



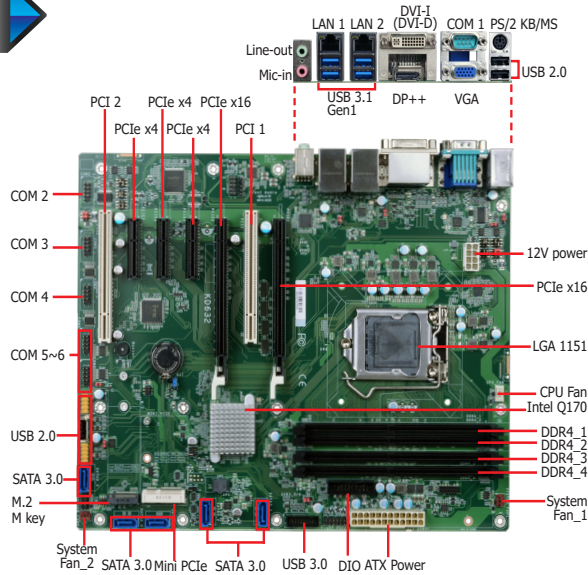
## 6th/7th Gen Intel® Core™ Processor ATX



# KD632-Q170

Desktop

Q170

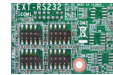


### Features

- 4 DDR4 Non-ECC U-DIMM up to 64GB
- 3 independent displays: VGA + DVI-I (DVI-D signal) + DP++
- DP++ resolution up to 4096x2160 @ 60Hz
- Multiple expansion: 2 PCIe x16 (1 x16 or 2 x8 signal), 3 PCIe x4, 2 PCI, 1 M.2 M key, 1 Mini PCIe
- Rich I/O: 2 Intel GbE, 6 COM, 6 USB 3.1 Gen1, 7 USB 2.0



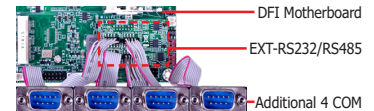
### 2 Extension Modules for Additional 4 COM Ports (via the LPC connector)



EXT-RS232  
- 4 RS232



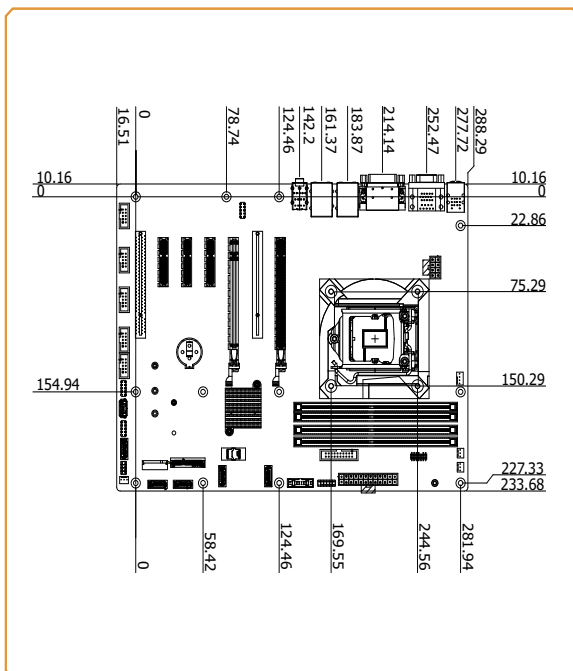
EXT-RS485  
- 4 RS485



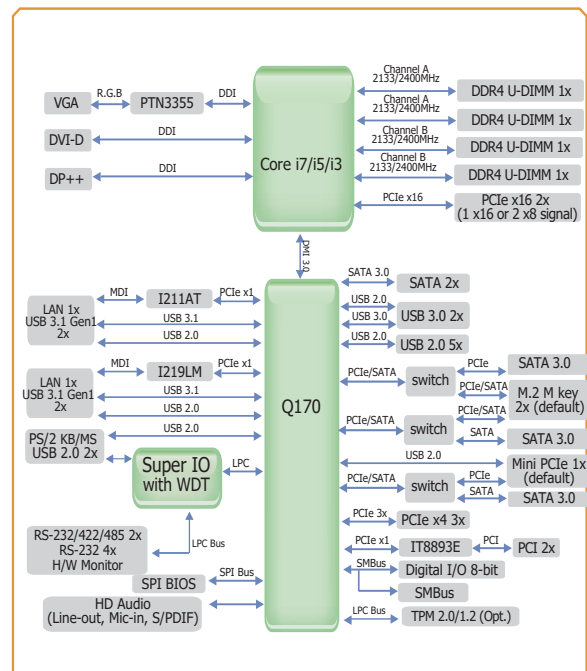
### Ordering Information

| Model Name    | P/N             | Memory   | GbE | RS-232/422/485 | RS-232 | USB 3.1 Gen1 | USB 2.0 | Power      | Thermal | Temp.     |
|---------------|-----------------|----------|-----|----------------|--------|--------------|---------|------------|---------|-----------|
| KD632-Q170CRM | 770-KD6321-000G | 4 U-DIMM | 2   | 2              | 4      | 6            | 7       | 24-pin ATX | Active  | 0 to 60°C |

### Mechanical Drawing



### Block Diagram





## Specifications

|                |                 |                                                                                                                                                                             |                                                                                                                               |
|----------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| SYSTEM         | Processor       | 6th/7th Generation Intel® Core™ /Pentium®/Celeron® LGA 1151 Socket Processors with TDP up to 95W                                                                            |                                                                                                                               |
|                | Chipset         | Intel® Q170 Chipset                                                                                                                                                         |                                                                                                                               |
|                | Memory          | Four 288-pin Non-ECC U-DIMM up to 64GB                                                                                                                                      | Dual Channel DDR4 2133/2400MHz                                                                                                |
|                | BIOS            | Insyde SPI 128Mbit                                                                                                                                                          |                                                                                                                               |
| GRAPHICS       | Controller      | Intel® HD Gen 9 Graphics                                                                                                                                                    |                                                                                                                               |
|                | Feature         | OpenGL 5.0, DirectX 12, OpenCL 2.1<br>HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9<br>HW Encode: MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9       |                                                                                                                               |
|                | Display         | 1 x VGA<br>1 x DVI-I (DVI-D signal)<br>1 x DP++                                                                                                                             | VGA: resolution up to 1920x1200 @ 60Hz<br>DVI-D: resolution up to 1920x1200 @ 60Hz<br>DP++: resolution up to 4096x2160 @ 60Hz |
|                | Triple Displays | VGA + DVI-I (DVI-D signal) + DP++                                                                                                                                           |                                                                                                                               |
| EXPANSION      | Interface       | 2 x PCIe x16 (1 x16 or 2 x8 signal) (Gen 3)<br>3 x PCIe x4 (Gen 3)<br>2 x PCI<br>1 x M.2 2260/2280 M key (SATA3.0/PCIe Gen3 x 2 NVMe)<br>1 x Mini PCIe (PCIe/mSATA/USB 2.0) |                                                                                                                               |
| AUDIO          | Audio Codec     | Realtek ALC888S-VD2-GR                                                                                                                                                      |                                                                                                                               |
| ETHERNET       | Controller      | 1 x Intel® I211AT PCIe (10/100/1000Mbps)<br>1 x Intel® I219LM PCIe with iAMT11.0 (10/100/1000Mbps) (only Core i7/i5 supports iAMT)                                          |                                                                                                                               |
| REAR I/O       | Ethernet        | 2 x GbE (RJ-45)                                                                                                                                                             |                                                                                                                               |
|                | USB             | 4 x USB 3.1 Gen1<br>2 x USB 2.0                                                                                                                                             |                                                                                                                               |
|                | Serial          | 1 x RS-232/422/485 (RS-232 w/ power) (DB-9)                                                                                                                                 |                                                                                                                               |
|                | PS/2            | 1 x PS/2 (mini-DIN-6)                                                                                                                                                       |                                                                                                                               |
|                | Display         | 1 x VGA<br>1 x DVI-I (DVI-D signal)<br>1 x DP++                                                                                                                             |                                                                                                                               |
|                | Audio           | 1 x Line-out, 1 x Mic-in, 1 x Line-in (opt., MOQ required)                                                                                                                  |                                                                                                                               |
|                | Internal I/O    | 1 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch)<br>4 x RS-232 (2.54mm pitch)                                                                                            |                                                                                                                               |
| INTERNAL I/O   | USB             | 2 x USB 3.1 Gen1<br>4 x USB 2.0 + 1 x Vertical USB 2.0 (type A)                                                                                                             |                                                                                                                               |
|                | Audio           | 1 x Front Audio Header<br>1 x S/PDIF                                                                                                                                        |                                                                                                                               |
|                | SATA            | 5 x SATA 3.0 (up to 6Gb/s)<br>(1 SATA shared with mini PCIe (SATA), default at mini PCIe/2 SATA shared with M.2, default at M.2)<br>RAID 0/1/5/10                           |                                                                                                                               |
|                | DIO             | 1 x 8-bit DIO                                                                                                                                                               |                                                                                                                               |
|                | LPC             | 1 x LPC (supports LPC EXT-RS232/RS485 module)                                                                                                                               |                                                                                                                               |
|                | SMBus           | 1 x SMBus                                                                                                                                                                   |                                                                                                                               |
|                | WATCHDOG TIMER  | Output & Interval                                                                                                                                                           |                                                                                                                               |
| SECURITY       | TPM             | Infineon TPM1.2/2.0 (opt., MOQ required)                                                                                                                                    |                                                                                                                               |
| POWER          | Type            | ATX                                                                                                                                                                         |                                                                                                                               |
|                | Connector       | 8-pin ATX 12V power                                                                                                                                                         | 24-pin ATX power                                                                                                              |
|                | Consumption     | TBD                                                                                                                                                                         |                                                                                                                               |
|                | RTC Battery     | CR2032 Coin Cell                                                                                                                                                            |                                                                                                                               |
| OS SUPPORT     |                 | Windows 7 32/64-bit<br>Windows 8.1 64-bit<br>Windows 10 64-bit<br>Linux<br>Note: 7th Gen CPU SKU ONLY support Windows 10 64-bit & Linux.                                    |                                                                                                                               |
| ENVIRONMENT    | Temperature     | Operating: 0 to 60°C<br>Storage: -30 to 60°C with RTC Battery; -40 to 85°C without RTC Battery                                                                              |                                                                                                                               |
|                | Humidity        | Operating: 5 to 90% RH<br>Storage: 5 to 90% RH                                                                                                                              |                                                                                                                               |
|                | MTBF            | 537,588 hrs @ 25°C; 298,813 hrs @ 45°C; 184,762 hrs @ 60°C<br>Calculation model: Telcordia Issue 4<br>Environment: GB, GC – Ground Benign, Controlled                       |                                                                                                                               |
| MECHANICAL     | Dimensions      | ATX Form Factor                                                                                                                                                             | 305mm (12") x 244mm (9.6")                                                                                                    |
|                | Height          | PCB: 1.6mm                                                                                                                                                                  | Top Side: TBD Bottom Side: TBD                                                                                                |
| CERTIFICATIONS |                 | CE, FCC Class B, RoHS                                                                                                                                                       |                                                                                                                               |

## Packing List

|                                                    |                 |
|----------------------------------------------------|-----------------|
| • 1 KD632-Q170 motherboard                         |                 |
| • 1 COM port cables (Length: 400mm, 2 x COM ports) | A81-015026-023G |
| • 1 Serial ATA data cable (Length: 500mm)          | 332-553001-005G |
| • 1 I/O shield                                     | A49-KD6000-000G |
| • 1 M.2 standoff                                   | A33-725019-090G |
| • 1 M.2 screw                                      | A32-112016-041G |

## Optional Items

|                                                 |                 |
|-------------------------------------------------|-----------------|
| • USB 2.0 port cable (Length: 350/398mm)        | A81-001066-016G |
| • USB 3.1 Gen1 port cable (Length: 320mm)       | A81-001052-023G |
| • Front Audio cable                             | A81-022022-016G |
| • DP to HDMI dongle                             | 612-D2H13M-000G |
| • COM port cable (Length: 400mm, 2 x COM ports) | A81-015026-023G |
| • Serial ATA data cable (Length: 500mm, W/LOCK) | 332-553001-005G |
| • Thermal solution (For 35W, Height: 37.3mm)    | A71-103004-000G |
| • Thermal solution (For 65W, Height: 72.8mm)    | 552-200049-000G |
| • Thermal solution (For 95W, Height: 72.8mm)    | 761-103001-000G |
| • LPC EXT-RS232 module (4 x RS232 ports)        | 770-EXTRS1-000G |
| • LPC EXT-RS485 module (4 x RS485 ports)        | 770-EXTRS1-100G |

## Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

### US

[sales@assured-systems.com](mailto:sales@assured-systems.com)

Sales: +1 347 719 4508

Support: +1 347 719 4508

1309 Coffeen Ave  
Ste 1200  
Sheridan  
WY 82801  
USA

### EMEA

[sales@assured-systems.com](mailto:sales@assured-systems.com)

Sales: +44 (0)1785 879 050

Support: +44 (0)1785 879 050

Unit A5 Douglas Park  
Stone Business Park  
Stone  
ST15 0YJ  
United Kingdom

VAT Number: 120 9546 28

Business Registration Number: 07699660