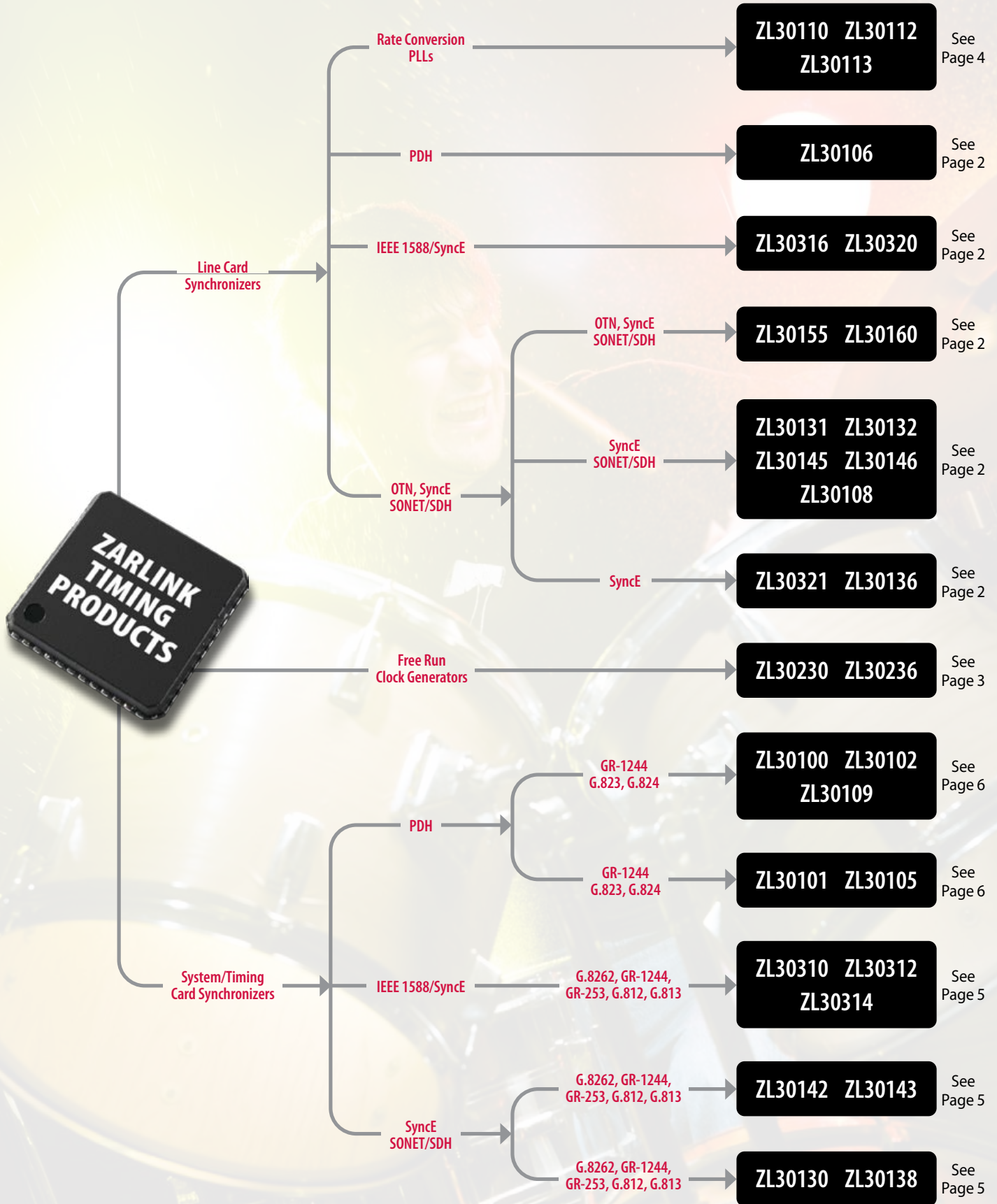


TIMING AND SYNCHRONIZATION

PRODUCT CATALOG





QUICK GLANCE SELECTOR GUIDE

LINE CARD SYNCHRONIZERS

Zarlink offers the industry's broadest portfolio of phase-locked loops (PLLs) for high performance line card synchronization, including the new ZL30155 and ZL30160 ClockCenter Universal Clock Translator products.

Our portfolio of line card timing products support jitter performance from T1/E1 up to 10G/OC-192/STM-64, and includes IEEE1588 devices which support both client and server applications. The devices recover and transmit network synchronization over Ethernet networks. All IEEE1588 products work with Zarlink's field-proven timing algorithm to ensure the best possible results over packet networks.

The highly integrated, feature-rich chips—with multiple outputs, redundancy protection, and low-power consumption—help simplify the design of networking equipment that meets the latest performance requirements.

Applications

- ➔ Optical equipment used in DWDM & WDM networks
- ➔ Optical Transport Network (OTN)
- ➔ SONET/SDH equipment such as Multi-Service Provisioning Platforms (MSPP)
- ➔ Wireless Base Stations and Node B
- ➔ Wireless Base Station Controllers and Radio Network Controllers
- ➔ Routers and switches
- ➔ Add-Drop Multiplexers (ADM)
- ➔ Metro Ethernet equipment
- ➔ Integrated Access Devices (IAD)
- ➔ Multi-Service Access Platforms (MSAP)
- ➔ Passive Optical Network (PON) equipment
- ➔ Gateways
- ➔ Digital Subscriber Line Access Multiplexers (DSLAM)

Product Features

- ➔ Any Rate—Any Port—All The Time performance
- ➔ New ClockCenter products synchronize to any rate and generate any rate from 1 kHz to 720 MHz
- ➔ ITU-T G.8261 compatible clock recovery performance
- ➔ Simultaneous support for IEEE 1588 and Synchronous Ethernet from a single device
- ➔ Highly flexible dual GbE/FE MAC promoting simple system architectures
- ➔ Meets Ethernet/SONET/SDH jitter generation requirements up to 10G/OC-192/STM-64
- ➔ Multiple PLLs per device for rate conversion
- ➔ Supports ITU-T G.8262 requirements for Synchronous Ethernet slave clocks (EEC option 1 & option 2)
- ➔ Input synchronizes to telecom reference clocks or to Ethernet reference clocks
- ➔ Output generates standard SONET/SDH clock rates or standard Ethernet clock rates

	IEEE 1588/SynchE		WDM/OTN/ SynchE/SONET/SDH		SynchE/SONET/SDH				SynchE		SONET/ SDH	PDH
	ZL30316	ZL30320	ZL30160*	ZL30155*	ZL30131	ZL30132	ZL30146	ZL30145	ZL30136	ZL30321	ZL30108	ZL30106
ITU-T G.8261 PTP Synchronization (Synch I/F)	✓	✓										
Protocol Support RTP and IEEE 1588	✓	✓										
Jitter compliance	PDH, OC-3/ STM-1	PDH, OC-3/ STM-1	Up to 10G/ OC-192/ STM-64	Up to 10G/ OC-192/ STM-64	up to 10G/ OC-192/ STM-64	up to 10G/ OC-192/ STM-64	up to 10G/ OC-192/ STM-64	up to 10G/ OC-192/ STM-64	Gigabit	Gigabit	OC-3/ STM-1	PDH, OC-3/ STM-1
Number of rate conversion Digital PLLs	2	1	4	2	2	1	2	1	1	2	1	1
Maximum frequency (MHz)	125	125	720	720	622.08	622.08	622.08	622.08	125	125	19.44	65.536
Number of SONET/SDH/ Ethernet outputs	CMOS	2	4 8 config	4	2	1	1	1	1	2	1	1
	Differential	0	8 4 config	8	2	1	1	1	0	0	0	0
Number of PDH/TDM outputs (CMOS)	4	2	12	4	4	1	1	0	1	4	0	7
Number of frame pulse outputs (CMOS)	2	2	Program- mable	Program- mable	2	1	1	0	1	2	2	4
Programmable synthesizers (N x 8 kHz)	2	1	4 fully programmable	2 fully programmable	2	1	1	0	1	2	0	0
Number of reference inputs	8	1	4	4	8	3	5	1	3	8	2	3
Sync inputs for output frame pulse alignment	2	1	0	0	3	3	1	0	3	3	0	2
Package size	17 x 17 mm TEBGA-2	17 x 17 mm TEBGA-2	11 x 11 mm CABGA	11 x 11 mm CABGA	9 x 9 mm CABGA	9 x 9 mm CABGA	9 x 9 mm CABGA	9 x 9 mm CABGA	9 x 9 mm CABGA	9 x 9 mm CABGA	5 x 5 mm QFN	10 x 10 mm TOFP

***New ClockCenter Products**

FREE RUN CLOCK GENERATORS

Part of Zarlink's ClockCenter platform, our Universal Clock Generators help lower bill of material costs, reduce board space requirements, simplify design complexity and improve performance reliability by replacing multiple external components traditionally used to time processors, memory chips, PHY chips and more with a fully integrated single-chip solution.

High performance, integration and flexibility ensure that ClockCenter devices can meet the most demanding system requirements. Benefits of the advanced silicon solutions include improved reliability and additional features. Reliability is improved by replacing multiple oscillators which have inferior failure in time performance compared to silicon. Additional integrated features, such as frequency margining, simplify system validation while using an integrated single frequency source with fine programmable control over every frequency makes crosstalk and board noise issues easier to manage compared to multiple discrete oscillators. Fully programmable frequency flexibility allows designers to simply change frequencies instead of devices. ClockCenter devices generate up to 20 fully programmable clocks with frequencies up to 720 Mhz and jitter performance of less than 0.7 ps rms.

Applications

- ➔ Data Networking applications
- ➔ Storage Area Network applications
- ➔ High Performance Computing applications
- ➔ OTN and SONET/SDH applications
- ➔ Asynchronous High-Rate Serial Communications applications
- ➔ Clock generation for NPUs, FPGAs, Ethernet switches and PCIe switches, 10Gigabit CDRs, Rapid-IO, PCIe, Serial MII, Star Fabric, Fibre Channel, InfiniBand, XAUI, Processor clock, Processor bus clock, SDRAM clock, DDR clock

Product Features

- ➔ Fully programmable clock generation from 1 kHz to 720 Mhz
- ➔ Highly integrated with 2 or 4 independently programmable synthesizers
- ➔ Differential LVPECL clocks up to 720 Mhz
- ➔ LVCMOS clocks up to 160 MHz
- ➔ Configurable single-ended or differential clocks
 - 3.3/2.5/1.8 or 1.5 V LVCMOS clocks up to 160 MHz or
 - LVDS/LVPECL/HCSL clocks up to 350 MHz
- ➔ Jitter below 0.7 ps rms
- ➔ Dynamically configurable via SPI/I²C interface
- ➔ Supports programmable frequency offsets for frequency margining; or for use as a digitally controlled oscillator
- ➔ All clocks generated from a single 24.576 MHz crystal resonator, clock oscillator or voltage controlled oscillator
- ➔ Pin compatible

	ZL30236*	ZL30230*
Ultra low jitter synthesis engines	2	2
General purpose synthesis engines	0	2
Total Clocks	12	20
High performance differential clocks	8	8
High performance LVCMOS clocks	4	4
General purpose clocks configurable as single ended or differential	0	8
Package	11 x 11 mm 100 BGA	11 x 11 mm 100 BGA

*New ClockCenter Products



RATE CONVERSION PLLS

Zarlink's telecom rate conversion phase locked loops (PLLs) provide accurate and reliable frequency conversion for telecom, enterprise and access equipment. Targeting volume designs, the products deliver required performance with integrated reference monitoring to ensure system reliability.

Applications

- ➔ Passive Optical Network Terminal (ONT)
- ➔ Integrated Access Device (IAD)
- ➔ Voice over IP (VoIP) line cards
- ➔ Private Branch Exchange (PBX)
- ➔ Channel bank

Product Features

- ➔ Standard input frequencies of 8 kHz, 2.048 MHz, 8.192 MHz, or 19.44 MHz
- ➔ Provides a selection of telecom frequencies
- ➔ Less than 0.6 nspp intrinsic jitter on TDM clock outputs
- ➔ Status output pins for lock indication & reference failure
- ➔ Goes to free run mode when the reference fails
- ➔ Provides reset pin for control
- ➔ Simple hardware control interface
- ➔ Small package: 5 mm x 5 mm, QFN package

	ZL30110	ZL30112	ZL30113
Rate conversion DPLL with stand by capability	✓		
Number of reference inputs	1	1	1
Number of CMOS outputs	9	1	1
Synthesizers	65.536 MHz, 100/66 MHz 125 & 25 MHz	2.048 MHz 8.192 MHz	65.536 MHz
Fanout capability	✓		
Number of frame pulse outputs	0	1	1
Package	5 x 5 mm QFN	5 x 5 mm QFN	5 x 5 mm QFN



TIMING CARD SYNCHRONIZERS

Zarlink's single-chip solutions for timing card applications deliver critical end-to-end network timing performance while helping equipment manufacturers lower costs, reduce power consumption and speed time-to-market.

Zarlink provides a full range of timing card products, including PDH, SONET/SDH and next-generation Synchronous Ethernet (SyncE) and Timing over Packet (ToP/IEEE1588) solutions. Our products for timing card applications meet ANSI, ETSI and Telecordia standards as well as ITU-T Recommendation G.8262 for Synchronous Ethernet timing requirements. The IEEE1588 devices combine a full GbE "wire-speed" time stamping mechanism with a proven clock recovery algorithm.

Deployed in a range of access, wireless, router and Metro Ethernet applications, our timing card synchronization solutions allow service providers to deliver truly reliable voice, video, data and mobile services over packet networks.

Applications

- Optical equipment used in DWDM & WDM networks
- SONET/SDH equipment such as Multi-Service Provisioning Platforms (MSPP)
- Wireless Base Stations and Node B
- Wireless Base Station Controllers and Radio Network Controllers
- Routers and switches
- Add-Drop Multiplexers (ADM)
- Metro Ethernet equipment
- Integrated Access Devices (IAD)
- Multi-Service Access Platforms (MSAP)
- Passive Optical Network (PON) equipment
- Gateways
- Digital Subscriber Line Access Multiplexers (DSLAM)

Product Features

- ITU-T G.8261 compatible clock recovery performance
- Simultaneous support for IEEE 1588 and Synchronous Ethernet from a single device
- Single device can be used as either Server or Client, single package footprint and software API
- Meets the requirements of ITU-T G.8262 for synchronous Ethernet Equipment slave clocks (EEC Option 1 & Option 2)
- Generates standard SONET/SDH clock rates or Ethernet clock rates up to 622 MHz
- Additional programmable output synthesizer generates telecom clock frequencies from any multiple of 8 kHz to 100 MHz
- Generates several styles of telecom frame pulses with selectable pulse width, polarity & frequency

	IEEE 1588/SyncE			SyncE/SONET/SDH			
	ZL30310	ZL30312	ZL30314	ZL30138	ZL30130	ZL30143	ZL30142
Protocol Support: RTP and IEEE1588	✓	✓	✓				
ITU-T G.8261 PTP Synchronization (Synch I/F)	✓	✓	✓				
ITU-T G.8262 (EEC Option 1/Option 2)	✓	✓	Opt 1 only	✓	✓	✓	✓
GR-1244 Stratum 2/3E (G.812 Type II & III)	✓			✓	✓		
GR-253 SONET Stratum 3 & SMC	✓	✓		✓	✓	✓	✓
GR-1244 Stratum 3, G.812 Type IV	✓	✓	✓	✓	✓	✓	✓
GR-1244 Stratum 4/4E	✓	✓	✓	✓	✓	✓	✓
ITU-T G.813 Option 1/Option 2	✓	✓	Opt 1 only	✓	✓	✓	✓
Number of independent digital PLLs	2	2	2	2	2	2	1
Number of reference inputs	8	8	8	9	9	9	3
Sync inputs for output frame pulse alignment	3	3	3	4	4	4	3
Number of SONET/SDH/ Ethernet outputs	CMOS	2	2	2	2	2	1
	Differential	0	0	0	2	2	1
Number of PDH/TDM outputs (CMOS)	4	4	4	4	4	4	1
Number of frame pulse outputs (CMOS)	2	2	2	4	4	4	1
Programmable synthesizers (N x 8 kHz)	2	2	2	2	2	2	1
Jitter compliance	PDH, OC-3/ STM-1	PDH, OC-3/ STM-1	PDH, OC-3/ STM-1	up to 10G/ OC-192/STM-64	up to 1G/ OC-12/STM-4	up to 10G/ OC-48/STM-16	up to 10G/ OC-48/STM-16
Maximum frequency Ethernet (MHz)	125	125	125	312.5	125	312.5	312.5
Maximum frequency SONET/SDH (MHz)	100	100	100	622.08	622.08	622.08	622.08
Package size	17 x 17 mm TEBGA-2	17 x 17 mm TEBGA-2	17 x 17 mm TEBGA-2	9 x 9 mm CABGA	9 x 9 mm CABGA	9 x 9 mm CABGA	9 x 9 mm CABGA

PDH TIMING CARD SYNCHRONIZERS

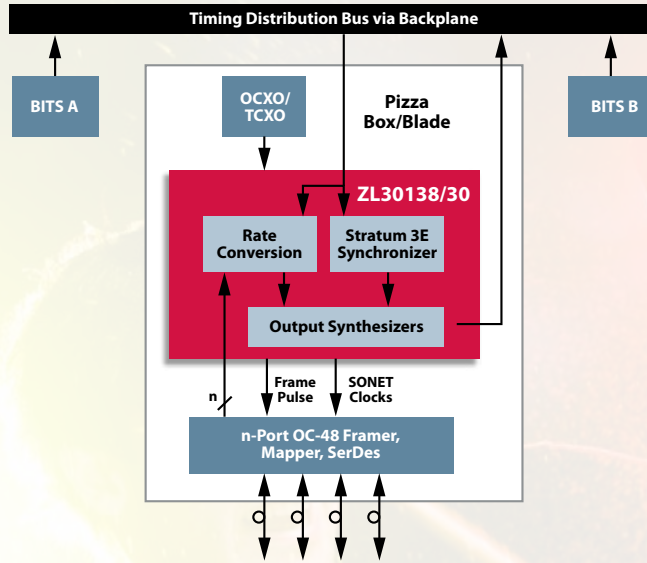
Product Features

- Supports standards from Telecordia , ANSI, ETSI & ITU
- Accepts wide range of common telecom input frequencies
- Provides a wide range of telecom clocks & frame pulses
- Holdover accuracy equal to or better than 1.5×10^{-7}
- Manual or automatic hitless reference switching
- Simple hardware control interface

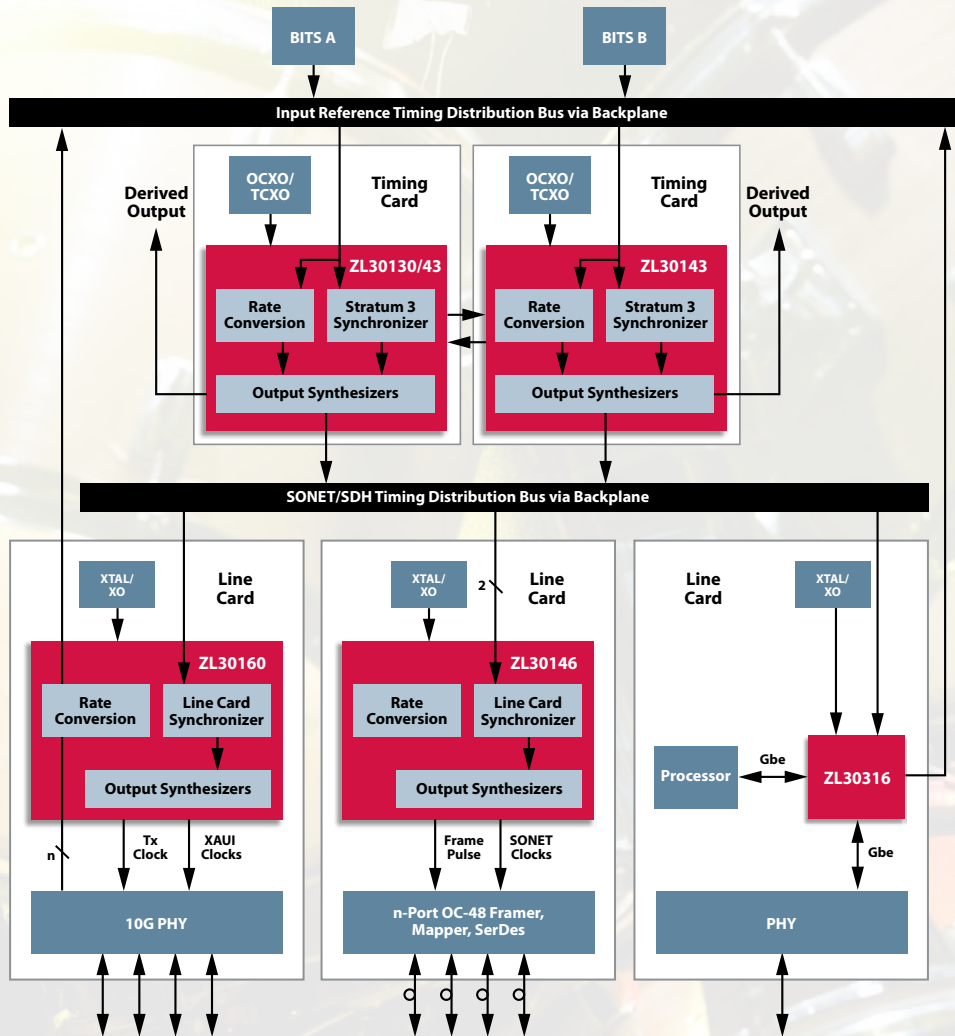
	PDH				
	ZL30105	ZL30101	ZL30102	ZL30109	ZL30100
GR-1244 Stratum 3	✓	✓			
GR-1244 Stratum 4/4E	✓	✓	✓	✓	✓
Number of independent digital PLLs	1	1	1	1	1
Number of reference inputs	3	2	3	2	2
Sync inputs for output frame pulse alignment	1	0	1	0	0
Number of SONET/SDH/Ethernet outputs (CMOS)	1	0	0	1	0
Number of PDH/TDM outputs (CMOS)	7	5	7	5	5
Number of frame pulse outputs (CMOS)	4	3	3	4	3
Jitter compliance	up to OC-3/ STM-1	PDH Interfaces	PDH Interfaces	up to OC-3/ STM-1	PDH Interfaces
Maximum output frequency (MHz)	65.536	65.536	65.536	65.536	65.536
Package size	10 x 10 mm TGFP	10 x 10 mm TGFP	10 x 10 mm TGFP	10 x 10 mm TGFP	10 x 10 mm TGFP



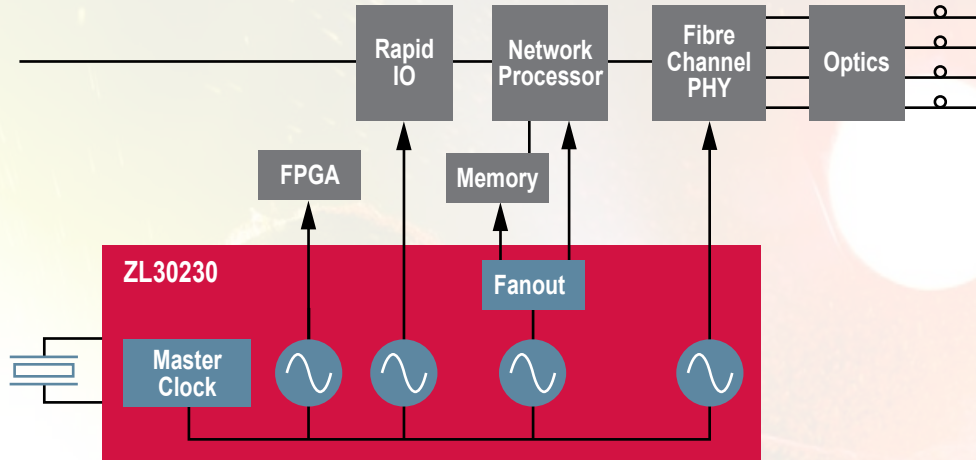
Distributed Timing For Pizza Box



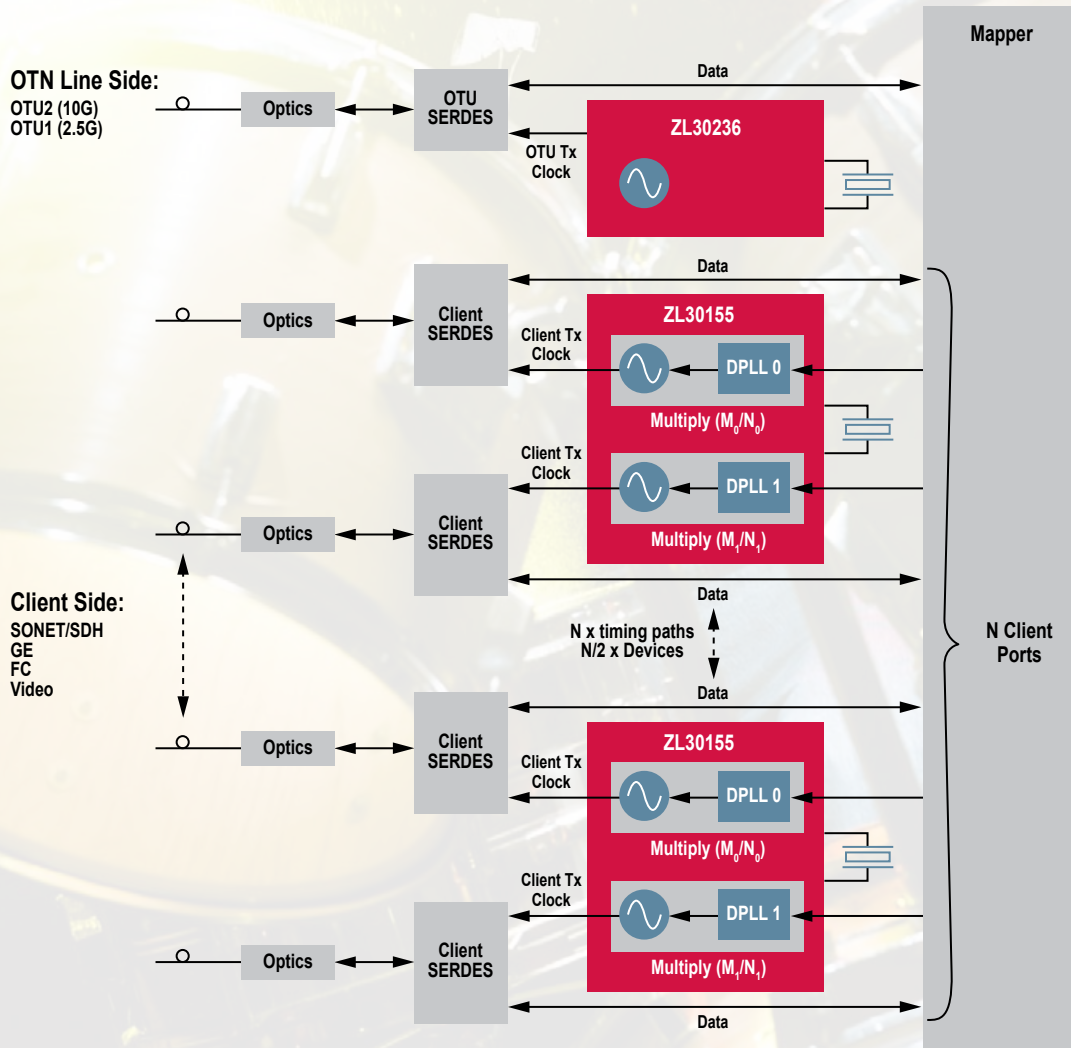
Centralized System Timing And Blade Applications



Integrated ClockCenter Device Replaces Multiple Oscillators



OTN Muxponder



Zarlink's Timing and Synchronization solutions are based on a foundation of over 20 years of expertise in designing leading-edge products that ensure maximum network uptime while meeting strict performance requirements.

Highly Integrated Solutions: Complete solutions that reduce bill-of-material costs, board space and power consumption

Simplify Design: Easy-to-adopt products, fully supported by design tools, evaluation boards, software and dedicated support teams, to simplify and shorten your design cycle

Standards Compliant: Designed to meet the latest performance requirements, including ITU-T Recommendation G.8262 for Synchronous Ethernet, to achieve quality of transmission and reliable carrier-grade services

Our state-of-the-art Line Card and Timing Card synchronization solutions increase performance, reduce costs and keep our customers ahead of the technology curve.



www.zarlink.com/timing.htm

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