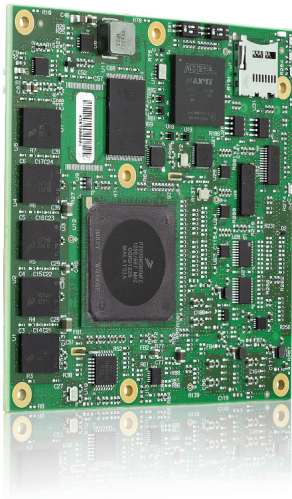
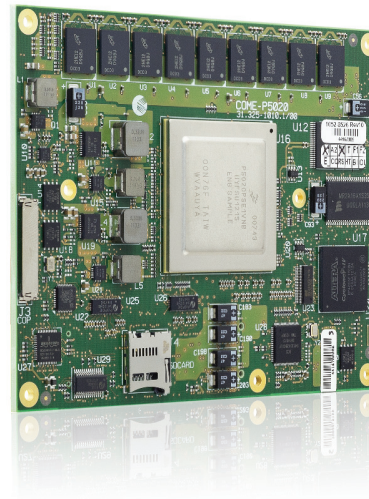


» COM Express® QorIQ™ «



COMe-cP2020



COMe-bP5020



QorIQ™ Power Architecture® Computer-on-Modules based on Freescale™ P-Series

Speed up your time to market with COM Express® principles

- » Up to 10Gb Ethernet
- » Flexible interface support by SerDes lanes
- » Commercial and ind. temp versions
- » Long term availability > 10 years

Kontron's first Power Architecture® Computer-on-Modules with multi-core Freescale™ QorIQ™ P-series processor, are especially suited for headless and low-power, deeply embedded telecommunication and number crunching systems which need especially high single threaded performance-per-watt of the Power Architecture®. As a ready-to-install COTS component, with its long-term availability of more than 10 years, fanless operation and support for the extended temperature range up to -40°C to +70 °C, the new COMs are also designed to run in especially durable applications even in harsh environments.

The Power Architecture® COMe-cP2020 and COMe-bP5020 Computer-on-Modules meet the requirements for variety markets and applications:

- » In enterprise network and telecommunication appliances, for example, in switches, WLAN access points or Long Term Evolution (LTE)- and WiMax channel card applications
- » In the transport sector for deployment in vehicle control or event-recording units
- » In the energy sector in performance measurement systems
- » In industrial applications like PLCs or closed-loop controls for synchronous motors or turbines

As a ready-to-install COTS component, the new Kontron Power Architecture® Computer-on-Modules combines the comfort and the design safety of a standard board solution with the flexibility of a full custom design, which can be realized via an application-specific carrierboard which is much faster to design than a complete baseboard.

Convenient: the Kontron Power Architecture® COM form factor is mechanically compatible with the COM Express® compact and basic standard. That enables the efficient use of the world's leading ecosystem for Computer-on-Modules and it assists in significantly minimizing development time and effort. The cooling concept and the power supply are, for example, adopted. The pin-out relates to the COM Express® pin-out type 6 as far as possible. But the main differences are the flexible SerDes lanes offered by the QorIQ™ series and the grafic support. The SerDes lanes can be pre-configured on customer request from Kontron and make the module best suitable to the customer requirements.

Kontron's QorIQ™ Computer-on-Modules comes with Board Support Packages for the most important operating systems Kontron Linux, WindRiver Linux and the RTOS VxWorks. In addition, Kontron also offers a corresponding evaluation carrierboard, adapter cards for the different SerDes interfaces and a starterkit for QorIQ™ COMs will come soon.

If required, Kontron's design service 'Boards & More' can carry out carrierboard development, so that OEMs can fully concentrate on their core competencies.

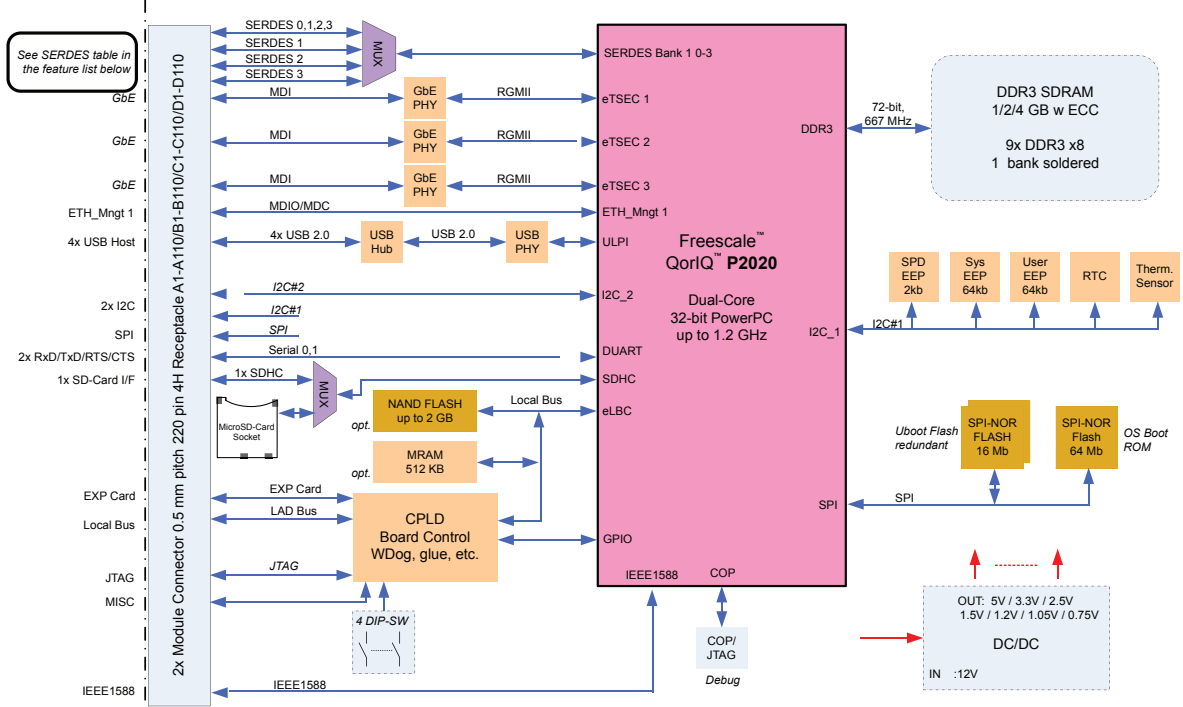
The feature set of the Kontron COMe-cP2020

The Kontron COMe-cP2020 which is mechanically compatible with the COM Express® compact (95 mm x 95 mm) specification is based on the Freescale™ QorIQ™ P2020 dual-core Power Architecture® with 1.2 GHz. For deployment in the industrial temperature range of -40°C to +70°C there is also a version available with 1.0 GHz clock rate. The COM integrates up to 4 GByte of soldered DDR3 RAM at 667 MHz and ECC. Up to 2 GB of NAND Flash as well as a socket for MicroSD cards on the COM offer reliable storage space for application data. In terms of I/Os, the new module interfaces the QorIQ™-specific I/Os towards the carrierboard: Besides four USB 2.0 ports there are also two UART (TxD, RxD, RTC and CTS) and three Gigabit Ethernet interfaces. Flexible interface support is guaranteed by four SerDes lanes, which can be configured according to application-specific needs in a whole range of different combinations (please consult the list below).

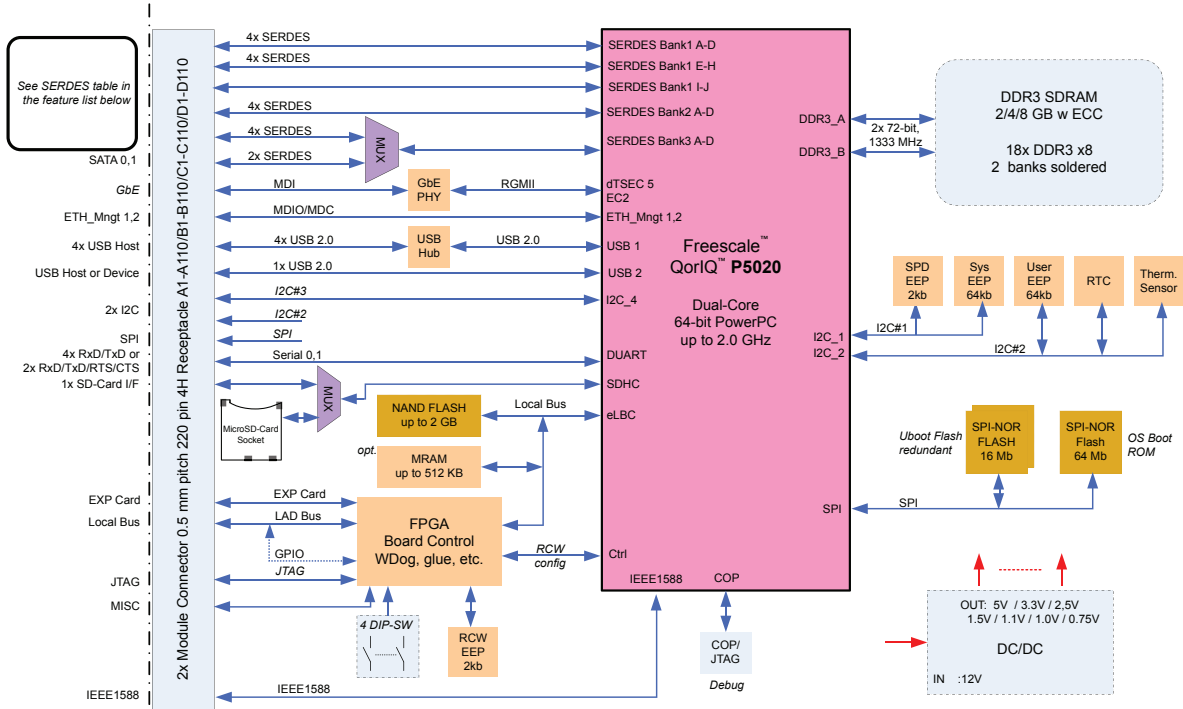
The feature set of the Kontron COMe-bP5020

The Kontron COMe-bP5020 which is mechanically compatible with the COM Express® basic (95 mm x 125 mm) specification is based on the Freescale QorIQ™ P5020 dual-core power processor with 2.0 GHz. Featuring 64 bit processor technology, the Computer-on-Module integrates up to 8 GByte of soldered DDR3 RAM at 1333 MHz and ECC. Additionally, 2 MByte of shared third level cache facilitates core-to-core communications and minimizes accesses to main memory. Up to 2 GB of NAND Flash as well as a socket for MicroSD cards on the COM offer reliable storage space for application data. In terms of I/Os, the new module interfaces the QorIQ™-specific I/Os towards the carrierboard: Besides five USB 2.0 ports there are also two UART (TxD, RxD, RTC and CTS) available. Flexible interface support is guaranteed by 18 SerDes lanes, which can be configured according to application-specific needs in a whole range of different combinations as PCIe x4, sRIO x4, XAUI, SATA, or Serial Gigabit Media Independent Interface (SGMII).

COMe-cP2020: COM Express[®] COM based on QorIQ[™] P2020



COMe-bP5020: COM Express[®] COM based on QorIQ[™] P5020



Technical Information

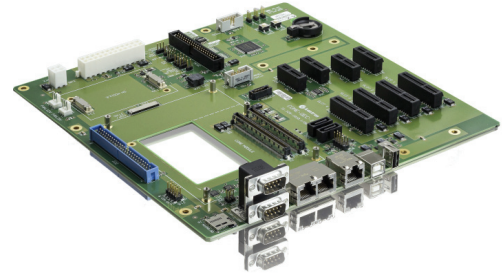
Productname	COMe-cP2020*	COMe-bP5020*
Processor	Freescale QorIQ™ P2020 e500 Power Architecture® (2x 1.2 GHz commercial temp. / 1.0 GHz industrial temp.) on project request : P2010 up to 1x 1.2 GHz P1020 up to 2x 800 Mhz P1011 up to 1x 800 MHz	Freescale QorIQ™ P5020 (P5010) e5500 Power Architecture® up to 2x 2.0 GHz (1x 2.0 GHz) on project request: P3041 e500mc up to 4x 1.5 GHz
Cache	32 KB L1 instruction cache and 32 KB L1 data cache for each core; 512 KB L2 cache with ECC.	32 KB L1 instruction cache and 32 KB L1 data cache for each core; 512 KB L2 cache/Core; 2MB L3 cache shared
Memory	Up to 4GB DDR3-667 72-bit	Up to 8GB DDR3-1333 MHz ECC
Cooling solution	Commercial temperature Versions incl. Heatspreader Industrial temperature versions incl. passive Heatsink	Incl. Heatspreader
Storage/Flash	64kbit I²C EEPROM / up to 2GB NAND Flash + 2MB NOR Flash; 2nd 2MB SPI NOR Flash for boot recovery purposes; 512kB MRAM	64kbit I²C EEPROM / up to 2GB NAND Flash; 2MB NOR Flash; 2nd 2MB SPI NOR Flash for boot recovery purposes; 2x SATA multiplexed with SerDes; 512kB MRAM
Micro SD Card	MicroSD card slot / bootable	MicroSD card slot/ bootable
USB	4x USB 2.0	5x USB 2.0 (one channel device capable)
PCI Express®	See SerDes	See SerDes
SerDes* Options	4x SerDes up to 3.125 Gbps multiplexed across controllers can be configured as: PCIexpress, sRIO, GbE; Example: » 1x PCIe x4 » 2x PCIe x1 + 1PCIe x2 2.5 Gbps » 1x PCIe x2 + 2x 1GbE SGMII » 2x SRIO x1 2.5Gbps + 2x GbE SGMII » 2x SRIO x1 3.125 Gbps » 1x SRIO x4 with 1.25/2.5 or 3.125 Gbps	18x SerDes lanes configurable; pre-selected standard configurations: » 2x PCIe x4 + 4x 1 GbE SGMII + 2x SATA » 2x PCIe x4 + 4x 1 GbE SGMII + 1x XAUI » 2x PCIe x4 + 1x XAUI + 2x SATA » 2x sRIO x4 + 4x 1 GbE SGMII + 2x SATA
Serial	2x UART	2x UART (2x FourWire/ 2x TX/RX)
Serial Rapid I/O	See SerDes	See SerDes
Ethernet	3x 10/100/1000 Base-T	1x 10/100/1000 Base-T
SPI	Yes	Yes
GPIO	2x GPIO (exclusive with SDHC usage); additional GPIO on project base	12x GPIO
I²C	2x I²C	1x I²C
IEEE 1588	2x IEEE 1588 control	IEEE 1588 control
Interface Others	1x SDHC; 1x MDIO (IEEE 802.3 clause 22); 5x IRQ; 1x IRQ OUT; 16 bit eLBC (2 Devices); Processor Local Bus	1x SDHC; 2x MDIO (IEEE 802.3 clause 22 + clause 45) 5x IRQ Interrupts; Processor Local Bus
Other Features	Watchdog, JTAG debug, Real time clock; LEDs	Watchdog, JTAG debug, Aurora debug; Temperatur Monitor; LEDs
Bootloader	U-Boot	U-Boot
Operating Systems	Linux; Wind River VxWorks 6.9.2	Linux; Wind River VxWorks 6.9.2
Power	12 V +/- 5% (optional RTC supply voltage of 3.3V)	12 V +/- 5% (optional RTC supply voltage of 3.3V)
Power Consumption	Est. 12W/12V	Est. 30W/12V
Temperature	c-version 0°C to +60°C; i-version -40°C to +70°C	0°C to 60°C
Humidity	93% relative Humidity at 40 °C, non-condensing (acc. to IEC 60068-2-78)	93% relative Humidity at 40°C, non-condensing (acc. to IEC 60068-2-78)
Compliance	Com Express® compact, 95x95 mm	Com Express® basic, 95x125 mm

* Please consult our sales support team for other processor versions and SerDes configurations.

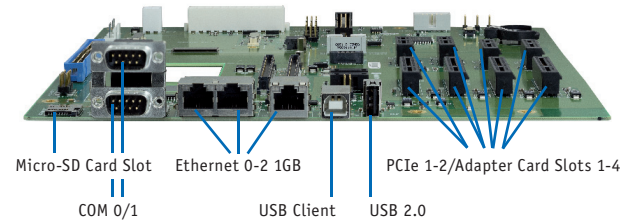
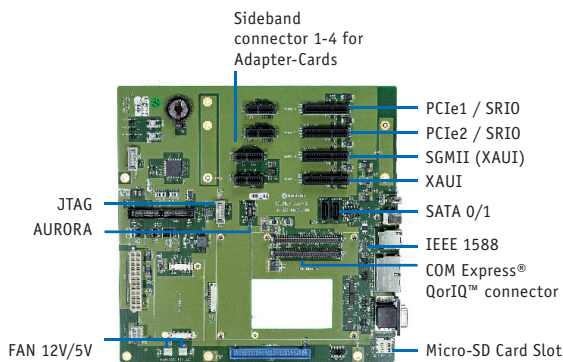
COMe Eval Carrier QorIQ™

COM Express® Eval Carrier for QorIQ™ Power Architecture® Designs

- » Flexible interfaces by adapter cards
- » High performance Ethernet interfaces (XAUI)
- » COM Express® basic and compact compliant
- » Adapter Cards for SRIO/SGMII/XAUI



The COM Express® Evaluation Carrier QorIQ™ is specially designed for Kontron Computer-on-Modules with COM Express® QorIQ™ pin-out. The 4 PCI Express® slots are connected to the SerDes Interfaces provided by the dedicated COMs and can be equipped with different adapter cards. Start your research and development with this fast and flexible solution for express evaluation purposes for Freescales Power technology.



Technical Information

Productname

COMe Eval Carrier QorIQ™

Hard Disk

2x SATA standard interface

Flash Extension

Micro SD/SDHC card socket

Ethernet

3x RJ45 Ethernet connectors

Interfaces

- » SPI/LPC Firmware HUB socket for external BIOS
- » 2x I2C (I2C 6 pin header/ I2C/SPI 10 pin header)
- » Aurora High Speed Debug Connector
- » 2x UART on DSUB-9 (RS232 or RS485)
- » 1x UART (TX/RX) on pin header
- » IEEE1588 on pin header
- » JTAG on pin header
- » Local Bus on 50 pin header connector
- » Up to 12 GPIO
- » IRQ
- » 2x fan connector (5V/12V)
- » 2x MDC/MDIO (for 1G/10G ETH PHY configuration) sideband connector (PCIe slot 2)
- » 1x MDC/MDIO (for 10G ETH PHY configuration) sideband connector (PCIe slot 3)

SerDes

Support up to 16 SerDes lanes routed to 4x PCI Express® x4 connector

SerDes Adapter Card (To be used in the PCI Express® x4 connectors)

- » Adapter card (1) Card-edge connector with 4x SGMII on SerDes lanes, 4x 1GbE with 1000Base-T interface - RJ45 connector
- » Adapter card (2) Card-edge connector with XAUI on SerDes lanes 10GbE SFP+ interface
- » Adapter card (3) Card-edge connector with SRIO on SerDes lanes 1x 1 FCI Densi-Shield interface

USB

1x USB 2.0 Type A; 2x USB 2.0 pin header; 2x USB sideband connector (PCIe slot 0+1); 1x USB client

PCI Express®

2x PCIe x1/x4 GenI/GenII, shared with SerDes Adapter cards

Form Factor

Micro-ATX form factor, 244 mm × 244 mm (9,6" × 9,6")

Supported Modules

Com Express® basic (95x125mm) and Com Express® compact (95x95 mm) with Kontron QorIQ™ pin-out

Power Supply

ATX power supply 24 + 4 pin

Temperature

0°C to +50°C

COMe QorIQ™ Starterkit w/ Eval Carrier

The QorIQ™ Starterkit with QorIQ™ Evaluation Carrier is equipped for express evaluation purposes. The Starterkit is shipped incl. a QorIQ™ Evaluation Carrier, 3 different Adapter cards for the SerDes slots supporting SRIO, SGMII and a SFP+ XAUI, 12V power supply, cables, accessories. Just connect your chosen COMe-QorIQ™ COM and start your evaluation.



Ordering Information

Article*	Part No.	Description
COMe-cP2020c 2x1.2 2GB/1GB	66001-2010-12-2	COM Express® compact Computer-on-Module with Freescale™ QorIQ™ P2020 Dual Core 2x1.2GHz, 2GB DDR3-667 ECC memory down, 1GB onboard NAND Flash, incl. Heatspreader, commercial temperature range 0°C to +60°C
COMe-cP2020i 2x1.0 2GB/1GB	66002-2010-10-2	COM Express® compact Computer-on-Module with Freescale™ QorIQ™ P2020 Dual Core 2x1.0GHz, 2GB DDR3-667 ECC memory down, 1GB onboard NAND Flash, incl. Heatsink, extended temperature range -40°C to +70°C
COMe-bP5020 2x2.0 4GB/1GB	68001-4010-20-2	COM Express® basic Computer-on-Module with Freescale™ QorIQ™ P5020 Dual Core 2x2.0GHz, 4GB DDR3-1333 ECC memory down, 1GB onboard NAND Flash, incl. Heatspreader
COMe-bP5020 2x2.0 8GB/1GB	68001-8010-20-2	COM Express® basic Computer-on-Module with Freescale™ QorIQ™ P5020 Dual Core 2x2.0GHz, 8GB DDR3-1333 ECC memory down, 1GB onboard NAND Flash, incl. Heatspreader
Evaluation Carrier: COMe Eval Carrier QorIQ™	68100-0000-00-0	Micro-ATX form factor; 244 mm × 244 mm (9,6" × 9,6") Adapter: SRIO Adapter card (68100-0000-01-0), SGMII Adapter card (68100-0000-02-0), SFP+ XAUI Adapter card (68100-0000-03-0) Power Supply: ATX PSU 115V/230V ~ 300 W wide range Documentation: USB stick with manual Mounting Kit: COM Express® mounting kit (screws and spacers) Supported Modules: COM Express® QorIQ™ Computer-on-Modules (basic and compact) with Kontron QorIQ™ pin-out Please order your COMe-QorIQ™ module separately.
* Please consult our sales support team for other processor versions and SerDes configurations.		
Options		
COMe Starterkit QorIQ™	68100-0000-00-5	Starterkit for QorIQ™ based Com Express® COM, incl. COMe Eval Carrier QorIQ™, Adpater cards for SRIO (ADA-Eval-QorIQ-SRIO)/SGMII (ADA-Eval-QorIQ-SGMII)/SFP+XAUI (ADA-Eval-QorIQ-XAUI), Mounting Kit, Power supply, Documentation. Please order your COMe QorIQ™ Module separately.
Software		
LIN-BSP-COME-CP2020	1053-8484	Linux BSP for COMe-cP2020 modules
VXW-BSP-COME-CP2020-V6.9.2	1053-8352	VxWorks 6.9.2 BSP for COMe-cP2020 modules
LIN-BSP-COME-BP5020	1053-8446	Linux BSP for COMe-bP5020 modules
VXW-BSP-COME-BP5020-V6.9.2	1053-8353	VxWorks 6.9.2 BSP for COMe-bP5020 modules

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