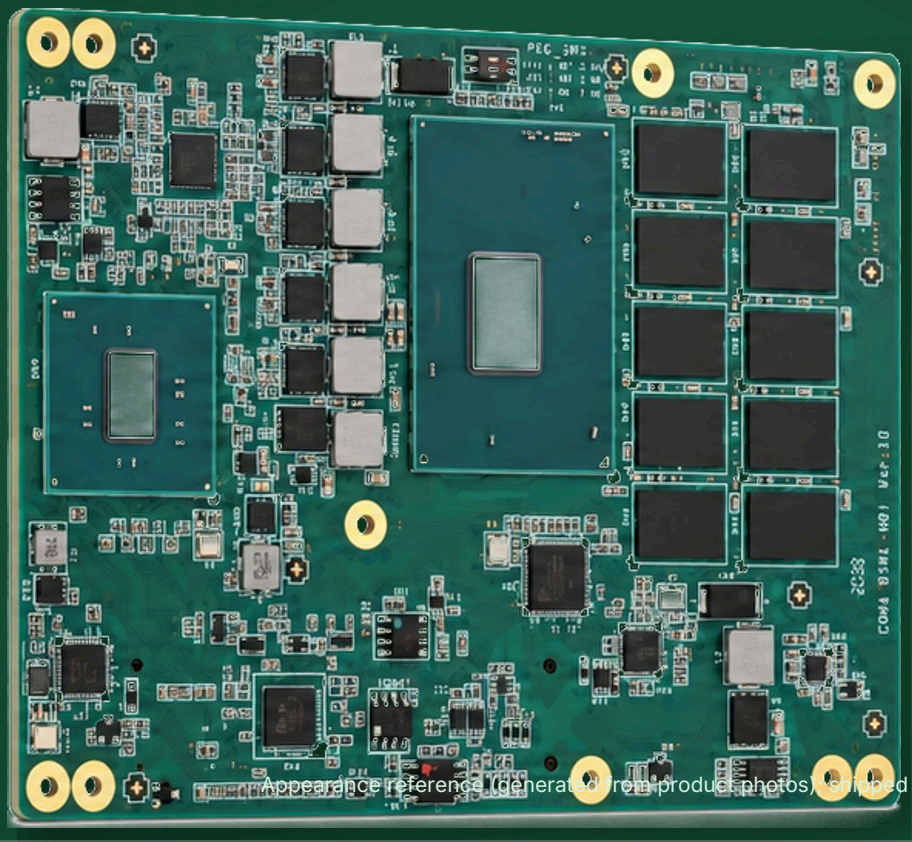
EQIO

COMe-6820EQ

PRODUCT MANUAL

Intel i7-6820EQ COM Express Type 6 Module

Intel Core i7-6820EQ



Appearance reference (generated from product photos); shipped units may differ.

Measurement and control, made easy.

EQIO.COM

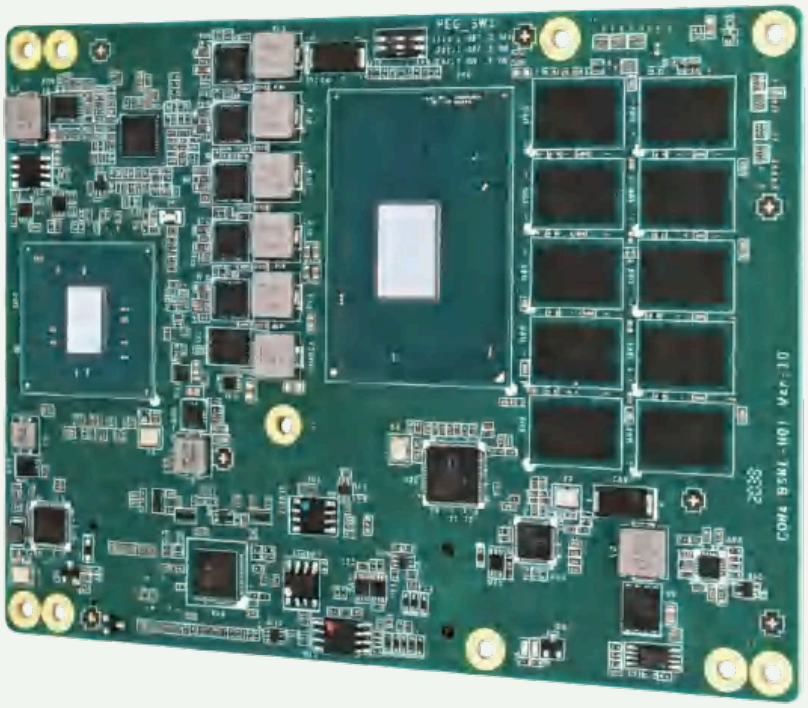
Easy · Quick · Input · Output

01 OVERVIEW

Intel i7-6820EQ COM Express Type 6 Module

COM Express compute module · Industrial control · Medical imaging · Network devices · COM Express · Intel

COMe-6820EQ uses 6th-generation Intel Core i7-6820EQ processor, supports dual channel DDR4 memory, provides display, PCIe, SATA, Gigabit Ethernet and industrial peripheral I/O, used for x86 embedded compute platform.
VGA, LVDS or eDP and digital display connection can together with carrier organize video output, serial, GPIO and HDA used for industrial peripherals and audio attach. Module centralized provides compute, communications and storage resources, suited to unit unit equipment controller, measurement instrument and industrial display terminal.



Product appearance reference; shipped units may differ.

Key features

- Core i7-6820EQ 4-core processor
- Dual channel DDR4, up to 32GB
- 125 × 95mm Type6 module
- Gigabit Ethernet and 4-ch SATA3.0
- PCIe3.0 and multi type display connection

02 FUNCTIONS

Functions and engineering value

4-core eight threads embedded compute

I7-6820EQ provides 4-core eight threads, base frequency 2.8GHz, up to turbo 3.5GHz, together with selected QM170 or CM236 chip group forms Type6 platform. Board-level memory upper limit 32GB, and processor vendor memory upper limit should separate de, continuous performance depends on to product thermal design and task load.

Display output per multiplexed relationship planning

Module provides VGA, LVDS or eDP and DDI resources, can around industrial display unit and panel design carrier. LVDS and eDP either-or, DDI3 change DP when VGA not can used, therefore display solution should design stage fixed, avoid protocol compatible capability promotion all output at the same time storage.

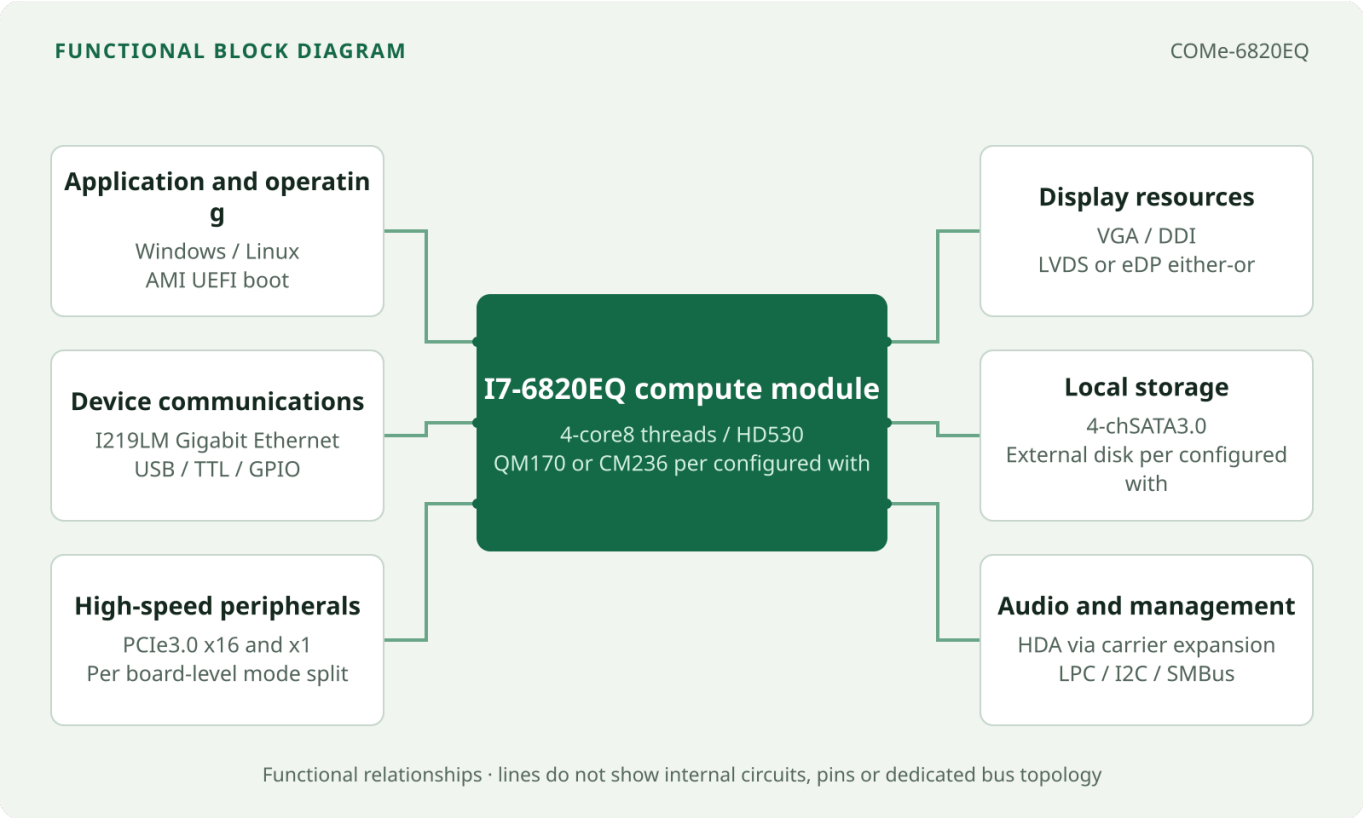
Expansion and storage resources configured with

PCIe x16 and multi-channel x1 can per board-level lists mode split, used for connect different bandwidth expansion equipment. 4-ch SATA3.0, Gigabit Ethernet and USB storage and peripherals provides basic, UART and HDA etc.I/O required carrier matching, and should and chip group solution and firmware settings keep consistent.

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

Compute platform and functional relationships



From published specification express functional relationship; display and PCIe resources storage multiplexed, chip group configured with and board-level memory upper limit and processor vendor upper limit respectively de.

Platform and I/O

I7-6820EQ is 4-core eight threads x86 processor, with HD Graphics 530, this module paired with QM170 or CM236 solution and up to 32GB DDR4. Graphics and I/O resources via Type6 carrier organize, DDI protocol switch, LVDS/eDP mutually exclusive and PCIe split will affect final can used I/O. Should first determine required peripherals, again freeze module and carrier configured with.

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	Intel Core i7-6820EQ, 4-core8 threads, base frequency 2.8GHz, up to turbo 3.5GHz; QM170/CM236 chip group per configured with selection
System memory	Dual channel DDR4-2133, up to 32GB
Display	Intel HD Graphics 530
BIOS	AMI UEFI BIOS
Operating system	Microsoft Windows®7/8.1/10、Linux

Environmental conditions

Operating temperature	Operating temperature: -40°C ~ 70°C; storage temperature: -45°C~80°C
Humidity	10 ~ 95% @ 85°C (non-condensing)

Mechanical specifications and system requirements

Specification	125mm×95mm

I/O and expansion

USB	8-chUSB 2.0, 4-chUSB 3.0
Serial	2-chTTL serial, maximum baud rate 115200 bps
DIO/MIO	8-chGPIO, can configured with input or output; 24MHz LPC, supports 1-chI2C bus, supports 1-chSMBUS bus
Display interfaces	1-chVGA: maximum resolution 1920 × 1200@60Hz, 1-ch dual channel 18/24-bit LVDS (LVDS and EDP function either-or) DDI1 and DD2 configured with DP++ (supports HDMI/DVI/DP) DDI3 only supports HDMI/DVI (if configured with DP, VGA not can used)
Network interfaces	1-chIntel I219LM 1000BASE-T Ethernet I/O
Storage interfaces	4-chSATA3.0 I/O
Expansion slots	1-chPCIe3.0 × 16, can configured with 2-chPCIe × 8 or 4-chPCIe × 4 8-chPCIe3.0 × 1, can configured with 1-chPCIe × 4+ 4-chPCIe × 1
Audio	1-chHDA I/O, can via base plate expansion audio function

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 (Optional)

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

Intel QM170 (Optional)

Chip group TDP	2.6W
Manufacturing process	22nm
DMI I/O	DMI3.0, up to 4 lanes
PCH PCIe resources	PCIe3.0, up to 16 lanes, x1/x2/x4 configured with
USB resources upper limit	14 total port; up to 8 USB3.0, 14 USB2.0 multiplexed resources aperture, not add

05 COMPONENTS

Processor and device specifications (continued)

Intel QM170 (Optional) (continued)

SATA6Gb/s port upper limit	4
Chip group ECC supports	Not supports
Package dimensions	23×23mm

Sources: Intel, Intel i7-6820EQ Processor Specifications; Intel, Intel CM236 Chipset Specifications; Intel, Intel QM170 Chipset Specifications.

06 APPLICATIONS

From product capability to applications

Industrial equipment compute controller

Type6 module and acquisition, motion control or communications carrier connect, can centralized run equipment software and operator UI. First per selected PCIe split mode match expansion card, again check Windows or Linux driver supports, real-time control requirement must be task software and complete system test confirm.

Imaging equipment operation and processing

Multi type display protocol and PCIe expansion suited to used for imaging equipment operation and data processing platform design, can per application selection display and acquisition peripheral. Graphics processing throughput, display combination and software compatible must via actual operation stream verification, product I/O and compute configured with is not the same as medical equipment certification.

Network and local logging platform

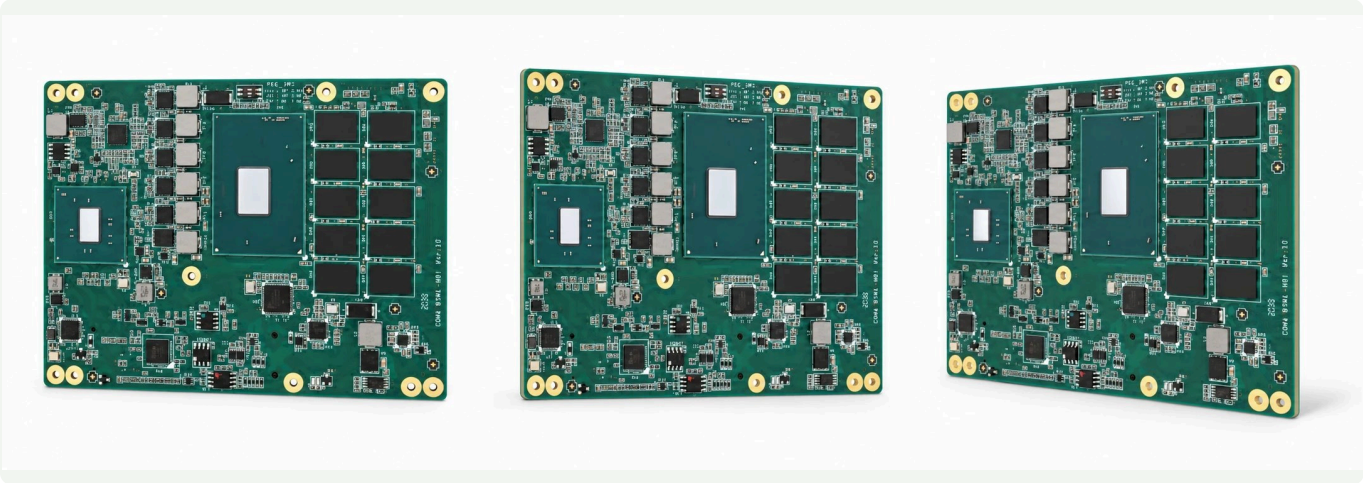
Gigabit Ethernet, 4-ch SATA and up to 32GB memory can used for with local logging industrial communications node. Storage devices, file system and log policy must follow data amount configured with, multiple network or acquisition expansion equipment parallel when, should verification PCIe bandwidth assign and continuous write disk behaviour.

Integration checks

Chip group configured with	QM170 or CM236 per solution selection chip group; check corresponding firmware, driver, carrier and material list.
Display mutually exclusive	LVDS/eDP either-or; DDI3 configured with DP when VGA not can used, required fixed actual output combination.
Memory and link	Dual channel DDR4-2133 board-level upper limit 32GB; PCIe x16 and x1 resources split per product definition confirm.
Temperature and peripheral	Operation−40–70°C; check cooling, carrier UART signal level and HDA audio matching, avoid directly connect not match peripherals.

07 CONFIGURATION

Appearance, configuration and selection



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

Configuration

LVDS and eDP uses selection configured with, PCIe link provides multi type split mode, supports Windows and Linux system.

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

Email lyping@eqio.com Phone +86 182 8191 2988
Web eqio.com

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

Email lyping@eqio.com Phone +86 182 8191 2988 Web EQIO.COM