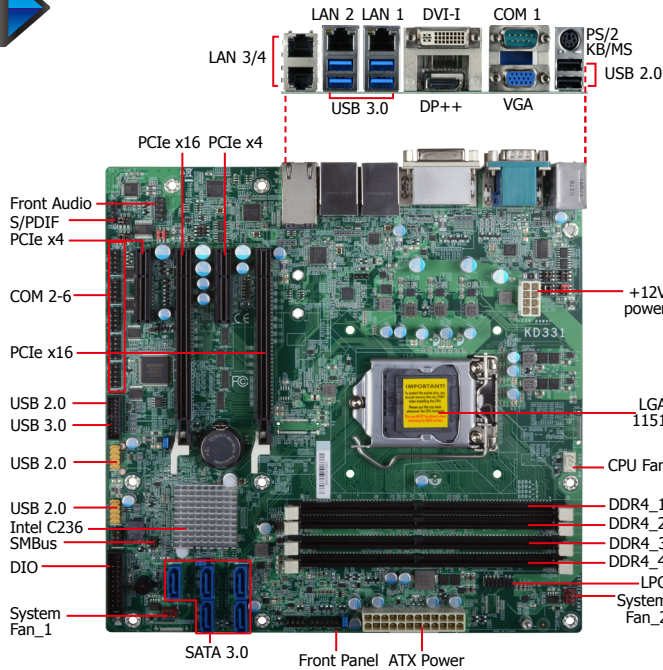


## KD331-Q170

Desktop

C236



### Features

- 4 DDR4 DIMM up to 64GB
- Three independent displays: VGA + DVI-I + DP++
- DP++ resolution up to 4096x2304 @ 60Hz
- Multiple expansion: 2 PCIe x16 (1 x16 or 2 x8 signal), 2 PCIe x4, 1 LPC
- Rich I/O: 4 Intel GbE, 6 COM, 4 USB 3.0, 5 USB 2.0
- LPC EXT-RS232/485 module extends additional 4 COM ports



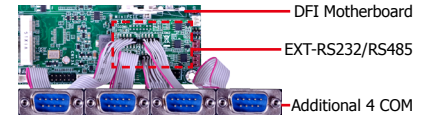
### 2 Extension Modules for Additional 4 COM Ports (via the LPC connector)



EXT-RS232  
- 4 RS232



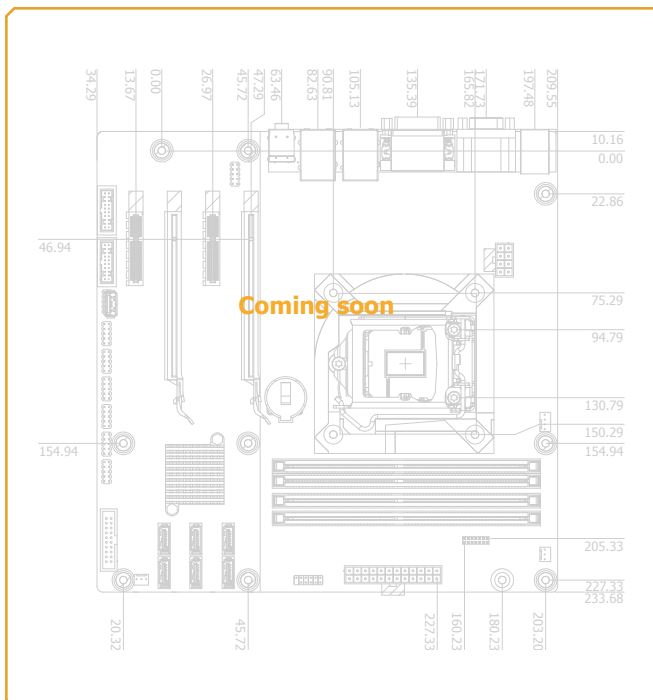
EXT-RS485  
- 4 RS485



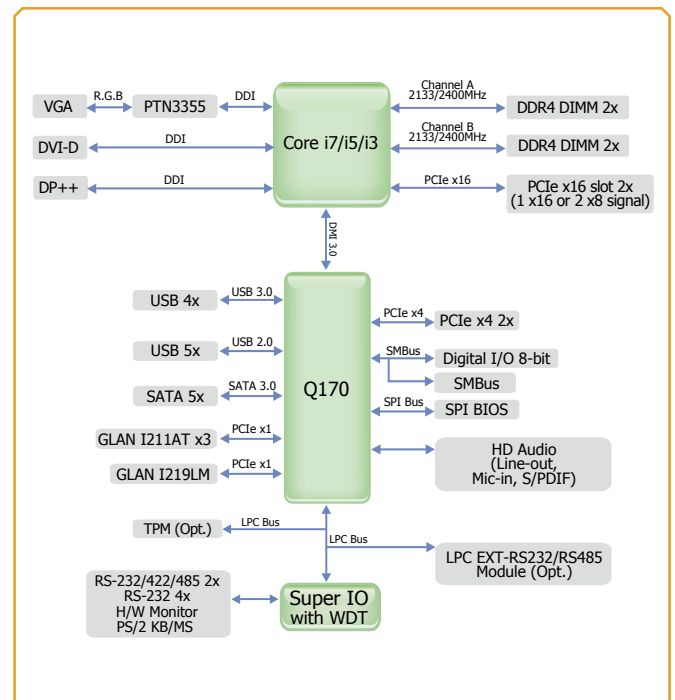
### Ordering Information

| Model Name | P/N | Memory | GbE | RS-232/422/485 | RS-232 | USB 3.0 | USB 2.0 | Power      | Thermal | Temp.     |
|------------|-----|--------|-----|----------------|--------|---------|---------|------------|---------|-----------|
| KD331-Q170 | TBD | 4 DIMM | 4   | 2              | 4      | 4       | 5       | 24-pin ATX | Active  | 0 to 60°C |

### Mechanical Drawing



### Block Diagram



## Specifications

|                |                   |                                                                                                                                                                                                                                                                                        |                                                                                                                               |
|----------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| SYSTEM         | Processor         | 7th Generation Intel® Core™ Processors, LGA 1151 Socket<br>Intel® Core™ i7-7700 Processor, Quad Core, 8M Cache, 3.6GHz (4.2GHz), 65W<br>Intel® Core™ i5-7500 Processor, Quad Core, 6M Cache, 3.4GHz (3.8GHz), 65W<br>Intel® Core™ i3-7101E Processor,Dual Core, 3M Cache, 3.9GHz , 65W |                                                                                                                               |
|                | Chipset           | Intel® Q170 Chipset                                                                                                                                                                                                                                                                    |                                                                                                                               |
|                | Memory            | Four 288-pin DIMM up to 64GB                                                                                                                                                                                                                                                           | Dual Channel DDR4 2133/2400 MHz                                                                                               |
|                | 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-I-D signal)<br>1 x DP++                                                                                                                                                                                                                                      | VGA: resolution up to 1920x1200 @ 60Hz<br>DVI-I: resolution up to 2560x1600 @ 60Hz<br>DP++: resolution up to 4096x2304 @ 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>2 x PCIe x4 (Gen 3)                                                                                                                                                                                                                     |                                                                                                                               |
| AUDIO          | Audio Codec       | Realtek ALC888S-VD2-GR                                                                                                                                                                                                                                                                 |                                                                                                                               |
| ETHERNET       | Controller        | 3 x Intel® I211AT PCIe (10/100/1000Mbps)<br>1 x Intel® I219LM PCIe (10/100/1000Mbps)                                                                                                                                                                                                   |                                                                                                                               |
| REAR I/O       | Ethernet          | 4 x GbE (RJ-45)                                                                                                                                                                                                                                                                        |                                                                                                                               |
|                | USB               | 4 x USB 3.0<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++                                                                                                                                                                                                                                        |                                                                                                                               |
|                |                   |                                                                                                                                                                                                                                                                                        |                                                                                                                               |
| INTERNAL I/O   | Serial            | 1 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch)<br>4 x RS-232 (2.54mm pitch)                                                                                                                                                                                                       |                                                                                                                               |
|                | USB               | 3 x USB 2.0 (2.54mm pitch) + 1 x Vertical USB 2.0 (opt.)                                                                                                                                                                                                                               |                                                                                                                               |
|                | Audio             | 1 x Audio (Line-out/Mic-in)<br>1 x S/PDIF                                                                                                                                                                                                                                              |                                                                                                                               |
|                | SATA              | 5 x SATA 3.0 (up to 6Gb/s)                                                                                                                                                                                                                                                             | 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 | System Reset, Programmable via Software from 1 to 255 Seconds                                                                                                                                                                                                                          |                                                                                                                               |
| SECURITY       | TPM               | Available Upon Request (TPM1.2/2.0)                                                                                                                                                                                                                                                    |                                                                                                                               |
| POWER          | Type              | ATX                                                                                                                                                                                                                                                                                    |                                                                                                                               |
|                | Connector         | 8-pin ATX 12V power                                                                                                                                                                                                                                                                    | 24-pin ATX power                                                                                                              |
|                | Consumption       | TBD                                                                                                                                                                                                                                                                                    |                                                                                                                               |
|                | RTC Battery       | CR2032 Coin Cell                                                                                                                                                                                                                                                                       |                                                                                                                               |
|                |                   |                                                                                                                                                                                                                                                                                        |                                                                                                                               |
| OS SUPPORT     |                   | Windows 10 IoT Enterprise 64-bit                                                                                                                                                                                                                                                       |                                                                                                                               |
| ENVIRONMENT    | Temperature       | Operating: 0 to 60°C                                                                                                                                                                                                                                                                   | Storage: -40 to 85°C                                                                                                          |
|                | Humidity          | Operating: 5 to 90% RH                                                                                                                                                                                                                                                                 | Storage: 5 to 90% RH                                                                                                          |
|                | MTBF              | TBD                                                                                                                                                                                                                                                                                    |                                                                                                                               |
| MECHANICAL     | Dimensions        | microATX form factor                                                                                                                                                                                                                                                                   | 244mm (9.6") x 244mm (9.6")                                                                                                   |
|                | Height            | PCB: TBD                                                                                                                                                                                                                                                                               | Top Side: TBD, Bottom Side: TBD                                                                                               |

## Packing List

|                                                    |     |
|----------------------------------------------------|-----|
| • 1 KD331-Q170 motherboard                         |     |
| • 1 COM port cables (Length: 300mm, 2 x COM ports) | TBD |
| • 1 Serial ATA data cable (Length: 500mm)          | TBD |
| • 1 I/O shield                                     | TBD |
| • 1 DVD                                            |     |

## Optional Items

|                                                 |     |
|-------------------------------------------------|-----|
| • USB 2.0 port cable (Length: 350/398mm)        | TBD |
| • USB 3.0 port cable (Length: 320mm)            | TBD |
| • COM port cable (Length: 300mm, 2 x COM ports) | TBD |
| • Serial ATA data cable (Length: 500mm)         | TBD |
| • Thermal solution (For 35W, Height: 37.3mm)    | TBD |
| • Thermal solution (For 65W, Height: 72.8mm)    | TBD |
| • Thermal solution (For 95W, Height: 69.3mm)    | TBD |
| • LPC EXT-RS232 module (4 x RS232 ports)        | TBD |
| • LPC EXT-RS485 module (4 x RS485 ports)        | TBD |