

SPECTRA POWERBOX 500-SERIES

FEATURES

- Small, fanless GPU-Computing System
- Robust and in attractiv industrial design
- Supports Intel® 9th/8th Gen. Xeon® & Core™ i7/i5/i3 Desktop processors
- Various expansion possibilities among which MXM GPU cards
- Wide input power supply range : 9 – 48 V with voltage monitoring

The Spectra PowerBox 500 is a robust GPU computing platform that supports embedded MXM GPU extensions. It has all the features required for a compact, reliable and powerful computing system for field applications in machine vision and artificial intelligence.

The compact GPU system can accommodate an additional GPU extension via the MXM interface, which can be used in the maximum extension range.

NVIDIA Quadro RTX 3000 series graphics cards with 2,304 CUDA cores and 288 Tensor cores are supported.

Thus, intensive workloads are intercepted by intelligent parallel processing and optimized performance for demanding embedded vision computing applications is guaranteed.

In addition, the Spectra PowerBox 500 can be equipped with PoE, Power Ignition and various I/Os such as LAN, M12, DIO, USB and COM can be extended. The technologies provide a customized extension to meet the specific needs and applications of each user.



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COMMON TECHNICAL DATA

SYSTEM

CPU support	9th Generation Intel® CPU
Xeon®	- E-2278GE 8 Cores up to 4.7 GHz, TDP 80W - E-2278GEL 8 Cores up to 3.9 GHz, TDP 35W
Core™	- i7-9700E 8 Cores up to 4.4 GHz, TDP 65W - i5-9500E 6 Cores up to 4.2 GHz, TDP 65W - i3-9100E 4 Cores up to 3.7 GHz, TDP 65W - i7-9700TE 8 Cores up to 3.8 GHz, TDP 35W - i5-9500TE 6 Cores up to 3.6 GHz, TDP 35W - i3-9100TE 4 Cores up to 3.2 GHz, TDP 35W
	8th Generation Intel® CPU
Xeon®	- E-2176G 6 Cores up to 4.7 GHz, TDP 80W - E-2124G 4 Cores up to 4.5 GHz, TDP 71W
Core™	- i7-8700 6 Cores up to 4.6 GHz, TDP 65W - i5-8500 6 Cores up to 4.1 GHz, TDP 65W - i3-8100 4 Cores 3.6 GHz, TDP 65W - i7-8700T 6 Cores up to 4.0 GHz, TDP 35W - i5-8500T 6 Cores up to 3.5 GHz, TDP 35W - i3-8100T 4 Cores 3.1 GHz, TDP 35W
Pentium®	- G5400 2 Cores 3.7 GHz, TDP 58W - G5400T 2 Cores 3.1 GHz, TDP 35W
Celeron®	- G4900 2 Cores 3.1 GHz, TDP 54W - G4900T 2 Cores 2.9 GHz, TDP 35W
Chipset	Intel® C246
BIOS	AMI BIOS
RAM-Socket	2 x DDR4 SO-DIMM, 2666/2400 MHz,max.64GB (Xeon/i7/i5: DDR4 2666 MHz i3/Pentium/Celeron: DDR4 2400 MHz)
Watchdog	software programmable, 256 Level System Reset

CONTROLLERS

Graphics	Intel® UHD Graphics (Xeon® / Core™: UHD 630; Pentium®/Celeron®: UHD 610), support 3 independent Displays (DVI-I/DP/HDMI)
Network	1 x Intel® i219LM Gigabit-LAN 1 x Intel® i210AT Gigabit-LAN
Audio	Realtek ALC888 HD

I/O INTERFACES

Front	- 4 x 10 Gbps USB3.2 Gen 2, Type A - Power ON/OFF - LED: GPU, IGN, GPIO, HDD, Ethernet
Front behind service lid	AT/ATX-Switch, CMOS Battery & Switch, Power Ignition Switch, Reset
Rear	- 4 x 5 Gbps USB3.2 Gen1, Type A - 4 x RS-232/422/485 (Auto Flow Control, 5V/12V) - 2 x RJ45 - 1 x DVI-I (DVI-D:1.920x1.200 / VGA:1.920x1.080) - 1 x HDMI (4.096 x 2.160) - 1 x DP (4.096 x 2.304) - 1 x Line-out / 1 x Mic-in - 2 x holes for antennas - DC in - Remote Power On/Off - 2 x 4-pin Terminal Block for external fan

DRIVES & EXPANSIONS

HDD/SSD	- 2 x Hot swap 2.5" SATA-6G HDD/SSD - 3 x mSATA (shared with mPCIe Socket) - support S/W RAID 0, 1, 5 & 10 - 1 x M.2 NVMe PCIe(x4) M Key 2280
Sockets	- 3 x mPCIe (Full Size) - 1 x High Speed Socket for GLAN/10GLAN Multi-I/O Modules - 1 x Low Speed Socket for DIO/COM Multi-I/O Modules - 1 x Interface for Power Ignition Module - 1 x MXM Interface for GPU Module - 1 x M.2 PCIe(x2) E Key 2230
Others	- 2 x SIM card slots

MECHANICAL & ENVIRONMENT CONDITIONS

Chassis	Aluminium special profile
Dimensions (WxHxD)	260 x 85 x 200 mm
Weight	4,6 kg
Storage Temperature	-40°C to +85°C
Rel. humidity	95% @ 70°C, non condensing
Protection	- Reverse Power Input Protection - Over Voltage Protection Range: 51~58V / Type: shut down operating voltage, re-power on at the preset level to recover - Over Current Protection: 30A - ESD Protection: +/-8kV (air), +/-4kV (contact) - Surge Protection: 3.84 kV (Impedance 12 ohm 1.2/50us Waveform)
Environment	- Shock: Operating, 50 Grms, Half-sine 11 ms Duration (with SSD, according to IEC60068-2-2) - Vibration: Operating, 5 Grms, 5-500 Hz, 3 Axes (with SSD, according to IEC60068-2-64) - MTBF: 331,596 Hours (Database: Telcordia SR-332 Issue 3, Method 1, Case 3)
Power	AT, ATX 9 – 48 V DC 120 W Power adapter, 24 V With PoE option: 220 W Power adapter
Warranty	24 months
Certificates	- EMC: CE, FCC Class A - Railway: EN50121-3-2 - Security (LVD): EN62368-1
Packing list	Manual/Driver-CD, Windows® Recovery Stick, Power Adapter, Rail for wallmount

Operating Temperatures

CPU	with GPU (58W)	with FAN	Temperatures
35W	—	—	-40°C to +70°C
65W	—	✓	-40°C to +60°C
80W	—	✓	-40°C to +55°C
35W	✓	✓	-40°C to +55°C
65W	✓	✓	-40°C to +55°C
80W	✓	✓	-40°C to +50°C

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SPEZIFISCHE TECHNISCHE DATEN & AUSSTATTUNGSVARIANTEN



Modell	Spectra PowerBox 500
Artikelnr.	162634

SYSTEM

CPU	Intel® Core™ i7-9700E 2,6 GHz
RAM	8 GB DDR4, Wide Temp.
HDD / SSD	1x 256 GB 2.5" SATA-6G SSD, wide Temp.

FURTHER EQUIPMENT

LAN	2x Intel® x550 10GLAN, incl. Bracket
Graphics	Grafik-Kit, Nvidia P2000 MXM, incl. Baseboard 4x DP

EXPANSIONS

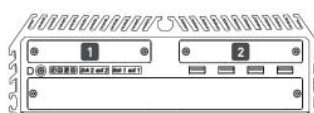
Free sockets	1 x Low Speed Socket for COM/DIO
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FURTHER DATA

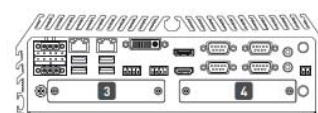
Operating system	Microsoft® Windows® 10 IoT Enterprise 2019 LTSC Hi-end (PKEA)
Operating temperature	-20°C to +50°C
Others	External fan kit

POSSIBLE CONFIGURATION

Front



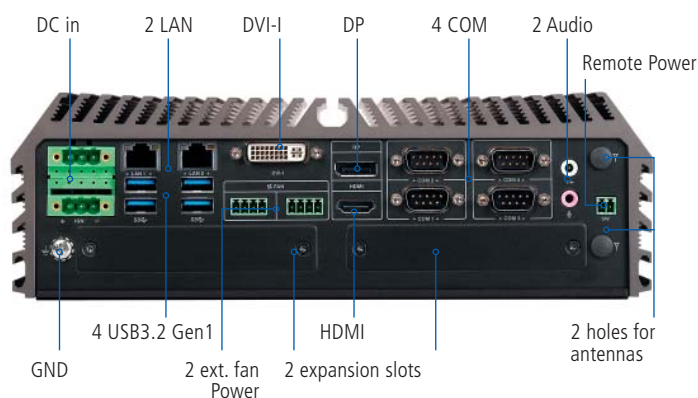
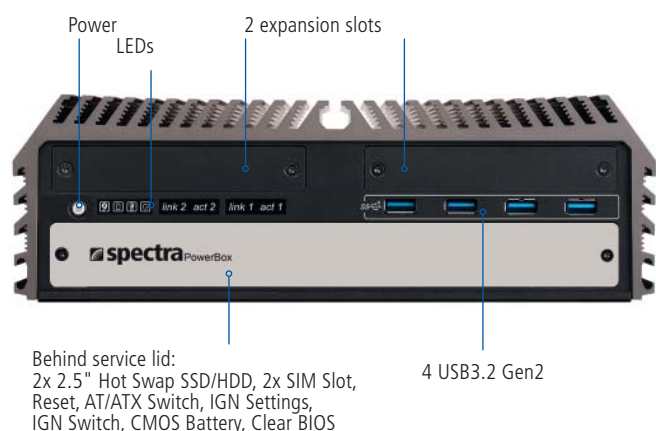
Rear



Expansion modules	1	2	3	4
PB-500-MMX-P2000	✓	—	—	—
PB-500-MMX-E9174	✓	—	—	—
PB-500-LAN-Set	—	✓	—	—
PB-500-10GLAN-Set	—	✓	—	—
PB-500-LAN-M12-Set	—	✓	—	—
PB-500-DIO-Set	—	—	✓	—
PB-500-COM-Set	—	—	✓	—
PB-500-PoE-Set	—	✓	—	—
PB-500-PoE-M12-Set	—	✓	—	—
PB-500-MEC-COM-M212-Set	—	—	✓	✓
PB-500-MEC-COM-M334-Set	—	—	✓	✓
PB-500-MEC-LAN-M002-Set	—	—	✓	—
PB-500-MEC-USB-M102-Set	—	—	✓	—

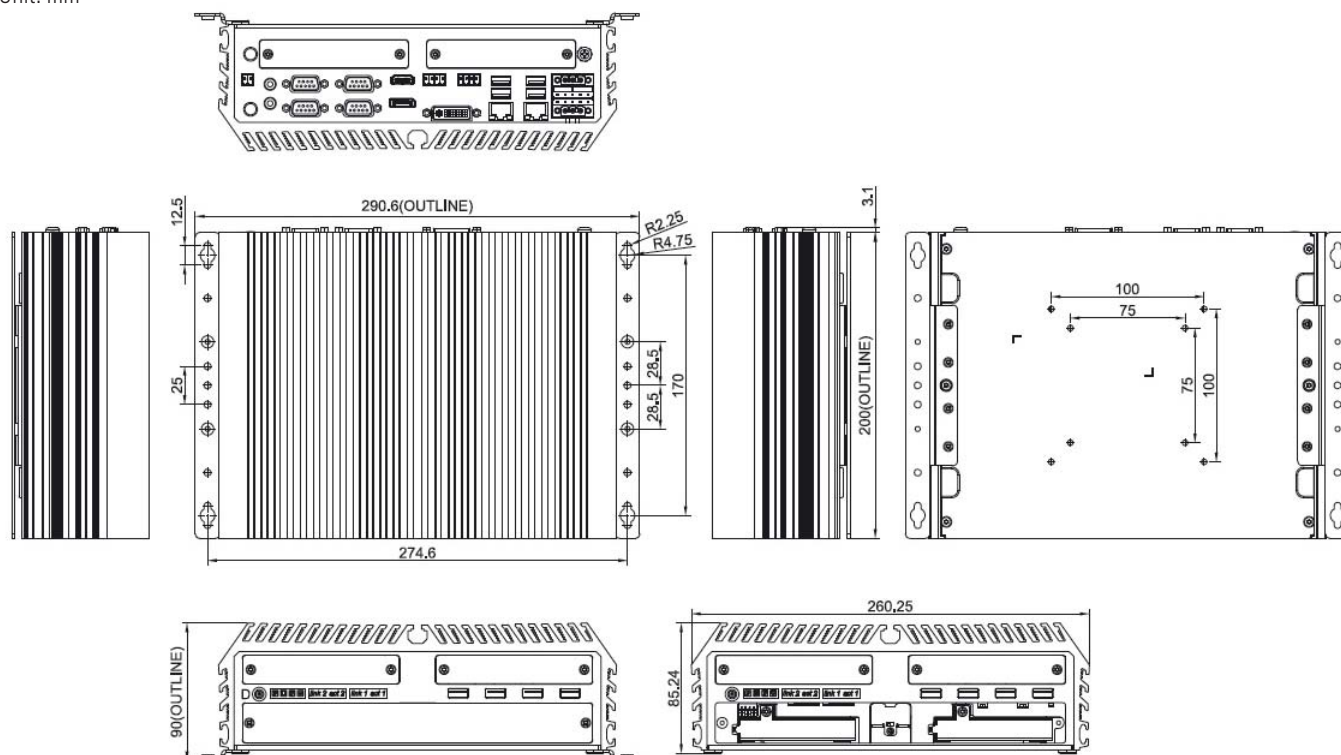
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CONSTRUCTION, INTERFACES & DIMENSIONS



DIMENSIONS

Unit: mm



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FURTHER FUNCTIONALITIES



Support 3 independant Displays



3 integrated mPCIe-Sockets for wireless communication (opt. WLAN/LTE/GPS...)



PoE with RJ45 or M12 Connectors



1 High Speed Socket for i.e. 4 x 10GLAN (RJ45), 4 x LAN (RJ45), 4 x LAN (M12), 4 x PoE (RJ45), 4 x PoE (M12) Modules



1 Low Speed Socket for i.e. DIO, COM



1 MXM Interface for GPU Modules



Option: Power Ignition-Function, time triggered shut down, ideal for transport applications.

MOUNTING POSSIBILITIES



Included in packing list, rail kit for wall mount.
Optional: Sideboard & DIN-Rail Kit



Mounting using T-slot nuts.

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OPTIONAL EQUIPMENT

GPU COMPUTING

N° 162425 PB-500-MXM-P2000-Set

NVIDIA® Quadro® Embedded P2000 Type A MXM Module incl. Baseboard with 4 x DisplayPort and Universal Bracket

N° 162426 PB-500-MXM-E9174-Set

AMD Embedded Radeon™ E9174 Type A MXM Module incl. Baseboard with 4 x DisplayPort and Universal Bracket



Spectra PowerBox 500 with MXM Module

MXM Baseboard

HIGH SPEED MULTI I/O MODULES

N° 160901 PB-500-10GLAN-Set

Module with 2 x Intel® X550 10GbE LAN, RJ45, incl. Bracket

N° 160900 PB-500-LAN-Set

Module with 4 x Intel® I210AT GLAN, RJ45, incl. Bracket

N° 160904 PB-500-LAN-M12-Set

Module with 4 x Intel® I210AT GLAN, M12, incl. Bracket

N° 160908 PB-500-PoE-Set

Bundle: PB-500-LAN + PoE Daughterboard for 4 x PoE, RJ45, 25,5 W/Port, incl. Bracket

N° 160939 PB-500-PoE-M12-Set

Bundle: PB-500-LAN-M12 + PoE Daughterboard for 4 x PoE, M12, 25,5 W/Port, incl. Bracket



Spectra PowerBox 500 with 4 GLAN or 4 PoE Module (RJ45 connector)

LOW SPEED MULTI I/O MODULES

N° 160905 PB-500-DIO-Set

Module with 16 digital I/Os, incl. Bracket

N° 160906 PB-500-COM-Set

Module with 2 x RS-232/422/485, incl. Bracket



Spectra PowerBox 500 with 2 COM Module

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FURTHER OPTIONAL ACCESSORIES

MINI-PCIE MODULES

N° 160911 PB-500-MEC-COM-M212-Set

2 x RS-232, Wide Temp., incl. Bracket

N° 160912 PB-500-MEC-COM-M334-Set

4 x RS-232, Wide Temp., incl. 2 x Bracket

N° 160914 PB-500-MEC-LAN-M102-Set

2 x LAN (Intel® i210-IT), incl. Bracket

N° 160915 PB-500-MEC-USB-M102-Set

2 x USB, incl. Bracket



Spectra PowerBox 500 with
2 USB Module

MOUNTING

N° 162714 DIN Rail Kit

N° 160941 PB-500-SIDE

Side Mount Kit



Side Mount Kit



DIN Rail Kit

UPON REQUEST

- T-slot nuts (Bosch Rexroth)
- T-profile

OTHERS

N° 160940 PB-500-IGN v1.5

Module for Power Ignition Sensing Control

Function, 12V/24V selectable

N° 160913 PB-500-FAN-EX

External fan Kit, 2x 4-pin Terminal Block



external fan



Power Ignition Module