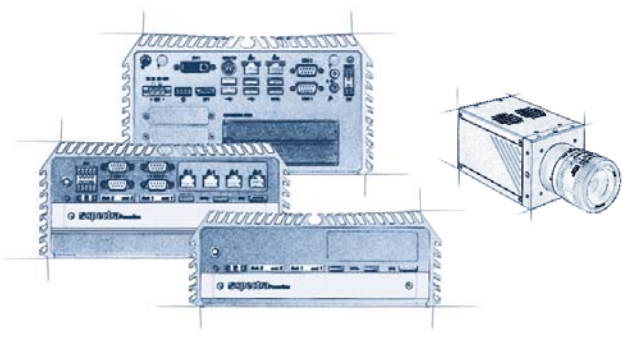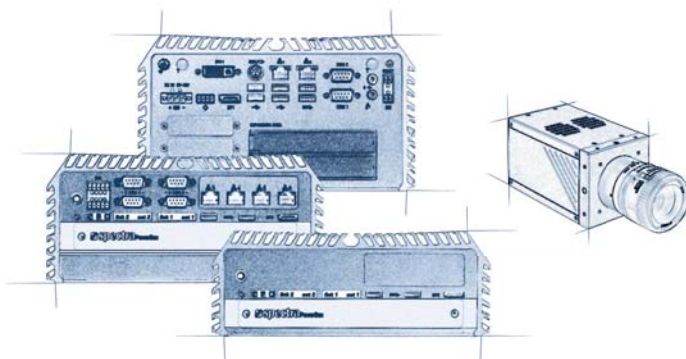# INDUSTRIAL IMAGE PROCESSING AND MACHINE VISION

VERSION 2022|1

INDUSTRIAL PC SYSTEMS AND COMPONENTS FOR

INDUSTRIAL MACHINE VISION

spectra
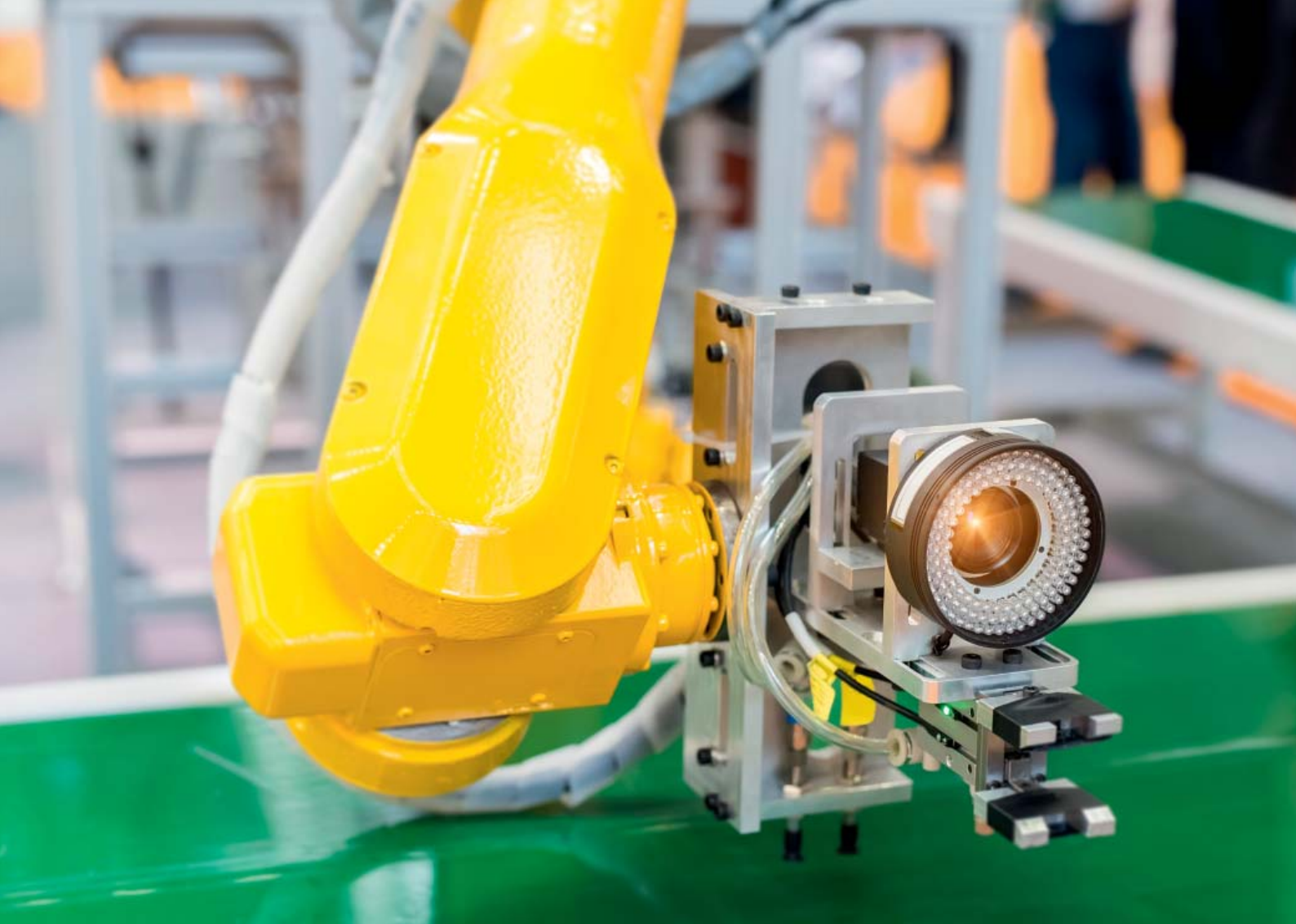Industrie-PC & Automation

INDUSTRIAL MACHINE VISION

INDUSTRIAL IMAGE PROCESSING AS KEY TECHNOLOGY

With the rapidly growing automation in industry, industrial image processing is becoming an indispensable key technology.

In production and quality assurance more and more processes and production steps are monitored, compared, corrected and documented.

OPTICAL MONITORING

For the optical monitoring in industry, powerful computer systems take over the control and processing of images captured by cameras and frame grabbers.

EXPERIENCE AND COMPETENCE

For many years, Spectra has been manufacturing industrial PCs in various shapes, sizes and performance levels that are individually adapted to customer requirements. This long experience is the basis for configuration and production of special computers for industrial image processing.

FAST DATA EVALUATION

The industrial PCs for visualization and image processing, which are relatively similar to image processing computers, differ in the installation of powerful, professional 2D and 3D graphics cards with high-resolution (4K) multi-display outputs. These visualization PC complement the range of image processing computers.

VARIOUS DESIGNS

The spectrum ranges from the small, fanless mini or compact PC to the 19" high performance PC. As usual with Spectra, all industrial PCs are equipped with proven and long-term available components.

INDIVIDUAL CONFIGURATION

Apart from the industrial PCs presented below, individually configured computer systems adapted to customer requirements are also possible.

FURTHER COMPONENTS

The offer is complemented by a comprehensive wide range of network accessories, switches (managed and unmanaged, PoE, LWL) and professional graphics cards.

SPECTRA BV-RACK SERIES

FEATURES

The Spectra BV-Rack series is equipped with high-performance processors and high-end graphics cards. A reproduction of contents in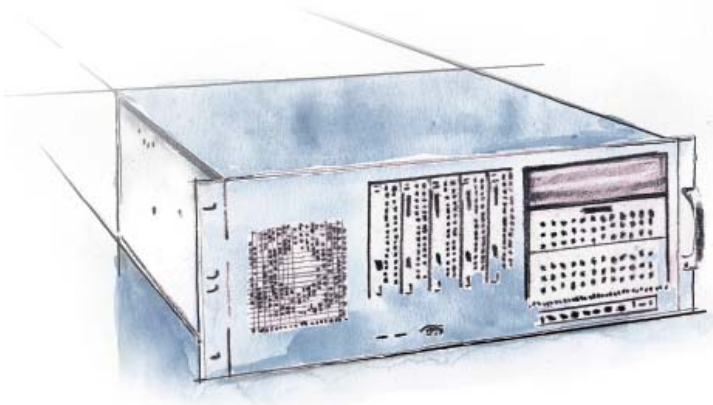 4K quality is possible on several displays. The visualization PCs have a large number of interfaces such as: RS-232, RS-485, 10 Gigabit-LAN, Gigabit-LAN, Power over Ethernet, USB 3.1 / USB 3.0, DisplayPort, DVI and digital I/O. If additional interfaces are required, these can be individually retrofitted via the free PCIe or Mini PCIe expansion slots.

The 19" rackmount PCs of the BV-Rack series are available in designs from 1 to 4 U (height units). They are powerful and flexibly expandable and are ideal for installation in 19" control cabinets.

FOR HIGH COMPUTING REQUIREMENTS

The Spectra BV-Rack series are high-end computers with powerful graphics cards, which are particularly suitable for the very high computing requirements of industrial applications. such as visualization.

These industrial PCs are used for processing and displaying high-resolution image content in visualization applications such as professional design and 3D construction.

19" 1U PC FOR VISION

Intel® Xeon® E3, 4x DP1.4, 2x GLAN, 2x USB3.0

Spectra BV-Rack 1H-A1 | Art. N° 145774

- 19" 1 U, 650 mm deep
- Intel® C236 chipset, Intel® Xeon® E3-1275v5 (Skylake),
  16 GB RAM (max. 64 GB, 4x 288-pin DDR4 DIMM)
- 2x Intel® I210-AT GLAN, 2x RJ45
- PNY 3D-Graphics card P1000, 4x mDP1.4 (4x mDP/DP-Adapter),
  Max. resolution 4x 5120 × 2880
- Storage: 1x 250 GB NVMe M.2 PCIe(x4) SSD,
  4x Hot-Swap 3.5" SATA-6G Drive Bay
- I/O interfaces: 2 (+2) x USB 3.0, 2 (+4) x USB 2.0, 1 (+1) x RS-232
- 2x 500 W redundant PSU, 80+ Platinum, Efficiency >94%
- Microsoft® Windows® 10 IoT Enterprise 2019 LTSC

19" 2U PC FOR VISION

Intel® Xeon® E3, 4x DP1.4, 2x GLAN, 2x USB3.1, 2x USB3.0

Spectra BV-Rack 2H-A1 | Art. N° 146550

- 19" 2 U, 457 mm deep
- Intel® C236 chipset, Intel® Xeon® E3-1275v5 (Skylake),
  16 GB RAM (max. 64 GB, 4x 288-pin DDR4 DIMM)
- 1x Intel® I210-AT GLAN, 1x Intel® I219-LM GLAN, 2x RJ45
- PNY 3D-Graphics card P1000, 4x mDP1.4 (4x mDP/DP-Adapter),
  Max. resolution 4x 5.120 × 2.880
- Storage: 1x 250 GB NVMe M.2 PCIe(x4) SSD, 2x internal 3.5",
  2x internal 2.5", 1x external 3.5", 1x external 5.25"
- I/O interfaces: 2x USB3.1, 2(+4)x USB3.0, 2(+6)x USB2.0, (2x RS-232)
- 500 W PSU, 80+ Platinum, Efficiency >94%
- Microsoft® Windows® 10 IoT Enterprise 2019 LTSC

19" 4U PC FOR VISION

Intel® Xeon® Scalable Silver 4210, 4x DP1.4, 1x 10GLAN, 1x GLAN, 2x USB3.1, 4x USB3.0, 6x PCIe free

Spectra BV-Rack 4H-A1 | Art. N° 141946

- 19" 4 U, 521 mm deep
- Intel® C622 chipset, Intel® Xeon® Scalable Silver 4210 (Cascade Lake),
  16 GB RAM (max. 3 TB, 12x 288-pin DDR4 DIMM)
- 1x Intel® I210-AT Gigabit-LAN, 1x RJ45
  1x Aquantia AQC 107 10Gigabit-LAN, 1x RJ45
- PNY 3D-Graphics card P1000, 4x mDP1.4 (4x mDP/DP-Adapter),
  Max. resolution 4x 5.120 × 2.880
- Storage: 1x 512 GB M.2 NVMe SSD, 1x 2 TB Hot-Swap SATA-6G
  3.5" HDD 24h/7d, 4x Hot-Swap 3.5" SATA-6G Drive Bay
- I/O interfaces: 2x USB3.1, 4(+2)x USB3.0, 2x USB2.0, 1(+1)x RS-232
- 865 W PSU, 80+, Efficiency >82%
- Microsoft® Windows® 10 IoT Enterprise 2019 LTSC
- 3x PCIe(x16)3.0 and 3x PCIe(x8)3.0 free

SPECTRA BV-COMPACT SERIES

FEATURES

The compact and powerful industrial PCs of the BV-Kompakt series have the interfaces required in industrial image processing, such as 10 Gigabit LAN, Gigabit-LAN, PoE+, USB 3.0. Frame grabber expansion cards with CameraLink or CoaXPress interfaces can be individually retro-fitted according to customer requirements.

The Spectra BV-Box series is compact in design and powerful. It is particularly suitable for applications in industrial image processing where a 19" computer system cannot be used for space reasons.

COMPACT AND POWERFUL

Many industrial image processing applications take place close to the process. For this it is important that the actual image processing computer is compact. The Spectra BV-Box series offers the advantage of high perfor-mance in addition to its compact design. This combination coupled with the industrial speci-fications forms an excellent basis for numerous applications in industrial image processing, such as part, position and position recognition as well as quality inspection.

COMPACT PC FOR IMAGE PROCESSING

Intel® Core™ i7, 2x DP1.2,/1x DVI-D, 1x 10-GLAN, 2x GLAN, 2x POE, 2x USB3.1, 6x USB3.0, 1x PCIe free

Spectra BV-Box 6K-A1 | Art. N° 141939

- Width x Height x Depth: 320 x 164 x 316 mm, Front-I/O interfaces
- Intel® Q370 chipset, Intel® Core™ i7-7700 (Coffee Lake),
  8 GB RAM (max. 64 GB, 4x 288-pin DDR4 DIMM)
- 1x Intel® X550-T1 10 GLAN, 1x RJ45, 1x Intel® I210-AT GLAN,
  1x Intel® I219-LM GLAN, 2x RJ45
- 2x RTL8111C PoE+ GLAN, IEEE 802.3at (25,5 W pro Port), 2x RJ45
- Intel® HD Graphics 630, 2x DP1.2, 1x DVI-D, 1x VGA,
  Max. resolution 4.096 x 2.304
- Storage: 1x 512 GB 2.5" SATA-6G SSD,
  1x 2 TB 3.5" SATA-6G HDD 24h/7d
- I/O interfaces: 2x USB3.1, 6(+2)x USB3.0, 4(+2)x USB2.0,
  1(+3)x RS-232, (1x LPT)
- 350 W PSU, 80+ Bronze, Efficiency >85%
- Microsoft® Windows® 10 IoT Enterprise 2019 LTSC
- 1x PCIe(x16)3.0 free

COMPACT PC FOR IMAGE PROCESSING

Intel® Xeon® Scalable Silver 4210, 1x VGA, 2x 10-GLAN, 4x GLAN, 1x IPMI, 2x USB3.0, 2x USB2.0, 2x PCIe free

Spectra PowerBox 4000AC C622 Silver 4210 Win10 BV |
Art. N° 156264

- Width x Height x Depth: 340 x 133 x 330 mm
- Intel® C622 chipset, Intel® Xeon® Scalable Silver 4210 (Cascade Lake),
  32 GB RAM (max. 768 GB, 6x 288-pin DDR4 ECC-DIMM)
- 1x Intel® X557-AT2 Dual-10-GLAN, 2x RJ45
  1x Intel® i350-T4v2 Quad-GLAN, 4x RJ45
- ASpeed AST2500 Baseboard Management Controller,
  with integriated Graphics, Max. resolution 1.920 x 1.200, 1x VGA
- Storage: 1x 500 GB NVMe M.2 PCIe(x4) SSD
- I/O interfaces: 4(+1)x USB3.0, 2(+4)x USB2.0, 1x RS-232,
  1x RJ45 (IPMI)
- 500 W PSU, 80+ Platinium, Efficiency >92%
- Microsoft® Windows® 10 Pro 64-bit
- 2x PCIe(x16)3.0 (free), 1x PCIe(x8)3.0 (reserved)

COMPACT PC FOR VISION

Intel® Core™ i7-9700K, 4x mDP, 2x GLAN, 4x USB3.1, 2x PCIe free

Spectra PowerBox 4000AC C246 i7-9700K Win10 BV |
Art. N° 156960

- Width x Height x Depth: 340 x 133 x 330 mm
- Intel® C6246 chipset, Intel® Core™ i7-9700K (Coffee Lake),
  16 GB RAM (max. 64 GB, 4x 288-pin DDR4 DIMM)
- 1x Intel® I210AT GLAN, 1x RJ45
  1x Intel® I219LM GLAN, 1x RJ45
- PNY 3D-Graphics card P1000, 4x mDP1.4 (4x mDP/DP-Adapter),
  Max. resolution 4x 5.120 x 2.880
- Storage: 1x 500 GB NVMe M.2 PCIe(x4) SSD
- I/O interfaces: 6(+2)x USB3.1, 0(+7)x USB2.0, 0(+4)x RS-232,
  1x RJ45 (IPMI)
- 500 W PSU, 80+ Platinium, Efficiency >92%
- Microsoft® Windows® 10 Pro 64-bit
- 1x PCIe(x16)3.0 (reserved), 2x PCIe(x4)3.0 (free)

SPECTRA BV-MINI SERIES

FEATURES

The compact Box PCs are suitable for use directly on intelligent cameras. Equipped with modern interfaces such as 10 Gigabit-LAN, Gigabit-LAN, PoE+, USB 3.0, the partially fanless Box-PCs are ideally used in industrial environments.

The small and robust image processing systems of the Spectra PowerBox series are ideally suited for use directly next to the camera. For critical environmental conditions, the fanlessen variants are particularly recommended.

COMPACT AND POWERFUL

Despite its small size, the Spectra Powerbox BV series is modularly expandable. Depending on the model, PCIe and mPCIe slots as well as mSATA and 2.5" SATA slots are available. All important interfaces are already user-friendly. Thus, the small, industrial image processing systems are optimally designed for decentralized use. These can be distributed applications with the necessity of pre-processing on site, such as the monitoring of larger production lines or process chains.

MINI PC FOR IMAGE PROCESSING

Intel® Celeron®, 1x DVI-I, 4x GLAN, 1x USB3.0, 2x COM, fanless

Spectra PowerBox 100-J19 BV | Art. N° 153326

- Width x Height x Depth: 150 x 52 x 105 mm
- SoC Intel® Celeron® J1900 (Bay Trail),
  8 GB RAM (max. 8 GB, 1x 204-pin DDR3 SO-DIMM)
- 2x Intel® I210-AT GLAN, 2x Intel® 82583V GLAN, 4x RJ45
- Intel® HD Graphics, 1x DVI-I,
  Max. resolution 2.560 x 1.600
- Storage: 1x 128 GB mSATA-6G SSD with PowerGuard
- I/O interfaces: 1x USB3.0, 3x USB2.0, 2x RS-232/422/485
- 9 – 48 VDC external power adapter 60 W, Efficiency >88%
- Microsoft® Windows® 10 IoT Enterprise 2019 LTSC
- 1x mPCIe (full-size) free

MINI PC FOR IMAGE PROCESSING

Intel® Core™ i7, 2x DP1.2,/1x DVI-I, 6x GLAN, 4x POE, 8x USB3.0

Spectra PowerBox 400-i7 BV | Art. N° 155622

- Width x Height x Depth: 242 x 77 x 173 mm
- Intel® C236 chipset, Intel® Core™ i7-7700T (Kaby Lake),
  16 GB RAM (max. 32GB, 2x 260-pin DDR4 SO-DIMM)
- 5x Intel® I210-AT GLAN, 1x Intel® I219-LM GLAN, 6x RJ45
- 4x Intel® 82583V PoE+ GLAN, IEEE 802.3at (25,5 W pro Port), 4x RJ45
- Intel® HD 630 Graphics, 2x DP1.2, 1x DVI-I,
  Max. resolution 3.840 x 2.160
- Storage: 1x 512 GB 2.5" SATA-6G SSD, 1x 2.5" internal free
- I/O interfaces: 8x USB3.0, 4x RS-232/422/485
- 24 VDC external power adapter 220 W, Efficiency >93%
- Microsoft® Windows® 10 Pro 64-bit
- 4x mPCIe (full-size) free

MINI PC FOR VISION

Intel® Core™ i7, 4x DP1.4, 2x GLAN, 6x USB3.0

Spectra PowerBox 32A1-i7 BV | Art. N° 145772

- Width x Height x Depth: 227 x 133 x 261 mm
- Intel® Q170 chipset, Intel® Core™ i7-6700 (Skylake),
  16 GB RAM (max. 32 GB, 2x 260-pin DDR4 SO-DIMM)
- 1x Intel® I210-AT GLAN, 1x Intel® I219-LM GLAN, 2x RJ45
- PNY 3D-Graphics card P1000, 4x mDP1.4 (4x mDP/DP-Adapter),
  Max. resolution 4x 5.120 × 2.880
- Storage: 1x 512 GB 2.5" SATA-6G SSD, 1x internal 2.5" free
- I/O interfaces: 6x USB3.0, 2x USB2.0, 6x RS-232/422/485, 8x DIO
- 9 – 48 VDC external power adapter 220 W, Efficiency >93%
- Microsoft® Windows® 10 Pro 64-bit
- 1x mPCIe (full-size) free

COMPONENTS FOR
IMAGE PROCESSING & MACHINE VISION

IGS-5225 Series

POE SWITCHES / INJECTOR / SPLITTER / EXTENDER

Model	Ports				Managed	Operating temperature	Feature	Art. N°
	Total	PoE TX	TX	SFP				
IGS-801T	8	--	8x 1000	--	no	-40 to 75 °C	12 to 48 VDC	151765
IGS-504HPT	5	4x 1000	1x 1000	--	no	-40 to 75 °C	4x PoE+, IEEE 802.3af/802.3at, max. 30W pro Port	152484
IGPS-1080-24V	8	8x 1000	--	--	no	-40 to 70 °C	8x PoE+, IEEE 802.3at, max. 30W pro Port, 24VDC in	126121
IGPS-1080A	8	8x 1000	--	--	no	-40 to 70 °C	8x PoE+, IEEE 802.3at, max. 30W pro Port, slim	126120
IGPS-9080-24V	8	8x 1000	--	--	yes	-40 to 70 °C	8x PoE+, IEEE 802.3at, max 30W pro Port, 24VDC in	151656
IGS-5225-4UP1T2S	7	4x 1000	1x 1000	2x 1000	yes	-40 to 75 °C	4x PoE++ (60W), 2x DI, 2x DO	152487
IGS-5225-8P2S2X	12	8x 1000	--	2x 1000 2x 10G	yes	-40 to 75 °C	8x PoE+, IEEE 802.3at, max. 30W pro Port	151858

Model	Ports				Managed	Operating temperature	Feature	Art. N°
	Total	PoE TX	TX	SFP				
INJ-102GT++-24	2	1x 1000	1x 1000	--	--	-25 to 70 °C	Injector, 1x PoE++ (90W), 24VDC	152419
IPOE-171S	1	1x 1000	1x 1000	--	--	-40 to 75 °C	Splitter, 1x PoE++ (90W), 2x 45W@24VDC	151859
IPOE-E174	5	4x 1000	1x 1000	--	--	-40 to 75 °C	Extender, 1x PoE++ (90W) to 4x PoE+ (30W)	152493

COMPONENTS FOR IMAGE PROCESSING & MACHINE VISION

Intel® I350-T4v2

NETWORK CARDS

Model	LAN	Bus	Form factor	Connectors	Feature	Art. N°
EX-6072-2	Dual Gigabit	PEX1	LPHL	2x RJ45	--	144385
EX-6074-2	Quad Gigabit	PEX4	FHHL	4x RJ45	--	145974
PL8608X4	Quad Gigabit	PEX4	FHHl	4x RJ45	--	128000
Intel® I210-T1	Gigabit	PEX1	LPHL	1x RJ45	Server	132614
Intel® I350-T2v2	Dual Gigabit	PEX4	LPHL	2x RJ45	Server	143676
Intel® I350-T4v2	Quad Gigabit	PEX4/2.0	LPHL	4x RJ45	Server	143674
Intel® X550-T1	10-Gigabit	PEX4/3.0	LPHL	1x RJ45	Server	152140
Intel® X550-T2	Dual 10-Gigabit	PEX4/3.0	LPHL	2x RJ45	Server	153040
IPCIE-4POE	Quad Gigabit PoE(af)	PEX4	FHHL	4x RJ45	15,4 W pro Port	151384

PNY Nvidia Quadro P4000

PROFESSIONAL GRAPHICS CARDS

Model	Graphics	Bus	Form factor	Connectors	Power consumption	Art. N°
PNY Nvidia Quadro P4000/8GB	Hi-End-3D	PEX16/3.0	1 SFHHL	4x DP1.4	105 W	152691
PNY Nvidia Quadro P2000/5GB	Mid-3D	PEX16/3.0	1 SFHHL	4x DP1.4	75 W	152635
PNY Nvidia Quadro P1000/4GB	Mid-3D	PEX16/3.0	1 SLPHL	4x mDP1.4	47 W	152146
PNY Nvidia Quadro P600/2GB	Entry-3D	PEX16/3.0	1 SLPHL	4x mDP1.4	40 W	152145
PNY Nvidia Quadro P600DVI/2GB	Entry-3D	PEX16/3.0	1 SLPHL	4x DVI-D (SL)	40 W	152224
PNY Nvidia Quadro P400/2GB	Entry-3D	PEX16/3.0	1 SLPHL	3x mDP1.4	30 W	152144
PNY Nvidia Quadro P400DVI/2GB	Entry-3D	PEX16/3.0	1 SLPHL	3x DVI-D (SL)	30 W	152225
PNY Nvidia NVS 810DP/4GB	Business	PEX16/3.0	1 SFHHL	8x mDP1.2	68 W	152673

More informations at www.spectra.de/BV

MODERN PRODUCTION – HIGH-QUALITY PRODUCTS IN SERIES

Our careful selection of components combined with numerous and extensive tests guarantee the quality of our products, their reliability and your security! No company can afford downtimes nor should it have to.

We therefore test all our systems, which leave our premises, in a practice-based 24-hour burn-in test so that can be rest assured that the product that has been individually matched with your requirements will reliably withstand even the toughest demands.

SERVICE AND SUPPORT

In addition to the warranty and quality assurance, we offer our customers not only expert individual advice, but also competent support during commissioning and if any problems arise in service. Our repair department provides rapid, reliable and uncomplicated assistance – also on our customers' premises.

MANY GOOD REASONS FOR SPECTRA PCS:

- Competent advice and needs analysis
- Well-thought-out system from an experienced manufacturer
- Various form factors & equipment
- Cost-effective
- Fast delivery times
- 24 h Burn-in test
- 24 months warranty

SPECTRA INDIVIDUAL – TAILOR-MADE IPCS
FROM DEVELOPMENT TO MECHANICAL ADJUSTMENT

There are always cases where standard solutions are not sufficient, for example when it comes to realising a system in the corporate design of your company, implementing specific technical requirements for which no standard components are available in the market or ensuring optimum ease of use. Spectra Customised is designed exactly for these cases.

Customised industrial PC chassis

There are numerous aspects that can necessitate the development of a customised chassis, for example if your machine has special space requirements where a standard housing is not suitable, if the chassis needs special protection against opening by unauthorised persons or if a customised product design has to be met.

Numerous mechanical modifications

If the ready-made industrial PC meets your requirements as regards the basic configuration and only minor adaptations are required, such as an additional interface led out of the housing, this can be done by the staff members in our workshop. This is where these and other mechanical modifications are carried out in consultation with the customer.

FURTHER SERVICES

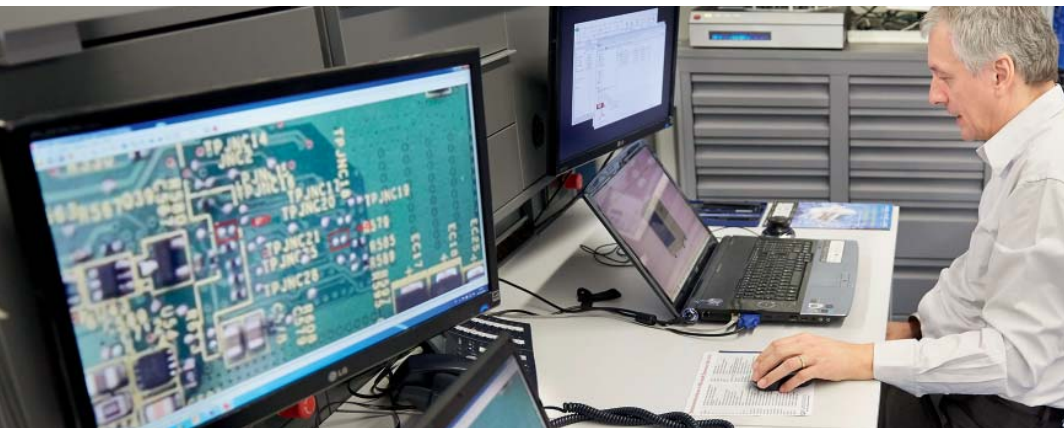**Hardware**

- Configuration adaptation
- Customisation
- Tests and certifications

Software

- Application software
- Operatinig system
- BIOS/UEFI

Process

- Article number / Serial number / Versions
- Component-Kits
- Individual Logistics concepts
- Projects
- Product lifecycle management

powered by individuality

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Industrie-PC & Automation