



# TRI-SPEED 10GBASE-T / 1000BASE-T / 100BASE-TX ETHERNET PHYSICAL LAYER DEVICE

## INTRODUCTION

The TN2020 is a lower power, single-port 65nm PHY offering triple-speed Ethernet support: 10GBASE-T / 1000BASE-T / 100BASE-TX. The TN2020 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. With the additional support of XFI interface, the TN2020 further enable dense 10 Gigabit applications.

## FEATURES HIGHLIGHTS

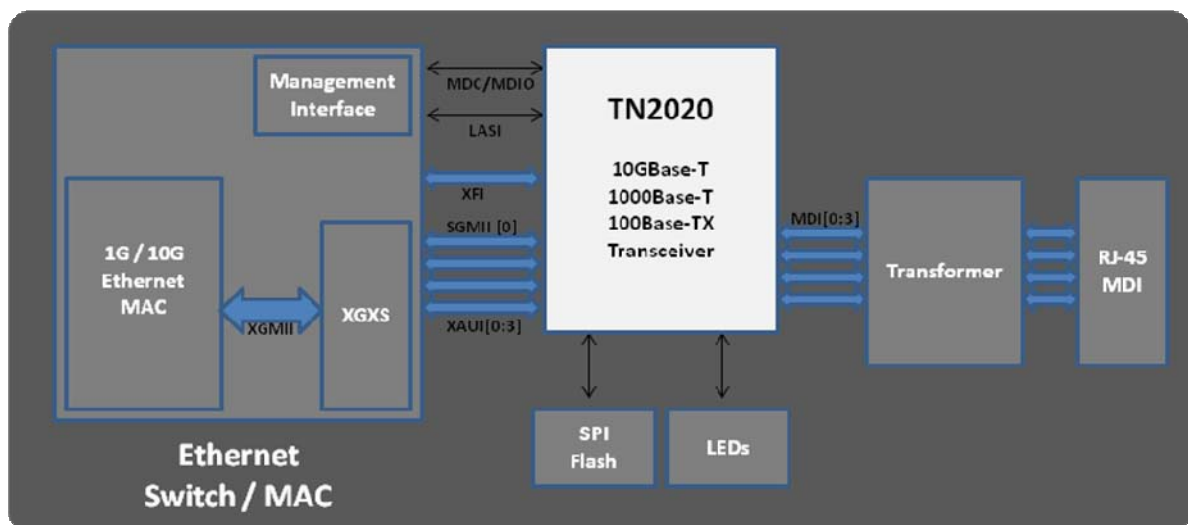
- Fully IEEE 802.3an-2006 compliant
- 100m 802.3an compliant cable reach
- Auto-negotiated triple-speed operation:
  - 10GBase-T
  - 1000Base-T
  - 100Base-TX
- Flexible MAC/Switch interface:
  - 10G XFI or XAUI, 3.125G
  - 1G SGMII - 1 lane, 1.25G

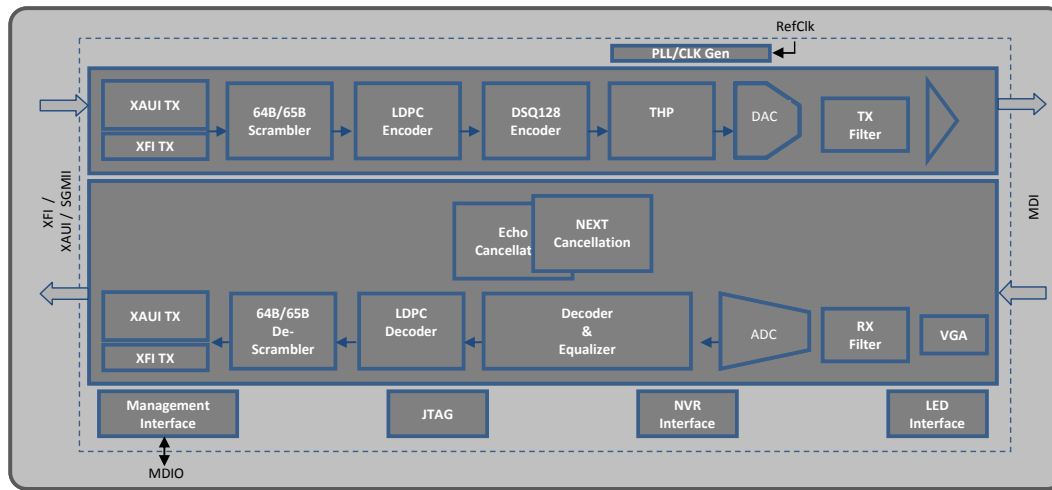
- Detection/Correction of wiring pair or polarity swaps
- IEEE 1149.1 (JTAG) boundary scan
- Compact 25x25mm BGA packaging
- Cable Monitoring diagnostics
- Low Power: 5.7W/port @ 100m; 4W/port @ 30m
  - Adaptive Voltage Scaling for optimal power efficiency

## TN2020 BENEFITS

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

TN2020: System Block Diagram for Typical 10G Connectivity





TN2020: Block Diagram

## OVERVIEW

The TN2020 is an integrated single-port 10GBase-T / 1000Base-T / 100Base-TX Ethernet Copper Physical Layer (PHY) device. Fully IEEE 802.3an compliant, the TN2020 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 TN2020 offers auto-negotiated triple-speed operation: 10GBase-T / 1000Base-T / 100Base-TX, enabling legacy IEEE Ethernet compliance, compatibility with existing installed base, and providing a seamless upgrade path to increased bandwidth.

The TN2020 provides system interface flexibility with 4-lane XAUI or 1-lane XFI support for 10G

applications and 1-lane SGMII support for 1G applications on the system side.

The combination of compact 25x25mm packaging and the support of single-lane XFI switch interface promote ease of dense 10 Gigabit applications. The efficient packaging and auto-negotiated triple-speed support are ideal for flexible adapter card applications.

The TN2020 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 TN2020 10GBase-T Ethernet PHY is part of a 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.

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