

BL70W

Rugged Box PC for Transportation with Intel Core i3 / i5 / i7 Railway & Automotive Embedded Computer for Wireless Connectivity

- » Intel Core i7, 3rd generation
- » Up to 16 GB DDR3 DRAM soldered, ECC
- » 4 PCI Express Mini Card slots each with dual micro-SIM for GSM (2G), UMTS (3G), LTE (4G), WLAN, 9 antenna cut-outs
- » GPS/GLONASS interface
- » 2 Gigabit Ethernet, 2 USB 2.0, 2 DisplayPorts
- » 1 RS232, 1 RS422/485
- » 3 flexible slots for IBIS, RS232, RS422/485 or CAN
- » 24 VDC and 36 VDC nom. class S2 power supply, incl. ignition
- » -40 to +85°C operating temperature, fanless
- » Conformal coating of internal components
- » Compliant to EN 50155 (railways)
- » Compliant to ISO 7637-2 (E-mark for automotive)



The BL70W is a fanless, maintenance-free box computer that has been designed for independent use or as display computer electronics for embedded wireless applications in transportation, e.g. in trains, commercial vehicles, mobile machines or airplanes.

The BL70W is powered by an Intel Core i7-3517UE CPU, running at 1.7 GHz. Other processors of the 3rd generation Intel Core i7 family can be used which makes for high scalability in CPU (single/dual/quad core) performance.

The BL70W is equipped with 4 GB of DDR3 SDRAM and offers microSD card and mSATA slots.

Wireless Communication

Four PCI Express Mini Card slots each with dual micro-SIM make it possible to flexibly implement the whole range of wireless interfaces such as mobile service standards up to 4G LTE or WLAN/WLAN IEEE 802.11, and derivatives. A GNSS interface supporting positioning systems GPS and GLONASS complements the possibilities.

Fanless Operation for Mobile Applications

The system is designed for fanless operation at temperatures from -40 to +70°C (+85°C for up to 10 minutes), its special rugged aluminum housing with

cooling fins serves as a heat sink for the internal electronics and in this way provides conduction cooling.

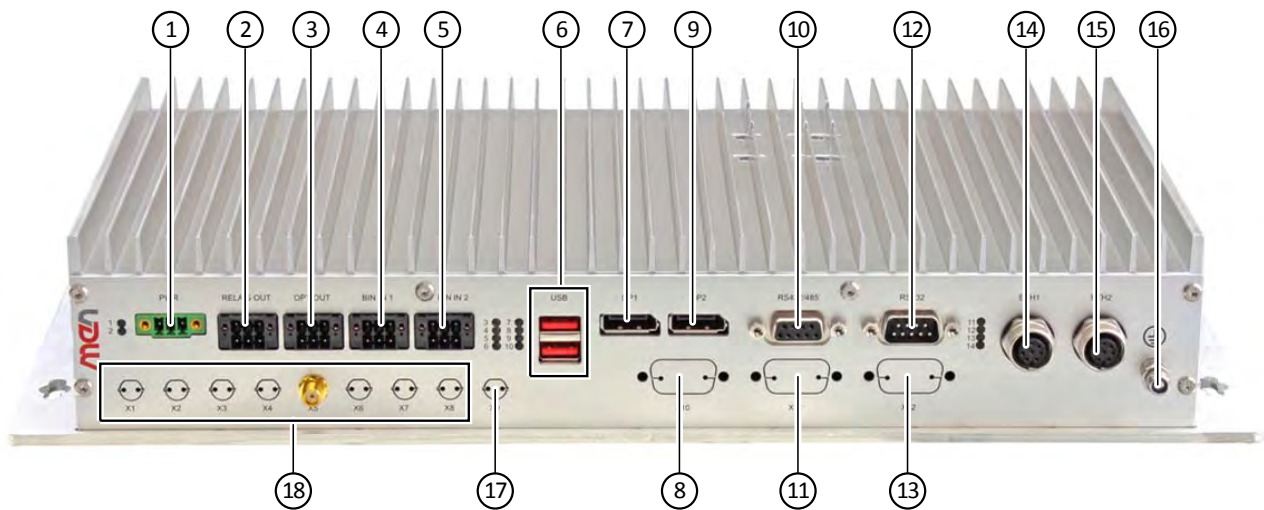
Railway-Compliant PSU with Ignition Function

The BL70W comes with its own integrated 30W 24 VDC nom. class S2 wide-range power supply and is in compliance with EN 50155 and ISO 7637-2 (E-mark for automotive). The power can be switched on and off using an ignition signal on the power connector, and a run-down time after switching off the ignition signal can be adjusted by software.

Flexible System Design

The various CPU options with the available selection of external interfaces (realized via separate graphics and I/O interface boards within the system) makes for an extremely flexible system design that can quickly be tailored to a vast number of applications.

The BL70W supports up to two DisplayPort interfaces with full HD resolution. In addition, a multitude of other I/O is available at the front panel, including two Gigabit Ethernet, two USB 2.0, variable slots for legacy serial I/O (e.g. RS232) or CAN bus, general purpose inputs and relay outputs.



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|--------------------------------------------------|------------------------------------------|
| ① PSU (10V-50.4V) | ⑩ RS422/485 interface |
| ② 2 relay outputs | ⑪ Cutout for RS232, RS422/485 or IBIS |
| ③ 2 photocoupler outputs | ⑫ RS232 interface |
| ④ 6 digital (binary) inputs | ⑬ Cutout for RS232, RS422/485 or IBIS |
| ⑤ 1 odometer input, 1 IBIS slave, 1 binary input | ⑭ Gigabit Ethernet 1 |
| ⑥ 2 USB 2.0 interfaces | ⑮ Gigabit Ethernet 2 |
| ⑦ DisplayPort 1 | ⑯ Earthing stud |
| ⑧ Cutout for RS232, RS422/485, IBIS or CAN | ⑰ Antenna connector cutout for GNSS |
| ⑨ DisplayPort 2 | ⑱ Antenna connector cutouts for LTE/WLAN |

CPU

- The following CPU types are supported:
 - Intel Core i7-3517UE, 2 cores, 4 threads, 1.7 GHz, 2.8 GHz Turbo Boost, 17 W, 4 MB cache
 - Intel Core i3-3217UE, 2 cores, 4 threads, 1.6 GHz, 17 W, 3 MB cache
 - Intel Celeron 1047UE, 2 cores, 2 threads, 1.4 GHz, 17 W, 2 MB cache
 - Chipset
 - QM77 Platform Controller Hub (PCH)
-

Memory

- System RAM
 - Soldered DDR3 with ECC
 - 16 GB max.
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Security

- Trusted Platform Module 1.2
-

Mass Storage

- The following mass storage devices can be assembled:
 - microSD card
 - mSATA
 - SSD 2.5" (SATA, on request)
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Graphics

- Processor graphics
 - Maximum resolution: 2560 x 1600 pixels (DisplayPort 1.1a)
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Wireless Functionality

- Possible wireless functions:
 - GNSS
 - LTE
 - WLAN

Interfaces

- Video
 - 2x DisplayPort
- USB
 - 2x USB 2.0, Type A
- Ethernet
 - 2x 10/100/1000BASE-T, M12 A-coded
 - 2x 10/100BASE-T, M12 A-coded
- PCI Express Mini Card
 - 4x PCI Express Mini Card slot
 - Slot A: PCIe Full-Mini; PCIe x1, USB 2.0
 - Slot B: PCIe Full-Mini; PCIe x1, USB 2.0
 - Slot C: PCIe Full-Mini; PCIe x1, USB 2.0
 - Slot D: PCIe Full-Mini; USB 2.0
- SIM card
 - 2x micro-SIM card slot, internally
- Digital inputs
 - 7x, 6-pin PCB plug
- Relay outputs
 - 2x, 6-pin PCB plug
- Photocouplers (shutters)
 - 2x, 6-pin PCB plug
- Odometer input
 - 1x, 6-pin PCB plug
- IBIS slave interface
 - 1x, 6-pin PCB plug
- Serial
 - 1x RS232, isolated, D-Sub, 9-pin, plug
 - 1x RS422/RS485, isolated, D-Sub, 9-pin, receptacle
- Power input
 - 1x power inlet connector
 - Ignition input
- LED
 - Status: board status, power status
 - Ethernet: link, activity
 - User configurable: 8x
- Cutout
 - Antenna connector: RP-SMA receptacle, RP-SMA plug, QMA receptacle, QMA plug, FME receptacle, FME plug
 - D-Sub options: Audio, RS232, RS422/RS484, CAN bus, digital I/O, real-time Ethernet, Profibus, IBIS master

Supervision and Control

- Board management controller
- Watchdog timer
- Temperature measurement
- Real-time clock, buffered by supercapacitor (3 days)

Electrical Specifications

- Supply voltages
 - 24 V and 36 V nominal input voltage according to EN 50155
 - 24 V nominal input voltage according to ISO 7637-2 (E-mark) requirements
 - Input voltages of 48V, 72V, 110V (on request)
 - EN 50155 power interruption class S2
- Power consumption: 24 W typ.

Mechanical Specifications

- Dimensions: (W) 390 mm, (D) 215 mm, (H) 66 mm
- Weight: approx. 3 kg

Environmental Specifications

- Temperature range (operation):
 - -40°C to +70°C, with up to +85°C for 10 minutes according to class TX (EN 50155)
- Cooling concept
 - Fanless operation, natural convection
- Temperature range (storage): -40°C to +85°C
- Relative humidity (operation): max. 95% non-condensing
- Relative humidity (storage): max. 95% non-condensing
- Altitude: -300 m to +3,000 m
- Shock: 50 m/s², 30 ms (EN 61373)
- Vibration (function): 1 m/s², 5 Hz - 150 Hz (EN 61373)
- Vibration (lifetime): 7.9 m/s², 5 Hz - 150 Hz (EN 61373)
- Protection rating:
 - IP20 (IEC 60529)
 - Other IP protection classes possible on request

Reliability

- MTBF: 198 000 h @ 40°C according to IEC/TR 62380 (RDF 2000)(model 09BL70W00)

Safety

- Fire Protection
 - EN 45545-2 (Railway)
 - ECE-R118 (Automotive)
- Electrical Safety
 - EN 50153
 - EN 50155

EMC Conformity (Railway)

- EN 50121-3-2

EMC Conformity (Automotive)

- ECE R10 (E-mark)
- ISO 10605 (ESD)

BIOS

- InsydeH2O UEFI Framework

Software Support

- Windows 7
- Windows Embedded Standard 7
- Linux
- For more information on supported operating system versions and drivers see Software.

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