EQIO

CPCI-6820

PRODUCT MANUAL

6U Intel i7-6820EQ Soldered-Memory CompactPCI Controller

Intel Core i7-6820EQ



Measurement and control, made easy.

Easy · Quick · Input · Output

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01 OVERVIEW

6U Intel i7-6820EQ Soldered-Memory CompactPCI Controller

CPCI system controller · Industrial measurement and control · Rail transit · Equipment system integration · CompactPCI · Intel

CPCI-6820 uses Intel Core i7-6820EQ and CM236 chip group, soldered 16GB DDR4 memory, provides multi-channel front rear I/O network, display, USB and serial I/O, used for CompactPCI compute platform.
Front panel and rear I/O respectively arrangement network, DP, VGA, DVI and composite serial, facilitates connect operation equipment and cabinet internal module. 4-ch SATA used for system and data storage, GPIO and audio bus expansion external HMI, can consists of industrial measurement and control and data acquisition host. Facilitates integrates.



Product appearance reference; shipped units may differ.

Key features

- Core i7-6820EQ and CM236
- Soldered 16GB DDR4
- Front I/O dual Gigabit, rear I/O 4-ch Gigabit
- DP, VGA and DVI display
- 4-ch SATA3.0 and composite serial

02 FUNCTIONS

Functions and engineering value

4-core compute and soldered memory

I7-6820EQ and CM236 chip group, soldered 16GB DDR4 consists of x86 compute basic, memory up to supports 32GB. Soldered solution capacity change must follow actual supply configured with confirm, 4-core eight threads and graphics resources can used for equipment application and UI run, continuous performance still requires per product load verification.

Multi network and front rear connect

Front I/O dual Gigabit and rear I/O 4-ch Gigabit, multi equipment or cabinet network provides connect resources. Front I/O DP, USB3.0 and RS-232 facilitates local HMI, rear I/O display and composite serial carries internal equipment, I/O quantity and network or display parallel operation capability should respectively via actual configured with confirm.

Rear I/O storage and expansion

4-ch rear I/O SATA3.0 provides multi storage devices connect basic, GPIO and HDA used for control and audio expansion. J1/J2 carries 32/64-bitPCI bus, J3 includes PICMG2.16 and RTM area, J4/J5 used for rear I/O, backplane and RTM must per the same I/O definition matching. Rear part cables should installation front completes channel marking.

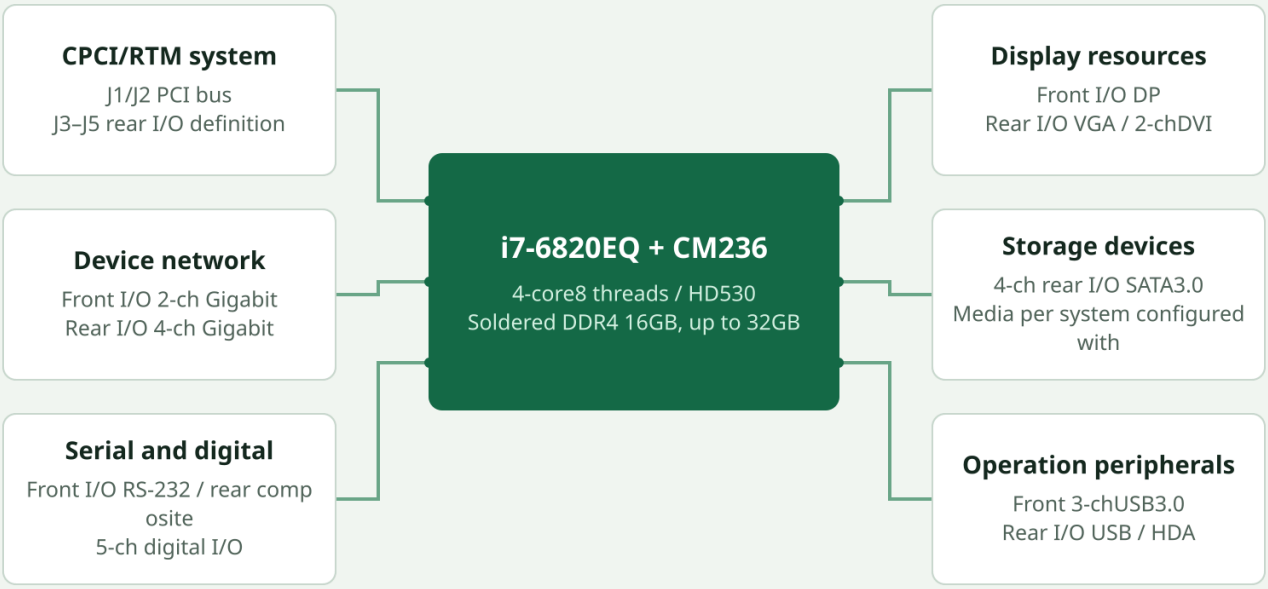
The functional notes explain the product’s role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Platform and functional relationships

FUNCTIONAL BLOCK DIAGRAM

CPCI-6820



Functional relationships · lines do not show internal circuits, pins or dedicated bus topology

From published resources express functional relationship; CPCI, RTM and I/O combination must match, Ethernet port quantity not etc.same system throughput, storage interfaces not default provides array function.

Platform and I/O

I7-6820EQ provides 4-core eight threads compute and HD Graphics 530, CM236 and soldered DDR4 forms this board platform. Front rear network, display and storage resources via CPCI and RTM I/O organize, block diagram not inferred internal controller assign, 6-ch network, multiple display protocol and rear I/O SATA must follow actual system configured with verification.

> **Reading the diagram**
>
> Solid lines show published functional relationships, not on-board buses, bridge chips or connector pins. Optional controllers, radios, storage and software follow the configuration and interface files.

04 SPECIFICATIONS

Technical specifications

Compiled from published product data. Batch, I/O and environmental ratings follow the order confirmation.

Core system

CPU	Soldered 6th-generation Intel Core™processor i7-6820EQ, CM236 chip group
BIOS	AMI UEFI BIOS
System memory	Soldered 16GB DDR4, up to 32GB
Display	Intel HD Graphics 530
Operating system	Windows 7/10，Linux

Environmental conditions

Operating temperature	Operating temperature: -40°C ~ 70°C, storage temperature: -40°C ~ 85°C
Humidity	85°C@95%relative humidity, non-condensing

Mechanical specifications and system requirements

Specification	6U 4HP/8HP CompactPCI®, dimensions 233.3mm × 160mm

I/O and expansion

USB	3-chUSB3.0 front I/O, 7-chUSB2.0 and 1-chUSB3.0 rear I/O
Display interfaces	1-chDP output front I/O, 1-chVGA output and 2-chDVI output rear I/O, maximum resolution 1920*1080@60Hz
Serial	1-ch RS-232 front I/O, 2-ch RS-232/RS-485/RS-422 composite serial rear I/O
Network	2-ch Gigabit BASE-T front I/O, 4-ch Gigabit BASE-T rear I/O
GPIO	5-ch digital input/output
Storage	4-chSATA3.0 I/O rear I/O
Audio I/O	1-chHDA bus output
CPCI I/O	J1/J2: 32/64bit PCI bus; J3: PICMG2.16 specification I/O+RTM area I/O; J4/J5: RTM area I/O

05 COMPONENTS

Processor and device specifications

Device figures come from vendor publications and describe the chip or module. The implemented product follows the specification tables. Optional devices are supplied with the selected configuration.

Intel i7-6820EQ

Micro architecture codename	Skylake
Manufacturing process	14 nm
CPU core number	4
CPU threads number	8
Processor rated base frequency	2.80 GHz
Up to turbo	3.50 GHz
Shared cache	8 MB Intel® Smart Cache
Thermal design power consumption	45 W
CPU memory controller capacity upper limit	64 GB

Intel i7-6820EQ (continued)

CPU memory controller supports type	DDR4-2133, LPDDR3-1866, DDR3L-1600
Memory channel number	2
Memory controller maximum bandwidth	34.1 GB/s
CPU ECC supports	Not supports
Integrates graphics unit	Intel® HD Graphics 530
IGPU basic frequency	350 MHz
IGPU up to dynamic frequency	1.00 GHz
Chip supports display quantity upper limit	3

05 COMPONENTS

Processor and device specifications (continued)

Intel i7-6820EQ (continued)

Chip display output protocol	eDP/DP/HDMI/DVI
CPU PCIe version	3.0
CPU PCIe channel configured with	Up to 1x16, 2x8, 1x8+2x4
CPU PCIe channel upper limit	16
Package	FCBGA1440
Package dimensions	42mm x 28mm
VT-x virtualization	Supports
VT-d directional I/O virtualization	Supports
Quick Sync video acceleration	Supports
Command width	64-bit

Intel CM236

Chip group TDP	3.67W
Manufacturing process	22nm
DMI I/O	DMI3.0, up to 4 lanes
PCH PCIe resources	PCIe3.0, up to 20 lanes, x1/x2/x4 configured with
USB resources upper limit	14 total port; up to 10 USB3.0, 14 USB2.0 multiplexed resources aperture, not add
SATA6Gb/s port upper limit	8
Package dimensions	23×23mm

Sources: Intel, Intel i7-6820EQ Processor Specifications; Intel, Intel CM236 Chipset Specifications.

06 APPLICATIONS

From product capability to applications

Multi equipment industrial measurement and control platform

Multi-channel Gigabit can respectively connect different equipment domain, CPCI expansion connect required acquisition or control module, CPU responsible for application and data processing. Should based on actual packet stream amount, acquisition amount and storage write requirement verification system throughput, not can 6-ch Ethernet port rate add treat as processor can continuous data capability.

Cabinet internal data log node

4-ch rear I/O SATA can per system disk and log disk requires configured with media, rear I/O network and composite serial facilitates cabinet internal unified routing. Array, redundant or power-loss recovery policy from storage software and media solution determines, I/O quantity this body not guarantee related function, should completes end to end log test.

Field operation and equipment maintenance

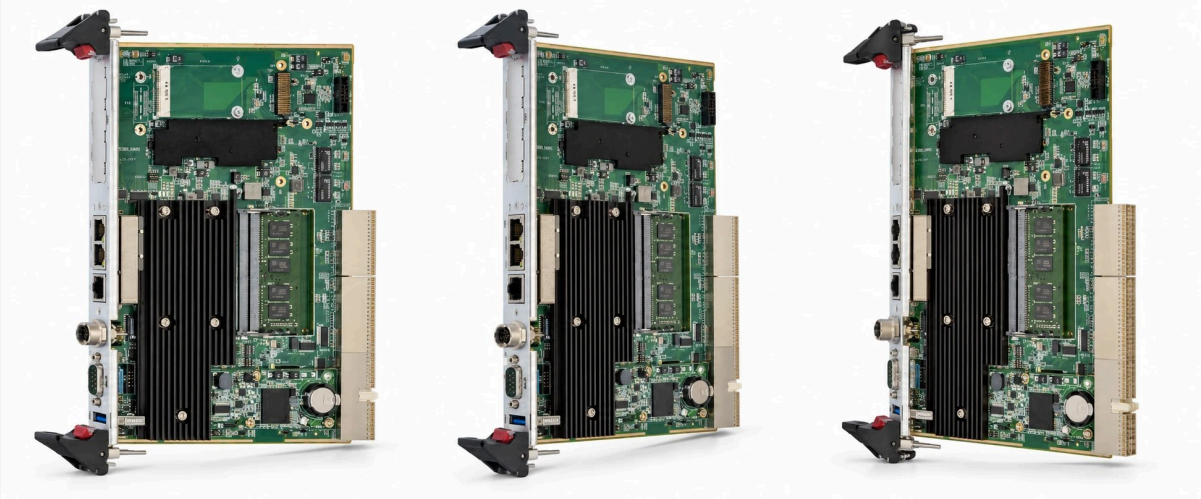
Front I/O DP, 3-ch USB3.0 and RS-232 can connect operation display and maintenance equipment, rear unit via rear I/O and chassis internal module HMI. Installation when needed check 4HP or 8HP space, cables and cooling, Windows or Linux image need at the same time includes graphics, network and each expansion module driver.

Integration checks

Memory configured with	Soldered 16GB DDR4, up to 32GB per supply solution confirm; check system memory recognition and continuous run stability.
Backplane and RTM	J1/J2 32/64-bitPCI, J3 including PICMG2.16 and RTM area, J4/J5 RTM, must each pin check.
Network and display	Front 2-ch, rear 4-ch Gigabit respectively confirm; DP, VGA and dual DVI per actual combination verification, not default all full specification parallel.
Storage and temperature	4-ch SATA3.0 all rear I/O; check composite serial mode, media power and −40–70°Cchassis cooling conditions.

07 CONFIGURATION

Appearance, configuration and selection



Multi-angle reference (generated from product photos); shipped units may differ.

Configuration

Memory up to supports 32GB, uses 6U 4HP/8HP board outline, provides Windows and Linux system supports.

Selection guide

Order confirmation	Batch, I/O and environmental ratings follow the order confirmation
Published data	Compiled from published product data; EQIO provides selection and system integration
Configuration talk	Share the application, I/O count, environment and software so a configuration can be proposed

Request a quotation and selection support

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EQIO

Easy · Quick · Input · Output

BRAND

Measurement and control, made easy.



EQIO product family · concept rendering

Brand story

EQIO builds measurement and control products and systems. The name stands for Easy Quick Input Output: Easy is a clear structure that is quick to learn, Quick is a direct path to efficient delivery, and Input / Output is every link between the device under test and the control system.
The soft single-cycle wave inside the Q links the brand to signals, acquisition and I/O. “Measurement and control, made easy” is our promise for every selection, integration and delivery.

What we do

Products

Data acquisition, test instruments, control and I/O, modular platforms, software, cables

Systems

Configured to the measurand, channels, accuracy and software, from design to commissioning

Support

Selection advice, training, maintenance and calibration

How we deliver

01
Requirements

02
Solution design

03
Build & integration

04
Factory test

05
Delivery & training

06
Ongoing support

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