



# DUAL-SPEED 10GBASE-T / 1000BASE-T ETHERNET PHYSICAL LAYER DEVICE

## INTRODUCTION

The TN2010 is a lower power, single-port 65nm PHY offering complete pin-compatibility with the 1st generation TN1010 PHY device. The TN2010 is ideal for applications ranging from aggregation ports on switch uplinks, to 10GBase-T NIC/Adapter cards for servers, to dense 24- and 48-port 10 Gigabit Ethernet switches for data center applications.

## FEATURES HIGHLIGHTS

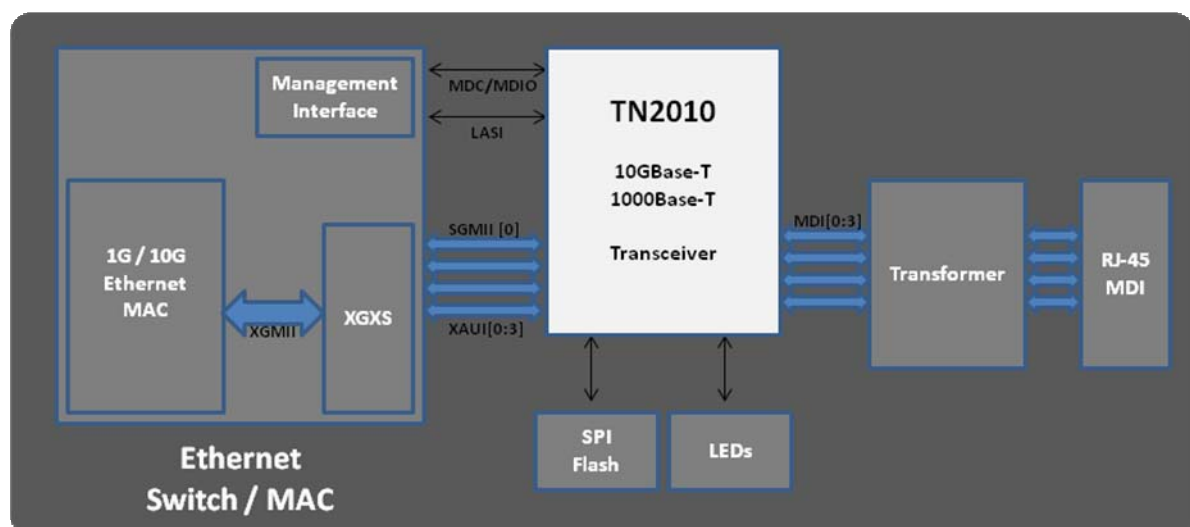
- 2nd Generation Low-power, Single Chip, Integrated 10GBase-T Ethernet PHY
- Pin-compatible with 1st Generation TN1010 10GBASE-T PHY
- Fully IEEE 802.3an-2006 compliant
- 100m 802.3an compliant cable reach
- Auto-negotiated Dual-speed operation:
  - 10GBase-T
  - 1000Base-T

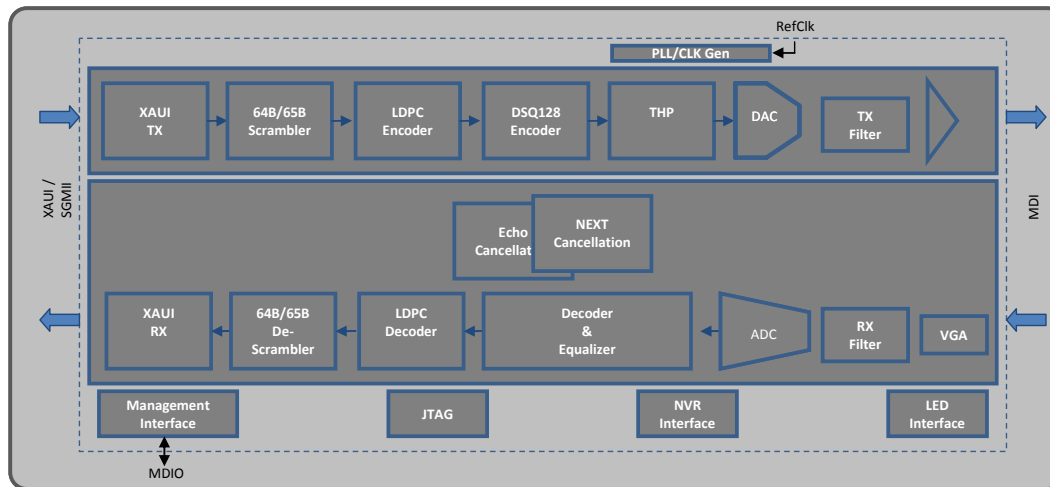
- Flexible MAC/Switch interface:
  - 10G XAUI - 4 lane, 3.125G
  - 1G SGMII - 1 lane, 1.25G
- Detection/Correction of wiring pair or polarity swaps
- IEEE 1149.1 (JTAG) boundary scan
- Compact 25x25mm BGA packaging
- Cable Monitoring diagnostics
- Low Power: 5.7W/port @ 100m; 4W/port @ 30m
  - Adaptive Voltage Scaling for optimal power efficiency

## TN2010 BENEFITS

- Low Power enables dense 10G applications
- Single chip with efficient, compact packaging offers efficient board space utilization.
- Dual-speed operation enables compatibility with existing installed base, with added upgrade path to increased bandwidth.
- Cable diagnostics enables fault detection, BER measurements, and pair skew measurements for immediate cable characterization.

TN2010: System Block Diagram for Typical 10G Connectivity





TN2010: Block Diagram

## OVERVIEW

The TN2010 is an integrated single-chip 10Gbase-T / 1000Base-T Ethernet Copper Physical Layer (PHY) device. Fully IEEE 802.3an compliant, the TN2010 is ideal for 10 Gigabit Ethernet data transport over conforming structured copper cable up to 100m. Key features include low power and small footprint, supporting adapter card application requirements through to dense 10G switch applications.

The TN2010 is pin-compatible with Teranetics' flagship first generation 10GBase-T PHY: TN1010. This enables ease of upgradeability to low power consumption.

The TN2010 offer flexibility on both ends, with 4-lane XAUI for 10G applications and 1-lane SGMII support for 1G applications on the system side. On the line side, the TN2010 enables legacy line support with auto-negotiated IEEE compliant 10G Ethernet or 1G

Ethernet line rates. 10G and 1G Ethernet support enables compatibility with existing installed base, with added upgrade path to increased bandwidth over as long as link segment requirements are met.

The TN2010 incorporates various advanced features for ease of design and performance monitoring. The Cable Diagnostics features enables fault detection and BER/skew management. Multiple loopback modes are supported for verification and debugging.

The TN2010 10GBase-T Ethernet PHY, offering a pin-compatible low-power upgrade path from the TN1010, is a part of a full multi-generation family of 10 Gigabit Ethernet Physical Layer (PHY) devices offered by Teranetics. Teranetics offers a family of single and dual port solutions based on application requirements.

## ABOUT TERANETICS

Teranetics provides state-of-the-art silicon solutions that enable 10 Gigabit rates over the traditional UTP and STP copper cabling; an order of magnitude improvement over rates available in today's enterprise networks. Teranetics products allow data centers and enterprise networks to increase scalability and improve throughput while dramatically lowering the cost of ownership for 10 Gigabit links. Teranetics solutions are being adopted by many of the networking industry's leading OEMs and equipment providers.

### Corporate Headquarters

2665 North First Street  
Suite 300  
San Jose, CA 95134

Tel: 408.457.2200  
Fax: 408.321.8758

[www.Teranetics.com](http://www.Teranetics.com)  
[sales@Teranetics.com](mailto:sales@Teranetics.com)