

## Introduction

The MorethanIP PhyworkX Two-PHY Ethernet Development Kit provides an Ethernet PHY Daughter Board enabling two ports 10/100Mbps Ethernet copper connectivity using standard RJ45 connectors.

The board implements two independent Ethernet interfaces using separate PHY devices. To the main board, a High Speed Mezzanine Card (HSMC) connector is used implementing the Reduced MII (RMII) operating at 50MHz.

The PHY devices provide dedicated IEEE1588 functions for precise frame time stamping supporting synchronization applications, which can be used individually per port. In addition an adjustable clock with very low jitter output is available per device.

In combination with the MorethanIP Ethernet Cores (e.g. MAC, Switch, IEEE 1588) the PHY daughter board can be used to quickly design, implement, prototype and test embedded Ethernet Telecom or Industrial applications from 10Mbps and 100 Mbps speeds.

The board can be used with any Altera (e.g. Arria GX, Stratix II GX, Cyclone III) or MorethanIP board that implements a HSMC connector.

## Hardware Features Overview

- Daughter Board with Two National DP83640 10/100 Ethernet PHY device
- 2x RJ45 Standard Ethernet copper connectors for 10Base-T, 100 Base-T networks
- PHY implements Autonegotiation for automatic speed selection and automatic cable crossover configuration individual per port
- PHY implements support for IEEE 1588 precision time synchronization protocol (v1/v2) with frame timestamping and adjustable clock
- PHY provides generic I/Os used to create trigger events or measure events, available on general purpose connectors as well as HSMC
- High Speed Mezzanine Card (HSMC) connector to mainboard
- Implements reduced MII (RMII) MAC interfaces
- 2-Wire PHY MDIO Management Interface for PHY configuration / status available on the HSMC
- Status LEDs providing PHY speed/link/activity indications per port



**Figure 1: Two-PHY PhyWorkx Board**

- Single 3.3V powered through HSMC
- 3.3V I/Os voltage on the HSMC parallel RMII interfaces (supports also 2.5V I/O connections)

## Design Package and Support

- Includes 10/100 Ethernet DP83640 PHY daughter Board
- Detailed user's and reference guides
- Optional: Reference designs in bitstream format for Altera FPGAs
- Optional: C Software for Reference Designs with associated drivers and examples

## Ordering Information

**MTIP-PHYWORKX-2xDP83640**

## Contact

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