EKOS GROUP

ALGIERS • ISTANBUL • CALGARY

EKOSync 1588

PTP TIME SERVER

PTP SERVEUR DE TEMPS

PTP ZAMAN SUNUCUSU

EKOSinerji

INTRODUCTION / PRESENTATION / TANITIM EKOSync 1588

Features
- Full IEEE 1588v2 PTP Grandmaster & Slave functionality
- Supports one-step and two-step clock
- SNTP support
- Flexible holdover performance levels
- IRIG-B

Applications
- Power substations
- Power grid time synchronization systems
- Industrial automation timing systems
- "Internet of things" with precise time synchronization

Caractéristiques
- Full IEEE 1588v2 PTP Grandmaster & Slave fonctionnalité
- Clock support one-step et two-step
- Support SNTP
- Niveaux flexibles de holdover performance
- IRIG-B

Applications
- Postes de transformation
- Systèmes de synchronisation des lignes de transmission d'énergie
- Systèmes de synchronisation d'automation industrielle
- "Internet of things" avec un timing précis

Özellikler
- Full IEEE 1588v2 PTP Grandmaster & Slave fonksiyonu
- One-step ve two-step clock desteği
- SNTP desteği
- Esnek holdover performans seviyeleri
- IRIG-B

Uygulamalar
- Trafo merkezleri
- Enerji nakil hatları senkronizasyon sistemleri
- Endüstriyel otomasyon senkronizasyon sistemleri
- Hassas zaman senkronizasyonlu "Internet of things"

Overview

Emerging applications in power substations, industrial automation, mobile infrastructure and smart grid have higher precision time synchronization needs. Every device in power systems must use the same sync source for coordinated action. Traditional synchronization methods are either costly or less accurate. The EKOSync 1588 implements a time & frequency synchronization system using packet timing to deliver a full, high performance, reliable timing solution.

The EKOSync 1588 can be quickly integrated into a system and works in two configurations:
- EKOSync 1588 Slave only mode: extracts time from a PTP stream and produces stable frequency and time outputs
- EKOSync 1588 Ordinary clock mode: produces frequency and phase outputs, and can operate as a slave or grandmaster to slaves downstream, generating streams of PTP packets

Integration

The EKOSync 1588 enables an easy path to quickly integrate a precision synchronization system. The EKOSync 1588 can be integrated into an end-point where precision timing signals are required as well as systems that need to provide Grandmaster functionality.

Precise syntonized signals are generated and are available at rear BNC connectors as 5/10/20/25 MHz and a PPS. The "Time of Day" (ToD) information is available in NMEA or ASCII format.

The EKOSync 1588 has industry leading algorithms that enable it to extract precise time signals from packets impeded over the network by traffic load, congestion and delay variation (PDV).

Vue générale

Les systèmes de distribution d'énergie en développement, l'automation industrielle, les infrastructures mobiles et les smart réseaux nécessitent une synchronisation de temps précis. Tous les appareils du système de puissance doivent utiliser la même source de synchronisation pour un fonctionnement simultané. Les méthodes de synchronisation traditionnelles sont très couteux ou bien moins précis. EKOSsync est un système de synchronisation de temps et de fréquence précis et de haute performance et qui utilise un paquet timing (PTP –IEEE 1588) pour présenter des solutions fiable de timing.

EKOSync est facilement adaptable au système et fonctionne avec deux configurations différentes :
- EKOSync 1588 Slave only mode : Reçoit les informations de temps du flux PTP et produit des sorties de temps et de fréquence stables.
- EKOSync 1588 Ordinary clock mode (ordinaire mode d'horloge): Produit des sorties de phases et de fréquence, fonctionne comme grand master en produisant des paquets de PTP pour les slave ou les slave en aval.

Intégration

EKOSync présente une méthode simple pour l'intégration rapide d'un système de synchronisation précis. EKOSync 1588 peut intégrer les signaux précis de timing vers les end-points et peut être utilisé dans les systèmes qui nécessitent un grandmaster.

Les signaux précis synchronisés sont produits en 5/10/20/25 MHz et en PPS (pulse per second-impulsion per second) et sont communiqués aux connecteurs BNC. Les informations ToD (Time of day-temps du jour) sont fournis en format NMEA ou ASCII.

EKOSync 1588 possède des algorithmes leader industriels qui fournissent des signaux de timing précis des paquets en perturbation sur le réseau à cause de la charge du trafic, congestions et variations de retard.

Genel Bakış

Gelişen enerji dağıtım sistemleri, endüstriyel otomasyon, mobil altyapı ve akıllı şebekeler yüksek hassasiyetli zaman senkronizasyonuna ihtiyaç duyar. Güç sistemlerindeki her bir cihaz birlikte çalışmak için aynı senkronizasyon kaynağını kullanmalıdır. Geleneksel senkronizasyon metodları ya çok pahalı ya da hata oranları oldukça yüksektir. EKOSync 1588 tam ve yüksek performanslı, güvenilir timing çözümleri için paket zamanlama (PTP - IEEE 1588) kullanan bir zaman ve frekans senkronizasyonu sistemidir.

EKOSync 1588 sisteme kolayca entegre edilebilir ve iki farklı konfigürasyon ile çalışır:
- EKOSync 1588 Slave only mode: PTP akışından zaman bilgisini alır, sabit frekans ve zaman çıkışı üretir.
- EKOSync 1588 Ordinary clock mode: Frekans ve faz çıkışları üretir, slave veya downstream'deki slave'ler için PTP paketleri üreterek grandmaster olarak çalışabilir.

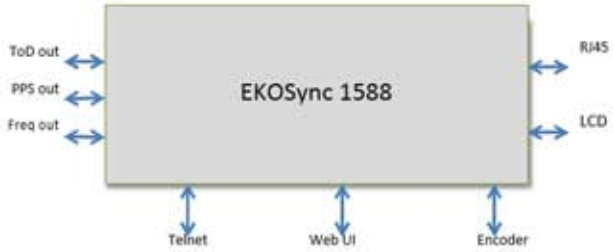
Entegrasyon

EKOSync 1588 bir hassas senkronizasyon sistemini hızlıca entegre edebilmek için kolay bir yol sunar. EKOSync 1588 hassas zaman sinyallerinin gerekli olduğu end-point'lere entegre edilebildiği gibi Grandmaster fonksiyonuna ihtiyaç duyan sistemlerde de kullanılabilir.

Hassas syntonize sinyaller 5/10/20/25 MHz ve PPS (pulse per second) olarak üretilir ve BNC konnektörlere verilir. ToD (time of day) bilgileri NMEA veya ASCII formatında sağlanır.

EKOSync 1588 network trafiği yükü, yığılması ve gecikme varyasyonları yüzünden network üzerinde sekteye uğrayan paketlerden hassas zaman sinyallerini çıkaran endüstri lideri algoritmaya sahiptir.

CONTEMPORARY PRECISE TIME SYNCHRONIZATION FOR POWER SYSTEMS
SERVEUR DE TEMPS PTP (IEEE 1588) POUR LES RESEAUX MODERNES D'ELECTRICITE
MODERN ELEKTRİK ŞEBEKELERİ İÇİN PTP (IEEE 1588) ZAMAN SUNUCUSU



System Features
- IEEE 1588-2008 Master and / or Slave clocks
- Fully compliant to telecom, power and defaults profiles
- Best master clock algorithm
- IRIG-B
- Frequency accuracy better than 1ppb
- Enhanced synchronization and network performance metrics

Network Interface
- 10/100 Mbps RJ45
- Second management port
- IPv4 and IPv6 (PTP)

Other Features
- DHCP client
- FTP server
- TELNET server
- SSH server
- Remote firmware upgrade
- Command line interface configuration (Telnet, SSH)
- SNMP v1, v2c, v3
- Web UI

Physical Interfaces
- Alarm relay
- ToD and PPS output & syntonized frequency
- Two 10/100 BaseT

Operating Specifications
- Power Supply: 18-75V DC & 110V DC
- Operating temperature -20oC to 70oC
- RoHS compliant
- Dimensions: 1RU 19"

Technical Specifications

Ethernet
- 10/100 Mbps FE

PTP Master
- Accuracy: +/- 25 ns
- Holdover: VCTCXO(30min), OCXO(120min)
- Output sync rate: upto 128 Hz
- Number of slaves: upto 250

PTP Slave
- Supports 1-step and 2-step masters
- Input sync rate: upto 128 Hz
- Accuracy: upto +/- 50 ns
- Holdover: VCTCXO(30min), OCXO(120min)

Input Synchronization Interfaces
- PTP: Ethernet (L2), UDP IPv4 / IPv6 (L3)

Output Synchronization Interfaces
- Freq out: 5/10/20/25 MHz
- IRIG-B : DC level shift & Modified Manchester
- PPS out: upto 2 kHz with 1 µs resolution
- ToD out: TTL 4800 /9600 bps
- PTP: Ethernet (L2) or UDP IPv4 / IPv6 (L3)

ToD Format
- ASCII: YYYY-MM-DD HH:MM:SS
- NMEA & China Mobile format
- Binary

Caractéristiques du système
- IEEE 1588-2008 Master et/ou Slave horloges
- Conforme avec télécom, énergie et les profiles prévus
- Meilleur master algorithme d'horloge
- IRIG-B
- Précision de fréquence mieux que 1ppb
- Mesures de synchronisation développée et de performance du réseau

Interface de réseau
- 10/100 Mbps RJ45
- Deuxième ports de gestion
- IPv4 et IPv6 (PTP)

Autres Caractéristiques
- DHCP client
- FTP serveur
- TELNET serveur
- SSH serveur
- Firmware mis à jour par télécommande
- Configuration avec ligne de commande (Telnet, SSH)
- SNMP v1, v2c, v3
- Interface Web

Interfaces Physiques
- Relais d'alarme
- Sorties ToD et PPS & fréquence synchronisée
- 2 points de connexion 10/100 BaseT Ethernet

Spécifications Opératives
- Alimentation : 18-75 V DC & 110V DC
- Température de fonctionnement : -20 / 70 degré C
- Conformité RoHS
- Dimensions : 1RU 19 pouces

Spécifications Techniques

Ethernet
- 10/100 Mbps FE

PTP Master
- Précision : +/- 25 ns
- Holdover : VCTCXO (30 min.), OCXO (120 min.)
- Ratio de synchronisation à la sortie : Jusqu'à 128 Hz
- Nombre de slave : Jusqu'à 250

PTP slave
- Support une phase et deux phases master
- Ratio de synchronisation à l'entrée : Jusqu'à 128 Hz
- Précision : +/- 50 ns
- Holdover : VCTCXO (30 min.), OCXO (120 min.)

Interfaces de Synchronisation à l'Entrée
- PTP : Ethernet (L2), UDP IPv4/IPv6 (L3)

Interfaces de Synchronisation à la sortie
- Fréquence de sortie : 5/10/20/25 MHz
- IRIG-B : DC level shift & Modified Manchester
- Sortie PPS : jusqu'à 2kHz avec une résolution de 1 micro s
- Sorite ToD : TTL 4800/9600 bps
- PTP : Ethernet (L2), UDP IPv4/IPv6 (L3)

Format ToD
- ASCII : YYYY-MM-DD HH :MM :SS
- NMEA & China Mobile format
- Binaire

Sistem Özellikleri
- IEEE 1588-2008 Master ve / veya Slave saatleri
- Telecom, enerji ve varsayılan profillere tam uygunluk
- En iyi master saat algoritması
- IRIG-B
- 1ppb 'den daha iyi frekans doğruluğu
- Gelişmiş senkronizasyon ve ağ performans ölçümleri

Ağ Arayüzü
- 10/100 Mbps RJ45
- İkinci yönetim portu
- IPv4 and IPv6 (PTP)

Diğer Özellikler
- DHCP istemci
- FTP sunucu
- TELNET sunucu
- SSH sunucu
- Uzaktan firmware güncellemesi
- Komut satırı ile konfigürasyon (Telnet, SSH)
- SNMP v1, v2c, v3
- Web Kullanıcı Arayüzü

Fiziksel Arabirimler
- Alarm röle
- ToD ve PPS çıkış & syntonized frekans
- 2 adet 10/100 BaseT Ethernet bağlantı noktası

Çalışma Özellikleri
- Güç kaynağı: 18-75V DC & 110V DC
- Çalışma sıcaklığı -20oC to 70oC
- RoHS uyumlu
- Boyutlar: 1RU 19"

Teknik Özellikler

Ethernet
- 10/100 Mbps FE

PTP Master
- Doğruluk: +/- 25 ns
- Holdover: VCTCXO(30min), OCXO(120min)
- Çıkış senkronizasyon oranı: 128 Hz'e kadar
- Slave sayısı: 250'ye kadar

PTP Slave
- Bir aşamalı ve İki aşamalı master desteği
- Giriş senkronizasyon oranı: 128 Hz'e kadar
- Doğruluk: +/- 50 ns
- Holdover: VCTCXO(30min), OCXO(120min)

Giriş Senkronizasyon Arabirimleri
- PTP: Ethernet (L2), UDP IPv4 / IPv6 (L3)

Çıkış Senkronizasyon Arabirimleri
- Frekans çıkışı: 5/10/20/25 MHz
- IRIG-B: DC level shift & Modified Manchester
- PPS çıkışı: 1µs çözünürlük ile 2kHz 'e kadar
- ToD çıkışı: TTL 4800 /9600 bps
- PTP: Ethernet (L2) or UDP IPv4 / IPv6 (L3)

ToD Format
- ASCII: YYYY-MM-DD HH:MM:SS
- NMEA & China Mobile format
- Binary

DOCUMENTS / BELGELER

EKOSync 1588

Approval and Certification

- CE compliance Low voltage directive EN60950-1
- EMC directive EN61000-6-2, EN61000-6-4
- Radiated & Conducted EN55022 (CISPR22) Class A
- Emission

IEC 61850-3 EMI TYPE TESTS

ESD	EN61000-4-2	Level 4
RF Immunity	EN61000-4-3	20V/m
Burst(Fast Transient)	EN61000-4-4	Level 4
Surge Immunity	EN61000-4-5	Level 4
Conducted RF Immunity	EN61000-4-6	Level 3
Magnetic Field	EN61000-4-8	Level 3
Voltage Dip & Interrupt	EN61000-4-29	
Ripple on DC Power	EN61000-4-17	Level 3
Damped Oscillatory	EN61000-4-12	Level 3
Mains Freq. Voltage	EN61000-4-16	Level 4
Dielectric Strength	EN60255-5	2kV
HV Impulse	EN60255-5	5kV

IEEE 1613 (C37.90.X) EMI IMMUNITY TYPE TESTS

IEEE 37.90.3 ESD	EnclosureContact	+/-2kV,+/-4kV,+/-8kV
	Enclosure Air	+/-4kV,+/-8kV,+/-15kV
IEEE 37.90.2 Radiated RFI	Enclosure Ports	35 V/m
IEEE 37.90.1 Fast Transient	Signal Ports	+/-4kV @ 2.5kHz
	DC Power Ports	+/-4kV
IEEE 37.90.1 Oscillatory	Signal Ports	2.5kV common mode@1MHz
	DC Power Ports	2.5kV com. 1kV diff.@1MHz
IEEE 37.90 HV Impulse	Signal Ports	5kV (fail-safe relay output)
	DC Power Ports	5kV
IEEE 37.90 Dielectric Str.	Signal Ports	2kVAC
	DC Power Ports	2kVAC

ENVIRONMENTAL TYPE TESTS

EN60068-2-1	Cold Temperature	-20°C
EN60068-2-2	Dry Heat	+70°C
EN60068-2-30	Humidity	95% (non-condensing)
EN60255-21-1	Vibration	2g @ 10-150 HZ
EN60255-21-2	Shock	30g @ 11mS

Approbation et Certification

- Conformité CE Directif Base Tension EN60950-1
- Directif EMC EN61000-6-2, EN61000-6-4
- Rayonné et conduit EN55022 (CISPR22) Classe A
- Emission

Types Testes IEC 61850-3 EMI

ESD	EN61000-4-2	Niveau 4
Immunité RF	EN61000-4-3	20V/m
Explosion (transition rapide)	EN61000-4-4	Niveau 4
Immunité saut de courant	EN61000-4-5	Niveau 4
Immunité RF conduit	EN61000-4-6	Niveau 3
Champs magnétique	EN61000-4-8	Niveau 3
Manque de tension /Interruption	EN61000-4-29	
Ondulation sur DC	EN61000-4-17	Niveau 3
Oscillations amorties	EN61000-4-12	Niveau 3
Réseau Fréq. Tension	EN61000-4-16	Niveau 4
Résistance diélectrique	EN60255-5	2kV
Choc HT	EN60255-5	5kV

Types Testes de Susceptibilité IEEE 1613(C37.90.X) EMI

IEEE 37.90.3 ESD	Boite des contacts	+/- 2kV, +/-4kV, +/-8kV
	Réservoir d'air	+/-4kV, +/-8kV, +/-15 kV
IEEE 37.90.2 Rayonnement RFI	Boites des portes	35 V/m
IEEE 37.90.1 Transition rapide	Portes de signaux	+/-4kV @ 2.5kHz
	Portes Puiss. DC	+/-4kV
IEEE 37.90.1 Oscillations	Portes de signaux	2.5kV modèle ordinaire@1MHz
	Portes Puiss. DC	2.4kV ord. 1kV diff.@1MHz
IEEE 37.90 Choc HT	Portes de signaux	5kV (fail-safe relais de sortie)
	Portes Puiss. DC	5kV
IEEE 37.90 Résistance diélectrique	Portes de signaux	2kVAC
	Portes Puiss. DC	2kVAC

Types Testes d'Environnement

EN60068-2-1	Température froide	-20 degré C
EN60068-2-2	Température chaude	+70 degré C
EN60068-2-30	Humidité	95% (sans condensation)
EN60255-21-1	Vibrations	2g@10-150Hz
EN60255-21-2	Choc	30g@11ms

APPROVAL AND CERTIFICATION
APPROBATION ET CERTIFICATION
ONAY VE SERTİFİKASYON

Onay Ve Sertifikasyon

- CE compliance Low voltage directive EN60950-1
- EMC directive EN61000-6-2, EN61000-6-4
- Radiated & Conducted EN55022 (CISPR22) Class A
- Emission

IEC 61850-3 EMI TİP TESTLERİ

ESD	EN61000-4-2	Level 4
RF Immunity	EN61000-4-3	20V/m
Burst(Fast Transient)	EN61000-4-4	Level 4
Surge Immunity	EN61000-4-5	Level 4
Conducted RF Immunity	EN61000-4-6	Level 3
Magnetic Field	EN61000-4-8	Level 3
Voltage Dip & Interrupt	EN61000-4-29	
Ripple on DC Power	EN61000-4-17	Level 3
Damped Oscillatory	EN61000-4-12	Level 3
Mains Freq. Voltage	EN61000-4-16	Level 4
Dielectric Strength	EN60255-5	2kV
HV Impulse	EN60255-5	5kV

IEEE 1613 (C37.90.X) EMI ALINGANLIK TİP TESTLERİ

IEEE 37.90.3 ESD	EnclosureContact	+/-2kV,+/-4kV,+/-8kV
	Enclosure Air	+/-4kV,+/-8kV,+/-15kV
IEEE 37.90.2 Radiated RFI	Enclosure Ports	35 V/m
IEEE 37.90.1 Fast Transient	Signal Ports	+/-4kV @ 2.5kHz
	DC Power Ports	+/-4kV
IEEE 37.90.1 Oscillatory	Signal Ports	2.5kV common mode@1MHz
	DC Power Ports	2.5kV com. 1kV diff.@1MHz
IEEE 37.90 HV Impulse	Signal Ports	5kV (fail-safe relay output)
	DC Power Ports	5kV
IEEE 37.90 Dielectric Str.	Signal Ports	2kVAC
	DC Power Ports	2kVAC

ÇEVRESEL TİP TESTLERİ

EN60068-2-1	Cold Temperature	-20°C
EN60068-2-2	Dry Heat	+70°C
EN60068-2-30	Humidity	95% (non-condensing)
EN60255-21-1	Vibration	2g @ 10-150 Hz
EN60255-21-2	Shock	30g @ 11mS

Certificates / Certificats / Sertifikalar

EKOS GROUP has the ISO 9001 Quality Management System, ISO 14001 Environmental System, OHSAS 18001 Occupational Health & Safety Management System Certificates. Also, manufactured medium voltage switchgears have type test reports, taken from internationally acredited laboratories, such as KEMA, ICMET, IPH.

Le GROUPE EKOS possède les certificats de ISO 9001 Systèmes de Management de la Qualité, ISO 14001 Sytèmes de Management Environnemental OHSAS 18001 Systèmes de Management de la santé et de la sécurité. Les cellules de moyenne tension possedent les rapports de type test des laboratoires accreditées internationnaux comme KEMA, ICMET, IPH.

EKOS GROUP, ISO 9001 Kalite Yönetim Sistemleri, ISO 14001 Çevre Yönetim Sistemi ve OHSAS 18001 İş Sağlığı ve Güvenliği Yönetim Sistemi sertifikalarına sahiptir. Ayrıca, üretimi yapılan orta gerilim hücreleri, KEMA, IPH, ICMET gibi uluslararası akredite olmuş laboratuvarlardan alınmış tip test raporlarına sahiptir.

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EKOS GROUP exports the 70% of its products to Czech Republic, Algeria, Senegal, Canada, Germany, Uruguay, Burkina Faso, Kazakhistan, Turkmenistan, Azerbaijan, Iran, Iraq, Palestine, Tunisia, Marocco, Libya, Jordan and Syria.

Le GROUPE EKOS exporte 70% de ses porduits vers le République Tchèque, l'Algérie, le Sénégal, le Canada, l'Allemagne, l'Uruguay, le Burkina Faso, le Kazakhistan, le Turkmenistan, l'Azerbaijan, l'Iran, l'Irak, la Palestine, la Tunisie, le Maroc, la Libye, la Jordanie et la Syrie.

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