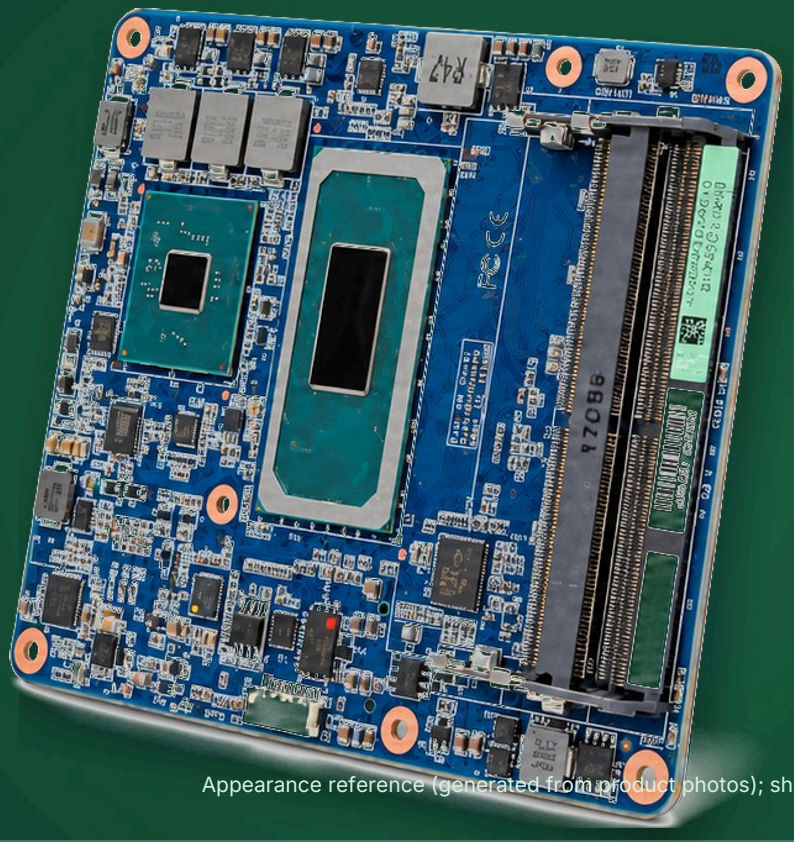
EQIO

COMe-11850

PRODUCT MANUAL

Intel i7-11850HE COM Express Type 6 Module

Intel Core i7-11850HE



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

Measurement and control, made easy.

Easy · Quick · Input · Output

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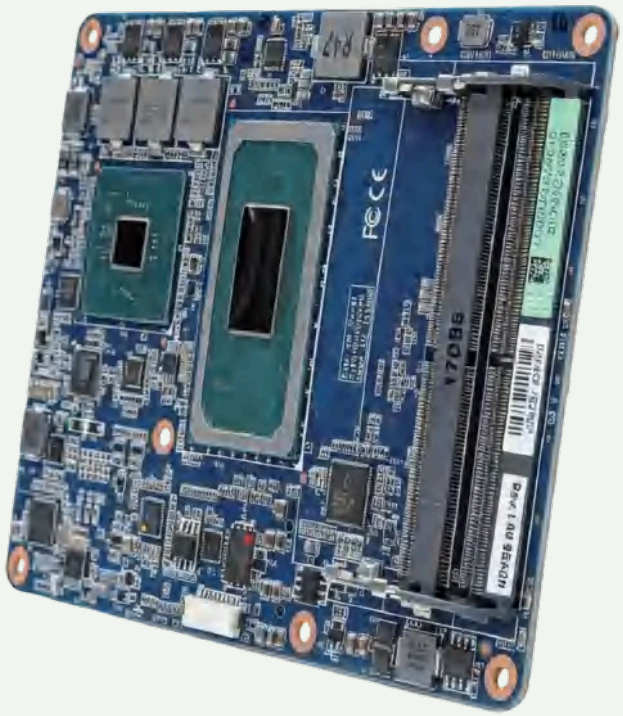
01 OVERVIEW

Intel i7-11850HE COM Express Type 6 Module

COM Express compute module · Industrial automation · Real-time data processing · Edge service unit · COM Express · Intel

COMe-11850 uses 11th-generation Intel Core compute platform, provides 3-ch DDR4 SO-DIMM slot, PCIe Gen4, 2.5G bE and multi-display display interfaces, suited to high memory capacity embedded data processing and edge computing application.

3-ch SO-DIMM slot facilitates configured with memory capacity, USB, UART and GPIO can and carrier peripheral connection. Module equipped with high-speed network, storage and multi-channel display resources, suited to industrial data processing, instrument control and requires multi video HMI embedded system.



Product appearance reference; shipped units may differ.

Key features

- 11th-generation Intel Core compute platform
- 3-ch DDR4 SO-DIMM slot
- Up to 96GB board-level memory supports
- PCIe Gen4 and 2.5G bE I/O
- Multi-display display and 4-ch SATA3.0

02 FUNCTIONS

Functions and engineering value

8-core multi threads and memory configured with

I7-11850HE provides 8-core 16 threads, up to turbo 4.7GHz; product tabulated out 3 DDR4-3200 SO-DIMM slot, total capacity up to 96GB. The capacity should combined with delivery hardware, BIOS and memory compatible list confirm, not cannot only per slot number inferred any memory item combination all can stable run.

High-speed expansion and network connect

PCIe Gen4 x16 and Gen3 x1 resources can connect acquisition, communications or other expansion equipment, 2.5G bE I/O handles network data HMI. Link bandwidth belongs to I/O specification, actual throughput depends on to peripherals, carrier routing and driver, integrates when at the same time evaluate data input, memory cache and storage write path.

Multi video and basic management

Product provides 3-ch DDI plus eDP four display unit solution, per published board-level specification up to 2K planning display. UART, GPIO and multi type management bus carries carrier control, TPM2.0 belongs to optional assembly; safety boot or can signal application requirement also requires combined with firmware and operating system together confirm.

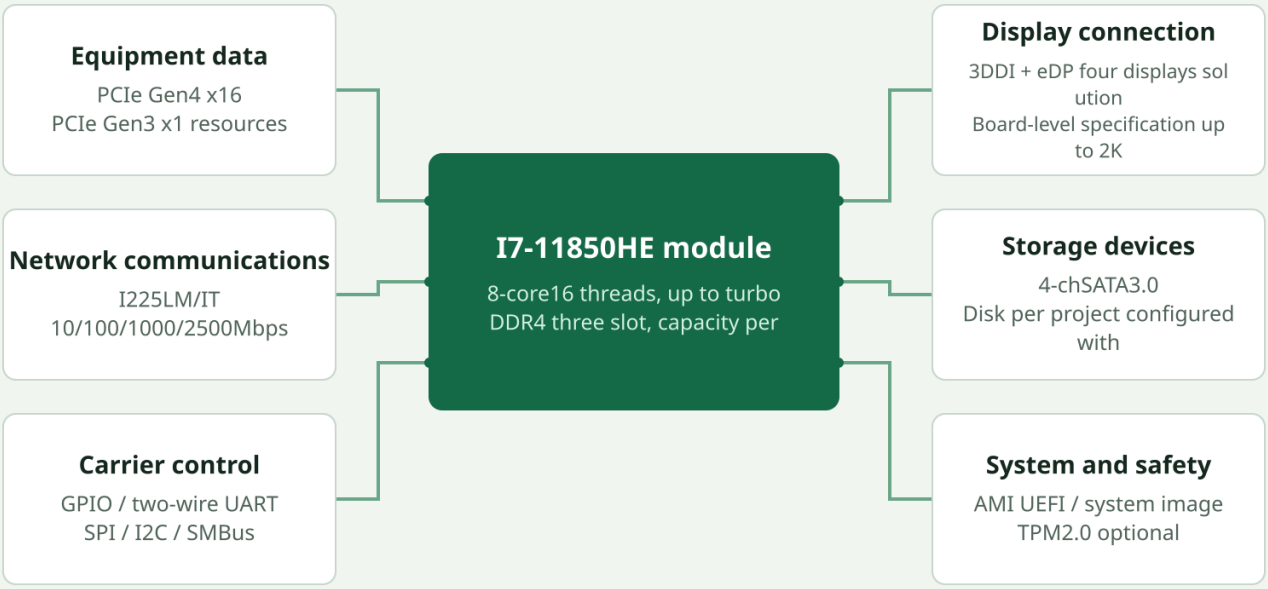
The functional notes explain the product’s role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Platform and functional relationships

FUNCTIONAL BLOCK DIAGRAM

COMe-11850



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

Indicates published function resources relationship, not indicates internal circuit; memory compatible, four displays mode and TPM assembly specific delivery version shall prevail.

Platform and I/O

I7-11850HE 8-core 16 threads x86 platform, integrates Xe architecture UHD graphics, module provides 3-ch DDR4 slot, high-speed PCIe and 2.5G bE connect. Board-level memory capacity, four displays 2K output and TPM option all per product configured with confirm, not chip graphics capability or up to turbo treat as product continuous performance.

> **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 i7-11850HE, 8-core16 threads, up to turbo 4.7GHz
System memory	3 × 260 pin DDR4 3200MHz SO-DIMM slot, each slot most multi 32GB (total 96GB)
Display	Intel® UHD Graphics (Xe architecture)
BIOS	AMI UEFI BIOS, 256 Mbit SPI flash ROM
Operating system	Windows 10 64-bit, Linux (kernel 5.8)
TPM safety chip	TPM2.0 (optional)

I/O and expansion

USB	4 × USB 3.2 Gen.2 × 1、8 × USB 2.0
COM port	2 × UART (limited to RX/TX)
DIO/MIO	1 × 8-bit GPIO; 1 × SMBus, 1 × LPC (via ESPI to LPC bridge IC), 1 × I2C, 1 × GP SPI, 1 × SPI
Display interfaces	Supports four display unit, up to up to 2K (3DDI+eDP)
Network interfaces	Chip group: 1 x Intel® I225LM/IT, I/O: 10/100/1000/2500 Base-Tx GbE compatible
Storage interfaces	4-chSATA3.0 I/O
Expansion slots	1 × PCIe ×16（Gen4），8 × PCIe ×1 （Gen3）

Environmental conditions

Operating temperature	Operating temperature: 0°C–60°C (standard version), -40°C–70°C (industrial version); storage temperature: -45°C ~ 85°C
Humidity	40°C @ 95% relative humidity, non-condensing

Mechanical specifications and system requirements

Specification	125mm × 95mm, weight 0.2kg

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 i7-11850HE

Micro architecture codename	Tiger Lake
Manufacturing process	10 nm SuperFin
CPU core number	8
CPU threads number	16
Up to turbo	4.70 GHz
Shared cache	24 MB Intel® Smart Cache
CTDP-up should be based on frequency	2.60 GHz
CTDP-up power	45 W
CTDP-down should be based on frequency	2.10 GHz
CTDP-down power	35 W

Intel i7-11850HE (continued)

CPU memory controller capacity upper limit	128 GB
CPU memory controller supports type	DDR4-3200
Memory channel number	2
CPU ECC supports	Not supports
Integrates graphics unit	Intel® UHD Graphics for 11th Gen Intel® Processors
IGPU basic frequency	350 MHz
IGPU up to dynamic frequency	1.35 GHz
IGPU actuation unit	32

05 COMPONENTS

Processor and device specifications (continued)

Intel i7-11850HE (continued)

Chip supports display quantity upper limit	4
Chip display output protocol	eDP 1.4b, MIPI-DSI 2.0, DP 1.4, HDMI 2.0b
Processor PCIe version	Gen 4
PCH side PCIe version	Gen 3
CPU PCIe channel configured with	Up to 1x16+1x4, 2x8+1x4, 1x8+3x4
CPU PCIe channel upper limit	20
Package	FCBGA1787
Package dimensions	50 x 26.5
VT-x virtualization	Supports

Intel i7-11850HE (continued)

VT-d directional I/O virtualization	Supports
Quick Sync video acceleration	Supports
Command width	64-bit

Intel QM580E (Optional)

Chip group TDP	2.9W
DMI I/O	DMI3.0, up to 8 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 USB3.2 (Gen2x1 10Gb/s or Gen1x1 5Gb/s), 14 USB2.0 multiplexed resources aperture
SATA6Gb/s port upper limit	4
Chip group ECC supports	Not supports

05 COMPONENTS

Processor and device specifications (continued)

Intel QM580E (Optional) (continued)

Package dimensions	25×24mm

Intel RM590E (Optional)

Chip group TDP	3.4W
DMI I/O	DMI3.0, up to 8 lanes
PCH PCIe resources	PCIe3.0, up to 24 lanes, x1/x2/x4 configured with
USB resources upper limit	14 total port; up to 10 USB3.2 (Gen2x1 10Gb/s or Gen1x1 5Gb/s), 14 USB2.0 multiplexed resources aperture
SATA6Gb/s port upper limit	8
TSN supports	Yes; actual driver and timing function must product enable
Package dimensions	25×24mm

Sources: Intel, Intel i7-11850HE Processor Specifications; Intel, Intel QM580E Chipset Specifications; Intel, Intel RM590E Chipset Specifications.

06 APPLICATIONS

From product capability to applications

Industrial automation data host

8-core 16 threads can used for parallel run device communications, data processing and readable task, PCIe expansion connect required acquisition card. Memory configured with per actual cache and application occupancy selected, continuous run when needed verification power, cooling and peripherals throughput, not up to turbo instead of long-term load performance.

Multi source data processing node

High-speed expansion and 2.5G bE suited to carrier on aggregation multi type data from source, and uses SATA storage arrangement task result and log. Has response when limit application, requires target Linux or Windows system in verification scheduling and driver, I/O rate and not etc. To determine processing latency.

Edge computing and multi-display operation

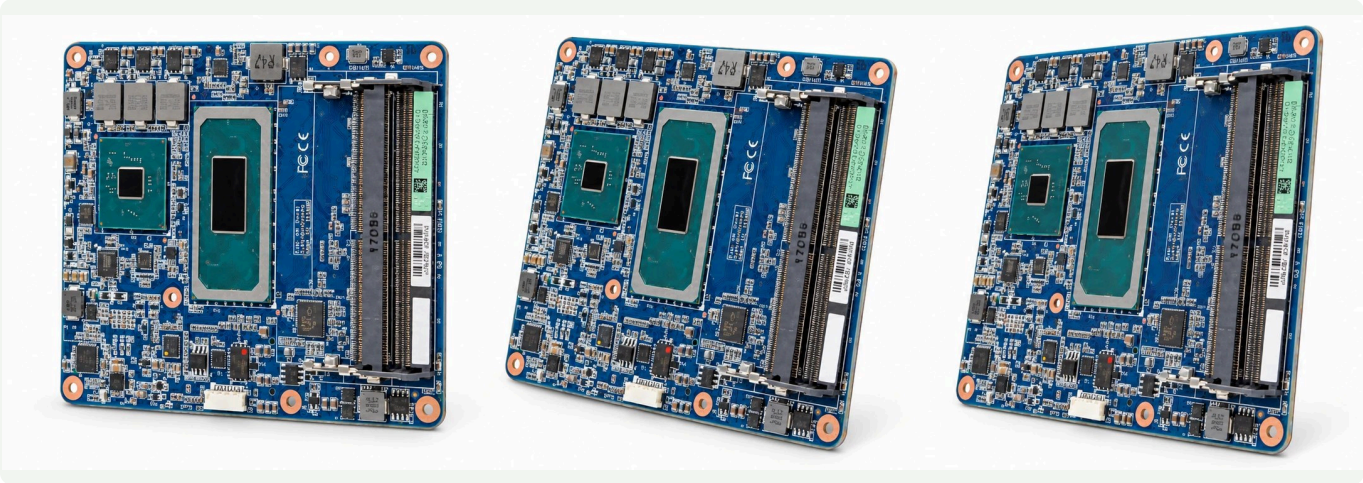
Relatively multi memory slot and four display unit resources can service to edge application and multi video operation end design. First confirm three DDI plus eDP actual connect method and board-level 2K specification, again per application configured with memory and storage; requires can signal function when purchasing stage stated TPM option and software implement range.

Integration checks

Memory delivery	Product tabulated 3-ch DDR4-3200 slot, each slot 32GB, up to 96GB; check actual PCB, BIOS and memory compatible list.
Carrier high-speed link	Check Gen4 x16, Gen3 x1 and 2.5G bE connect requirements, per actual expansion equipment verification link training and continuous throughput.
Display and safety	Four displays per 3DDI+eDP, up to 2K board-level specification confirm; TPM2.0 optional configuration, not can default already installation.
Environment and system	Standard version 0–60°C, industrial version−40–70°Crespectively selection; check Windows10 or listed Linux kernel and driver version.

07 CONFIGURATION

Appearance, configuration and selection



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

Configuration

Provides standard and industrial temperature version, optional TPM2.0; uses 125 × 95mm Type6 dimensions.

Temperature version	Standard version 0~60°C / industrial version-40~70°C
TPM	TPM2.0 optional; not made all configured with standard

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

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