

# Zyntai TimeNode TN3100 / TN3040

Next Generation of Precision TimeNet Synchronization Solution

Precision TimeNet synchronization provides a GNSS/GPS independent accurate time and phase synchronization over any network. The solution is specifically designed for high and cost-effective scalability and security in 5G and mission critical networks. Next generation of Precision TimeNet synchronization consists of Zyntai TN3100 (core), Zyntai TN3040 (access) and the Zyntai Director (see separate datasheet).

With the Zyntai portfolio based on Precision TimeNet (PTN), it is possible to set up an overlay synchronization network directly over existing infrastructure, effectively transporting accurate time with inherent redundancy to handle link and node failures, transport delay variation as well as changes in asymmetries in underlying networks.

The Zyntai TN3100 and Zyntai TN3040 provide an integrated solution, with complete PTP stack, multiband GNSS interface and 10G / GbE interfaces. The Zyntai series has secure, flexible, and upgradable microservices architecture and is fully orchestrated from the Zyntai Director.



Zyntai TN3100 and Zyntai TN3040

## Key Features

### High Accuracy timing transfer

The Zyntai solution allows the number of synchronization messages to be streamed and varied up to several Mbps. In combination with intelligent and proven min delay algorithm and digital filters, this makes the solution very resilient to the Packet Delay Variation of the underlying network.

### Full PTP Client and PTP Master Clock function with frequency support

The Zyntai TimeNodes have complete PTP support for both PTP Client and PTP Master Clock functions. They supports both PTP profiles for phase/time synchronization with full timing support (G.8275.1 FTS) and partial timing support (G.8275.2 PTS). The Zyntai TimeNodes also support C.37.238 Power and 61850-9-3 Power Utility Profile.

The Zyntai solution contains frequency synchronization that eliminates the need for intermediate Sync-E infrastructure and the Zyntai TimeNode presents a Synchronous Ethernet Equipment Node (EEC) GbE to provide a fully G.8275.1 FTS compliant interface.



Enables GNSS/GPS independence



Specifically designed for 5G TDD and mission critical services



Disaggregated and open to allow any underlying network including leased line

### Enhanced Synchronization routing protocol

The Zyntai solution has an advanced synchronization routing protocol which selects the best paths and supports mesh networks and multiple clock sources in the network.

### Asymmetry Autocalibration Profiles

The Zyntai solution also has built-in support to handle asymmetric delays in underlying infrastructure and to detect and mitigate change in delay, e.g., due to network protection or Optical Transport Networks (OTN) ODU reconfiguration.

The solution also includes Asymmetry Autocalibration that effectively handles a multitude of network asymmetries that could occur, such as routing changes due to link or node errors, asymmetric delays in intermediate routers and transport asymmetries in microwave or due to SDH, OTN and DWDM transport. All these asymmetries are identified and auto calibrated for in runtime.

### Collaborative Clocks

The Zyntai synchronization allows timing to be received from multiple sources simultaneously, selecting one or combining several as synchronization sources to create an optimal output.

# Technical Specifications

## Zyntai TN3100 / TN 3040

<b>Time Transfer</b>	Upto 32 simultaneous Time Transfer sessions (Nimbra 3100 PTN) Upto 4 simultaneous Time Transfer sessions (Nimbra 3040 PTN)
<b>PTP</b>	ITU-T G.8275.1 Telecom Profile (full timing support) ITU-T G.8275.2 Telecom Profile (partial timing support) ITU-T G.8265.1 Telecom Frequency Profile IEC 61850-9-3 Power Utility Profile IEEE C.37.238 Power Profiles SMPTE ST 2059-2 and AES67 Broadcast and Media Profiles
<b>Interfaces</b>	N3040: 4x 10G/GbE SFP/SFP+, 2x RJ-45 N3100: 10x 10G/GbE SFP/SFP+, 2x RJ-45
<b>Synchronization interface</b>	PPS in/out, 2x HDBNC, 10MHz in/out, 2x HDBNC 2.048 MHz and 1.544 MHz in/out ITU-T G.703.
<b>Synchronous Ethernet</b>	ITU-T G.8261, G.8262 (EEC) and G.8264 Ethernet Synchronization Messaging Channel (ESMC)
<b>GNSS receiver</b>	Multiband GNSS receiver for GPS, Galileo, GLONASS and BeiDou
<b>Syslog</b>	Local and remote syslog (RFC 5424)

<b>Management If</b>	Electrical GbE/FE (RJ-45) Serial Port USB-C port for onboarding
<b>Power</b>	2 x -48 VDC (-60 to -40 VDC) or 2 x 100-240 VAC.
<b>Environmental cond.</b>	
Operating temp.	Zyntai TN3100: 5 to 40 °C (41 to 104 °F) EN 300 019-1-3 Class 3.1 Temperature controlled locations. Zyntai TN3040: -40 to 65 °C (-40 to 149 °F) EN 300 019-1-3 Class 3.3 Not temperature-controlled locations
Storage temp.	-40 to 70°C (-40 to 156 °F)
<b>Regulatory compliance</b>	
Safety	IEC 62368-1
ERM/EMC	FCC 15 Class A, EN 300 386
<b>Dimensions (HxWxD)</b>	43.5 mm (1.75" / 1RU) x 440 mm (17.5") x 302 mm (11.9")