CP 6940
Fully Managed L2&L3 Switching and Routing

CompactPCI®/VME 1/10/40 Gigabit Ethernet Switch

- For long term programs and harsh environments
- PICMG2.16 and VITA31.1
- QSFP+, SFP+, SFP, RJ45 uplink options
- L2-only value version
- European design and production
Kontron’s CP6940 is a non-blocking fully managed layer 2&3 1/10/40 Gigabit Ethernet Switch series. It provides rich and versatile feature support by using highest integration of Ethernet switch silicon. CP6940 is designed for long term programs and harsh environments, for applications requiring outstanding bandwidth and communication safety.

- More uplinks, higher bandwidth, improved management
- QSFP+ for 40G or 4x 10G
- SFP+ multi-rate 1/2.5/5/10GBase-x
- RJ45 and SFP 1G front uplinks
- 24x extended fabric links CPCI PICMG2.16 and VME VITA31.1
- Optimized for multicast traffic
- Robust: VITA 47 class EAC6 V2 and extended temperature
- Reliable: hot swap, IPMI, SNMP, built-in tests, maintenance
- Widely compatible with CP6924 & CP6930

**Optimized for multicast traffic**
The Kontron design is equipped with a powerful QorIQ® LS1 family processor, avoiding limitations which could be observed using only the switch silicon-integrated CPU. In particular, the onboard processor enables faster setup of routings, higher performance in protocol handling, especially higher throughput of multicast traffic.

**Full L2/L3 Management**
The CP6940 can be monitored via SNMP, which also allows access to the devices connected to the backplane. A comprehensive command line interface provides easy management and remote configuration by either serial or network interface. Supported features are: IPv4/IPv6 forwarding & multicast, routing & switching, Quality of Service, VLANs, Spanning tree (STP, RSTP, MSTP), time synchronization using B02.1AS, access control, extended user management and many more.

**PICMG2.16 and VITA 31.1**
The 24 rear ports meet the requirements of CompactPCI systems according to PICMG2.16 and of VME systems according to VITA31.1, as well.

**Reliability and Robustness**
CP6940 Rugged air cooled designs are made for harsh environments and meet VITA 47 class EAC6 V2 and can operate in environments with an extended temperature range from -40 °C up to +85 °C. The robust design including hardware hot swap as well as complete SNMP management support is the basis for robust and reliable systems. Built-In test capabilities enable effective switch maintenance.

**CP6940-RA-OC, successor of CP6924**
The CP6940-RA-OC rugged air cooled optical copper switch version provides four RJ45 10/100/1000BASE-T front uplinks, moreover two SFP for optical 1000Base-x or SGMII for 10/100/1000Base-T copper modules, and four SFP+ multi-rate 1/2.5/5/10GBase-x uplinks.

**140Gbps high performance version**
CP6940-RA-OC-P is the high performance version, equipped with two QSFP+ front uplinks which provide 40GBase-xR4 or 4x 1/10GBase-x via breakout cable. Additional two SFP and four SFP+, together with the rear uplinks, add up to 140 Gbps calculated bandwidth in total. CP6940-RA-OC-P is the perfect successor for CP6930, with more uplinks and higher ruggedization.

**Cost sensitive value version**
A value version of the CP6940 is tailored for cost sensitive system solutions, when many front uplinks are requested, but average robustness as well as an operation in a standard temperature range is sufficient. The CP6940-5A-OC-V provides layer 2 management only, four front RJ45 10/100/1000BASE-T and six SFP for optical 1000Base-x or SGMII for 10/100/1000Base-T copper modules. Thus, it provides more front uplinks than the previous CP69247 value version.
### TECHNICAL INFORMATION

#### CONTROLLER AND SWITCH

| Broadcom BCM56174 Ethernet Switch  
| Onboard NXP QorIQ® Layerscape 1020A  
| NXP μController for IPMI  

#### INTERFACES

##### COMMON

- 24x 10/100/1000 Base-T link ports on backplane or RTM acc. PICMG2.16 / VITA311  
- 1x 10/100Base-T for Management (RJ45 connector)  
- 1x RS232 for Management (RJ45 connector and backplane)  
- Reset Switch  
- Status LEDs  

##### OPTIONS

- SGMII/1000Base-X uplinks for SFP optical transceivers  
  - (2x for CP6940-RA, 6x for CP6940-SA)  
- 1/2.5/5/10GBase-X uplinks for SFP+ optical transceivers  
  - (4x only for CP6940-RA)  
- 10/100/1000Base-T uplinks for RI45 (4x but not for CP6940-RA-OC-P)  
- 40GBase-X uplinks for QSFP+ or alternatively 4x 1G/10GBase-X via break-out cable  
  - (2x only for CP6940-RA-OC-P)  

#### MANAGEMENT

##### GENERAL

- Management via SNMP, Command Line (Telnet, SSH)  
  - In-band  
  - Out of band via Ethernet or RS232  
- IPMI version 1.5, Power On Self Test  
- DHCP server, relay and Boot media supported  
- NTP server feature  
- Reliable software, field upgradable  
- Dual boot images with roll-back capabilities  
- Advanced management monitoring features  
  - Including:  
    - Link aggregation (802.3ad)  
    - VLANs (802.1Q)  
    - QoS (IEEE 802.1p)  
    - Spanning tree (802.1D, 802.1w)  
    - Flow control (802.3x)  
- Including:  
  - Static routing  
  - VLAN/Port based routing  
  - GARP/GVRP, GMRP  
  - ARP, ICMP, OSPF, RIP, VRRP, DVMRP  
  - DHCP/Boot relay  
  - BFD detection  

##### ETHERNET BRIDGING PROTOCOLS

- Egress ACLs, IP ACL support  
- Auto VoIP  
- IGMP snooping & proxy support  
- Startup configuration configurable  
- Watchdog  
- Cable test  

##### ETHERNET ROUTING PROTOCOLS

- Designed to meet VITA47, class EAC6, V2 (CP6940-RA versions)  
- EN61000-6-2, NEBS GR-1089-CORE Issue 6, CP61000-6-3  
- IEC61010-1, designed to meet UL61010-1 and CSA22.2 No.950, LVD 73/23/EEC, Denan Law compliant  

#### COMPLIANCE

- CompactPCI® Core Specification PICMG 2.0 Rev. 3.0  
- CompactPCI® HotSwap Specification PICMG 2.1 R 2.0  
- CompactPCI® System Management PICMG 2.09 R1.0  
- CompactPCI® Packet Switching Backplane PICMG 2.16 R. 1.0  
- VME64x Packet Switching Backplane VITA 31.1  
- Intelligent Platform Management Interface Specification V1.5  

#### ENVIRONMENT

##### HUMIDITY

- 93 % RH at 40 °C, non-condensing (acc. to IEC 60068-2-78)  

##### OPERATING TEMPERATURE

- CP6940-RA variants: -40 °C to +85 °C; CP6940-SA variants: 0 °C to +60 °C (forced air cooling required)  

##### STORAGE TEMPERATURE

- -50 °C to +100 °C  

##### SHOCK/VIBRATION

- IEC 60068-2–6, IEC 60068-2–27, IEC 60068-2–29  
- Designed to meet VITA47, class EA6, V2 (CP6940-RA versions)  

##### IMMUNITY/EMISSION

- EN61000-6-2, NEBS GR-1089-CORE Issue 6, CP61000-6-3  

##### SAFETY

- IEC61010-1, designed to meet UL61010-1 and CSA22.2 No.950, UORD 73/23/EEC, Denan Law compliant  

#### GENERAL

##### POWER CONSUMPTION

- max. 60 W  

##### DIMENSION

- 233.5 mm x 160 mm, 6U 4HP (single slot)  

##### WEIGHT

- approx. 800 g  

##### MTBF

- >100,000 h @ 30 °C, based on Bellcore Issue 6, Ground Benign, Controlled  
- >100,000h @ 30 °C, based on MIL-HDBK-217 FN2, Ground Benign, Controlled  

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<tr>
<th>ARTICLE</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>CP6940-RA-OC-P</td>
<td>Performance Rugged GbE Switch. Full L2/L3 management. Rear: 24x Ports 10/100/1000BaseTX acc. to PICMG 2.16 and VITA31.1, or Rear-I/O. Front ports: Two 1G SFP, four 1/2.5/5/10G SFP+, two 40G QSFP+, option for 4x 1G/10G each. Extended temperature range -40 °C to +85 °C.</td>
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<tr>
<td>CP6940-RA-OC</td>
<td>Rugged GbE Switch. Full L2/L3 management. Rear: 24 ports 10/100/1000BaseTX acc. to PICMG 2.16 and VITA31.1, or Rear-I/O. Front ports: Two 1G SFP, four 1/2.5/5/10G SFP+, four 1GbE RJ45. Extended temperature range -40 °C to +85 °C.</td>
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<tr>
<td>CP6940-SA-OC-V</td>
<td>Value Line GbE Switch. Layer 2 management. Rear: 24x ports 10/100/1000BaseTX acc. to PICMG 2.16 and VITA31.1, or Rear-I/O. Front ports: four 1G RJ45, six 1G SFP. Standard temperature range 0 °C to +60 °C.</td>
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