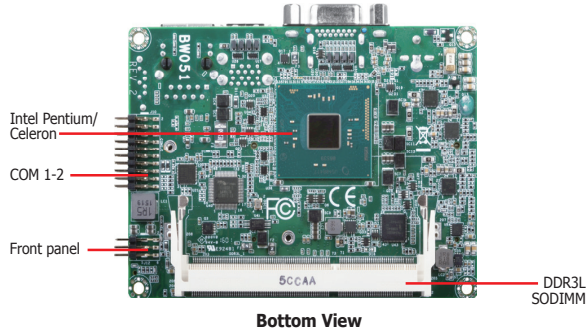
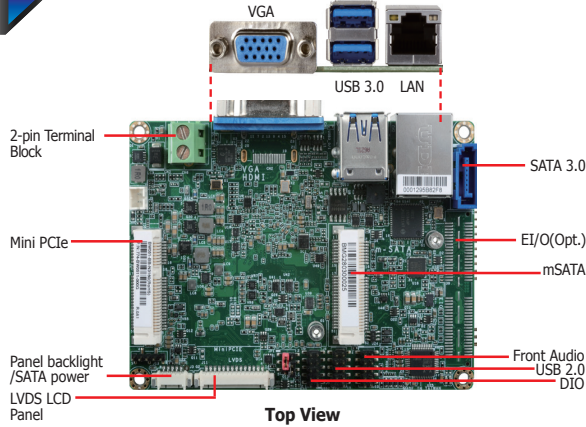




Intel® Pentium®/Celeron® Processor N3000 Family
2.5" Pico-ITX



BW051



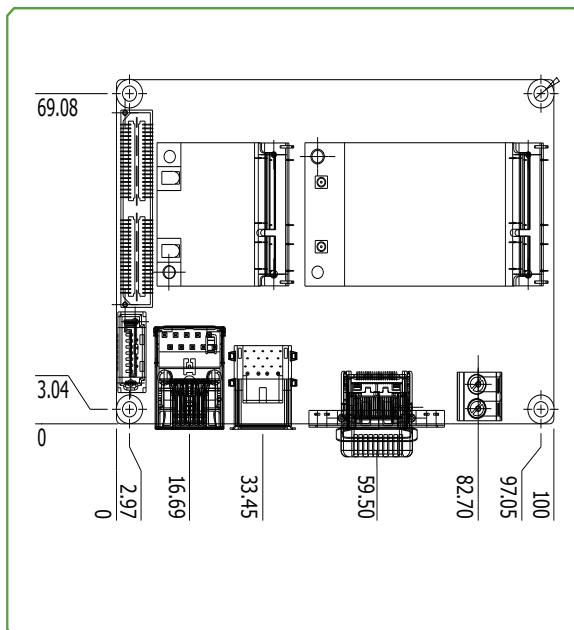
Features

- **Small form factor 2.5" Pico-ITX for space-limited applications**
- **1 DDR3L SODIMM up to 8GB**
- **Dual independent displays: VGA*/HDMI + LVDS**
- **Expansion and Storage: 1 Mini PCIe, 1 mSATA, 1 SATA 3.0**
- **Rich I/O: 1 Intel GbE, 2 COM, 2 USB 3.0, 2 USB 2.0**

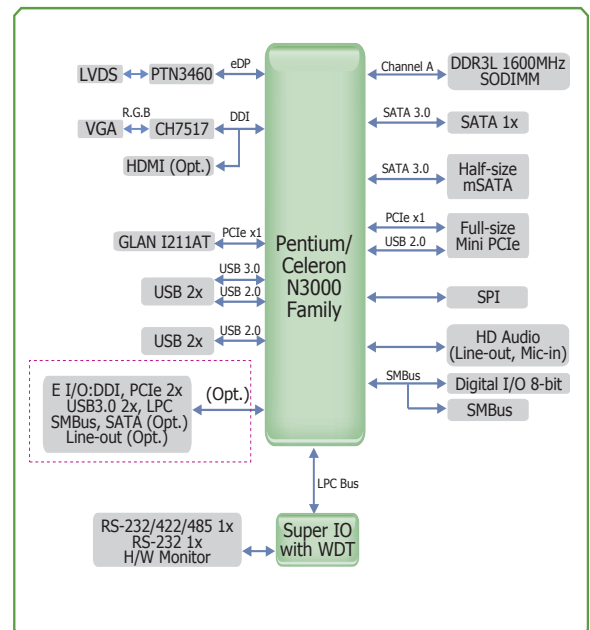
* Populated by default



Mechanical Drawing



Block Diagram





Specifications

SYSTEM	Processor	Intel® Pentium®/Celeron® Processor N3000 Family, BGA 1170 Intel® Atom™ Processor x5-E8000, Quad Core, 2M Cache, 1.04GHz, 5W Intel® Pentium® Processor N3710, Quad Core, 2M Cache, 1.6GHz (2.56GHz), 6W Intel® Celeron® Processor N3160, Quad Core, 2M Cache, 1.6GHz (2.24GHz), 6W Intel® Celeron® Processor N3060, Dual Core, 2M Cache, 1.6GHz (2.48GHz), 6W Intel® Celeron® Processor N3010, Dual Core, 2M Cache, 1.04GHz (2.24GHz), 4W
	Memory	One 204-pin SODIMM up to 8GB Single Channel DDR3L 1600MHz
	BIOS	Insyde SPI 64Mbit
	GRAPHICS	Controller Intel® HD Graphics
GRAPHICS	Feature	OpenGL 4.2, Direct X 11.1, OpenCL 1.2, OGL ES 3.0 HW Decode: H.264, MPEG2, VC1, VP8, H.265, MPEG4 HW Encode: H.264, MPEG2, MPEG4
	Display	1 x VGA/HDMI (HDMI available upon request) 1 x LVDS VGA: resolution up to 1920x1200 @ 60Hz HDMI: resolution up to 1920x1080 @ 60Hz LVDS: single channel 24-bit, resolution up to 1366x768 @ 60Hz
	Dual Displays	VGA + LVDS HDMI + LVDS
EXPANSION	Interface	1 x Half-size mSATA (SATA) 1 x Extension I/O connector (available upon request) 1 x Full-size Mini PCIe (PCIe/USB)
AUDIO	Audio Codec	Realtek ALC888S-VD2-GR
ETHERNET	Controller	1 x Intel® I211AT PCIe (10/100/1000Mbps)
REAR I/O	Ethernet	1 x GbE (RJ-45)
	USB	2 x USB 3.0
	Display	1 x VGA/HDMI (HDMI available upon request)
INTERNAL I/O	Serial	1 x RS-232/422/485 (2.0mm pitch, right angle type) 1 x RS-232 (2.0mm pitch, right angle type)
	USB	2 x USB 2.0 (2.0mm pitch)
	Display	1 x LVDS LCD Panel Connector
	Audio	1 x Audio (Line-out/Mic-in)
	SATA	1 x SATA 3.0 (up to 6Gb/s)
	DIO	1 x 8-bit DIO
	SMBus	1 x SMBus
	WATCHDOG TIMER	Output & Interval
SECURITY	TPM	Available Upon Request
POWER	Type	Single 12V +/-10% DC
	Connector	2-pin Terminal Block
	Consumption	BW051 Typical: N3710:12V @ 0.47A (5.64Watt) Max.: N3710:12V @ 1.0864A (13.037Watt)
	RTC Battery	Lithium 3V (210mAH)
OS SUPPORT	Microsoft/Linux	Windows 7 (/WES7) 32/64-bit Debian 8 (with VESA graphic driver) Windows 8.1 (64-bit) CentOS 7 (with VESA graphic driver) Windows 10 IoT Enterprise 32/64-bit Ubuntu 15.10 (Intel graphic driver available)
ENVIRONMENT	Temperature	Operating: 0 to 60°C Storage: -40 to 85°C
	Humidity	Operating: 5 to 90% RH Storage: 5 to 90% RH
MECHANICAL	Dimensions	2.5" Pico-ITX Form Factor 100mm (3.94") x 72mm (2.83")
	Height	PCB: 1.6mm Top Side: 15.5mm, Bottom Side: 8.0mm

Ordering Information

Model Name	P/N	Processor	Memory	VGA/HDMI	GbE	RS-232/422/485	RS-232	USB 3.0	USB 2.0	Power	Thermal	Temp.
BW051-BB-E8000	770-BW0512-100G	x5-E8000	1 SODIMM	VGA	1	1	1	2	2	12V DC	Fanless	0 to 60°C
BW051-BB-N3160	770-BW0512-000G	N3160	1 SODIMM	VGA	1	1	1	2	2	12V DC	Fanless	0 to 60°C
BW051-BB-N3060	770-BW0512-200G	N3060	1 SODIMM	VGA	1	1	1	2	2	12V DC	Fanless	0 to 60°C

Note: N3710 and N3010 are supported upon request with MOQ requirement.

Packing List

• 1 BW051 board	
• 1 COM port cable (Length: 300mm, 2 x COM ports)	A81-015020-001G
• 1 Serial ATA data cable (Length: 152mm)	A81-002000-000G
• 1 Y cable for SATA and inverter power (Length: 155mm)	A81-020016-018G
• 1 DVD	
• 1 Heat sink (Height: 19mm)	A71-011065-000G

Optional Items

• USB port cable (Length: 200mm)	A81-001032-016G
• Power adapter (60W, 12V, DC jack)	671-106012-102G
• Heat spreader (Height: 11mm)	A71-808301-000G
• 1 Audio cable (Length: 160mm)	A81-022007-016G

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.

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