

# SPECTRA POWERBOX 410-SERIES

## FEATURE

- Compact, fanless Mini-Server
- Robust and in attractive industry design
- Supports 9th/8th Generation Intel® Xeon® & Core™ i7/i5/i3 desktop processors
- 3 sockets for various expansions
- Wide range voltage: 9 – 48 V, with voltage monitoring
- Wall mount, optional side board or DIN rail mounting kits

The Spectra PowerBox 410 is a new generation of industrial box PC. It is compact, extremely cost-effective and ideal for use in numerous applications where high performance is required and little space is available.



## COMMUNICATIVE AND EXPANDABLE

Numerous interfaces, such as 8 x USB, 4 x COM and 2 x LAN, guarantee a wide range of communication options. Three mini PCIe sockets take WiFi-, GSM-, COM-, LAN- or fieldbus modules. Using proprietary sockets, the PowerBox 410 can be expanded with additional modules, such as 8 x LAN with or without PoE (RJ45 or M12 connector). The connections are routed to the outside via the universal I/O bracket.

## ROBUST AND EASY TO MAINTAIN

The wireless design of the device reduces the risk of failure due to disconnected cables.

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## COMMON TECHNICAL DATA

### SYSTEM

CPU Support	<p>9th Generation Intel® Coffee Lake-R S CPU:</p> <ul style="list-style-type: none"> <li>Xeon® - E-2278GEL 8 Cores Up to 3.9 GHz, TDP 35W</li> <li>Core™ - i7-9700E 8 Cores Up to 4.4 GHz, TDP 65W<sup>1</sup></li> <li>- i5-9500E 6 Cores Up to 4.2 GHz, TDP 65W<sup>1</sup></li> <li>- i3-9100E 4 Cores Up to 3.7 GHz, TDP 65W<sup>1</sup></li> <li>- i7-9700TE 8 Cores Up to 3.8 GHz, TDP 35W</li> <li>- i5-9500TE 6 Cores Up to 3.6 GHz, TDP 35W</li> <li>- i3-9100TE 4 Cores Up to 3.2 GHz, TDP 35W</li> </ul> <p>8th Generation Intel® Coffee Lake S CPU:</p> <ul style="list-style-type: none"> <li>Xeon® - E-2176G 6 Cores Up to 4.7 GHz, TDP 80W<sup>1</sup></li> <li>- E-2124G 4 Cores Up to 4.5 GHz, TDP 71W<sup>1</sup></li> <li>Core™ - i7-8700 6 Cores Up to 4.6 GHz, TDP 65W<sup>1</sup></li> <li>- i5-8500 6 Cores Up to 4.1 GHz, TDP 65W<sup>1</sup></li> <li>- i3-8100 4 Cores 3.6 GHz, TDP 65W<sup>1</sup></li> <li>- i7-8700T 6 Cores Up to 4.0 GHz, TDP 35W</li> <li>- i5-8500T 6 Cores Up to 3.5 GHz, TDP 35W</li> <li>- i3-8100T 4 Cores 3.1 GHz, TDP 35W</li> <li>Pentium® - G5400 2 Cores 3.7 GHz, TDP 58W<sup>1</sup></li> <li>- G5400T 2 Cores 3.1 GHz, TDP 35W</li> <li>Celeron® - G4900 2 Cores 3.1 GHz, TDP 54W<sup>1</sup></li> <li>- G4900T 2 Cores 2.9 GHz, TDP 35W</li> </ul>
Chipset	Intel® C246
BIOS	AMI 32MB
Memory	2 x 260-pin DDR4 SO-DIMM, 2666/2400 MHz, max. 64 GB (i3/Pent/Cel: DDR4 2400 MHz)
Watchdog	Software programmable, supports 256 Levels, System Reset

### CONTROLLERS

Graphics	Intel® UHD Graphics (Xeon®: UHD P630; Core™ i7/i5/i3: UHD 630; Pentium®/Celeron®: UHD 610) supports 3 independent Displays
Network	1 x Intel® i210IT / 1 x Intel® i219LM Gigabit-LAN with WoL, XPE, Teaming, Jumbo Frames, IEEE 1588v2 support
Audio	Realtek ALC888 HD

### DRIVES

Connectors	<ul style="list-style-type: none"> <li>- 2 x Hot swap 2.5" SATA-6G HDD/SSD</li> <li>- 3 x mSATA Gen2 (shared with mPCIe Socket)</li> <li>- Support S/W RAID 0, 1, 5 &amp; 10</li> </ul>
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### EXPANSION SLOTS

Slots	<ul style="list-style-type: none"> <li>- 3 x mPCIe (full size), for WiFi / GSM or I/O</li> <li>- 2 x High Speed Socket for LAN &amp; PoE<sup>1</sup> Multi-I/O Modules or mPCIe Modules</li> <li>- 1 x Low Speed Socket for DIO/COM Multi-I/O Modules or mPCIe Modules</li> <li>- 1 x Universal Bracket for mPCIe Modules</li> <li>- 1 x M.2 2230 Socket (Key E), supports WiFi/Bluetooth or BIOS Selectable Intel® CNVi (integrated WiFi/Bluetooth)</li> <li>- 1 x Interface for Function module (Power Ignition or PoE)</li> </ul>
Others	- 1 x SIM card

### I/O INTERFACES

Front	<ul style="list-style-type: none"> <li>- 1 x HDMI (3.840 x 2.160 @30Hz)</li> <li>- 2 x USB3.1</li> <li>- 2 x USB3.0</li> <li>- Power on/off</li> <li>- LED: Power, HDD, IGN, Temperatures</li> </ul>
Front behind service lid	<ul style="list-style-type: none"> <li>- AT/ATX-Switch</li> <li>- Clear CMOS Switch</li> <li>- Power Ignition Switch</li> <li>- Reset</li> </ul>
Rear	<ul style="list-style-type: none"> <li>- 4 x USB3.0</li> <li>- 4 x RS-232/422/485 (Auto Flow Control, 5V/12V)</li> <li>- 2 x RJ45</li> <li>- 1 x DVI-I VGA: 1.920 x 1.080 @60Hz, DVI-D: 1.920 x 1.080 @60Hz</li> <li>- 1 x DP (3.840 x 2.160 @30Hz)</li> <li>- 1 x Line-out / 1 x Mic-in</li> <li>- 3 x holes for antennas</li> <li>- DC in</li> <li>- Remote Power on/off</li> <li>- 1 x 4-pin Terminal Block for external fan</li> </ul>

### MECHANICAL & ENVIRONMENT CONDITIONS

Chassis	Aluminum special profile
Dimensions (BxHxT)	242 x 77 x 173 mm
Weight	3,6 kg
Operating temperatures	<p>35 W TDP: -40°C to +70°C</p> <p>54 W - 65 W TDP: -40°C to +45°C</p> <p>71 W - 80 W TDP: -40°C to +40°C</p> <ul style="list-style-type: none"> <li>- PassMark BurnIn Test: 100% CPU, 2D/3D Graphics (without thermal throttling)</li> <li>- with Wide Temp. Components &amp; Air Flow according to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)</li> </ul>
Storage temperature	-40°C to +85°C
Rel. Humidity	95% @ 40°C, non-condensing
Protection	<ul style="list-style-type: none"> <li>- Reverse power input protection</li> <li>- Over voltage protection: 58 V</li> <li>- Over current protection: 15 A</li> <li>- ESD: ± 15 kV (air), ± 8 kV (contact)</li> <li>- Surge: 3 kW</li> </ul>
Power	<p>AT, ATX 9 – 48 V DC</p> <p>120 W Power adapter, 24 V / 5 A, 3-pin, C14 <u>with PoE option:</u></p> <p>220 W Power adapter, 24 V / 9,2 A</p>
Warranty	24 months
Certificates	<ul style="list-style-type: none"> <li>- EMC: CE, FCC Class A</li> <li>- Railway: EN50155, EN50121-3-2</li> <li>- LVD EN62368-1</li> </ul>

<sup>1</sup> external fan is recommended + 220 W ext. Power adapter (see Accessories on page 7)

<sup>2</sup> These processors cannot be used in conjunction with PoE modules

# SPECTRA POWERBOX 410-SERIES

## TECHNICAL DATA & FEATURE VARIATIONS



Model	Spectra PowerBox 410-E-2124G	Spectra PowerBox 410-i7	Spectra PowerBox 410-i5	Spectra PowerBox 410-i3
Article n°	158404	158410	158409	158406

### TECHNICAL DATA

CPU	Intel® Xeon® E3-2124G 3,4 GHz, 71 W TDP	Intel® Core™ i7-8700T 2,4 GHz, 35 W TDP	Intel® Core™ i5-8500T 2,1 GHz, 35 W TDP	Intel® Core™ i3-8100T 3,1 GHz, 35 W TDP
RAM	16 GB DDR4 ECC	8 GB DDR4, Wide Temp.		8 GB DDR4, Wide Temp.
HDD / SSD	256 GB mSATA-6G SSD, 2 x 1 TB 2.5" SATA-6G HDD	128 GB SATA-6G SSD, , Wide Temp. 1 x 2.5" SATA HDD/SSD Socket (free)		

### ADDITIONAL FEATURES VIA MULTI I/O MODULES

COM	–	–	–	–
LAN	8 x Gigabit-LAN i210IT (RJ45, front)	–	–	–

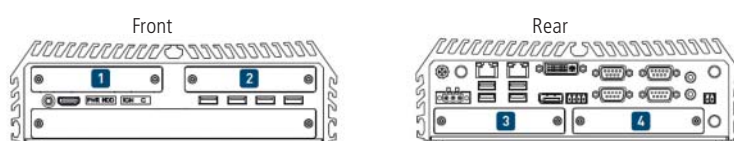
### EXPANSIONS

Free Sockets	1 x Low Speed Socket for DIO/COM or mPCIe Modules 1 x Universal Bracket for mPCIe Modules			
	–	2 x High Speed Socket for LAN/PoE or mPCIe Modules		

### FURTHER DATA

Operating system	Microsoft® Windows® Server Standard 64-bit	Microsoft® Windows® 10 IoT Enterprise LTSC High End 64-bit	Microsoft® Windows® 10 IoT Enterprise LTSC Value 64-bit
Operating temperature	0°C to +50°C	-20°C to +50°C	
Packing list	Manual & Driver CD, Windows® Recovery Medium, Power adapter, 2 x wall mount brackets, DVI-I to VGA adapter		

### POSSIBLE ASSIGNMENT OF THE UNIVERSAL BRACKETS

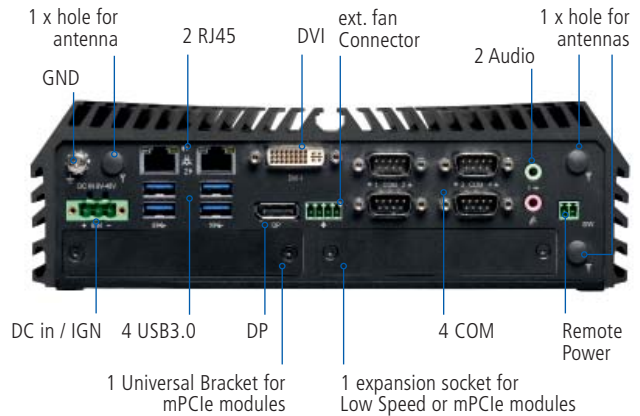
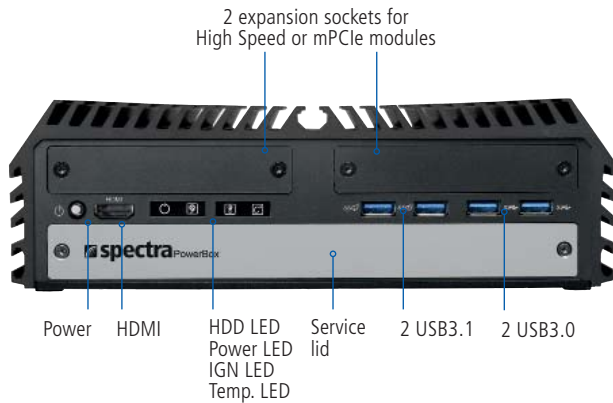


Expansion modules	1	2	3	4
PB-400-LAN	✓	✓	–	–
PB-400-LAN-M12	✓	✓	–	–
PB-400-PoE <sup>1</sup>	✓	✓	–	–
PB-400-PoE-M12 <sup>1</sup>	✓	✓	–	–
PB-400-DIO	–	–	–	✓
PB-400-COM	–	–	–	✓
PB-400-MEC-COM-M212A	✓	✓	✓	✓
PB-400-MEC-COM-M334A		✓		✓
PB-400-MEC-LAN	–	–	✓	–

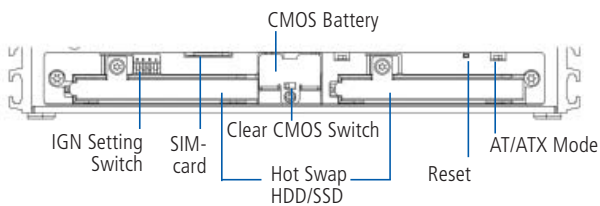
<sup>1</sup> external fan is recommended + 220 W ext. Power adapter (see Accessories on page 7)

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## INTERFACES OF GROUND SYSTEM & DIMENSIONS



### BEHIND SERVICE LID



Service lid for easy swap of SSD, SIM, for replacement of CMOS battery, to switch the power mode.

### WEITERE FUNKTIONEN

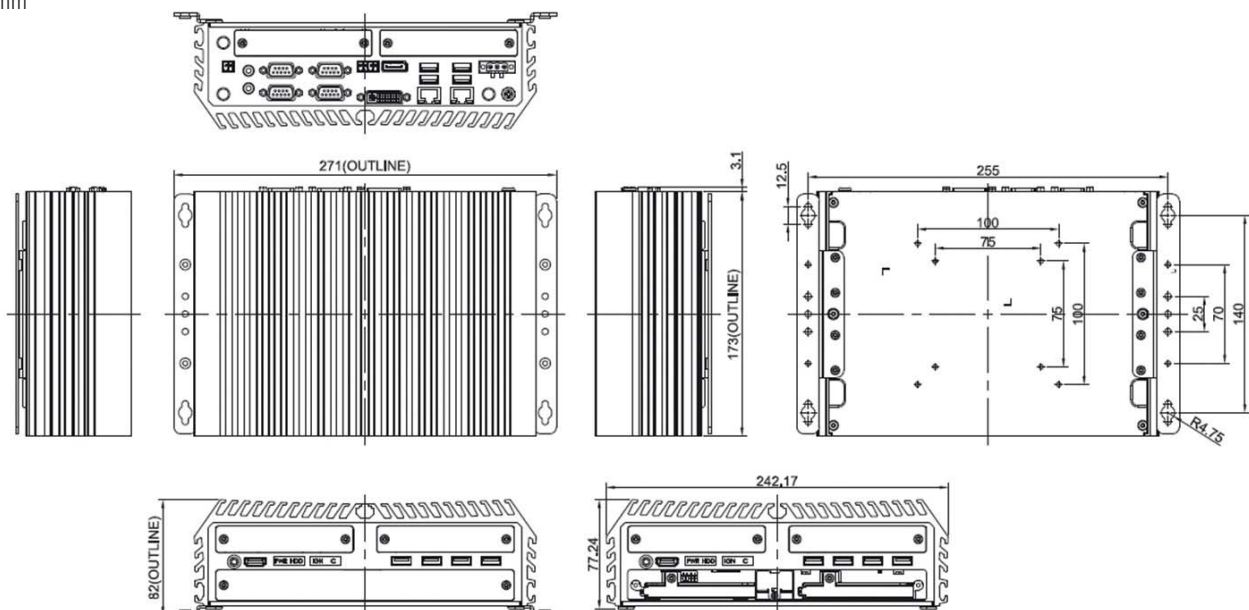
Instant Reboot Technology (0.2 sec)

SuperCap integrated for CMOS Battery maintain-free

Watchdog Timer: software programmable, supports 256 Levels, System Reset

### DIMENSIONS

unit: mm



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## FURTHER FUNCTIONALITIES




Supports 3 independent displays



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



PoE<sup>1</sup> with RJ45, M12 or x-M12 connectors



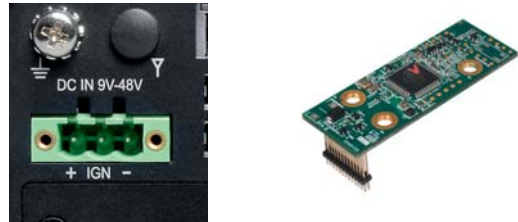
2 High Speed sockets for i.e. 4 x LAN (RJ45), 4 x LAN (M12), 4 x PoE<sup>1</sup> (RJ45) or 4 x PoE (M12) modules



1 Low Speed socket for DIO oder COM modules



1 Universal Bracket for Mini-PCIe modules such as serial, USB, LAN, Firewire



Option: Power Ignition module for time triggered shut down, ideal for transportation applications

## EXTENDED EQUIPMENT

## MOUNTING POSSIBILITIES



External PWM fan can be connected to ensure sufficient cooling (recommended for CPU over 35 W TDP)



Mounting using T-slot nuts



Included Wall mount brackets

<sup>1</sup> external fan is recommended + 220 W ext. Power adapter (see Accessories on page 7)



# SPECTRA POWERBOX 410-SERIES

## OPTIONAL EQUIPMENT

### HIGH SPEED MULTI I/O MODULES

#### N° 162609 PB-400/410-LAN-Set

4 x Giga-LAN, i210-IT, RJ45, incl. Bracket

#### N° 162650 PB-400/410-LAN-M12-Set

4 x Giga-LAN, i210-IT, M12, incl. Bracket

#### N° 166263 PB-400/410-LAN-xM12-Set

4 x Giga-LAN, i210-IT, xM12, incl. Bracket

#### N° 153843 PB-400/410-PoE-Set<sup>1</sup>

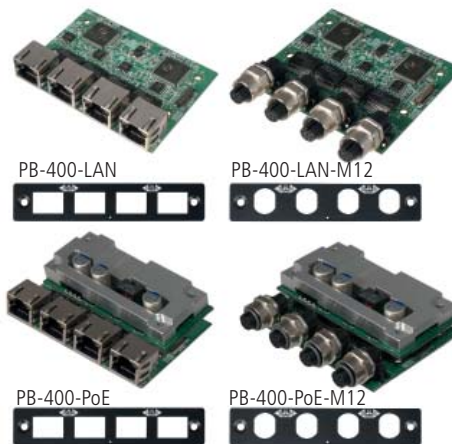
Bundle: PB-400-LAN + PoE Daughterboard  
for 4 x PoE, RJ45, 25,5 W/Port, incl. Bracket

#### N° 153844 PB-400/410-PoE-M12-Set<sup>1</sup>

Bundle: PB-400-LAN-M12 + PoE Daughterboard  
for 4 x PoE, M12, 25,5 W/Port, incl. Bracket

#### N° 166262 PB-400/410-PoE-xM12-Set<sup>1</sup>

Bundle: PB-400-LAN-xM12 + PoE Daughterboard  
for 4 x PoE, xM12, 25,5 W/Port, incl. Bracket



<sup>1</sup> external fan is recommended + 220 W ext. Power adapter (see Accessories on page 7)

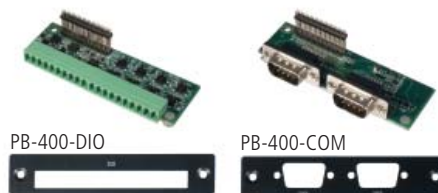
### LOW SPEED MULTI I/O MODULES

#### N° 153827 PB-400-DIO-Set

Module with 8/8 isolated digital I/O, incl. Bracket

#### N° 153826 PB-400-COM-Set

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



### MINI-PCIE MODULES

#### N° 153831 PB-400-MEC-COM-M212A-Set

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

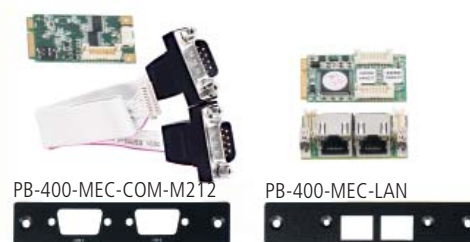
#### N° 153832 PB-400-MEC-COM-M334A-Set

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

(occupies Low Speed socket)

#### N° 162432 PB-400-MEC-LAN-Set

2 x LAN, incl. Bracket



### EXAMPLES FOR POSSIBLE EQUIPMENT VIA MULTI I/O & MINI-PCIE MODULES



PB-400-LAN-M12 + PB-400-LAN Modules



PB-400-MEC-COM-M212 + PB-400-DIO Modules



PB-400-MEC-COM-M212 + PB-400-COM Modules



PB-400-MEC-COM-M334 Module



PB-400-MEC-COM-M334 Module

# SPECTRA POWERBOX 410-SERIES

## ADDITIONAL OPTIONAL ACCESSORIES

### FUNCTION MODULES

#### N° 158062 PB-400-IGN V1.5

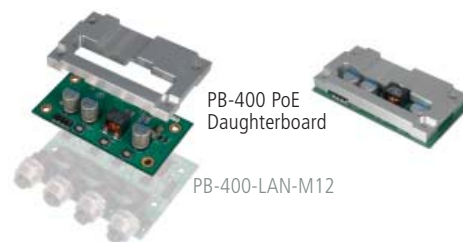
Module for Power Ignition Sensing Control Function, 12V/24V selectable



PB-400-IGN

#### N° 153823 PB-400-PoE<sup>1</sup> Daughterboard

Module for PoE Function (Retrofitting of PB-400-LAN or PB-400-LAN-M12 modules)  
external fan is recommended + 220 W ext. Power adapter



PB-400 PoE Daughterboard

PB-400-LAN-M12

### MOUNTING KITS

#### N° 162714 DIN Rail Kit

for Spectra PowerBox 410

#### N° 153841 Side Mount Kit

for Spectra PowerBox 410



Side Mount Kit



DIN Rail Kit

#### AUF ANFRAGE

T-slot nuts (Bosch Rexroth)

T-profile

### OTHERS

#### N° 154811 PB ext. fan Set

Fan 120 mm Topcase mounting, max. 2800 U/min.

#### N° 155058 PoE-Netzteil 220W/24V V.2

220 W, 24 V / 9.2A, for Spectra PowerBox 400 with PoE option

#### N° 152353 DP to DVI Adapter V1.1

OLV-DP active cable 100 mm



ext. fan