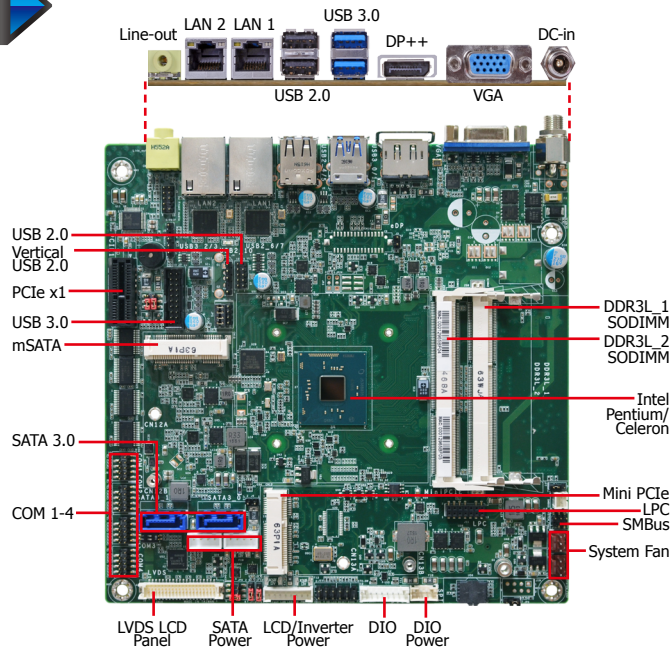


## BW171/BW173

Atom



\* The photos above refer to BW171.

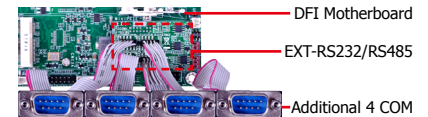
### Features

- 2 DDR3L 1600MHz SODIMM up to 8GB
- Three independent displays: DP++\*/eDP + VGA + LVDS
- DP++ resolution supports up to 3840x2160 @ 30Hz
- Multiple expansion:  
1 PCIe x1, 1 Mini PCIe, 1 mSATA, 1 SIM (Opt.), 1 LPC
- Rich I/O: 2 Intel GbE, 4 COM, 4 USB 3.0, 5 USB 2.0
- LPC EXT-RS232/485 module supports 4 COM ports

\* Populated by default



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

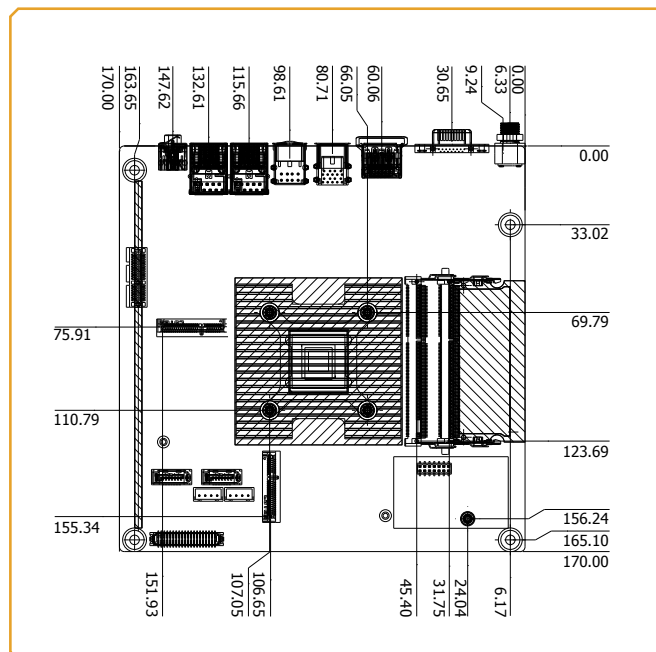


### Ordering Information

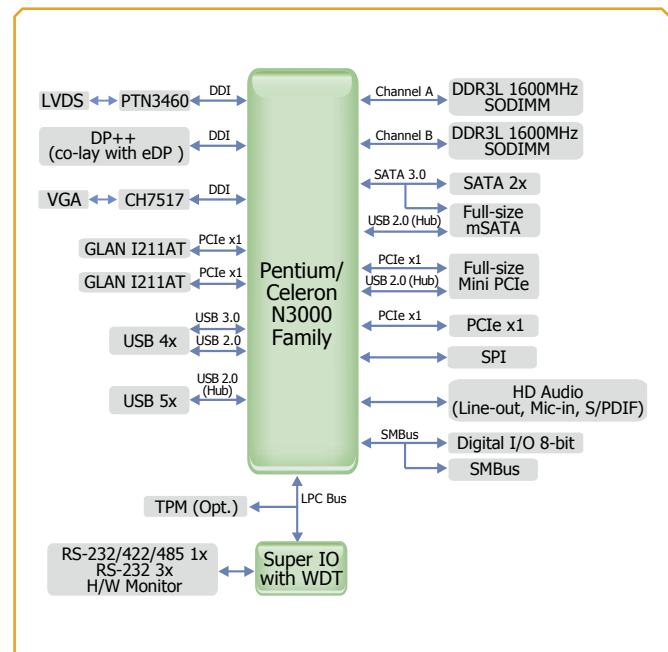
| Model Name     | P/N             | Processor | Memory   | DP++/eDP | GbE | RS-232/422/485 | RS-232 | USB3.0 | USB2.0 | Power     | Thermal | Temp.     |
|----------------|-----------------|-----------|----------|----------|-----|----------------|--------|--------|--------|-----------|---------|-----------|
| BW171-NB-N3710 | 770-BW1711-100G | N3710     | 2 SODIMM | DP++     | 2   | 1              | 3      | 4      | 5      | 12V DC    | Fanless | 0 to 60°C |
| BW171-NB-E8000 | 770-BW1711-200G | x5-E8000  | 2 SODIMM | DP++     | 2   | 1              | 3      | 4      | 5      | 12V DC    | Fanless | 0 to 60°C |
| BW171-NB-N3060 | 770-BW1711-000G | N3060     | 2 SODIMM | DP++     | 2   | 1              | 3      | 4      | 5      | 12V DC    | Fanless | 0 to 60°C |
| BW173-NB-N3710 | 770-BW1731-100G | N3710     | 2 SODIMM | DP++     | 2   | 1              | 3      | 4      | 5      | 15~36V DC | Fanless | 0 to 60°C |
| BW173-NB-E8000 | 770-BW1711-200G | x5-E8000  | 2 SODIMM | DP++     | 2   | 1              | 3      | 4      | 5      | 15~36V DC | Fanless | 0 to 60°C |
| BW173-NB-N3060 | 770-BW1711-000G | N3060     | 2 SODIMM | DP++     | 2   | 1              | 3      | 4      | 5      | 15~36V DC | Fanless | 0 to 60°C |

Note: N3160 and N3010 are supported upon request with MOQ requirement.

### Mechanical Drawing



### Block Diagram



## Specifications

|                     |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                               |
|---------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SYSTEM</b>       | <b>Processor</b>       | Intel® Pentium®/Celeron® Processor N3000 Family, BGA 1170<br>Intel® Atom™ Processor x5-E8000, Quad Core, 2M Cache, 1.04GHz, 5W<br>Intel® Pentium® Processor N3710, Quad Core, 2M Cache, 1.6GHz (2.56GHz), 6W<br>Intel® Celeron® Processor N3160, Quad Core, 2M Cache, 1.6GHz (2.24GHz), 6W<br>Intel® Celeron® Processor N3060, Dual Core, 2M Cache, 1.6GHz (2.48GHz), 6W<br>Intel® Celeron® Processor N3010, Dual Core, 2M Cache, 1.04GHz (2.24GHz), 4W |                                                                                                                                                                                                               |
|                     | <b>Memory</b>          | Two 204-pin SODIMM up to 8GB Dual Channel DDR3L 1600MHz                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                               |
|                     | <b>BIOS</b>            | Insyde SPI 64Mbit                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                               |
|                     | <b>Controller</b>      | Intel® HD Graphics                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                               |
| <b>GRAPHICS</b>     | <b>Feature</b>         | OpenGL 4.2, Direct X 11.1, OpenCL 1.2, OGL ES 3.0<br>HW Decode: H.264, MPEG2, VC1, VP8, H.265, MPEG4<br>HW Encode: H.264, MPEG2, MPEG4                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                               |
|                     | <b>Display</b>         | 1 x VGA<br>1 x LVDS<br>1 x DP++/eDP (eDP available upon request)                                                                                                                                                                                                                                                                                                                                                                                        | VGA: resolution up to 1920x1200 @ 60Hz<br>LVDS: dual channel 48-bit, resolution up to 1920x1200 @ 60Hz<br>DP: resolution up to 3840x2160 @ 30Hz or 2560x1600 @ 60Hz<br>eDP: resolution up to 2560x1440 @ 60Hz |
|                     | <b>Triple Displays</b> | VGA + LVDS + DP++<br>VGA + LVDS + eDP (available upon request)                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                               |
|                     | <b>Interface</b>       | 1 x PCIe x1 (Gen 2)<br>1 x SIM (available upon request)                                                                                                                                                                                                                                                                                                                                                                                                 | 1 x Full-size Mini PCIe (PCIe/USB)<br>1 x Full-size mSATA (USB/SATA)                                                                                                                                          |
| <b>EXPANSION</b>    | <b>Audio Codec</b>     | Realtek ALC888 5.1-channel                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                               |
| <b>AUDIO</b>        | <b>Controller</b>      | 2 x Intel® I211AT PCIe (10/100/1000Mbps)                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                               |
| <b>ETHERNET</b>     | <b>Ethernet</b>        | 2 x GbE (RJ-45)                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                               |
|                     | <b>USB</b>             | 2 x USB 3.0                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2 x USB 2.0                                                                                                                                                                                                   |
|                     | <b>Display</b>         | 1 x VGA                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1 x DP++                                                                                                                                                                                                      |
|                     | <b>Audio</b>           | 1 x Line-out                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                               |
| <b>INTERNAL I/O</b> | <b>Serial</b>          | 1 x RS-232/422/485 (RS-232 w/ power) (2.0mm pitch)<br>3 x RS-232 (2.0mm pitch)                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                               |
|                     | <b>USB</b>             | 2 x USB 3.0 (2.0mm pitch)<br>2 x USB 2.0 (2.0mm pitch)                                                                                                                                                                                                                                                                                                                                                                                                  | 1 x Vertical USB 2.0 (type A)                                                                                                                                                                                 |
|                     | <b>Display</b>         | 1 x LVDS LCD Panel Connector<br>1 x LCD/Inverter Power<br>1 x eDP LCD Panel (available upon request)                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                               |
|                     | <b>Audio</b>           | 1 x Audio (Line-out/Mic-in)<br>1 x S/PDIF                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                               |
|                     | <b>SATA</b>            | 2 x SATA 3.0 (up to 6Gb/s) (SATA port 1 multiplexed with mSATA)<br>2 x SATA Power                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                               |
|                     | <b>DIO</b>             | 1 x 8-bit DIO                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                               |
|                     | <b>LPC</b>             | 1 x LPC (supports LPC EXT-RS232/RS485 module)                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                               |
|                     | <b>SMBus</b>           | 1 x SMBus                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                               |
|                     | <b>WATCHDOG TIMER</b>  | <b>Output &amp; Interval</b><br>System Reset, Programmable via Software from 1 to 255 Seconds                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                               |
|                     | <b>SECURITY</b>        | <b>TPM</b><br>Available Upon Request                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                               |
| <b>POWER</b>        | <b>Type</b>            | Single 12V +/-10% DC (BW171)                                                                                                                                                                                                                                                                                                                                                                                                                            | Wide Range 15~36V (BW173)                                                                                                                                                                                     |
|                     | <b>Connector</b>       | DC-in Jack                                                                                                                                                                                                                                                                                                                                                                                                                                              | Right Angle Connector (4-pin) (available upon request)<br>Vertical Type Connector (4-pin) (available upon request)                                                                                            |
|                     | <b>Consumption</b>     | BW171<br>Typical: N3710:12V @ 0.436A (5.23Watt)<br>Max.: N3710:12V @ 0.658A (7.90Watt)<br>BW173<br>Typical: N3710:19V @ 0.186A (3.53Watt)<br>Max.: N3710:19V @ 0.398A (7.56Watt)                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                               |
|                     | <b>RTC Battery</b>     | Lithium 3V (210mAH)                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                               |
| <b>OS SUPPORT</b>   | <b>Microsoft/Linux</b> | Windows 7 (/WES7) 32/64-bit<br>Windows 8.1 (64-bit)<br>Windows 10 IoT Enterprise 32/64-bit<br>Debian 8 (with VESA graphic driver)<br>CentOS 7 (with VESA graphic driver)<br>Ubuntu 15.10 (Intel graphic driver available)                                                                                                                                                                                                                               |                                                                                                                                                                                                               |
| <b>ENVIRONMENT</b>  | <b>Temperature</b>     | Operating: 0 to 60°C                                                                                                                                                                                                                                                                                                                                                                                                                                    | Storage: -40 to 85°C                                                                                                                                                                                          |
|                     | <b>Humidity</b>        | Operating: 10 to 90% RH                                                                                                                                                                                                                                                                                                                                                                                                                                 | Storage: 10 to 90% RH                                                                                                                                                                                         |
|                     | <b>MTBF</b>            | BW171 : 357,014 hrs @ 25°C; 209,779 hrs @ 45°C ; 132,472 hrs @ 60°C<br>BW173 : 353,593 hrs @ 25°C; 207,418 hrs @ 45°C ; 130,956 hrs @ 60°C<br>Calculation model: Telcordia Issue 2, Method I Case 3<br>Environment: GB, GC – Ground Benign, Controlled                                                                                                                                                                                                  |                                                                                                                                                                                                               |
|                     | <b>MECHANICAL</b>      | <b>Dimensions</b><br>Mini-ITX Form Factor                                                                                                                                                                                                                                                                                                                                                                                                               | 170mm (6.7") x 170mm (6.7")                                                                                                                                                                                   |
|                     | <b>Height</b>          | PCB: 1.6mm                                                                                                                                                                                                                                                                                                                                                                                                                                              | Top Side: TBD, Bottom Side: TBD                                                                                                                                                                               |

## Packing List

|                                                      |                 |
|------------------------------------------------------|-----------------|
| • 1 BW171/BW173 motherboard                          |                 |
| • 1 COM port cable (Length: 250mm, 1 x COM ports)    | A81-015011-001G |
| • 1 Serial ATA data with power cable (Length: 300mm) | A81-002013-000G |
| • 1 DVD                                              |                 |
| • 1 Heat sink (Height: 18.3mm)                       | A71-010026-000G |

## Optional Items

|                                                    |                 |
|----------------------------------------------------|-----------------|
| • USB 2.0 port cable (Length: 200mm)               | A81-001032-016G |
| • USB 3.0 port cable (Length: 200mm)               | A81-001034-016G |
| • COM port cable (Length: 250mm, 1 x COM ports)    | A81-015011-001G |
| • Serial ATA data with power cable (Length: 300mm) | A81-002013-000G |
| • Power adapter (100W, 12V)                        | 671-110001-100G |
| • Power adapter (120W, 19V)                        | 671-112004-100G |
| • LPC EXT-RS232 module (4 x RS232 ports)           | 770-EXTRS1-000G |
| • LPC EXT-RS485 module (4 x RS485 ports)           | 770-EXTRS1-100G |
| • I/O shield                                       | A49-BW1710-000G |
| • DT122 Chassis                                    | 761-DT1220-200G |