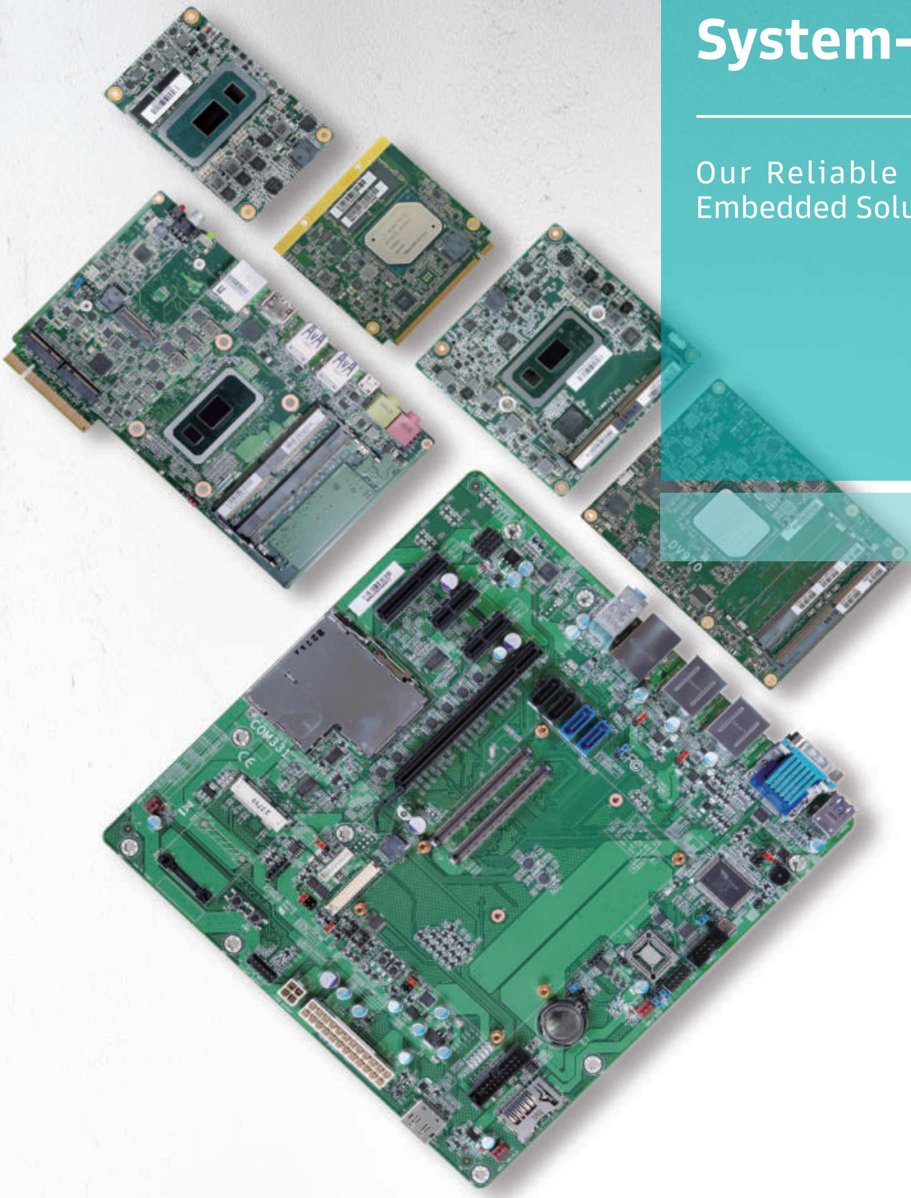
DFI Desire For Innovation



# System-On-Modules

Our Reliable and Scalable SOMs for Your Embedded Solutions

# Our Reliable and Scalable SOMs for Your Embedded Solutions

We provide off-the-shelf System-On-Modules including COM Express Mini, COM Express Compact, COM Express Basic, Qseven, SMARC and Customized Design-in Services for various embedded computing solutions

## *System-On-Modules Product Overview*

**Qseven**

RK701

| Processor | Platform | Chipset | Model | Index |
|---|---|---|---|---|
| Rockchip RK3568 / RK3568J Cortex A55 | ARM | - | RK701 | P6 |
| Intel® Atom® Processor x6000 | Atom | - | EHL701 | |
| | | | EHL700 | |
| Intel® Atom® Processor E3900 | Atom | - | AL701 | P7 |
| | | | AL700 | |
| Intel® Atom® Processor E3800 | Atom | - | BT700 | |
| Freescale™ i.MX6 Series | ARM | - | FS700 | |

**COM Express Mini**

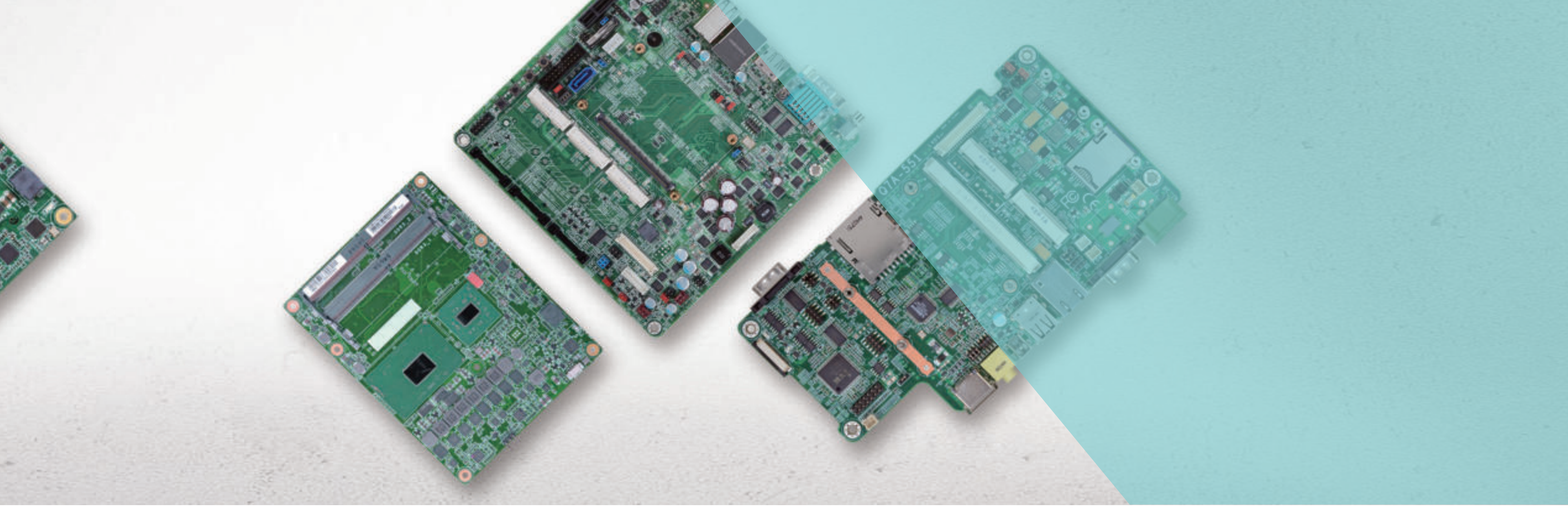
ASL9A2

| Type | Processor | Platform | Chipset | Model | Index |
|---|---|---|---|---|---|
| Type 10 | 11th Gen Intel® Core™ Processor | ULT | - | TGU9A2 | P8 |
| | 8th Gen Intel® Core™ Processor | ULT | - | WL9A3 | |
| | Intel® Atom® Processor Amston Lake/ Alder Lake-N Series | Atom | - | ASL9A2 | |
| | Intel® Atom® Processor Elkhart Lake Series | Atom | - | EHL9A2 | |
| | Intel® Atom® Processor E3900/ Intel® Pentium® N4200 | Atom | - | AL9A2 | P9 |
| | | | | AL9A3 | |
| | | | | AL9A8 | |
| | Intel® Atom® Processor E3800 | Atom | - | BT9A3 | |
| | AMD® Ryzen™ R1000 Series Processor | AMD | - | GH9A3 | |

**COM Express Compact**

MTH968

| Type | Processor | Platform | Chipset | Model | Index |
|---|---|---|---|---|---|
| Type 6 | 14th Gen Intel® Core™ Processor | ULT | - | MTH968 | P10 |
| | 13th Gen Intel® Core™ Processor | ULT | - | RPP968 | |
| | 12th Gen Intel® Core™ Processor | ULT | - | ADP968 | |
| | 11th Gen Intel® Core™ Processor | ULT | - | TGU968 | P11 |
| | 8th Gen Intel® Core™ Processor | ULT | - | WL968 | |
| | 7th Gen Intel® Core™ Processor | ULT | - | KU968 | |
| | 6th Gen Intel® Core™ Processor | ULT | - | SU968 | |
| | Intel® Atom® Processor E3900/ Intel® Pentium® N4200 | Atom | - | AL968 | |
| | Intel® Atom® Processor E3800 | Atom | - | BT968 | |



### COM Express Basic

RBT970

| Type | Processor | Platform | Chipset | Model | Index |
|---|---|---|---|---|---|
| Type 7 | AMD® Ryzen™ Embedded V3000 Series processors | AMD | - | RBT970 | P12 |
| | 3rd Gen Intel® Xeon® Scalable Processors D-1700 Family | Server | - | ICD970 | |
| | Intel® Atom® Processor C3000 | Atom | - | DV970 | |
| Type 6 | 11th Gen Intel® Core™ Processor | Mobile | RM590E/<br>QM580E/<br>HM570E | TGH960 | P13 |
| | 9th/8th Gen Intel® Core™ Processor | Mobile | CM246 | CH960-CM246/QM370 | |
| | | | QM370 | CH961-CM246/QM370 | |
| | | | HM370 | CH960-HM370 | |
| | | | | CH961-HM370 | |
| | 6th Gen Intel® Core™ Processor | Mobile | CM236/<br>QM170 | SH960MD-CM236/<br>QM170 | |
| | AMD® Ryzen™ V1000/R1000 Embedded Processors | AMD | - | GH960 | |

### COM HPC

RPS9HC-R680E /
Q670E / H610E

| Processor | Platform | Chipset | Model | Index |
|---|---|---|---|---|
| 13th Gen Intel® Core Processors | Desktop | R680E/<br>Q670E/<br>H610E | RPS9HC-R680E/<br>Q670E/H610E | P14 |

### Carrier Board

COM100-B

| Type | Form Factor | Compliance | Model | Index |
|---|---|---|---|---|
| Type 10 | Mini-ITX | COM Express R2.1 | COM100-B | P15 |
| Type 6,<br>Type 10 | microATX | COM Express R3.1 | COM335 | |
| Type 7 | | COM Express R3.0 | COM333-I | |
| Type 6 | | COM Express R2.1 | COM332-B(R.A) | P16 |
| Type 6 | | COM Express R2.1 | COM332-B(R.B1) | |
| - | Mini-ITX | Qseven (BT700) | Q7X-151(R.A) | |
| | | Qseven (AL700, AL701, BT701) | Q7X-151(R.D1) | |
| - | Proprietary | Qseven (FS700) | Q7A-551 | |

### SDM

SDML-WL

| Form Factor | Compliance | Model | Index |
|---|---|---|---|
| SDM Large | Intel® Smart Display Module | SDML-WL | P17 |

# *Customer-Oriented SOM Design-In Services*

## Design Assistance

- Comprehensive evaluation of carrier board design during planning phase
  Hardware/Software Recommendations, Technical Specifications, Developing Schedule, and Database
  Schematic Review, Placement/Layout Review, Debugging Assistance Services, and General/Special Reference Design
- Comprehensive design documentation for designing carrier board
  Carrier Board Design Guide, User's Manual, Schematic & Layout Checklist, and 2D/3D Mechanical Drawing

## Strict Validation

- Strict validation and testing process ensures reliable deployments
  Dedicated Design Review Team, Thermal Simulation, and COMe Debug Module Card

## Thermal Solution

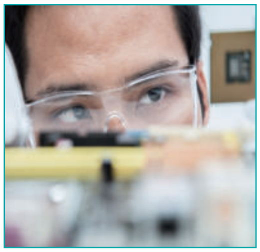
- Customized thermal solution design & Optional heatspreader
  For special requirements like high-temperature environments or ultra-slim chassis

## Software Integration

- Embedded OS and BIOS customization
  Windows 10, Windows 7, WES 7, Windows XP, Linux (CentOS/Debian), etc.
- Windows licensing offerings
- Application Programming Interface (API) library
  Watchdog, Hardware Control/Monitor, GPIO, Backlight Control, SMBus, etc.
- Remote management utility

Planning →

Design →



Validation →

Integration →

Production

# *Innovative Design & Services*

## Rugged Design

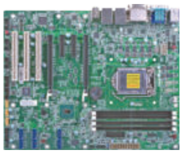
- Industrial-rated components with high MTBF over 100,000 hrs
- Extended operating temperatures
- High ESD protection for I/O ports
- Signal integrity measurement
- Wide range power design
- 100% Japanese-made solid capacitor
- Power hot plug protection for DC-in type SBC and Industrial Motherboards

## Software Integration

- Embedded BIOS and OS customization services
- Windows licensing offerings
- Android, Linux distribution (Yocto/Ubuntu/CentOS/Debian)
- Embedded API
  (Hardware Monitor, SMBus, $I^2C$, Brightness Control, GPIO,Watchdog)
- Remote management utility

## Embedded Total Solution

- Express customization service: 30 days (NRE cost: project based)
- Strict revision control
- Long product life cycle support
- High volume OEM/ODM production capabilities



**Embedded Boards**

**Peripherals**

**Systems**

**Embedded Software & BIOS**

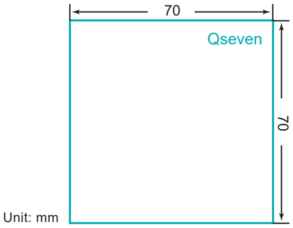
**Vertical Solutions**

# Qseven

Extremely Small & Mobile Solutions

## Features

Qseven is equipped with fast serial interfaces in an ultra-small form factor with a measurement of just 70 x 70 mm. It is much smaller than other system-on-module standards such as COM Express, which makes it an ideal solution for space-limited and low power applications such as industrial automation, retail, and power & energy.



Wide Temp ARM

Wide Temp Atom

Wide Temp Atom

| Model Name | | RK701 | EHL701 | EHL700 |
|---|---|---|---|---|
| Compliance | | Qseven R2.1 | Qseven R2.1 | Qseven R2.1 |
| System | Processor | Rockchip RK3568 / RK3568J Cortex A55 | Intel Atom® x6000 | Intel Atom® x6000 |
| | Socket | FCBGA | BGA 1493 | BGA 1493 |
| | Max. Speed | 1.8~2GHz | 1.2~3.0GHz | 1.2~3.0GHz |
| | TDP | 5W | 6W/6.5W/9W/10W/12W | 6W/6.5W/9W/10W/12W |
| | Cache | 32KB | 1M~2M | 1M~2M |
| | BIOS | - | AMI SPI 256Mbit (supports UEFI boot only) | AMI SPI 256Mbit (supports UEFI boot only) |
| Memory | Technology | DDR4 3200MHZ | Dual Channel LPDDR4 3200MHz | Dual Channel LPDDR4 3200MHz |
| | Max. Capacity | 2GB / 4GB / 8GB | 4GB / 8GB / 16GB | 4GB / 8GB |
| | Socket | Memory Down | Memory down | Memory down |
| Graphics | Interface | 1 eDP/LVDS, 1 DP/TMDS | 1 LVDS/eDP, 1 DDI | 1 eDP, 1 DDI |
| Expansion | PCIe | 2 PCIe x1 (Gen 3), 1 PCIe x1 (Gen 2) | 4 PCIe x1 | 4 PCIe x1 |
| | LPC | - | 1 | 1 |
| | I²C | 1 | 1 | 1 |
| | SMBus | - | 1 | 1 |
| | CAN Bus | 1 | - | - |
| Audio | Interface | HD Audio | HD Audio | HD Audio |
| Ethernet | Controller | 1 RTL8211F-CG | 1 Intel® I211 | 1 Intel® I211/I210 |
| I/O | USB | 1 USB 3.0, 4 USB 2.0 | 1 USB 3.1 + 8 USB 2.0 / 2 USB 3.1 + 6 USB 2.0 | 1 USB 3.2 + 8 USB 2.0 / 2 USB 3.2 + 6 USB 2.0 |
| | SATA | 2 SATA 3.0 | 2 SATA 3.0 | 2 SATA 3.0 |
| | eMMC | 1 eMMC 5.1 up to 128GB (Opt.) | 1 eMMC 5.1 up to 128GB (Opt.) | 1 eMMC 5.1 up to 128GB (Opt.) |
| | DIO | 4-bit DIO | 4-bit DIO | 4-bit DIO |
| | SD | - | - | - |
| TPM | | TPM 2.0 | dTPM or fTPM (Opt.) | fTPM |
| Power | | 5V, 5VSB, VCC-RTC | 5V, 5VSB, VCC-RTC | 5V, 5VSB, VCC-RTC |
| Operating Temperature | | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C, -5°C~65°C (Opt.) | -40°C~85°C, 0°C~60°C, -5°C~65°C (Opt.) |

*Populated by default

Wide Temp

Atom

Wide Temp

Atom

| Model Name | | AL701 | AL700 |
|---|---|---|---|
| Compliance | | Qseven R2.1 | Qseven R2.1 |
| System | Processor | Intel® Atom® E3900 | Intel® Atom® E3900 |
| | Socket | BGA 1296 | BGA 1296 |
| | Max. Speed | 1.8~2.5GHz | 1.8~2.5GHz |
| | TDP | 6W/6.5W/9.5W/12W | 6W/6.5W/9.5W/12W |
| | Cache | 2M | 2M |
| | BIOS | AMI SPI 128Mbit (supports UEFI boot only) | AMI SPI 128Mbit (supports UEFI boot only) |
| Memory | Technology | Dual Channel LPDDR4 3200MHz | Dual Channel DDR3L 1600MHz |
| | Max. Capacity | 4GB/8GB | 4GB/8GB |
| | Socket | Memory down | Memory down |
| Graphics | Interface | 1 LVDS*/eDP, 1 DDI | 1 LVDS*/eDP, 1 DDI |
| Expansion | PCIe | 4 PCIe x1 | 4 PCIe x1 |
| | LPC | 1 | 1 |
| | I$^2$C | 1 | 1 |
| | SMBus | 1 | 1 |
| | CAN Bus | 1 (only Linux support) | - |
| Audio | Interface | HD Audio | HD Audio |
| Ethernet | Controller | 1 Intel® I211AT / 1 Intel® I210IT | 1 Intel® I211AT / 1 Intel® I210IT |
| I/O | USB | 1 USB 3.2 + 8 USB 2.0 /<br>3 USB 3.2 + 4 USB 2.0 (Opt.) | 1 USB 3.2 + 8 USB 2.0 /<br>3 USB 3.2 + 4 USB 2.0 (Opt.) |
| | SATA | 2 SATA 3.0 | 2 SATA 3.0 |
| | eMMC | eMMC 5.0 up to 32GB (Opt.) | eMMC 5.0 up to 32GB (Opt.) |
| | DIO | 4-bit DIO | 4-bit DIO |
| | SD | Optional | Optional |
| TPM | | fTPM | fTPM |
| Power | | VCC-RTC, 5V standby, 5V | VCC-RTC, 5V standby, 5V |
| Operating Temperature | | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C |

*Populated by default

Wide Temp

Atom

ARM

| Model Name | | BT700 | FS700 |
|---|---|---|---|
| Compliance | | Qseven R2.0 | Qseven R1.2 |
| System | Processor | Intel® Atom® E3800 | Freescale™ i.MX6 Series |
| | Socket | BGA 1170 | FCPBGA |
| | Max. Speed | 1.46~2.41GHz | 1.0GHz |
| | TDP | 5W/7.5W/8W/10W | - |
| | Cache | 0.5M/1M/2M | 32KB |
| | BIOS | AMI SPI 64Mbit | - |
| Memory | Technology | Single Channel DDR3L 1066/1333MHz | Single Channel DDR3 1000/1200MHz |
| | Max. Capacity | 2GB/4GB | 1GB/2GB |
| | Socket | Memory down | Memory down |
| Graphics | Interface | 1 LVDS, 1 DDI | 1 HDMI, 2 LVDS |
| Expansion | PCIe | 3 PCIe x1 | 1 PCIe x1 |
| | LPC | 1 | - |
| | I$^2$C | 1 | 2 |
| | SMBus | 1 | - |
| | CAN Bus | - | 1 |
| Audio | Interface | HD Audio | I2S |
| Ethernet | Controller | 1 Intel® I211 / 1 Intel® I210 | 1 Atheros AR8033 |
| I/O | USB | 1 USB 3.2, 6 USB 2.0 | 4 USB 2.0, 1 USB OTG |
| | SATA | 2 SATA 2.0 | 1 SATA 2.0 |
| | eMMC | 1 x 8GB/16GB/32GB eMMC (Opt.) | 1 x 4GB*/8GB/16GB eMMC |
| | DIO | - | 1 SDIO |
| | SD | Optional | 1 microSD onboard |
| TPM | | Optional | - |
| Power | | VCC-RTC, 5V standby, 5V | VCC-RTC, 5V standby, 5V |
| Operating Temperature | | -40°C~85°C, -20°C~70°C, 0°C~60°C | -20°C~70°C |

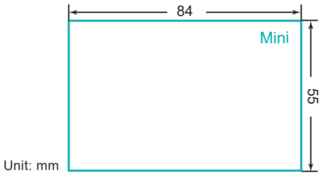
*Populated by default

# COM Express Mini

Power-Saving & Small-Size Solutions

## *Features*

COM Express® Mini module delivers high performance on a small footprint which features 55 x 84 mm in size. It is ideal for space-limited, power-saving and mobile applications. DFI's ultra-small modules are available with COM Express® pin-out Type 10.



| | | Wide Temp ULT | Wide Temp ULT | Wide Temp Atom | Wide Temp Atom |
|---|---|---|---|---|---|
| **Model Name** | | **TGU9A2** | **WL9A3** | **ASL9A2** | **EHL9A2** |
| Compliance | | COM Express® R3.0 Mini, Type 10 | COM Express® R3.0 Mini, Type 10 | COM Express® R3.1 Mini, Type 10 | COM Express® R3.0 Mini, Type 10 |
| System | Processor | 11th Gen Intel® Core™ | 8th Gen Intel® Core™ | Intel® Atom® Processor Amston Lake Alder Lake-N Series | Intel® Atom® Processor Elkhart Lake Series |
| | Socket | BGA1526 | FCBGA 1528 | BGA 1264 | FCBGA 1528 |
| | Max. Speed | up to 3.0GHz(Turbo) | 3.9~4.4GHz | 3.2~3.8GHz | 1.7~4.4GHz |
| | TDP | 15W | 15W | 6W/9W/10W/12W/15W | 6W/9W/10W/12W |
| | Cache | 4M/6M/8M/12M | 4M/6M/8M | 6M | 4M/6M/8M |
| | BIOS | AMI SPI 256Mbit | AMI SPI 128Mbit | AMI SPI 256Mbit | AMI SPI 256Mbit |
| Memory | Technology | Single Channel LPDDR4X 4266MHz | Dual Channel LPDDR3 2133MHz | Dual Channel LPDDR5 4800MHz | Dual Channel LPDDR4X 3733/4267MHz |
| | Max. Capacity | 8GB/16GB | 8GB/16GB | 16GB | 8GB/16GB |
| | Socket | Memory down | Memory down | Memory down | - |
| Graphics | Interface | 1 eDP, 1 DDI | 1 LVDS*/eDP, 1 DDI | 1 LVDS*/eDP, 1 DDI | 1 LVDS*/eDP, 1 DDI |
| Expansion | PCIe | 4 PCIe x1 | 4 PCIe x1 | 4 PCIe x1 | 4 PCIe x1 |
| | SDIO | - | 1 | - | 1 (Opt.) |
| | LPC | - | 1 | 1 | 1 |
| | I$^2$C | 1 | 2 | 1 | 1 |
| | SMBus | 1 | 1 | 1 | 1 |
| | CAN Bus | - | - | - | - |
| Audio | Interface | HD Audio | HD Audio | HD Audio | HD Audio |
| Ethernet | Controller | 1 Intel® I225IT | 1 Intel® I219 | 1 Intel® I226IT/LM | 1 Intel® I225IT/LM |
| I/O | USB | 2 USB 3.2, 8 USB 2.0 | 2 USB 3.2, 8 USB 2.0 | 2 USB 3.2 Gen2, 8 USB 2.0 | 2 USB 3.2, 8 USB 2.0 |
| | SATA | 2 SATA 3.0 | 2 SATA 3.0 | 2 SATA 3.0 | 2 SATA 3.0 |
| | SSD | 1 x 64GB/128GB/256GB/512GB/ 1024GB on board SSD (Opt.) | - | - | - |
| | eMMC | - | 1 4GB/8GB/16GB/32GB/64GB eMMC (Opt.) | 1 eMMC 5.1 8GB/16GB/32GB/64GB/128GB (Opt.) | 1 eMMC 5.1 8GB/16GB/32GB/64GB/128GB (Opt.) |
| | DIO | 8-bit DIO | 8-bit DIO | 8-bit DIO | 8-bit DIO |
| | SD | - | Optional | - | 1 |
| TPM | | dTPM or fTPM (Opt.) | fTPM | dTPM or fTPM (Opt.) | dTPM or fTPM (Opt.) |
| Power | | 4.75V~20V, 5VSB, VCC-RTC (ATX mode), 4.75V~20V, VCC-RTC (AT mode) | 12V~20V, 5VSB, VCC-RTC (ATX mode) 12V~20V, VCC-RTC (AT mode) | 4.75V~20V, 5VSB, VCC-RTC (ATX mode) 4.75V~20V, VCC-RTC (AT mode) | 4.75V~20V, 5VSB, VCC-RTC (ATX mode) 4.75V~20V, VCC-RTC (AT mode) |
| Operating Temperature | | -40°C~85°C, -5°C~65°C | -30°C~85°C, 0°C~60°C | -40°C~85°C, -5°C~65°C | -40°C~85°C, -5°C~65°C |

*Populated by default

Wide Temp Atom

Wide Temp Atom

Wide Temp Atom

| **Model Name** | | **AL9A2** | **AL9A3** | **AL9A8** |
|---|---|---|---|---|
| Compliance | | COM Express® R2.1 Mini, Type 10 | COM Express® R2.1 Mini, Type 10 | COM Express® R3.0 Mini, Type 10 |
| System | Processor | Intel® Atom® E3900 / Intel® Pentium® N4200 | Intel ®Atom® E3900 / Intel® Pentium® N4200 | Intel® Atom® E3900 / Intel® Pentium® N4200 |
| | Socket | BGA 1296 | BGA 1296 | BGA 1296 |
| | Max. Speed | 1.8~2.5GHz | 1.8~2.5GHz | 1.8~2.5GHz |
| | TDP | 6W/6.5W/9.5W/12W | 6W/6.5W/9.5W/12W | 6W/6.5W/9.5W/12W |
| | Cache | 2M | 2M | 2M |
| | BIOS | AMI SPI 128Mbit (supports UEFI boot only) | AMI SPI 128Mbit | AMI SPI 128Mbit (supports UEFI boot only) |
| Memory | Technology | Single Channel DDR3L 1600MHz | Dual Channel DDR3L 1600MHz | Dual Channel LPDDR4 2400MHz |
| | Max. Capacity | 4GB non-ECC / 8GB ECC | 4GB / 8GB | 4GB / 8GB |
| | Socket | Memory down | Memory down | Memory down |
| Graphics | Interface | 1 LVDS*/eDP, 1 DDI | 1 LVDS*/eDP, 1 DDI | 1 LVDS*/eDP, 1 DDI |
| Expansion | PCIe | 4 PCIe x1 | 4 PCIe x1 | 4 PCIe x1 |
| | SDIO | 1 (Opt.) | 1 (Opt.) | 1 (Opt.) |
| | LPC | 1 | 1 | 1 |
| | I$^2$C | 2 | 1 | 1 |
| | SMBus | 1 | 1 | 1 |
| | CAN Bus | - | - | - |
| Audio | Interface | HD Audio | HD Audio | HD Audio |
| Ethernet | Controller | 1 Intel® I210AT/IT | 1 Intel® I210AT/IT | 1 Intel® I210AT/IT |
| I/O | USB | 2 USB 3.2, 8 USB 2.0 | 2 USB 3.2, 8 USB 2.0 | 2 USB 3.2, 8 USB 2.0 |
| | SATA | 2 SATA 3.0 | 2 SATA 3.0 | 2 SATA 3.0 |
| | SSD | - | 1 4GB/8GB/16GB/32GB/64GB SSD (Opt.) | - |
| | eMMC | 1 8GB/16GB/32GB/64GB eMMC (Opt.) | - | 1 x eMMC up to 128GB |
| | DIO | 8-bit DIO | 8-bit DIO | 6-bit DIO |
| | SD | Optional | Optional | Optional |
| TPM | | - | - | dTPM or fTPM (Opt.) |
| Power | | 4.75V~20V, 5VSB, VCC-RTC (ATX mode)<br>4.75V~20V, VCC-RTC (AT mode) | 4.75V~20V, 5VSB, VCC-RTC (ATX mode)<br>4.75V~20V, VCC-RTC (AT mode) | 4.75V~20V, 5VSB, VCC-RTC (ATX mode)<br>4.75V~20V, VCC-RTC (AT mode) |
| Operating Temperature | | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C |

*Populated by default

Wide Temp Atom

Wide Temp AMD R1000

| **Model Name** | | **BT9A3** | **GH9A3** |
|---|---|---|---|
| Compliance | | COM Express® R2.1 Mini, Type 10 | COM Express® R3.0 Mini, Type 10 |
| System | Processor | Intel® Atom® E3800 | AMD® Ryzen™ Embedded R1000 Series |
| | Socket | BGA 1170 | FP5 |
| | Max. Speed | 1.46~2.41GHz | up to 3.5GHz (Turbo) |
| | TDP | 5W/7.5W/8W/10W | 12W |
| | Cache | 0.5M/1M/2M | 1M |
| | BIOS | AMI SPI 64Mbit | SPI 64Mbit |
| Memory | Technology | Single Channel DDR3L 1333MHz | Single Channel DDR4 2400MHz |
| | Max. Capacity | 2GB / 4GB | 4GB / 8GB |
| | Socket | ECC Memory down | Memory down |
| Graphics | Interface | 1 LVDS, 1 DDI | 1 LVDS*/eDP, 1 DDI |
| Expansion | PCIe | 3 PCIe x1 | 3 PCIe x1 |
| | SDIO | - | 1 |
| | LPC | 1 | 1 |
| | I$^2$C | 1 | 2 |
| | SMBus | 1 | 1 |
| | CAN Bus | - | - |
| Audio | Interface | HD Audio | HD Audio |
| Ethernet | Controller | 1 Intel® I210AT/IT | 1 Intel® I210 |
| I/O | USB | 1 USB 3.2, 8 USB 2.0 | 2 USB 3.2, 8 USB 2.0 |
| | SATA | 2 SATA 2.0 | 2 SATA 3.0 |
| | SSD | - | - |
| | eMMC | 1 4GB/8GB/16GB/32GB eMMC (Opt.) | Optional |
| | DIO | 8-bit DIO | 8-bit DIO |
| | SD | - | - |
| TPM | | - | dTPM or fTPM (Opt.) |
| Power | | 4.75V~20V, 5VSB, VCC-RTC (ATX mode)<br>4.75V~20V, VCC-RTC (AT mode) | 12V~20V, 5VSB, VCC-RTC (ATX mode)<br>12V~20V, VCC-RTC (AT mode) |
| Operating Temperature | | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C |

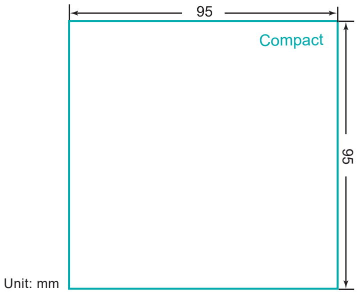
*Populated by default

# COM Express Compact

Reliable & Compact Solutions

## *Features*

COM Express® Compact module is designed with computing capability and cost efficiency in a compact form factor with a footprint of 95 x 95 mm, making it the best Option for transportation and defense applications. DFI's Compact modules are available with COM Express® pin-out Type 2 and Type 6.



| | | Wide Temp  ULT | Wide Temp  ULT | Wide Temp  ULT |
|---|---|---|---|---|
| **Model Name** | | **MTH968** | **RPP968** | **ADP968** |
| Compliance | | COM Express® R3.1 Compact, Type 6 | COM Express® R3.1 Compact, Type 6 | COM Express® R3.1 Compact, Type 6 |
| System | Processor | 14th Gen Intel® Core™ | 13th Gen Intel® Core™ | 12th Gen Intel® Core™ |
| | Socket | FCBGA1744 | FCBGA1744 | FCBGA1744 |
| | Max. Speed | 1.1~2.7GHz | 1.1~2.7GHz | 1.0~1.8GHz |
| | TDP | 15W/28W/45W | 15W/28W/45W | 15W/28W |
| | Cache | 12M/24M | 8M/10M/12M/18M/24M | 8M/10M/12M/18M |
| | Chipset | - | - | - |
| | BIOS | AMI BIOS | AMI BIOS | AMI BIOS |
| Memory | Technology | Dual Channel DDR5 5600MHz | Dual Channel DDR5 4800MHz | Dual Channel DDR4 3200MHz |
| | Max. Capacity | 64GB | 64GB | 64GB |
| | Socket | 2 SODIMM | 2 SODIMM | 2 SODIMM |
| Graphics | Interface | 1VGA, 1LVDS*/eDP, 3DDI | 1VGA, 1LVDS*/eDP, 3DDI | 1VGA, 1LVDS*/eDP, 3DDI |
| Expansion | PCIe | 2 PCIe x4, 5 PCIe x1, 1 PCIe x8 | 2 PCIe x4, 5 PCIex1 | 2 PCIe x4, 5 PCIex1 |
| | PCI | - | - | - |
| | LPC | - | - | - |
| | I²C | 1 | 1 | 1 |
| | SMBus | 1 | 1 | 1 |
| | CAN Bus | - | - | - |
| Audio | Interface | HD Audio | HD Audio | HD Audio |
| Ethernet | Controller | 1 Intel® I226, co-lay PCIe x1 (Opt.) | 1 Intel® I226, co-lay PCIe x1 (Opt.) | 1 Intel® I225, co-lay PCIe x1 (Opt.) |
| I/O | USB | 4 USB 3.2, 8 USB 2.0 | 4 USB 3.2, 8 USB 2.0 | 4 USB 3.2 Gen2, 8 USB 2.0 |
| | SATA | 2 SATA 3.0 | 2 SATA 3.0 | 2 SATA 3.0 |
| | IDE | - | - | - |
| | SSD | 1 x 64GB/128GB/256GB/512GB/1024GB on board SSD (Opt.) | 1 x 64GB/128GB/256GB/512GB/1024GB on board SSD (Opt.) | 1 x 64GB/128GB/256GB/512GB/1024GB on board SSD (Opt.) |
| | eMMC | - | - | - |
| | DIO | 8-bit DIO | 8-bit DIO | 8-bit DIO |
| | SD | - | - | - |
| TPM | | Optional | Optional | Optional |
| iAMT | | - | - | - |
| Power | | 8.5~20V, 5VSB, VCC-RTC (ATX mode)<br>8.5~12V, VCC-RTC (AT mode) | 8.5~20V, 5VSB, VCC-RTC (ATX mode)<br>8.5~12V, VCC-RTC (AT mode) | 8.5~20V, 5VSB, VCC-RTC (ATX mode)<br>8.5~20V, VCC-RTC (AT mode) |
| Operating Temperature | | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C |

*Populated by default

Wide Temp  ULT
Wide Temp  ULT
Wide Temp  ULT

| Model Name | | TGU968 | WL968 | KU968 |
|---|---|---|---|---|
| Compliance | | COM Express® R3.0 Compact, Type 6 | COM Express® R3.0 Compact, Type 6 | COM Express® R2.1 Compact, Type 6 |
| System | Processor | 11th Gen Intel® Core™ | 8th Gen Intel® Core™ | 7th Gen Intel® Core™ |
| | Socket | FCBGA 1449 | FCBGA 1528 | BGA 1356 |
| | Max. Speed | 1.5~4.4GHz | 2.0~4.4GHz | 2.2~3.9GHz |
| | TDP | 15-28W | 15W | 15W |
| | Cache | 4M~12M | 2M/4M/6M/8M | 2M/3M/4M |
| | Chipset | - | - | - |
| | BIOS | AMI BIOS | AMI SPI 128Mbit | Insyde SPI 128Mbit |
| Memory | Technology | Dual Channel DDR4 3200MHz | Dual Channel DDR4 2400MHz | Dual Channel DDR4 2133MHz |
| | Max. Capacity | 64GB | 64GB | 4GB / 8GB / 16GB |
| | Socket | 2 SODIMM | 2 SODIMM | Memory down |
| Graphics | Interface | 1 VGA*/DDI, 1 LVDS*/eDP, 3 DDI | 1 VGA*/DDI, 1 LVDS*/eDP, 1 DDI | 1 VGA*/DDI, 1 LVDS*/eDP, 1 DDI |
| Expansion | PCIe | 8 PCIe x1 + 1 PCIe x4 | 6 PCIe x1<br>2 PCIe x1 + 1 PCIe x4<br>3 PCIe x1 + 2 PCIe x2 | 5 PCIe x1<br>4 PCIe x1 + 1 PCIe x4<br>3 PCIe x1 + 2 PCIe x2 |
| | PCI | - | - | - |
| | LPC | - | 1 | 1 |
| | I²C | 1 | 1 | 1 |
| | SMBus | 1 | 1 | 1 |
| | CAN Bus | - | - | - |
| Audio | Interface | HD Audio | HD Audio | HD Audio |
| Ethernet | Controller | 1 Intel® I225 | 1 Intel® I219 | 1 Intel® I219 |
| I/O | USB | 4 USB 3.2, 8 USB 2.0 | 4 USB 3.2, 8 USB 2.0 | 4 USB 3.2, 8 USB 2.0 |
| | SATA | 2 SATA 3.0 | Up to 3 SATA 3.0 (RAID) (Opt.) | 3 SATA 3.0 (RAID) |
| | IDE | - | - | - |
| | SSD | 1 x 64GB/128GB/256GB/512GB/1024GB on board SSD (Opt.) | - | - |
| | eMMC | - | eMMC 5.1 8GB/16GB/32GB/64GB/128GB (Opt.) | - |
| | DIO | 8-bit DIO | 8-bit DIO | 8-bit DIO |
| | SD | - | - | - |
| TPM | | Optional | Optional | Optional |
| iAMT | | - | iAMT 12.0 (Core i7/i5) | iAMT 11.0 (Core i7/i5) |
| Power | | 8.5~20V, 5VSB, VCC-RTC (ATX mode)<br>8.5~20V, VCC-RTC (AT mode) | 12V, 5VSB, VCC-RTC (ATX mode)<br>12V, VCC-RTC (AT mode) | 12V, 5VSB, VCC-RTC (ATX mode)<br>12V, VCC-RTC (AT mode) |
| Operating Temperature | | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C |

*Populated by default

Wide Temp  ULT
Wide Temp  Atom
Wide Temp  Atom

| Model Name | | SU968 | AL968 | BT968 |
|---|---|---|---|---|
| Compliance | | COM Express® R2.1 Compact, Type 6 | COM Express® R2.1 Compact, Type 6 | COM Express® R2.1 Compact, Type 6 |
| System | Processor | 6th Gen Intel® Core™ | Intel® Atom® E3900 / Intel® Pentium® N4200 | Intel® Atom® E3800 |
| | Socket | BGA 1356 | BGA 1296 | BGA 1170 |
| | Max. Speed | 2~3.4GHz | 1.8~2.5GHz | 1.46~2.41GHz |
| | TDP | 15W | 6W/6.5W/9.5W/12W | 5W/7.5W/8W/10W |
| | Cache | 2M/3M/4M | 2M | 0.5M/1M/2M |
| | Chipset | - | - | - |
| | BIOS | Insyde SPI 128Mbit | AMI SPI 128Mbit (supports UEFI boot only) | AMI SPI 64Mbit |
| Memory | Technology | Dual Channel DDR3L 1600MHz | Dual Channel DDR3L 1600MHz | Dual/Single Channel DDR3L 1066/1333MHz |
| | Max. Capacity | 16GB | 8GB | 4GB / 8GB |
| | Socket | 2 SODIMM | 2 SODIMM | 1 or 2 SODIMM |
| Graphics | Interface | 1 VGA*/DDI, 1 LVDS*/eDP, 1 DDI | 1 VGA*/DDI, 1 LVDS*/eDP, 1 DDI | 1 VGA, 1 LVDS*/DDI, 1 DDI |
| Expansion | PCIe | 5 PCIe x1<br>4 PCIe x1 + 1 PCIe x4<br>3 PCIe x1 + 2 PCIe x2 | 4 PCIe x1 | 3 PCIe x1 or 1 PCIe x4 |
| | PCI | - | - | - |
| | LPC | 1 | 1 | 1 |
| | I²C | 1 | 1 | 1 |
| | SMBus | 1 | 1 | 1 |
| | CAN Bus | - | - | - |
| Audio | Interface | HD Audio | HD Audio | HD Audio |
| Ethernet | Controller | 1 Intel® I219 | 1 Intel® I211 / 1 Intel® I210 | 1 Intel® I210 |
| I/O | USB | 4 USB 3.2, 8 USB 2.0 | 4 USB 3.2, 8 USB 2.0 | 1 USB 3.2, 8 USB 2.0 |
| | SATA | 3 SATA 3.0 (RAID) | 2 SATA 3.0 | 2 SATA 2.0 |
| | IDE | - | - | - |
| | SSD | - | - | - |
| | eMMC | - | 1 x 8GB/16GB/32GB eMMC (Opt.) | 1 x 4GB/8GB/16GB/32GB eMMC (Opt.) |
| | DIO | 8-bit DIO | 8-bit DIO | 8-bit DIO |
| | SD | - | - | - |
| TPM | | Optional | Optional | Optional |
| iAMT | | iAMT 11.0 (Core i7/i5) | - | - |
| Power | | 12V, 5VSB, VCC-RTC (ATX mode)<br>12V, VCC-RTC (AT mode) | 12V, 5VSB, VCC-RTC (ATX mode)<br>12V, VCC-RTC (AT mode) | 12V, 5VSB, VCC-RTC (ATX mode)<br>12V, VCC-RTC (AT mode) |
| Operating Temperature | | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C | -40°C~85°C, -20°C~70°C, 0°C~60°C |

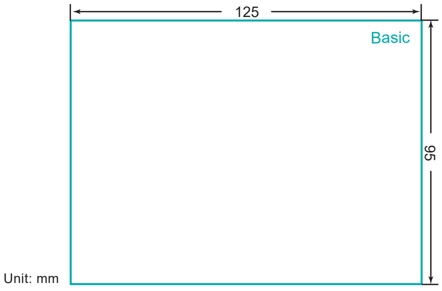
*Populated by default

# COM Express Basic

High-Performance & Cost-Effective Solutions

## Features

COM Express® Basic module provides high-level processing performance and high-speed interfaces for a wide range of computing-demand applications such as medical, transportation, and industrial automation. DFI's Basic modules are compatible with COM Express® pin-out Type 2, Type 6 and Type 7.



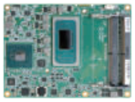

Wide Temp
Server

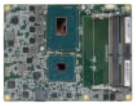

Wide Temp
Server


Wide Temp
Atom

| **Model Name** | | **RBT970** | **ICD970** | **DV970** |
|---|---|---|---|---|
| Compliance | | COM Express® R3.1 Basic Type 7 | COM Express® R3.0 Basic Type 7 | COM Express® R3.0 Basic Type 7 |
| System | Processor | AMD® Ryzen™ Embedded V3000 Series processors | 3rd Gen Intel® Xeon® Processor D-1700 Family | Intel® Atom® C3000 |
| | Socket | FP7r2 | FCLGA4189 | BGA 1310 |
| | Max. Speed | 1.9~3.5GHz | 1.9~2.4GHz | 1.7~2.0GHz |
| | TDP | 15W/45W | 40W/50W/52W/59W/67W | 17W/25W/31W |
| | Cache | - | 10M/15M | 12M/16M |
| | Chipset | - | - | - |
| | BIOS | AMI SPI 256Mbit | Insyde SPI 512Mbit | Insyde SPI 128Mbit |
| Memory | Technology | Dual Channel DDR5 4800MHz | Dual Channel DDR4 2666/2933MHz | Dual Channel DDR4 2400MHz |
| | Max. Capacity | 64GB | 64GB | 64GB |
| | Socket | 2 SODIMM | 2 SODIMM | 2 SODIMM |
| Graphics | Interface | - | - | - |
| Expansion | PCIe | 1 PCIe x14 (Gen 4) | 2 PCIe x8 (Gen3), 1 PCIe x16 (Gen4) | 2 PCIe x8 |
| | LPC | 1 | 1 | 1 |
| | I²C | 1 | 1 | 1 |
| | SMBus | 1 | 1 | 1 |
| | CAN Bus | - | - | - |
| Audio | Interface | - | - | - |
| Ethernet | Controller | 2 10G Ethernet, 1 2.5G Ethernet | 1 Intel® I210AT/IT | 1 Intel® I210, 4 10Gbase-KR |
| I/O | USB | 4 USB 3.2, 4 USB 2.0 | 4 USB 3.2, 4 USB 2.0 | 2 USB 3.2, 4 USB 2.0 |
| | SATA | 2 SATA 3.0 (up to 6Gb/s) | 2 SATA 3.0 (up to 6Gb/s) | 2 SATA 3.0 (RAID) |
| | IDE | - | - | - |
| | SSD | - | - | - |
| | eMMC | - | eMMC 5.1 16GB (Opt.) | - |
| | DIO | 1 x 8-bit DIO<br>(Default 4 inputs and 4 outputs) | 1 x 8-bit DIO<br>(Default 4 inputs and 4 outputs) | 8-bit DIO |
| TPM | | Optional | Optional | Optional |
| iAMT | | - | - | - |
| Power | | 12V, 5VSB, VCC-RTC (ATX mode)<br>12V, VCC-RTC (AT mode) | 12V, 5VSB, VCC-RTC (ATX mode)<br>12V, VCC-RTC (AT mode) | 12V, 5VSB, VCC-RTC (ATX mode)<br>12V, VCC-RTC (AT mode) |
| Operating Temperature | | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C |

*Populated by default





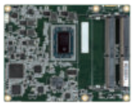
Wide Temp RM590E/QM580E/HM570E

Wide Temp CM246/QM370/HM370

Wide Temp CM246/QM370/HM370

| **Model Name** | | **TGH960** | **CH960-CM246/QM370/HM370** | **CH961-CM246/QM370/HM370** |
|---|---|---|---|---|
| Compliance | | COM Express® R3.0 Basic Type 6 | COM Express® R2.1 Basic Type 6 | COM Express® R2.1 Basic Type 6 |
| System | Processor | 11th Gen Intel® Core™ | 9th/8th Gen Intel® Core™ | 9th/8th Gen Intel® Core™ |
| | Socket | BGA 1787 | BGA 1440 | BGA 1440 |
| | Max. Speed | 3.1~4.7GHz | 2.5~4.4GHz | 2.5~4.5GHz |
| | TDP | 25W/35W/45W | 45W | 45W |
| | Cache | 8M/12M/24M | 2M/4M/6M/8M/9M/12M | 2M/4M/6M/8M/9M/12M |
| | Chipset | Intel® RM590E/QM580E/HM570E | Intel® CM246/QM370/HM370 | Intel® CM246/QM370/HM370 |
| | BIOS | AMI SPI 256Mbit | AMI SPI 128Mbit | AMI SPI 128Mbit |
| Memory | Technology | Dual Channel DDR4 3200MHz ECC support | Dual Channel DDR4 2666MHz | Dual Channel DDR4 2666MHz |
| | Max. Capacity | 128GB | 64GB | 96GB |
| | Socket | 4 SODIMM | 2 SODIMM | 4 SODIMM |
| Graphics | Interface | 1 VGA, 1 LVDS*/eDP, 3 DDI | 1 VGA*/DDI, 1 LVDS*/eDP, 2 DDI | 1 VGA*/DDI, 1 LVDS*/eDP, 2 DDI |
| Expansion | PCIe | 1 PCIe x16 (Gen 4), 8 PCIe x1 (Gen 3) | 1 PCIe x16 / 2 x PCIe x8 / 1 PCIe x8 + 2 PCIe x4 | 1 PCIe x16, 8 PCIe x1 |
| | LPC | 1 | 1 | 1 |
| | I²C | 1 | 1 | 1 |
| | SMBus | 1 | 1 | 1 |
| | CAN Bus | - | - | - |
| Audio | Interface | HD Audio | HD Audio | HD Audio |
| Ethernet | Controller | 1 Intel® I225 series (10/100/1000Mbps/2.5G) | 1 Intel® I219 | 1 Intel® I219 |
| I/O | USB | 4 USB 3.2 Gen2, 8 USB 2.0 | 4 USB 3.2, 8 USB 2.0 | 4 USB 3.2, 8 USB 2.0 |
| | SATA | 4 SATA 3.0 (up to 6Gb/s) support RAID 0/1/5/10 | 4 SATA 3.0 (RAID in CM246 & QM370) | 4 SATA 3.0 (up to 6Gb/s) support RAID 0/1/5/10 |
| | IDE | - | - | - |
| | SSD | (Opt.) NVMe SSD: PCIe x4 Gen4, 64GB~1TB | - | - |
| | eMMC | - | - | - |
| | DIO | 1 x 8-bit DIO (Default 4 inputs and 4 outputs) | 1 x 8-bit DIO (Default 4 inputs and 4 outputs) | 1 x 8-bit DIO (Default 4 inputs and 4 outputs) |
| TPM | | Optional | Optional | Optional |
| iAMT | | iAMT 12.0 (Core i7/i5 in RM590E & QM580E) | iAMT 12.0 (Core i7/i5 in CM246 & QM370) | iAMT 12.0 (Core i7/i5 in CM246 & QM370) |
| Power | | 8.5V~20V, 5VSB, VCC-RTC (ATX mode)<br>8.5V~20V, VCC-RTC (AT mode) | 12V, 5VSB, VCC-RTC (ATX mode),<br>12V, VCC-RTC (AT mode) | 8.5V~20V, 5VSB, VCC-RTC (ATX mode)<br>8.5V~20V, VCC-RTC (AT mode) |
| Operating Temperature | | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C |

*Populated by default



Wide Temp CM236/QM170

Wide Temp AMD

| **Model Name** | | **SH960MD-CM236/QM170** | **GH960** |
|---|---|---|---|
| Compliance | | COM Express® R2.1 Basic, Type 6 | COM Express® R3.0 Basic, Type 6 |
| System | Processor | 6th Gen Intel® Core™ | AMD® Ryzen™ V1000/R1000 Embedded Processors |
| | Socket | BGA 1440 | FP5 BGA |
| | Max. Speed | 1.9~3.5GHz | 3.2~3.8GHz |
| | TDP | 25W/35W/45W | 12-25W/35-54W |
| | Cache | 2M/3M/6M/8M | 1M/2M |
| | Chipset | Intel® CM236/QM170 | - |
| | BIOS | Insyde SPI 128Mbit | Insyde SPI 64Mbit |
| Memory | Technology | Dual Channel DDR4 2400MHz | Dual Channel DDR4 up to 2400/3200MHz |
| | Max. Capacity | 8GB / 16GB | 32GB |
| | Socket | Memory down | 2 SODIMM |
| Graphics | Interface | 1 VGA*/DDI, 1 LVDS*/eDP, 2 DDI | 1 VGA*/DDI, 1 LVDS*/eDP, 2 DDI |
| Expansion | PCIe | 1 PCIe x16 / 2 PCIe x8, 8 PCIe x1 | 1 PCIe x8, 6 PCIe x1 / 2 PCIe x2 / 1 PCIe x4 |
| | LPC | 1 | 1 |
| | I²C | 1 | 1 |
| | SMBus | 1 | 1 |
| | CAN Bus | - | - |
| Audio | Interface | HD Audio | HD Audio |
| Ethernet | Controller | 1 Intel® I210 | 1 Intel® I210 |
| I/O | USB | 4 USB 3.2, 8 USB 2.0 | 4 USB 3.2, 8 USB 2.0 |
| | SATA | 4 SATA 3.0 (up to 6Gb/s) support RAID 0/1/5/10 | 4 SATA 3.0 (up to 6Gb/s) support RAID 0/1/5/10 |
| | IDE | - | - |
| | SSD | - | - |
| | eMMC | - | - |
| | DIO | 8-bit DIO | 8-bit DIO |
| TPM | | Optional | TPM 1.2/2.0 (Opt.) |
| iAMT | | iAMT 11.0 PCIe | - |
| Power | | 12V, 5VSB, VCC-RTC (ATX mode)<br>12V, VCC-RTC (AT mode) | 12V, 5VSB, VCC-RTC (ATX mode),<br>12V, VCC-RTC (AT mode) |
| Operating Temperature | | -40°C~85°C, 0°C~60°C | -40°C~85°C, 0°C~60°C |

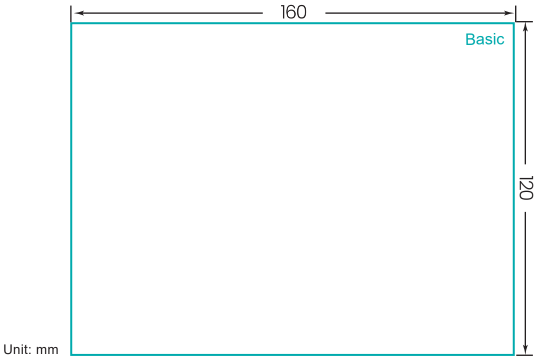
*Populated by default

# COM HPC

Computer on Module High Performance Computing

## Features

Supports high-performance multi-core processors, possesses high-performance edge computing capabilities, and offers flexible expandability, meeting the requirements of various industrial applications. It also supports multiple high-speed interfaces suitable for data-intensive and compute-intensive applications.

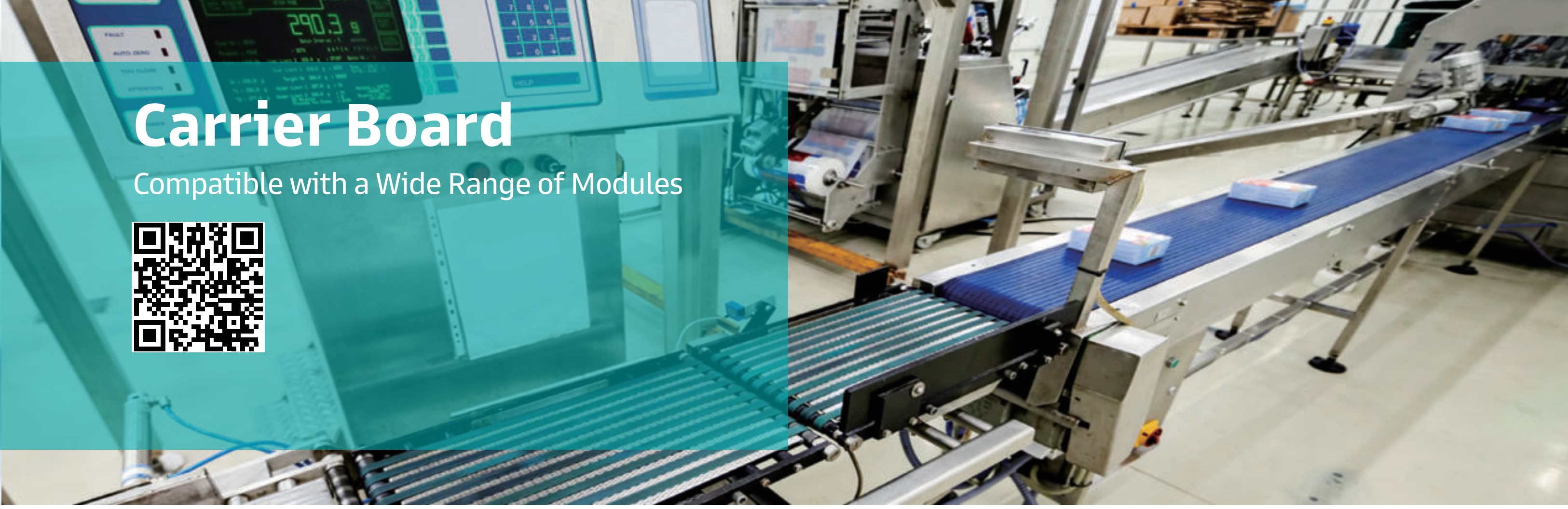


Wide Temp

R680E/Q670E/H610E

| **Model Name** | | **RPS9HC-R680E/Q670E/H610E** |
|---|---|---|
| Compliance | | COM HPC® R1.15, Client Size C |
| System | Processor | 13th Gen Intel® Core™ |
| | Socket | LGA 1700 |
| | Max. Speed | 3.3~5.2GHz |
| | TDP | 35W/60W/65W |
| | Cache | 12M/20M/24M/30M/36M |
| | Chipset | Intel® R680E/Q670E/H610E |
| | BIOS | AMI SPI 256Mbit |
| Memory | Technology | Dual Channel DDR5<br>(ECC support by R680 with i7 and i5) |
| | Max. Capacity | 128GB |
| | Socket | 4 SODIMM |
| Graphics | Interface | 1 eDP, 3 DDI |
| Expansion | PCIe | 1 x PCIe x16 (Gen5)<br>4 x PCIe x4 (Gen4)<br>2 x PCIe x4 (Gen3)<br>2 x PCIe x1 (Gen3) |
| | PCI | - |
| | LPC | - |
| | I$^2$C | 1 |
| | SMBus | 1 |
| | CAN Bus | - |
| Audio | Interface | HD Audio |
| Ethernet | Controller | 2 Intel® I226 |
| I/O | USB | 4 USB 3.2 Gen2, 8 USB 2.0 |
| | SATA | 2 SATA 3.0 (up to 6Gb/s) |
| | DIO | 12 bit in/out |
| TPM | | TPM 2.0 (Opt.) |
| Power | | 12V, 5VSB, VCC-RTC (ATX mode)<br>12V, VCC-RTC (AT mode) |
| Operating Temperature | | 0°C~60°C |

*Populated by default

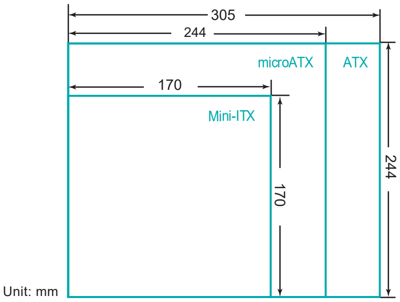


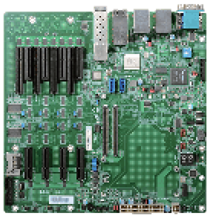
# Carrier Board

Compatible with a Wide Range of Modules

## Features

Our carrier board (also known as base board or evaluation board) offers a flexible engineering development environment for COM Express Type 10, Type 7, Type 6, Type 2, Qseven and SMARC to help our customers minimize installation requirements while reducing design time and cost.



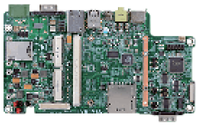


| **Model Name** | | **COM100-B** | **COM335** | **COM333-I** |
|---|---|---|---|---|
| Compliance | | COM Express® R2.1, Type 10 | COM Express® R3.1, Type 6, Type 10 | COM Express® R3.0, Type 7 |
| Form Factor | | Mini-ITX (170 x 170 mm) | microATX (244 x 244 mm) | microATX (244 x 244 mm) |
| Graphics | Connector | 1 LVDS, 1 DP | 1 VGA, 3 DP, 1 LVDS*/eDP, 1 eDP*/LVDS | 1 VGA via BMC |
| Expansion | PCIe, PCI | 1 PCIe x1 | 1 PCIe x16, 1 PCIe x4, 3 PCIe x1 | 8 PCIe x4 / 4 PCIe x8 |
| | Mini PCIe, M.2 | 3 Mini PCIe | 1 M.2 B Key 3042/3052 | - |
| | SIM | 1 | - | - |
| Audio | Audio Codec | Realtek ALC886 | Realtek ALC888S-VD2-GR | - |
| Rear I/O | Ethernet (GbE) | 1 | 1 | 2 GbE, 4 10Gbase-KR(2 RJ45, 2 SFP+) |
| | Serial | 2 RS-232 | - | 1 RS-232 |
| | USB | 2 USB 3.2, 4 USB 2.0 | 3 USB 3.2, 4 USB 2.0 | 4 USB 3.2/2.0 |
| | Display | 1 DP | 3 DP | - |
| | Audio | Mic-in, Line-in, Line-out | Min-in, Line-in,Line-out | - |
| | PS/2 | - | - | - |
| Internal I/O | Serial | 1 (TX/RX) | 1 (TX/RX) | 2 (TX/RX) |
| | USB | - | - | - |
| | Display | 1 LVDS | 1 VGA, 1 LVDS, 1 eDP | - |
| | Audio | Front Audio, S/PDIF | 1 Audio (Line-out/Mic-in), 1 S/PDIF | - |
| | SATA | 1 SATA 3.0 | 4 SATA 3.0 | 2 SATA 3.0 |
| | DIO | 8-bit DIO | 8-bit DIO | 8-bit DIO |
| | LPC | 1 | 1 | 1 |
| | SMBus | 1 | 1 | 1 |
| | I$^2$C | 1 | 1 | 1 |
| Power | | 5~19V DC-in | 4-pin ATX 12V, 24-pin ATX | 4-pin ATX 12V, 24-pin ATX |
| Operating Temperature | | 0°C~60°C | 0°C~60°C | 0°C~60°C |

*Populated by default

| Model Name | | COM332-B(R.A) | COM332-B(R.B1) |
|---|---|---|---|
| Compliance | | COM Express® R2.1, Type 6 | COM Express® R2.1, Type 6 |
| Form Factor | | microATX (244 x 244 mm) | microATX (244 x 244 mm) |
| Graphics | Connector | 1 VGA, 3 DP, 1 LVDS*/eDP, 1 eDP*/LVDS | 1 VGA, 3 DP, 1 LVDS*/eDP, 1 eDP*/LVDS |
| Expansion | PCIe, PCI | 1 PCIe x16, 6 PCIe x1 | 1 PCIe x16, 4 PCIe x1 |
| | Mini PCIe, M.2 | 2 Full-size Mini PCIe | 1 M.2 M Key 2280 |
| | SIM | - | - |
| Audio | Audio Codec | Realtek ALC888S-VD2-GR | Realtek ALC888S-VD2-GR |
| Rear I/O | Ethernet (GbE) | 1 | 1 |
| | Serial | - | - |
| | USB | 4 USB 3.2, 4 USB 2.0 | 4 USB 3.2, 4 USB 2.0 |
| | Display | 3 DP | 3 DP |
| | Audio | Mic-in, Line-in, Line-out | Mic-in, Line-in, Line-out |
| | PS/2 | - | - |
| Internal I/O | Serial | 2 (TX/RX) | 2 (TX/RX) |
| | USB | - | - |
| | Display | 1 VGA, 1 LVDS, 1 eDP | 1 VGA, 1 LVDS, 1 eDP |
| | Audio | Front Audio, S/PDIF | Front Audio, S/PDIF |
| | SATA | 4 SATA 3.0 | 4 SATA 3.0 |
| | DIO | 8-bit DIO | 8-bit DIO |
| | LPC | 1 | 1 |
| | SMBus | 1 | 1 |
| | I$^2$C | - | - |
| Power | | 4-pin ATX 12V, 24-pin ATX | 4-pin ATX 12V, 24-pin ATX |
| Operating Temperature | | 0°C~60°C | 0°C~60°C |

*Populated by default



| Model Name | | Q7X-151(R.A) | Q7X-151(R.D1) | Q7A-551 |
|---|---|---|---|---|
| Compliance | | BT700 | AL700 / AL701 / BT701 | FS700 |
| Form Factor | | Mini-ITX (170 x 170 mm) | Mini-ITX (170 x 170 mm) | Proprietary (190 x 102 mm) |
| Graphics | Connector | 1 LVDS, 1 DP | 1 LVDS, 2 DP, 1 eDP | 1 HDMI, 1 LVDS |
| Expansion | PCIe, PCI | 1 PCIe x4 | 2 PCIe x1 | - |
| | Mini PCIe, M.2 | - | 2 Mini PCIe | 1 Mini PCIe |
| | SIM | - | - | 1 |
| Audio | Audio Codec | Realtek ALC886 | Realtek ALC886 | I2S |
| Rear I/O | Ethernet (GbE) | 1 | 1 | 1 |
| | Serial | 2 RS-232 | 2 RS-232 | 2 RS-232 |
| | USB | 1 USB 3.2, 2 USB 2.0 | 3 USB 3.2, 6 USB 2.0 | 2 USB 2.0, 1 USB Client |
| | Display | 1 DP | 1 DP | 1 HDMI |
| | Audio | Mic-in, Line-in, Line-out | Mic-in, Line-in, Line-out | Line-out / Mic-in |
| | PS/2 | - | - | - |
| Internal I/O | Serial | 1 (TX/RX) | 1 (TX/RX) | 1 RS-232/422/485 |
| | USB | 4 USB 2.0 (Optional) | 2 USB 2.0 (Optional) | - |
| | Display | 1 LVDS | 1 LVDS | 1 LVDS |
| | Audio | - | - | 2 1W audio amplifier connectors (left and right sides) |
| | SATA | 1 SATA 3.0, 1 mSATA | 2 SATA 3.0 | - |
| | DIO | - | - | 12-bit DIO |
| | LPC | 1 | 1 | - |
| | SMBus | 1 | 1 | - |
| | I$^2$C | 1 | 1 | - |
| | CANBus | 1 | 1 | 1 |
| Power | | 12V DC-in | 12V DC-in | 12~36V DC-in |
| Operating Temperature | | 0°C~60°C | 0°C~60°C | 0°C~60°C |

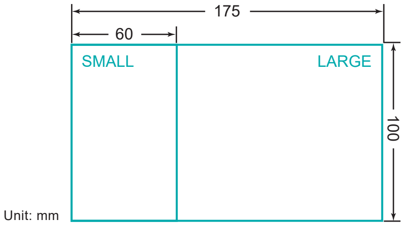
*Populated by default

# SDM

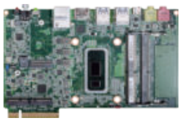
## Compact & Smart Retail Signage Solutions

## Features

Intel® Smart Display Module is for next generation commercial AIO displays and visual IoT devices. Intel® SDM provides the primary compute building block and requires an interface board on the displays or host system to complete platform implementation and provide standard end user physical interfaces.



Large Size: 175mm x 100mm
Small Size: 60mm x 100mm



| **Model Name** | | **SDML-WL** |
|---|---|---|
| Compliance | | SDM Large |
| System | Processor | 8th Gen Intel® Core™ |
| | Socket | FCBGA 1528 |
| | Max. Speed | 2.0~4.4GHz |
| | TDP | 15W |
| | Cache | 2M/4M/6M/8M |
| | Chipset | - |
| | BIOS | AMI Winbond SPI 128Mbit |
| Memory | Technology | Dual Channel DDR4 2400MHz |
| | Max. Capacity | 32GB |
| | Socket | 2 SODIMM |
| Graphics | Interface | 1 DP, 2 HDMI |
| Expansion | PCIe | 1 PCIe x1 for docking, 1 PCIe x4 for M.2 M Key, 1 PCIe x1 for M.2 B Key, 1 PCIe x1 for M.2 E Key |
| | PCI | - |
| | LPC | - |
| | I$^2$C | 1 I$^2$C master, 1 I$^2$C slaver (for docking) |
| | SMBus | - |
| | CAN Bus | - |
| Audio | Interface | Realtek ALC262-VC2-GR |
| Ethernet | Controller | 1 Intel® I219 |
| I/O | USB | 4 USB 3.2 (Type A), 1 USB 3.2 (Type C) |
| | SATA | - |
| | IDE | - |
| | SSD | - |
| | eMMC | - |
| | DIO | - |
| | SD | - |
| TPM | | Optional |
| iAMT | | iAMT 12.0 (Core i7/i5) |
| Power | | 12V DC-in |
| Operating Temperature | | 0°C~60°C |

*Populated by default