

DP83848H-MAU-EK Purpose and Contents

The purpose of the DP83848H-MAU-EK (EK) is to provide National Semiconductor Corp.'s customers with a vehicle to quickly design and market systems containing the DP83848H chip. Customers are encouraged to copy EK components to expedite their design process.

The EK contains:

- DP83848H Media Attachment Unit (MAU)
- Printed copy of this User's Guide
- DP83848H MAU schematic
- DP83848H MAU licensing agreement

Information and Specifications

This section contains specifications of the DP83848H MAU card, as well as a description of the card's interfaces, connectors, jumpers and the LED.

Usage setup and configuration

Power for the DP83848H MAU is supplied via MII connector.

- If 5V is supplied, the on-board voltage regulator, U5, will convert 5V to 3.3V for the device. J11 should be removed.
- If 3.3V is supplied from the MII connector, J11 needs to be ON (See schematics for details).

Address settings:

The PMD address for the DP83848H Physical Layer device is set by jumper J4.

- Default board setting for the PHY Address is 01
- The board may be set to PHY Address 03 by adding jumper J4.

Table of jumpers:

Jumper	Name	Function
J1	II Male Connector	II interface
J2	II Header	Alternative connection for II signals
J3A,B,C	MDIO access	J3 A to B should be ON for II MDIO access, J3B to C should ON for on_board uMDIO access, J3 A, B, C should be OFF for external uMDIO/FDI card use
J4	PHYAD1	PHY Address strap pin (PHY address = 01 when J4 is OFF, PHY address = 03 when J4 is ON)
J5	MDIX_EN	Auto_MDIX is enabled when J5 is OFF and disabled when J5 is ON.
J6	LED_CFG	Set LED configuration. When J6 is OFF and the chip is powered, a light on LED_LNK represents the presence of a link. When J6 is ON, the blinking light on LED_LNK represents link and activity. In both cases when there is no light on LED_LNK, this is an indication of absence of link.
J7	RESET_N	J7 ON will reset the device
J8 (Not populated)		
J9	Optional header	
J11	II 3V3 option	J11 should OFF for 5V II supply and J11 should be ON for 3.3V II supply
J12	Pulse Jack	Integrated Magnetic RJ-45 connector
J15	MDIO connector	On_board uMDIO connection

DP83848H MAU Specification

Overview

The DP83848H MAU is an NSC demo platform to allow customer evaluation of our device. While the DP83848H has many advanced and enticing features, this specific board is designed to demonstrate *only* a subset of those. The features chosen are the ones that the mainstream customers will use. Thus we have created an affordable, aesthetic platform to demonstrate the simplicity of designing in a National Semiconductor DP83848H.

Target Environment

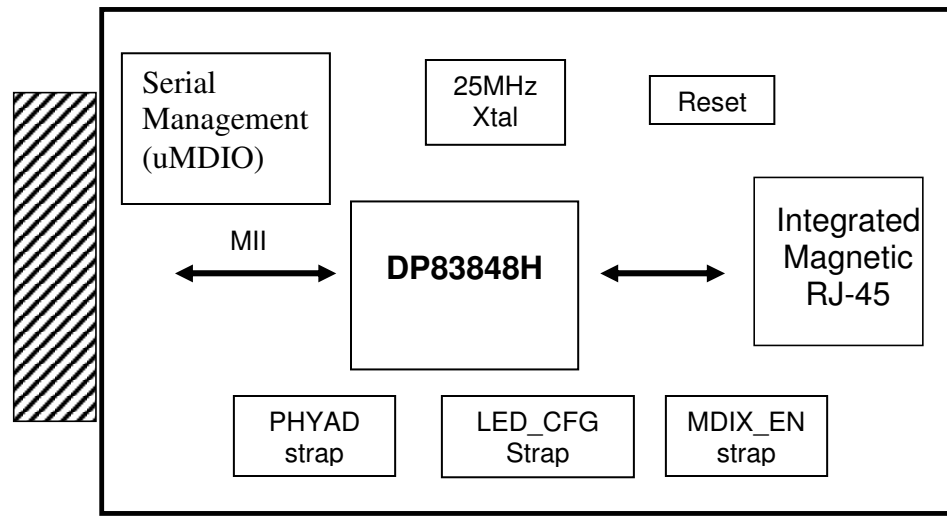
Any customer equipment that provides a standard IEEE 802.3, Clause 22 MII DTE interface; e.g. SmartBits/Netcom box.

Features/Goals

The DP83848H MAU features:

- Integrated magnetics
- Minimum configuration requirements:
 - 2 PHY Addresses - 01h (default) or 03h
 - 2 LEDs – 1 power, 1 LED for LINK
 - Strap Options – MDIX_EN, LED_CFG
 - RESET_N jumper
- Connections for the following interfaces:
 - MII Interface
 - Integrated transformer RJ-45
 - Header for “ribbon cable” connection to MII
- Standard PCB layout considerations with regards to clock, MII, and TD/RD
- Single sided component placement
- On-board clock – Crystal
- On-board power supplied by MII connector *only*, jumper to configure 5v or 3.3v
- On-board MDIO circuit
- Low cost

MAU Block Diagram



PCB Physical Layout requirements / Considerations

- FR4 material
- Trace impedance will be ensured by design:
 - Trace symmetry within differential pair (+/- 0.5")
 - Differential impedance 100 ohms, +/- 5%
 - Adjacent differential pairs spacing > 2X distance within a differential pair, to minimize cross-talk and EMI
- Trace length matching between differential pairs not required
- Trace space will be 0.007"/0.008" minimum
- Uniform supply & ground plane
- Combination of through-hole and surface mount technology
- Target size 2.0" (height), 3.0" (length)
- 4 layers
- Silk screen on two sides

MAU Interface requirements

- System interface will be via the MII connector, and MII header
- RJ-45 for network connection
- On Board Serial Management circuit

Software

- No device specific software is required for this board
National does provide the integrity utility; a diagnostic and configuration package at www.national.com/appinfo/networks/ethernet_utility.html

Additional information

Updated versions of the included material, related material can be found by going to ethernet.national.com or directly to design resources at <http://www.national.com/appinfo/networks/webench/dp83848.html>

National Semiconductor Corporation

2900 Semiconductor Drive
Santa Clara, CA 95051, U.S.A.

Tel: 1-800-272-9959

Fax: 1-800-737-7018

Email: support@nsc.com

WWW: www.national.com

National Semiconductor Europe

Fax: (+49) 0-180-530 85 86

Email: europe.support@nsc.com

Deutsch Tel: (+49) 0-180-530 85 85

English Tel: (+49) 0-180-532 78 32

National Semiconductor Asia Pacific

Customer Response Group

Tel: 65-254-4466

Fax: 65-250-4466

Email: sea.support@nsc.com

National Semiconductor Japan Ltd.

Tel: 81-3-5620-6175

Fax: 81-3-5620-6179

Copyright © 2005 National Semiconductor Corporation.

National Semiconductor and the National Semiconductor logo are registered trademarks of National Semiconductor Corporation.

All other brand or product names are trademarks of their respective holders.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products

Audio	www.ti.com/audio
Amplifiers	amplifier.ti.com
Data Converters	dataconverter.ti.com
DLP® Products	www.dlp.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
OMAP Mobile Processors	www.ti.com/omap
Wireless Connectivity	www.ti.com/wirelessconnectivity

Applications

Automotive and Transportation	www.ti.com/automotive
Communications and Telecom	www.ti.com/communications
Computers and Peripherals	www.ti.com/computers
Consumer Electronics	www.ti.com/consumer-apps
Energy and Lighting	www.ti.com/energy
Industrial	www.ti.com/industrial
Medical	www.ti.com/medical
Security	www.ti.com/security
Space, Avionics and Defense	www.ti.com/space-avionics-defense
Video and Imaging	www.ti.com/video

TI E2E Community Home Page

e2e.ti.com

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2012, Texas Instruments Incorporated