IEK-XF300

Time-aware Redbox-DAN PCIe NIC

Introduction

IEK-XF300 is a versatile, compact pluggable board that enhances networking capabilities in PCs of all sizes, utilizing the widely adopted PCI Express (PCIe) standard. It supports specialized networking, synchronization, and security services and can fit into both full-height and low-profile slots.

Functioning as a multimedia PCIe Redbox-DAN, it operates as an HSR/PRP node for high-availability networks, connecting Ethernet segments with HSR/PRP networks.

Specifications

Communications

Ethernet	2x HSR/PRP/Ethernet ports 1x Ethernet port
Media options (SFP cages)	10/100/1000Base-T / 1000Base-X / 100Base-FX
MMCX Interface	1x PPS output
PCIe	1x PCIe (Full height / low profile slot)
Seamless integration on old Legacy PCI Systems through optional adapter	

Redundancy & Layer 2 capabilities

Zero-Packet-Loss redundancy modes	IEC 62439-3 v3 Clause 5 "High-availability Seamless Redundancy (HSR)" IEC 62439-3 v3 Clause 4 "Parallel Redundancy Protocol (PRP)"
Cut-through operation for the HSR ring to minimize the latency in the ring	
Store&Forward for PRP and Ethernet operation	
Optional modes	IEC 62439-2 Clause 5 "Media Redundancy Protocol (MRP)" "Device Level Ring (DLR)" for Ethernet IP
IEEE802.1d (STP), IEEE802.1w (RSTP), IEEE802.1s (MSTP)	
Autonomous management of Supervision Frames	
VLAN support	
IEEE 802.1P Traffic prioritization	

Security features

IEEE 802.1X access control: port & MAC-based authentication
Selective ports disabling capability
Unsecure protocols disabling capability
Selective port mirroring
Digitally signed and encrypted firmware upgrades

Synchronization

IEEE 1588-2008 PTPv2 Ordinary Clock, Transparent Clock and Boundary Clock (optional) support. Preloaded configuration profiles (default end-to-end/peer-to-peer, power, IEC 61850-9-3…)
Network Time Protocol (NTP) support
Time bridging between synchronization protocol

Processing performance

On-board FPGA for high-speed network switching and PTP timestamping
Multi-core CPU unit to support autonomous software applications

Configuration and Management

OS	Linux, Windows, VxWorks
On-board Integrated Web Server	Accessible through HTTP(S) Configuration profiles and firmware updates (provide HTML5-GUI configuration access)
Real-time HSR/PRP network nodes monitoring	
SNMPv1/v2c/v3	SNMP over TLS support