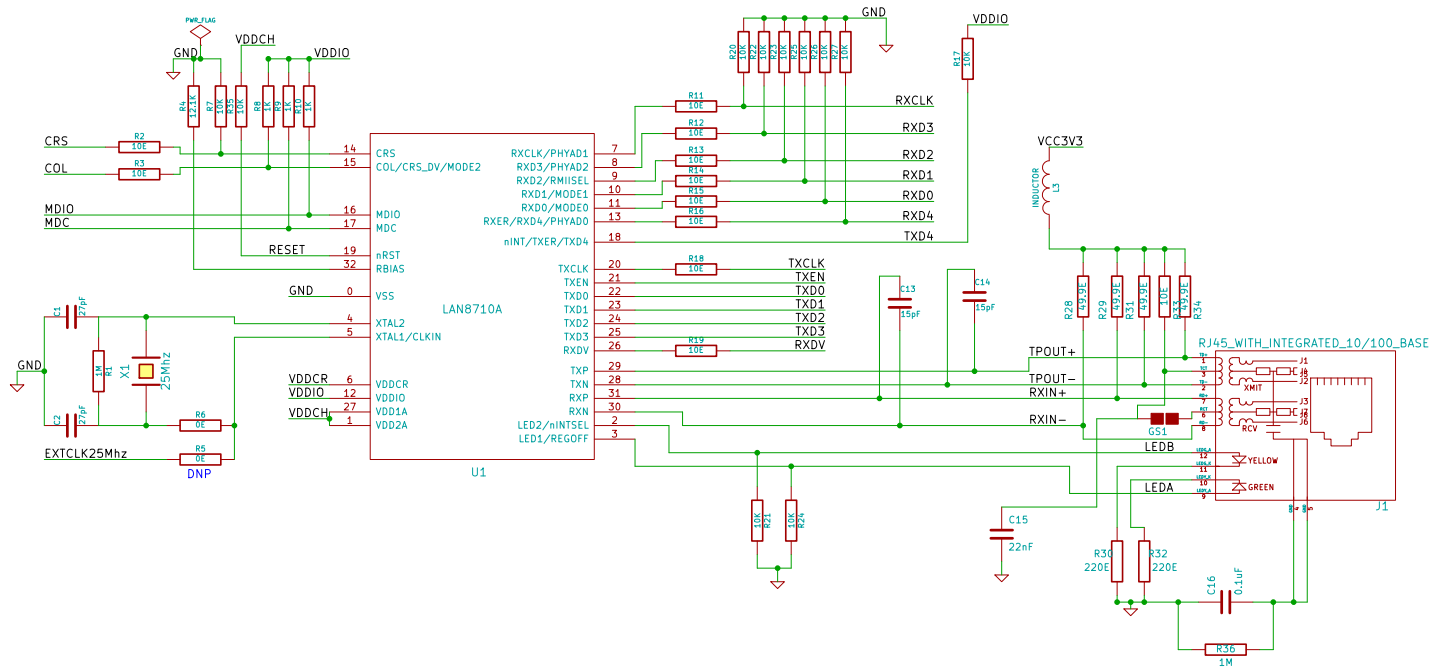
**L x W X H : 61.468 mm x 61.468 mm x 17 mm**

**Mechanical Hole Diameter : 4.0 mm**

## Schematics

See next page.





### Expansion Connectors

