b - plus

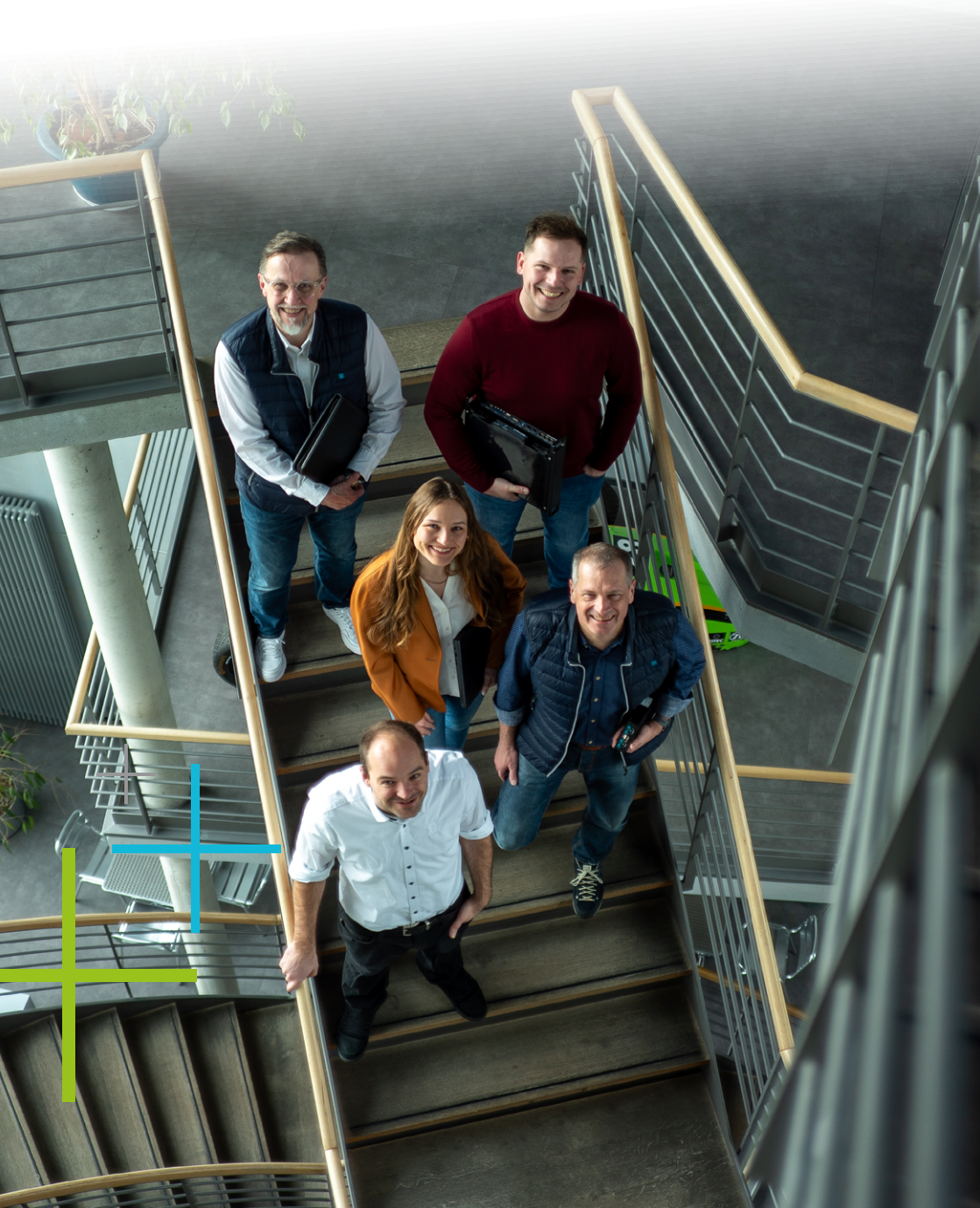
PIONEERING
NEW MOBILITY

Data Driven Development Tools

The smart scalable ADAS/AD development solutions tailored for your requirements

About b-plus

PIONEERING NEW MOBILITY



With our **passion** for innovative and technological **solutions**, we are shaping the **safe automation** of the **mobile future**.
PROFESSIONAL RELIABILITY – FOR MORE THAN 25 YEARS.

We are technology drivers and engineering partners for the development, testing and validation of driver assistance systems and control units. Since our foundation in 1996, we have established ourselves as an internationally networked and valued engineering partner in the development of hardware and software solutions for autonomous and automated driving.

With our high-performance technologies, our vision of a new mobility and the power to implement it, we are a strong partner and accompany our customers and business partners on their way to new mobility.
The complementary business units of the b-plus Group in automotive software, measurement technology for test Systems and mobile automation form a broad spectrum to holistically drive the further development of our technologies for development tools, measurement technology and the automation of mobile machines.

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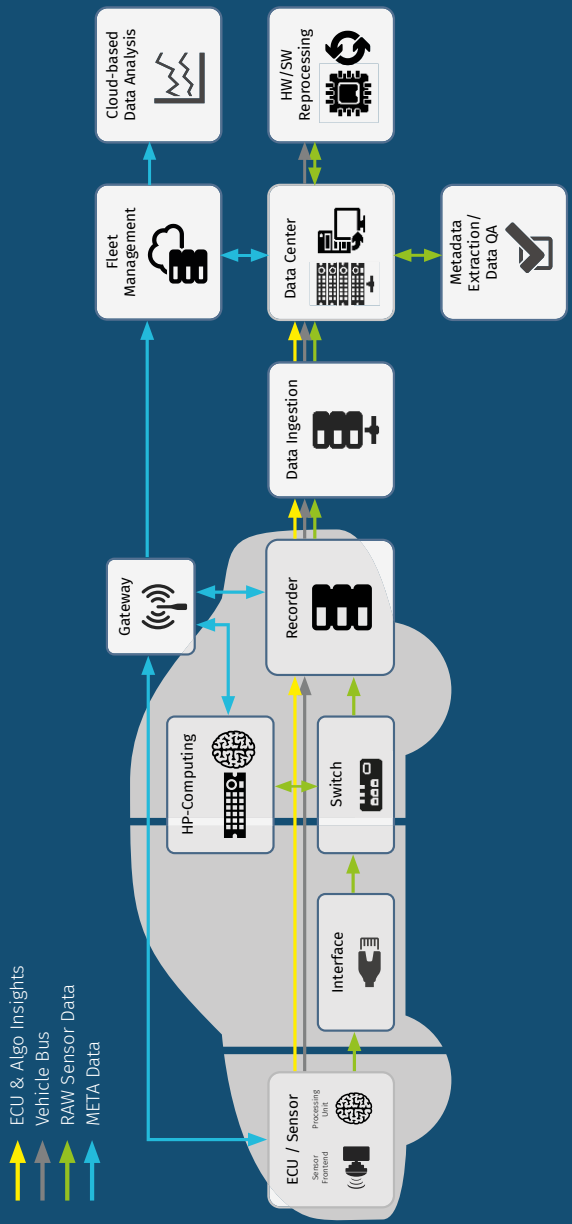
b-plus Added Value



AVETO Starter Kit

Easy entry into the world of sensor validation

All in One Demo System

The AVETO Validation Toolchain offers a complete development system consisting of recorder, measurement technology adapter and the visualization framework for the entire validation process for recording, analysis and processing of many sensors. Mastering the data and being able to start the validation process earlier is just one goal of the AVETO solution. The application areas for this system are demanding measurement tasks for driver assistance systems (ADAS) or automated and autonomous driving (AD).

With the AVETO Starter Kit you take the first steps in sensor validation. You receive a complete setup for validation of two camera systems. Of course, you can also expand this setup afterwards and adapt it to your needs.

Highlights

- Complete setup for validation of two camera systems
- Expandable setup

- BRICKplus Data Recorder
- BRICK STORAGEplus 16 TB

- Time Synchronization PTP and gPTP

- 4 Channel GMSL2 Measurement Data Interface
- 5.3 MP GMSL2 camera

- 5x 1 Gb Ethernet Ports TS
- 6x 1 Gb Ethernet Ports TS, PoE
- 2x 10 Gb Ethernet Ports TS
- 8x CN FD Interface

- AC/DC Power Supply 12 V

Specifications

Electrical Specification		
Supply Voltage	12 V or external AC Power Supply 85 ~ 264 VAC	
typ. Power consumption	250 W	
Environment Specification		
operation Temperature	-20 °C to +70 °C	
non operation	-40 °C to +75 °C	
Air humidity	90% non-condensing	
IP protection class	IP 20	
Mechanical Specification		
Dimensions	320 mm (W) x 250 mm (D) x 88 mm (H)	BRICKplus Recorder only
Certification	CE, RoHS, REACH	

Order Information Accessories

Name	Part Number	Description
AVETO Starter Kit GMSL	B17575-BCS-004-0000	AVETO Starter Kit, high bandwidth data recording system for sensor / ECU validation

Scope of Delivery

B17575-BCC-108-BA00	BRICK-CORE-COMplus BMC, including full version b-plus XTSS time synchronization service
B17575-BSC-101-016T	BRICK STORAGEplus, 16TB SATA RAID, EVO SSD
B17575-BMC-VB2-0008	BRICK Measurement Card, 8x CAN-FD
B17575-BMC-ETH-6000	BRICK Measurement Card , 6x 1GbE TS and PoE
B21671-MDI-001-0003	Measurement Data Interface , 2x GMSL2 TAP
B17575-ACC-007-0001	Power break out board, cable set and 12V power supply
	5,3MP GMSL2 camera, IMX490 imager and integrated GEO Semi GW5400 ISP
	AVETO Software Suite pre-installed

Watch the video and learn more about the **AVETO Starter Kit**

BRICKplus

ADAS measurement platform

BRICKplus

ADAS/AD Measurement Platform

BRICKplus is the central measurement and communication unit for the acquisition and recording of high bandwidth data.

The application areas for this platform are demanding measurement tasks for driver assistance systems (ADAS) or automated and autonomous driving (AD).

BRICKplus is a modular platform for a very flexible adaption and integration in sensor and ECU development and validation systems. Due to the optimized architecture a recording performance up to 16 Gbit/s opens a wide range of validation use cases.

Highlights

- Quad Core Processor, 32GB RAM
- Integrated GPU
- Cluster Time Sync via IEEE 1588v2 802.1AS-2020 multi domain
- Hardware time synced Ethernet interfaces
- Modular system for measurement Add-On BMC

High I/O Bandwidth

- 2x 10GBase-T Ethernet
- 6x 1GBase-T Ethernet
- 4x USB3.1

- Optimized PCIe 3.0 architecture for high bandwidth recording up to 16 Gbit/s
- Time Synchronization System XTSS
- Integrated and compact hardware platform
- Designed for harsh environments
- Extended temperature range -25 °C to +70 °C

Watch the video and learn more about the **BRICKplus**

BRICKplus

ADAS measurement platform

Features

Interfaces		
Ethernet	2x 10GBase-T, RJ45	(g)PTP IEEE 802.1AS-2020
	5x 1000Base-T, RJ45	(g)PTP IEEE 802.1AS-2020
	1x 1000Base-T, RJ45	management port
	integrated Wi-Fi module	optional
Video	DP Interface	Integrated GPU
GPS	integrated GNSS module	
I/O	SYSCRTL (ignition), 4x GPI, optional 4x GPO	
USB	4x USB A 3.1 Gen1	
SATA	2x eSATA 6G via SFF8088, CFast Slot	eSATA need self-powered device
STORAGE Interface	PCIe 3.0 x4 STORAGE expansion slot	22mm slot for BRICK STORAGE
BRICK SPC	2x PCIe 3.0 x8 Slot (mech. x16 and x8)	Max. 5A @12V (60W)
BRICK BMC	2x BRICK Measurement Card BMC	PCIe based module concept

Specifications

System		
CPU	Intel® Core™ i7-6820HE, HD Graphics 530	
Memory	32GB DDR4 RAM, 128 GB M.2 internal	
Ethernet	1x Intel® x550 (x540) dual 10GBase-T controller 5x Intel® I210 1000Base-T controller	hardware based platform time synchronization for highest accuracy
Operating System	Windows 10 IoT Enterprise, Ubuntu 20.04	other on request
ADAS Framework	AVETO® ready x64 platform	
Electrical Specification		
Supply Voltage	12V (10V – 28V) wide range	6V short term cranking save
Typ. Power consumption	100 - 140Watt including STORAGE	depends on configuration and used BRICK STORAGE
Max. Power consumption	200W	incl. measurement add-on and STORAGE
Environment Specification		
operation Temperature	-25°C to +70°C	@typical performance
non operation	-40°C to +85°C	
Relative Air Humidity	max. 90 % non-condensing	
Mechanical Specification		
Dimensions	320 mm (W) x 250 mm (D) x 66 mm (H)	BRICK CORE COMplus
	320 mm (W) x 250 mm (D) x 88 mm (H)	BRICK CORE COMplus BMC
	320 mm (W) x 250 mm (D) x 110 mm (H)	BRICK CORE COMplus SPC
Weight	approx. 7kg	
Certification	CE, FCC, VCCI, IECS, RoHS, REACH	

Order Information

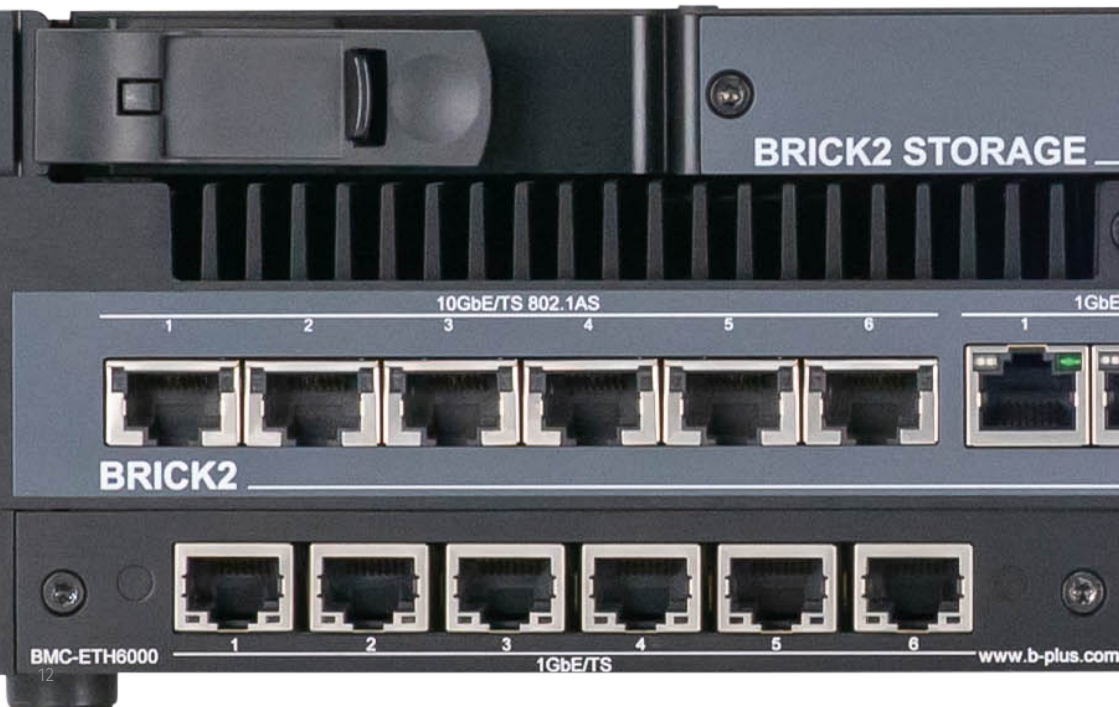
Name	Part Number	Description
BRICK-CORE-COMplus 	B17575-BCC-100-0000	BRICK-CORE-COMplus measurement and recording platform for ADAS and AD development
BRICK-CORE-COMplus BMC 	B17575-BCC-107-BA00	BRICK-CORE-COMplus measurement and recording platform for ADAS and AD development, dual slot BMC Add on empty
BRICK-CORE-COMplus SPC 	B17575-BCC-101-SA00	BRICK-CORE-COMplus measurement and recording platform for ADAS and AD development, dual slot PCIe Add on
BRICK STORAGEplus 	B17575-BSC-101-0xxT	BRICK STORAGEplus, 8 TB, 16 TB, 32 TB, 8x SATA SSD EVO, PCIe 3.0, including neoprene protection cover
BRICK STORAGEplus 	B17575-BSC-102-016T	BRICK STORAGEplus, 15,36 TB, 8x SATA SSD EXT extended temperature, PCIe 3.0, including neoprene protection cover
x4 STORAGE NVMe	coming soon	x4 STORAGE NVMe 15, 30, 60 TB, 8x M.2 SSD, integrated download port, neoprene protection cover, x8 adapter

Order Information Accessories

Name	Part Number	Description
220W AC/DC power supply	B17575-ACC-004-0001	BRICK Accessories Set 002 AC Power + EURO CEE7/7, 220 W AC power supply, In: 85-264 VAC, Out: 24 V DC / 9,2 A
BRICK Protection bar 66mm	B17575-ACC-008-0066	Set of 2 pieces. protection and handle bar 66 mm for BRICK2
BRICK Cable Guard	B17049-ACC-008-0000	Cable Guard 66mm with handles, screws and cable ties
BRICK Installation set 66, 88, 110 mm for ITEM Profile 20	B17575-BIM-001-00xx	Installation set 66, 88, 110mm for BRICK system components
COPYLynx G7. K1 - BSC/x4 STORAGE	B16017-CLY-107-0001	Multifunctional data copy station for decentral and data center use. Copy data from BRICK STORAGEplus to disk or USB or upload via 10 GbE
Measurement Card BMC-ETH 6000	B17575-BMC-ETH-6000	Time-synchronized measurement card with 6x 1GbE 802.1AS ports and power over Ethernet support
Measurement Card BMC-VB2 8x CAN FD	B17575-BMC-VB2-0008	Flexible Measurement Card based on FlexCard PMC-II with max 8 CAN FD ports

BRICK2

Measurement platform for driver assistance and autonomous driving



BRICK2

ADAS/AD Measurement Platform

BRICK2 is the next generation ADAS and AD measurement platform for the acquisition, processing and recording of high bandwidth data.

The application areas for this platform are demanding measurement tasks for driver assistance systems (ADAS) or automated and autonomous driving (AD).

BRICK2 is a modular platform for a very flexible adaption and integration in sensor and ECU development and validation systems. Due to the optimized architecture a recording performance up to 32 Gbit/s opens a wide range of validation use cases.

Highlights

- Hexa Core Processor, 64GB RAM
- Integrated GPU
- Cluster Time Sync via IEEE 1588v2 802.1AS-2020 multi domain
- Hardware time synced Ethernet interfaces
- Modular system for measurement Add-On BMC

Massive I/O Bandwidth

- 6x 10GBase-T Ethernet
- 3x 1GBase-T Ethernet
- 4x USB3.1

- Optimized PCIe 3.0 architecture for high bandwidth recording up to 32 Gbit/s
- Time Synchronization System XTSS
- Integrated and compact hardware platform
- Designed for harsh environments

BRICK2

Measurement platform for driver assistance and autonomous driving

Features

Interfaces		
Ethernet	6x 10GBase-T, RJ45	(g)PTP IEEE 802.1AS-2020
	3x 1000Base-T, RJ45	(g)PTP IEEE 802.1AS-2020
	1x 1000Base-T, RJ45	management port
Serial Port	Rx/Tx NMEA, PPS	external time synchronization
Video	DP Interface	Integrated GPU
GPS	integrated GPS module	24 h backup cap for fast positon fix
I/O	SYSCRTL (ignition), 4x GPI, optional 4x GPO	
USB	4x USB A 3.1 Gen1, 4x USB A 2.0	
STORAGE	PCIe 3.0 x8 STORAGE expansion slot	22mm slot for BRICK2 STORAGE
	up to 32 GBit/s sustained writing speed	with BRICK2 STORAGE NVMe
BRICK2 SPC	2x PCIe 3.0 x8 Slot (mech. x16 and x8)	max. 5A @12V (60W)
BRICK2 BMC	2x BRICK Measurement Card BMC	PCIe based module concept

Specifications

System		
CPU	Intel® Core™ i7-9850HE, UHD Graphics 630	
Memory	RAM, 64GB DDR4-2666, 512 GB M.2 internal	
Ethernet	3x X550 dual 10GBase-T controller, 3x I210 1000Base-T	hardware based platform time synchronization for highest accuracy
Operating System	Windows 10 IoT Enterprise, Ubuntu 20.04	other on request
ADAS Framework	AVETO® ready x64 platform	
Electrical Specification		
Supply Voltage	12V (10V – 32V) wide range	6V cranking save for short term
typ. Power consumption	150 - 220Watt including STORAGE	depends on configuration and used BRICK2 STORAGE
max. Power consumption	350W	incl. measurement add-on and STORAGE
Environment Specification		
operation Temperature	-20°C to +60°C	@typical performance, full load, all interface active
non operation	-40°C to +85°C	
Relative Air Humidity	max. 90 % non-condensing	
Mechanical Specification		
Dimensions	320 mm (W) x 250 mm (D) x 66 mm (H)	BRICK2
	320 mm (W) x 250 mm (D) x 88 mm (H)	BRICK2 BMC
	320 mm (W) x 250 mm (D) x 110 mm (H)	BRICK2 SPC
Weight	7kg	
Certification	CE, FCC, VCCI, IECS, KC, RoHS, REACH	

Order Information

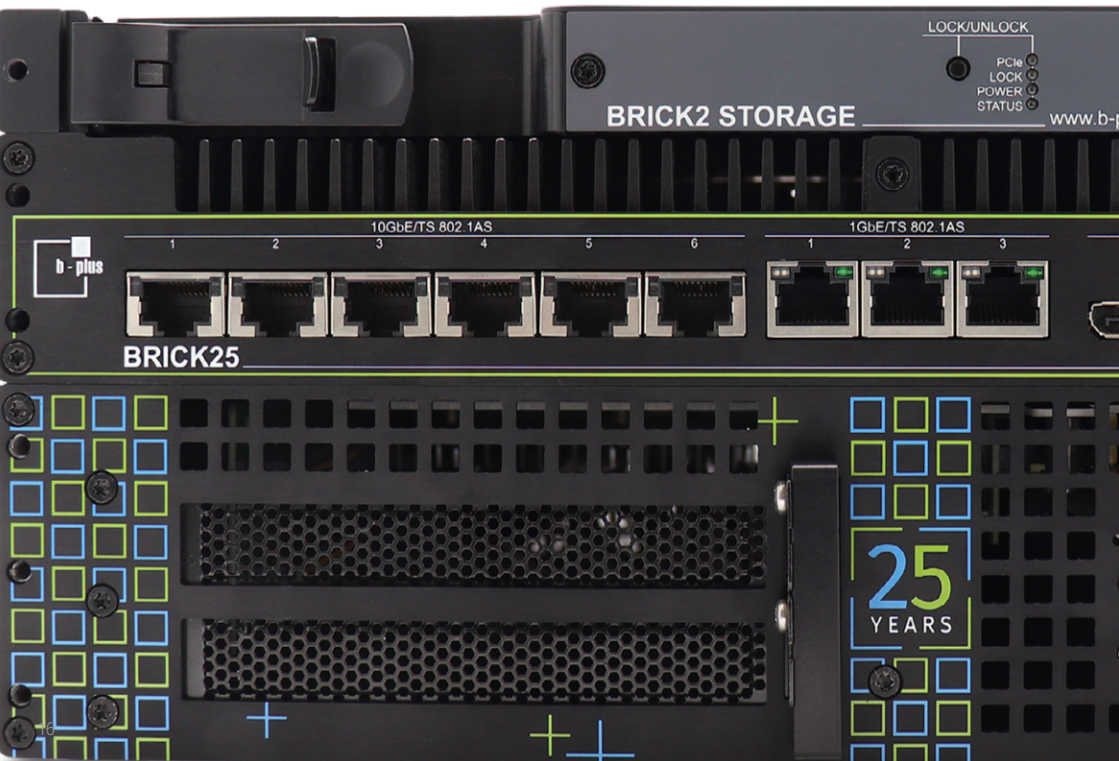
Name	Part Number	Description
BRICK2 	B17049-B2C-001-0000	BRICK2 measurement and recording platform for ADAS and AD development
BRICK2 BMC 	B17049-B2C-002-0000	BRICK2 measurement and recording platform for ADAS and AD development, dual slot BMC Add on empty
BRICK2 SPC 	B17049-B2C-003-0000	BRICK2 measurement and recording platform for ADAS and AD development, dual slot PCIe Add on
BRICK2 STORAGE	B17049-B2S-101-0xxT	BRICK2 STORAGE, 8 TB, 16 TB, 32 TB, 8x SATA SSD EVO, PCIe 3.0, including neoprene protection cover
BRICK2 STORAGE	B17049-B2S-102-016T	BRICK2 STORAGE, 15,36 TB, 8x SATA SSD EXT extended temperature, PCIe 3.0, including neoprene protection cover
BRICK2 STORAGE NVMe	B17049-B2S-202-030T	BRICK2 STORAGE NVMe 30 TB, 8x E1.S SSD

Order Information Accessories

Name	Part Number	Description
360W AC/DC power supply	B09003-PWR-002-03	Desktop type power supply 360 W In: 90-264 V AC, 50 -60 Hz, Out: 13.8 V DC / 26 A
750W AC/DC Power Supply	B09003-PWR-003-0750	Desktop type power supply 750 W, In: 90-264 V AC, 47-63 Hz, Out: 12 V DC / 62,5 A
BRICK STORAGE Upgrade kit for BRICK2	B17049-ACC-004-0001	Upgrade kit for BRICK STORAGE and BRICK STORAGEplus to BRICK2 STORAGE interface
BRICK Protection bar 66mm	B17575-ACC-008-0066	Set of 2 pieces. protection and handle bar 66 mm for BRICK2
BRICK2 Cable Guard	B17049-ACC-008-0000	Cable Guard 66mm with handles, screws and cable ties
BRICK Installation set 66, 88, 110 mm for ITEM Profile 20	B17575-BIM-001-00xx	Installation set 66, 88, 110mm for BRICK system components
COPYLynx	B16017-CLY-107-xxxx	Multifunctional data copy station for decentral and data center use. Copy data from BRICK2 STORAGE to disk or USB or upload via 10 GbE
MDLake Connection Set - BRICK2, 2x 100 GbE	B24004-ICO-004-2211	BRICK2 STORAGE Link 2100, 2x 100 GbE 1x DAC Ethernet Cable QSFP28, 1 m Starwind NVMe-oF Software and License on USB Stick
Measurement Card BMC-ETH 6000	B17575-BMC-ETH-6000	Time-synchronized measurement card with 6x 1GbE 802.1AS ports and power over Ethernet support
Measurement Card BMC-VB2 8x CAN FD	B17575-BMC-VB2-0008	Flexible Measurement Card based on FlexCard PMC-II with max 8 CAN FD ports

BRICK25

Measurement platform for driver assistance and autonomous driving with GPU Add-On



BRICK25 PCIe GPU

ADAS/AD Measurement Platform

BRICK25 PCIe GPU is the compact intelligent recording ADAS and AD measurement platform for AI accelerated recording and processing of high bandwidth data.

The application areas for this platform are demanding measurement tasks for driver assistance systems (ADAS) or automated and autonomous driving (AD).

BRICK2 is a modular platform for a very flexible adaption and integration in sensor and ECU development and validation systems.

The BRICK2 PCIe GPU now brings an enormous performance with 3584 CUDA® cores and 3rd generation tensor units to deliver unseen AI computing power for smart measurement and recording applications.

Highlights

- System performance 12,9 TFLOPS (FP32)
- Intel® Core™ Processor i7, 64GB DDR4 RAM
- NVIDIA® Geforce RTX3060 graphic accelerator

- 3584 CUDA® core Ampere GPU
- 12 GB GDDR6
- 3rd Gen Tensor core
- OpenGL 4.6 and DirectX 12

Massive I/O Bandwidth
- 6x 10GBase-T Ethernet
- 3x 1GBase-T Ethernet
- 4x USB3.1

- Optimized PCIe 3.0 architecture for high bandwidth recording up to 32 Gbit/s
- Time Synchronization System XTSS
- Integrated and compact hardware platform
- Designed for harsh environments
- PCIe expansion for measurement Add-On

Watch the video and learn more about the **BRICK25**

BRICK25

Measurement platform for driver assistance and autonomous driving with GPU Add-On

Features

Interfaces		
Ethernet	6x 10GBase-T, RJ45	(g)PTP IEEE 802.1AS-2020
	3x 1000Base-T, RJ45	(g)PTP IEEE 802.1AS-2020
	1x 1000Base-T, RJ45	management port
Serial Port	Rx/Tx NMEA, PPS	external time synchronization
Video	DP Interface	System GPU
	4x DP Interface	PCIe GPU RTX3060
GPS	integrated GPS module	Backup cap for fast positon fix
I/O	SYSCRTL (ignition), 4x GPI, optional 4x GPO	
USB	4x USB A 3.1 Gen1, 4x USB A 2.0	
STORAGE	PCIe 3.0 x8 STORAGE expansion slot	22mm slot for BRICK2 STORAGE
	up to 32 GBit/s sustained writing speed	with BRICK2 STORAGE NVMe
Measurement	2x PCIe 3.0 x4 Slot (mech. x16)	max. 5A @12V (60W), upper slot only for low profile cards

Specifications

System		
CPU	Intel® Core™ i7-9850HE, UHD Graphics 630	
Memory	RAM, 64GB DDR4-2666, 512GB M.2 internal	
Ethernet	3x X550 dual 10GBase-T controller, 3x I210 1000Base-T	hardware based platform time synchronization for highest accuracy
Operating System	Windows 10 IoT Enterprise, Ubuntu 20.04	other on request
ADAS Framework	AVETO® ready x64 platform	
Electrical Specification		
Supply Voltage	12V (10V – 28V) wide range	6V cranking save for short term
typ. Power consumption	300 - 470Watt including STORAGE	depends on configuration and used STORAGE
max. Power consumption	550W	
Environment Specification		
operation Temperature	-10°C to +60°C (tbd.)	@typical performance
non operation	-40°C to +85°C	
Relative Air Humidity	max. 90 % non-condensing	
Mechanical Specification		
Dimensions	320 mm (W) x 250 mm (D) x 132 mm (H)	
Weight	8kg (tbd.)	
Certification	CE, RoHS, REACH	

Order Information

Name	Part Number	Description
BRICK25 PCIe GPU	B17049-B2C-010-0000	BRICK25 measurement and recording platform for AI based ADAS and AD development
BRICK2 STORAGE	B17049-B2C-101-0xxT	BRICK2 STORAGE xx TB Cartridge with high performance RAID Controller and 8x SATA SSD
BRICK2 STORAGE	B17049-B2C-102-0xxT	BRICK2 STORAGE xx TB Cartridge with high performance RAID Controller and 8x SATA SSD, extended Temperature EXT
BRICK2 STORAGE NVMe	B17049-B2C-202-030T	BRICK2 STORAGE NVMe 30 TB, 8x E1.S SSD

Order Information Accessories

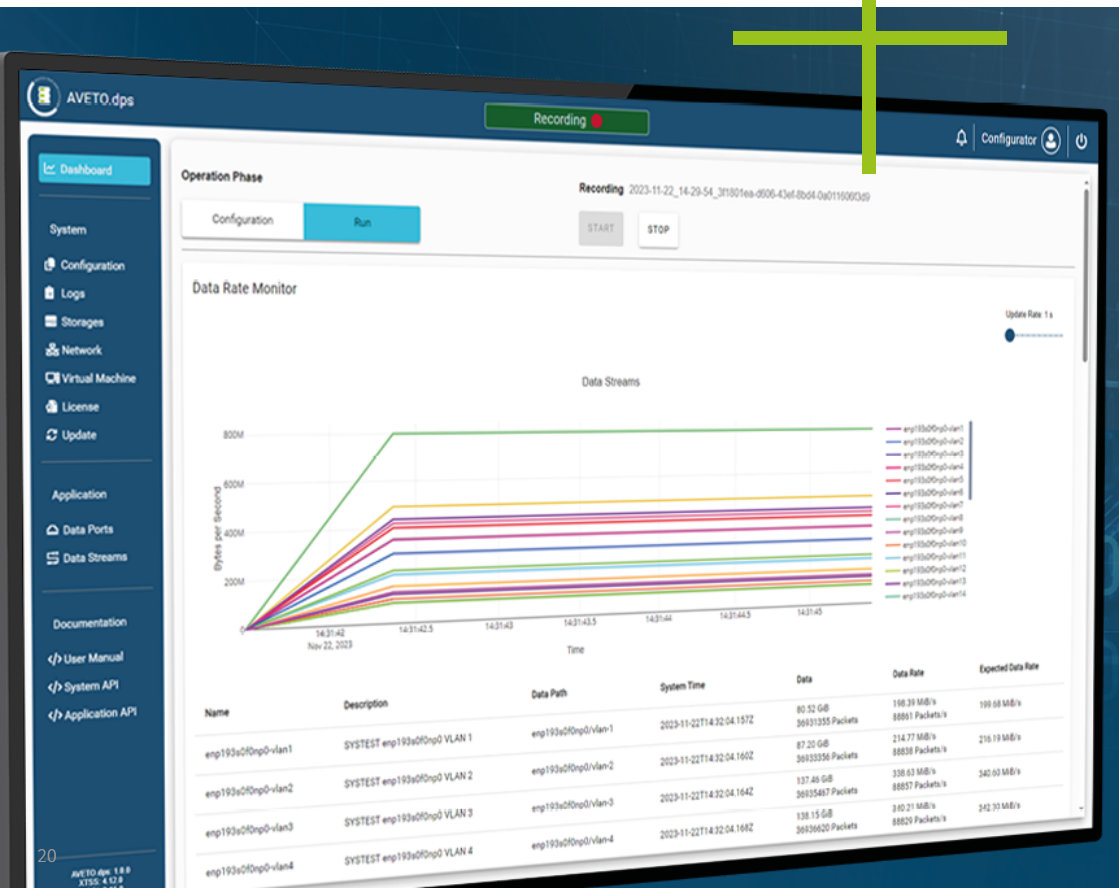
Name	Part Number	Description
BRICK STORAGE Upgrade kit for BRICK2	B17049-ACC-004-0001	Upgrade kit for BRICK STORAGE and BRICK STORAGEplus to BRICK2 STORAGE interface
BRICK Protection bar 66mm	B17575-ACC-008-0066	Set of 2 pieces. protection and handle bar 66 mm for BRICK2
BRICK2 Cable Guard	B17049-ACC-008-0000	Cable Guard 66mm with handles, screws and cable ties
BRICK Installation set 66 mm for ITEM Profile 20	B17575-BIM-001-0066	Installation set 66mm for BRICK system components with 66 mm (1½ U) height
COPYLynx	B16017-CLY-107-xxxx	Multifunctional data copy station for decentral and data center use. Copy data from BRICK2 STORAGE to disk or USB or upload via 10 GbE
MDLake Connection Set - BRICK2, 2x 100 GbE	B24004-ICO-004-2211	BRICK2 STORAGE Link 2100, 2x 100 GbE 1x DAC Ethernet Cable QSFP28, 1 m Starwind NVMe-oF Software and License on USB Stick
PCIe Measurement Card VB2 8x CAN FD	B17575-SPC-VB2-0008	Flexible Measurement Card based on FlexCard PMC-II with max 8 CAN FD ports

Open and flexible measurement technology platform meets reliable raw data logger

AVETO.dps combines the stability of a classic data logger with the flexibility of an open platform in one device

AVETO.dps is designed as a complete and integrated system that transforms b-plus measurement technology platforms such as BRICK or DATALynx ATX4 into a powerful raw data logger. It is ideal for users who need a robust and precise raw data logging solution without sacrificing the flexibility of a vehicle computer for development.

Learn more about **AVETO.dps** on **page 80** and our homepage



High-speed data acquisition and forwarding meets open system architecture

At the heart of AVETO.dps is the processing and recording of high data rates in the 100 Gbit/s performance class. The integrity and protection of valuable data is guaranteed at all times thanks to an integrated rights management for the storage.

The virtualized operating system creates an isolated, secure, and open environment for processing and visualization. Data streams can be received and processed there using middleware and frameworks that can be freely installed by the customer. The return channel and storage on the data memory parallel to the recorded raw data on the storage is also possible. The core functions of the recorder are not affected by this, which means that continuous data acquisition can be established even during intensive processing.

Resource management and system stability

A key aspect of AVETO.dps is the architecture with a virtualization solution that enables the allocation of different hardware resources to different operating systems within a single system. This promotes resource segregation and ensures high stability and reliability. Users also benefit from the ability to seamlessly switch between different operating systems within the system without the need to reboot the recorder.

Extensive data source support

The system supports a wide range of data sources such as Ethernet, CAN (FD), LIN, FlexRay, Automotive Ethernet and SerDes sources such as GMSL and FPDLink. This diversity makes AVETO.dps a comprehensive solution for collecting, recording, and analyzing data from almost any technology installed in the vehicle.

Open data formats

AVETO.dps supports advanced file formats such as the open PCAPNG and the ASAM-specified MDF4 format. These formats also offer broad tool support and high compatibility in the subsequent processing chain.

Highly accurate time synchronization

The integrated XTSS time synchronization service ensures precise time stamping of the data packets and is crucial for highly accurate correlation of the data in further processing.

A milestone in the world of raw data logging

With its advanced technology and intuitive user interface, AVETO.dps offers a unique combination of performance, flexibility, and reliability, making it a comprehensive solution in the field of raw data logging. AVETO.dps sets new standards in terms of data integrity and processing and positions itself as a unique solution on the market.

CONiX HiL Solution

Precise hardware and modular software for your individual ADAS/AD HiL use case

CONiX HiL Solution

High-precision hardware in combination with modular software for your individual HiL application

Scalable system

The CONiX HiL Solution is a scalable Open or Closed Loop ADAS/AD-HiL System. It consists of cutting edge hardware, designed for high precision raw and network data replay, combined with modular software building blocks. Coupled with highly expertised project teams we offer engineering services that ensure reliable customer solutions with early system availability

Radar, Lidar and Camera

Out-of-the-box HiL Solution to cover a lot of common raw data interfaces e.g. CSI2, GMSL2, FPD-III etc.

Highlights

- Modular concept to adapt to customer requirements
  - Scalable setup
  - High performance hardware
  - Reliable software
  - Expert engineering teams
- Fast and easy integration in customer environment and constraints due to XTSS time sync
- Independent, generic validation concepts
- KPI determination at each interface
  - CSI2
  - GMSL
  - CAN/FD
  - 100/1000BASE-T1
  - And more
- Synchronous playback of
  - Raw sensor data
  - Vehicle BUSs
  - And network information

Watch the video and learn more about the **CONiX HiL Solution**

CONiX HiL Solution

Precise hardware and modular software for your individual ADAS/AD HiL use case

Features

	CONiX HiL Developer	CONiX HiL Integration	CONiX HiL Racksystem
Raw Data Replay (CSI2, GMSL2, FPD3)	✓	✓	✓
Network Replay (CAN/FD, 100/1000BASE-T1)	✓	✓	✓
DoIP/UDS Support	✓	✓	✓
XTSS Time Sync Service	✓	✓	✓
XCP Master Lib	✓	✓	✓
24/7 Operation	✓	✓	✓
Replay Station		✓	✓
Prepared for continuous integration		✓	✓
Re-Recording		✓	✓
Remote ECU Update		✓	✓
Automated Replay		✓	✓
Cloud-Connector (down- & upload)		✓	✓
3rd party integration (hard- & software)		✓	✓
Drawer		✓	✓
Rack (incl. power management)			✓
Ethernet Switch (optional)			✓
Replay Manager & Dashboard			✓
Operational Support			✓

Package description

CONiX HiL Developer

Hardware in the loop for developer's desks

The developer system is designed for usage on the desk of software and algorithm developers. It contains a hardware platform (b-HIL), equipped with a standard SensorConnectorBoard (SCB), a bus replay license and the XTSS time sync service.

In combination with the compact design the system offers new possibilities in development of ADAS/AD sensors. By just plugging in some Ethernet cables and using the API or command line tools, a realistic environment for your sensor/ECU is created.

This enables an early stage testing of the developed algorithm for its usability in HIL mode. This initial tests in the system lead to the earliest possible detection of bugs.

CONiX HiL Integrator

Standard HiL system for all ADAS/AD scenarios

The integrator system comes mounted in a compact tray: a powerful player hardware with an included raw data interface, network replay, power-on/off relais, 3rd party hard-/software integrations and a re-recording possibility. It provides a complete environment for integration and testing in a compact 19" tray.

This stand alone system is easy to integrate to CI / CD environments to work as an integration test station. Configurable workflows and sequences make it easy for the user to adapt the functionality to different ECU behaviours or cloud/data-center platforms.

A bunch of protocol stacks, importers and converters can be added on demand: e.g. XCP and DoIP/UDS stacks for highest flexibility, or MDF4 reader/writer for compatibility.

The CONiX HiL Integrator provides a highly flexible, adaptable test environment that enables easy integration and usage of the HiL Solution with minimum effort.

CONiX HiL Rack System

HiL farm for high data throughput

Targeting the need of 24/7 systems with high data throughput, the CONiX Hil Rack System is the best choice for the usage of sensor or ECU validation.

By combining single rack trays with power supplies and high end network switches in large 19" racks, the required validation performance can be easily scaled.

Optional bundles, like a Replay Manager to orchestrate the clients or an Operational Support with a technical hotline for immediate problem resolutions complete the portfolio.

The CONiX HiL Rack System provides all the benefits of our HiL Integrator, scaled up into a 19'' rack for fully automated replay. The scalable setup enables a comfortable usage and reduces user maintenance as well as system failures.

b-HiL

ADAS HiL Raw Data Injection System

Compact HiL Raw Data Injection System for ADAS ECUs up to SAE-Level 3

The b-HiL platform delivers the ideal solution for Hardware-in-the-Loop tests. It works as a raw data re-injection system, featuring a scalable FPGA/SoC concept.

Your control units are electrically and mechanically connected to the b-HiL via a Sensor Connector Board (SCB) or via cable.

The size of the b-HiL allows it to be used not only in the test bench but also directly at the developer's workstation.

There are 10 Gigabit Ethernet interfaces which are ideal for a high bandwidth raw data transfer, especially necessary for high-resolution camera based ADAS ECU's.

The b-HiL creates best preconditions for open loop test runs with its features and interfaces.

Highlights

- Scalable processing power
- Optimized for multi-gigabit raw data replay
- 10GBASE-T interface for raw data transfer

- Various automotive bus interfaces onboard CAN, CAN-FD, 100BASE-T1, 1000BASE-T1
- Extensive embedded sensor interfaces (e.g., CSI2, ZipWire)

- Dual core ARM processor
- Sync and Trigger I/Os
- Powerful FPGA family
- Data integrity monitoring
- Option for time synchronization

- Cluster scalability (e.g., crosslinking two b-HIL systems)
- Suitable for ADAS development at the developer's workstation
- Highly adaptable for various ECUs with custom sensor connector board

Features

Functional details

- Linux based system
- Standalone-operation possible
- Interfaces for CAN, Ethernet, and ADAS sensors (e.g., CSI-2)
- Programmable status LED
- Transfer of data per Ethernet interface connection possible
- Sustainable through possible update solutions and expandability
- GPIO for trigger signals
- Enhancement of ECU software predevelopment
- Replacement of error prone Monitor HiL-Systems → cost reduction
- Reduced workspace requirements – ideal for developer workstation
- Cooling with fan, ECU power demand at up to 36 W possible
- Device monitoring system included (e.g., temperature)
- Option for clustering, ideal for the requirements of e.g., sensor fusion (HW stackable)
- SW-API for Windows and Linux available

Specifications

Logic & Processing System

- bHiL45 – 350k logic cells
- Dual ARM Cortex-A9 MPCore
- 1 GByte DDR3 SDRAM

Interfaces

- CAN, CAN FD, 100BaseT1, 1000BaseT1, 10GBaseT, GPIO

Supply Voltage

- 12 V DC

Dimensions

- 250 mm (L) x 175 mm (W) x 95 mm (H)
- Rugged metal case

Available SCB based interfaces

- 2x H-MTD GMSL 2 Twisted Pair
- 4x miniSAS CSI2
- 4x Fakra GMSL2 Coax
- 4x Fakra FPDLink 3

Accreditation

Project definition

Concept of SCB

b-HiL with open SCB case

Customer-specific Adaptable

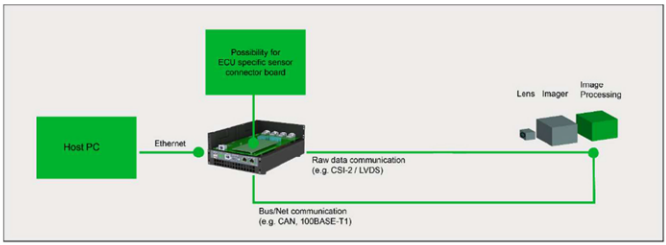
Sensor Connector Board (SCB)

For the ECUs/sensor, a custom Sensor Connector Board (SCB) is necessary. The ECUs differ from customer to customer. The SCB enables simple, customer-specific integration of the customer ECU into the b-HiL system.

Here an example configuration is shown. If there would be, e.g., an ECU interface change in a follow-up project, it is possible to exchange only the SCB and reuse the baseboard.

Need for adaptability / project diversity

- Possible connection of sensors / ECUs with different interfaces and use cases for the customer (e.g., CSI-2, ZipWire, ...)
- Variable for sensors (imager, radar, ...)
- Emulation of sensor parts possible
- Replay of synthetic generated image data
- Customer-specific imager-initialization (e.g., with I^2C)



BRICK ThunderDock TB3

Docking station for high bandwidth data download

Removable Mass Storage Device

The BRICK THUNDER DOCK TB3 docking station is designed to connect a BRICK STORAGE or BRICK STORAGEplus via Thunderbolt™ 3 interface to any standard PC-System (with Thunderbolt™ 3 or 4 interface).

Highlights

- Integrated dual Thunderbolt™ 3 interface
- High bandwidth data download
- Robust and reliable design

Suitable for:

- BRICK STORAGE
- BRICK STORAGEplus

Features

Interfaces		
Thunderbolt™ 3	2x USB-C connector	dual Port for cascading
STORAGE Interface	b-plus STORAGE x4	PCIe 3.0, 4 lanes
Power	Barrel plug	12V AC/DC power Adapter

Specifications

Electrical Specification	
Supply Voltage	12 V
typ. Power consumption	50 W including STORAGE
Environment Specification	
operation Temperature	0 °C to +40 °C
non operation	-40 °C to +75 °C
Air humidity	90% non-condensing
IP protection class	IP 20
Mechanical Specification	
Dimensions	320 mm (W) x 250 mm (D) x 66 mm (H)
Weight	3 kg
Certification	CE, FCC, VCCI, IECS, RoHS, REACH, China RoHS

Order Information Accessories

Name	Part Number	Description
BRICK THUNDER DOCK TB3	B17575-BTD-004-0TB3	Thunderbolt™ 3 Docking Station for BRICK STORAGE

Scope of Delivery

BRICK THUNDER DOCK TB3

Power cable IEC-320-C7 > CEE 7/16, 1.8 m, black (Euro)

Power cable IEC-320-C7 > NEMA 1-15P, 1.8 m, black (US, JP)

Thunderbolt 3 cable, 1 m, active

Desktop type power supply 60 W, 12 V, 5 A

BRICK STORAGEplus

Removable Storage with up to 32 TB capacity and 16 Gbit/s write performance for your ADAS/AD measurement setup

Removable Mass Storage Device

BRICK STORAGEplus is a removable mass Storage device up to 16 Gbit/s sustained write performance for BRICKplus measurement and recording systems.

PCI Express 3.0 based host connection for maximum data throughput. Hardware RAID Controller system for most flexibility and best performance to power ratio.

Proven SATA SSD technology for high capacity, bandwidth and data duration.

Highlights

- Removable device for simple data handling
- Compact and robust design for harsh environment
- Operation temperature -10 °C to +50 °C (EVO) and -20 °C to +70 °C (EXT)

- High performance RAID system up to 16 Gbit/s sustained write
- Various capacities of 8 TB, 16 TB, 32 TB (EVO)
- 15,36 TB for EXT Version (enterprise i-Temp)
- Software encryption AES 256 bit with hardware acceleration

- Status indicator for diagnostics
- Integrated µController based SIODI system management for safe operation

Features

Host Interface	PCIe 3.0, 4 lanes	
	STORGAE Hot plug prepared	depends on host system
Architecture	high performance Hardware RAID controller	Server RAID technology
Storage modules	8 x SATA SSD	RAID 0 preconfigured
Performance	Up to 16 Gbit/s	
Encryption	Software encryption AES 256 bit with hardware acceleration	
Housing	solid aluminum housing with direct attached SSD for optimized cooling	
Cooling	passive cooling, controlled airflow from host system	

Specifications

System		
Operating System	Windows 10 IoT Enterprise, Ubuntu 20.04	other on request
Administration	b-plus administration tool	integrated b-plus SIODI API
Electrical Specification		
Supply Voltage	12V	direct powered from host system
Power consumption	up to 50W	
Environment Specification		
operation Temperature	-10°C to +50°C	for EVO SSD version
	-20°C to +70°C	for EXT SSD version
non operation	-40°C to +85°C	
Relative Air Humidity	maximum 90 %, non-condensing	
Mechanical Specification		
Dimensions	280 mm (W) x 248 mm (D) x22 mm (H)	
Weight	approx. 2kg	
Certification	CE, RoHS, REACH, VCCI, FCC, ICES	

Order Information

Name	Part Number	Description
BRICK STORAGEplus	B17575-BSC101-0xxT	BRICK STORAGEplus, 8 TB, 16 TB, 32 TB, 8x SATA SSD EVO, PCIe 3.0, including neoprene protection cover
BRICK STORAGEplus	B17575-BSC-102-016T	BRICK STORAGEplus, 15,36 TB, 8x SATA SSD EXT, PCIe 3.0, including neoprene protection cover
BRICK STORAGE Transport Case	B17575-ACC-003-0001	Very robust Transport Case for up to 5 BRICK or BRICK2 STORAGEs
BRICK STORAGE Protection Cover	B17575-ACC-010-0010	Pack of 10 BRICK STORAGE Protection Cover blue with logo print, size 305 x 265mm, 3mm neoprene
BRICK STORAGE Adapter for BRICK2	B17049-ACC-004-0002	Adapter to use BRICK STORAGEplus B17575-BSC-101-0xxT or B17575-BSC-102-0xxT on a BRICK2 system

BRICK2 STORAGE

Removable Storage with up to 32 TB capacity and 24 Gbit/s write performance for your ADAS/AD measurement setup

Removable Mass Storage Device

BRICK2 STORAGE is a removable mass Storage device up to 24 Gbit/s sustained write performance for BRICK2 and DATALynx ATX4 measurement and recording systems.

PCI Express 3.0 based host connection for maximum data throughput. Hardware RAID Controller system for most flexibility and best performance to power ratio.

Proven SATA SSD technology for high capacity, bandwidth and data duration.

Highlights

- Removable device for simple data handling
- Compact and robust design for harsh environment
- Operation temperature -10 °C to +50 °C (EVO) and -20 °C to 60 °C (EXT)

- High performance RAID system up to 24 Gbit/s sustained write
- Various capacities of 8 TB, 16 TB, 32 TB
- Software encryption AES 256 bit with hardware acceleration

- Status indicator for diagnostics
- Integrated µController based SIODI system management for safe operation

Watch the video and learn more about **Removable Logging Storages**

Features

Host Interface	PCIe 3.0, 8 lanes	
	STORGAE Hot plug prepared	depends on host system
Architecture	high performance Hardware RAID controller	Server RAID technology
Storage modules	8 x SATA SSD	RAID 0 preconfigured
Performance	Up to 24 Gbit/s, up to 20 Gbit/s for EXT version	
Encryption	Software encryption AES 256 bit with hardware acceleration	
Housing	solid aluminum housing with direct attached SSD for optimized cooling	
Cooling	passive cooling, controlled airflow from host system,	

Specifications

System		
Operating System	Windows 10 IoT Enterprise, Ubuntu 20.04	other on request
Administration	b-plus administration tool	integrated b-plus SIODI API
Electrical Specification		
Supply Voltage	12V	direct powered from host system
Power consumption	up to 50W	
Environment Specification		
operation Temperature	-10°C to +50°C	for EVO SSD version
	-20°C to +60°C	for EXT SSD version
non operation	-40°C to +85°C	
Relative Air Humidity	maximum 90 %, non-condensing	
Mechanical Specification		
Dimensions	280 mm (W) x 248 mm (D) x22 mm (H)	
Weight	approx. 2kg	
Certification	CE, RoHS, REACH, VCCI, FCC, KC	

Order Information

Name	Part Number	Description
BRICK2 STORAGE	B17049-B2S101-0xxT	BRICK2 STORAGE, 8 TB, 16 TB, 32 TB, 8x SATA SSD EVO, PCIe 3.0, including neopren protection cover
BRICK2 STORAGE	B17049-B2S-102-0xxT	BRICK2 STORAGE, xx TB, 8x SATA SSD EXT, PCIe 3.0, including neopren protection cover
BRICK STORAGE Transport Case	B17575-ACC-003-0001	Very robust Transport Case for up to 5 BRICK or BRICK2 STORAGEs
BRICK STORAGE Protection Cover	B17575-ACC-010-0010	Pack of 10 BRICK STORAGE Protection Cover blue with logo print, size 305 x 265mm, 3mm neoprene

BRICK2 STORAGE NVMe

Removable Storage with up to 60 TB capacity and 48 Gbit/s write performance for your ADAS/AD measurement setup

Removable Mass Storage Device

BRICK2 STORAGE NVMe is a removable mass Storage device with 32 to 48 Gbit/s sustained write performance for BRICK2 and DATALynx ATX4 measurement and recording systems.

A PCI Express 3.0 x8 host connection enables maximum data throughput for recording applications. PCI Express switch technology combined with datacenter SSD architecture secures highest reliability and performance stability.

Highlights

- Hot-Plug supported
- Removable device for simple data handling
- Compact and robust design for harsh environment

- NVMe RAID system
- 32 to 48 Gbit/s sustained write
- Massive Storage capacity up to 60 TB
- Encryption acc. TCG OPAL 2.01 prepared

- Status indicator for diagnostics
- Simple OS based device management
- Integrated µController based SIODI system management for safe operation

Features

Host Interface	b-plus STORAGE Interface, PCIe 3.0 x8
Architecture	PCIe 3.0 switch
Exchangeability	Hot-swap supported at BRICK2 & ATX4 with b-plus SIODI Service 3.15 or newer Hot-plug supported at BRICK2 with BIOS BCL6R969 or newer Hot-plug supported at DATALynx ATX4
System compatibility	All BRICK2 configurations All DATALynx ATX4 configurations with Add-on B2S or 8S4 COPYLynx G7 K4, COPYLynx ATX4
OS compatibility	Windows 10 / 11, Ubuntu 18.04 / 20.04 / 22.04
RAID Management	via OS disc management, recommended RAID0 / Striped Volume
Encryption	TCG Storage Security Subsystem Class: Opal Rev 2.01
Housing	Solid aluminum housing, top and bottom part with direct attached SSD
Cooling	passive cooling, controlled airflow from host system
Non-operating temperature	-40°C to +85°C
Relative Humidity	maximum 90 %, non-condensing
Dimensions	280 mm (W) x 248 mm (D) x 22 mm (H)
Weight	2.1 kg

Specifications

Part Number **Part Name** **Part Description**	**B17049-B2S-202-015T** BRICK2 STORAGE NVMe 15T 834 M74	**B17049-B2S-202-030T** BRICK2 STORAGE NVMe 30T 834 M74	**B17049-B2S-202-060T** BRICK2 STORAGE NVMe 60T 834 M74
Capacity	15.36 TB 13.97 TiB	30.72 TB 27.94 TiB	61.44 TB 55.88 TiB
E1.S NVMe SSD	8x 1.92 TB	8x 3.84 TB	8x 7.68 TB
Sustained Write	48 Gbit/s @ ATX4 32 Gbit/s @ BRICK2	48 Gbit/s @ ATX4 32 Gbit/s @ BRICK2	48 Gbit/s @ ATX4 32 Gbit/s @ BRICK2
Operating temperature with sustained performance	-10 to +60°C @ ATX4 -10 to +55°C @ BRICK2	-10 to +60°C @ ATX4 -10 to +55°C @ BRICK2	-10 to +60°C @ ATX4 -10 to +55°C @ BRICK2
Thermal Design Power	121 W	133 W	145 W
Typical Power Consumption	91 W	100 W	109 W
Qualifications	CE, VCCI, FCC, ICES	CE, VCCI, FCC, ICES	CE, VCCI, FCC, ICES
Certifications	REACH, RoHS, China RoHS	REACH, RoHS, China RoHS	REACH, RoHS, China RoHS

x8 STORAGE Gen4 E1.S

Removable Storage with up to 60 TB capacity and 96 Gbit/s write performance for your ADAS/AD measurement setup

Removable Mass Storage Device

The x8 STORAGE is a removable mass Storage device with up to 96 Gbit/s sustained write performance for BRICK2 and DATALynx ATX4 measurement and recording systems.

A PCI Express 4.0 x8 host connection enables maximum data throughput for recording applications. PCI Express switch technology combined with datacenter SSD architecture secures highest reliability and performance stability.

Highlights

- Hot-Plug supported
- Removable device for simple data handling
- Compact and robust design for harsh environment

- NVMe RAID system
- 32 to 96 Gbit/s sustained write
- Massive Storage capacity up to 60 TB
- Encryption acc. TCG OPAL 2.01 prepared

- Status indicator for diagnostics
- Simple OS based device management
- Integrated µController based SIODI system management for safe operation

Watch the video and learn more about the **universal xSTORAGE concept**

Features

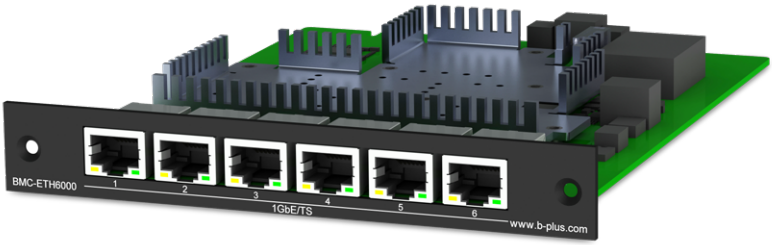
Host Interface	b-plus STORAGE Interface, PCIe 4.0 x8
Architecture	PCIe 4.0 switch
Exchangeability	Hot-swap supported at BRICK2 & ATX4 with b-plus SIODI Service 3.17 or newer Hot-plug supported at BRICK2 with BIOS BCL6R969 or newer Hot-plug supported at DATALynx ATX4
Stand-alone operation	2x USB-C data interface, PCIe 3.0 x4 (requires host system with TB3 interface) up to 20 Gbit/s read/write via USB-C Daisy chain support 12V R7B Power Connector
System compatibility	All BRICK2 configurations All DATALynx ATX4 configurations with Add-on B2S or 8S4 COPYLynx G7 K4, COPYLynx ATX4
OS compatibility	Windows 10 / 11, Ubuntu 18.04 / 20.04 / 22.04
RAID Management	via OS disc management, recommended RAID0 / Striped Volume
Encryption	TCG Storage Security Subsystem Class: Opal Rev 2.01
Housing	Solid aluminum housing, top and bottom part with direct attached SSD
Cooling	passive cooling, controlled airflow from host system
Non-operating temperature	-40°C to +85°C
Relative Humidity	maximum 90 %, non-condensing
Dimensions	280 mm (W) x 248 mm (D) x 22 mm (H)
Weight	2.1 kg

Specifications

Part Number **Part Name** **Part Description**	**B17102-8S4-101-015T** x8 STORAGE 15T 844 M74 – E1.S Gen4	**B17102-8S4-101-030T** x8 STORAGE 30T 844 M74 – E1.S Gen4	**B17102-8S4-101-060T** x8 STORAGE 60T 844 M74 – E1.S Gen4
Capacity	15.36 TB 13.97 TiB	30.72 TB 27.94 TiB	61.44 TB 55.88 TiB
E1.S NVMe SSD	8x 1.92 TB	8x 3.84 TB	8x 7.68 TB
Sustained Write	96 Gbit/s @ ATX4 PCIe4 48 Gbit/s @ ATX4 PCIe3 32 Gbit/s @ BRICK2	96 Gbit/s @ ATX4 PCIe4 48 Gbit/s @ ATX4 PCIe3 32 Gbit/s @ BRICK2	96 Gbit/s @ ATX4 PCIe4 48 Gbit/s @ ATX4 PCIe3 32 Gbit/s @ BRICK2
Operating temperature with sustained performance	-10 to +60°C @ ATX4 -10 to +55°C @ BRICK2	-10 to +60°C @ ATX4 -10 to +55°C @ BRICK2	-10 to +60°C @ ATX4 -10 to +55°C @ BRICK2
Thermal Design Power	121 W	133 W	145 W
Typical Power Consumption	91 W	100 W	109 W
Qualifications	CE, VCCI, FCC, ICES	CE, VCCI, FCC, ICES	CE, VCCI, FCC, ICES
Certifications	REACH, RoHS, China RoHS	REACH, RoHS, China RoHS	REACH, RoHS, China RoHS

BRICK BMC ETH6000

BRICK Measurement Card BMC
with 6x 1000Base-T (g)PTB IEEE 802.1AS ports



BRICK Measurement Card BMC

Time-synchronized measurement card with 6x 1000Base-T (g)PTB IEEE 802.1AS ports and power over Ethernet IEEE 802.3af support for direct capturing of Ethernet date.

The BRICK BMC ETH 6000 can be used on BRICKplus and BRICK2 Data Recording Systems.

Highlights

- Fully supported from b-plus XTSS Time Synchronization Service
- Integrated in BRICK hardware platform time synchronization
- Time synchronization IEEE1588, 802.1AS, PTP

- 6 Port RJ45 1000Base-T IEEE1588 (g)PTP
- Dedicated MAC/PHY controller for each port
- Managed PoE with max. 28W power delivery

- Status indicator for easy functional diagnostics
- Extended temperature from -25 °C to 70 °C
- Integrated in the µController based SIODI system management for safe operation

Features

Host Interface	PCIe 2.1, 4 lanes	
Interface	6x RJ45 10/100/1000BaseT(X), with dedicated i210IT MAC/PHY controller for each port	
Time synchronization	HW based time synchronization fully integrated in b-plus XTSS time synchronization service PTP and gPTP IEEE 802.1AS 2020	
Power over Ethernet (PoE)	Intelligent PSE (power sourcing device) management	For maximum power reason PoE is only available on one slot (upper left side) of a BRICK BMC system

Supported IEEE 802.3af classes

PoE delivery	Class 0/3 PD 15,4W	Class 2 PD 7W	Class 1 PD 4W
Device power	12,95W	6,49W	3,84W
# of powered devices	1	Up to 4	Up to 6

Mechanic	Module for integration in BRICKplus and BRICK2 Systems with BMC Add-on	
Cooling	active cooling in BMC Add-on, PWM fan control by host system	

Specifications

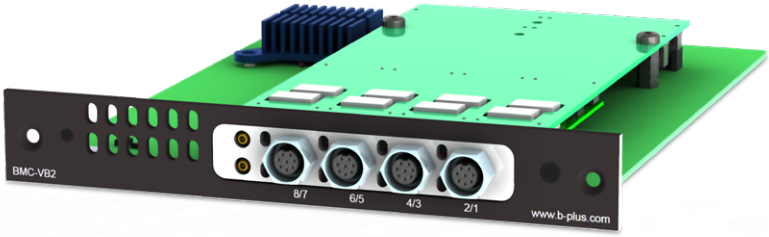
System		
Operating System	Windows 10 IoT Enterprise, Ubuntu 20.04	other on request
Administration	b-plus administration tool	integrated b-plus SIODI API
Electrical Specification		
Supply Voltage	12V	direct powered from host system
Power consumption	typ. 12W	Up to 40W with max. PoC supply
Environment Specification		
operation Temperature	-25°C to +70°C	
non operation	-40°C to +85°C	
Relative Air Humidity	maximum 90 %, non-condensing	
Mechanical Specification		
Dimensions	280 mm (W) x 248 mm (D) x22 mm (H)	
Weight	approx. 0,4kg	
Certification	CE, RoHS, REACH, VCCI, FCC, KC	

Order Information

Name	Part Number	Description
BRICK BMC ETH 6000	B17575-BMC-ETH-6000	BRICK BMC ETH 6000, 6 port 1000Base-T1 Ethernet Card with Power over Ethernet support, IEEE 802.1AS 2020 (g)PTP TSN support

BRICK BMC VB2

BRICK Measurement Card BMC
based on FlexCard PMC-II with max 8 CAN FD ports



BRICK Measurement Card BMC

Flexible BRICK Measurement Card based on FlexCard PMC-II with max 8 CAN FD ports The BRICK BMC VB2 can be used on BRICKplus and BRICK2 Data recording systems.

Highlights

- FlexCard PMC-II based design for prevalent support in ADAS frameworks
- Up to 8 CAN FD interfaces
- Modular concept with up to 4 various bus tiny
- BRICK hardware time sync trigger
- Status indicator for easy functional diagnostics
- Extended temperature from -25 °C to +70 °C
- Integrated in the µController based SIODI system management for safe operation

Features

Host Interface	PCIe 2.1, 4 lanes	
Interface	Up to 8 CAN FD ports in modular Tiny concept Other interfaces (FlexRay™) on request	2Mbit maximal bus speed
Time synchronization	Internal BRICK PPS trigger for time synchronization	
Bus cable	8 pole binder connector	DSUB 9 Bus cable connector

Pin	Colour	Name	
1	shield	Shield	Bus A
2	blue	GND/GNDiso	
3	white	Bus_P/High	
4	green	Bus_M/Low	
5	yellow	Bus_P/High	Bus B
6	orange	Bus_M/Low	
7	red	+5V	
8	black	GND	

Pin	Colour	Name	
1	-	-	
2	green	Bus_M/Low (A)	Bus A
3	blue	GND/GNDiso (A)	
5	shield	Shield (A)	
7	white	Bus_P/High, LIN (A)	
4	orange	Bus_M/Low (B)	Bus B
6	black	GND (B)	
8	yellow	Bus_P/High, LIN (B)	
9	red	+5V (B)	

Mechanic	BMC Module for integration in BRICKplus and BRICK2 Systems with BMC Add-on	
Cooling	active cooling in BMC Add-on, PWM fan control by host system	

Specifications

System		
Operating System	Windows 10 IoT Enterprise, Ubuntu 20.04	other on request
Electrical Specification		
Supply Voltage	12V	direct powered from host system
Power consumption	typ. 15W	
Environment Specification		
operation Temperature	-25°C to +70°C	
non operation	-40°C to +85°C	
Relative Air Humidity	maximum 90 %, non-condensing	
Mechanical Specification		
Dimensions	280 mm (W) x 248 mm (D) x22 mm (H)	
Weight	approx. 0,4kg	
Certification	CE, RoHS, REACH, VCCI, FCC, KC	

Order Information

Name	Part Number	Description
BRICK BMC VB2	B17575-BMC-VB2-0008	BRICK BMC VB, BRICK Measurement Card based on FlexCard PMC-II, 8 CAN FD ports
BRICK BMC VB2	B17575-BMC-VB2-0002	BRICK BMC VB, BRICK Measurement Card based on FlexCard PMC-II, 2 CAN FD ports
Bus cable	4001596	Universal bus cable 8pole Binder connector to DSUB9

COPYLynx ATX4

Copy Station for ingestion of very large storage data into the data center or the cloud

Multi Ingest Station

Data ingest from the vehicle to the cloud

For easy handling of very large storage data b-plus offers a data copy station with multiple 10 & 100 Gbit interfaces, enabling synchronous data upload for up to 6 STORAGEs simultaneously.

This copy station serves for the transfer of multi-sensor data to data centers, which ensures the subsequent processing for SiL and HiL simulation procedures, algorithm development and further procedures in sensor development.

Copy files from any source to any target manually triggered or full autonomous with pre-defined configuration profiles. No PC connection, no peripherals and no software configuration are required for operation.

Highlights

- Server performance
- For all b-plus STORAGE solutions
- Multiple Source & Target options with simultaneous data transfer

- Headless operation
- HMI, integrated info display
- Full-autonomous data transfer
- Simple and configurable copy-profiles
- Multiple Ethernet interfaces from 1 to 100G
- Secure hash algorithm support
- Integrated cloud services
- File encryption
- Source and target decryption
- File Server operating mode
- Up to 50 GB/s data transfer

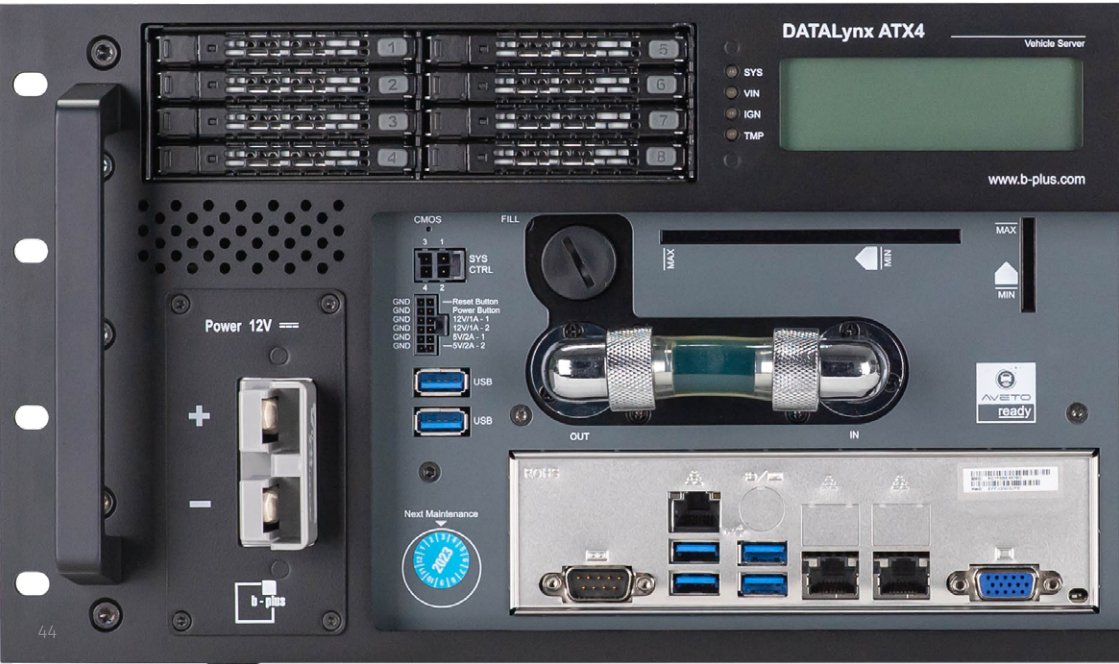
Specifications

	COPYLynx ATX4	
Part Number	B16092-CLY-EP3-0001	
STORAGE Support	**PCIe x8 STORAGEs** *(no Adapter required)* • BRICK2 STORAGE • BRICK2 STORAGE NVMe • x8 STORAGE • MDLake	**PCIe x4 STORAGEs** *(with x4-x8 Adapter mounted)* • BRICK STORAGE • BRICK STORAGEplus • x4 STORAGE
CPU Platform	AMD Epyc™ 7003, 24 Core CPU, 128GB DDR4 memory, Linux OS	
USB Source/Target	6x USB 3.0	
SATA Source/Target	1x 3.5" SATA HDD swap rack, 2x 2.5" SATA SSD swap rack	
LAN Source/Target	2x 1GbE, 4x 10GbE, 4x 10G SFP+, 4x 100G QSF28	
STORAGE Source/Target	6x STORAGE Slot (PCIe 4.0 x8)	
Windows FS	FAT16, FAT32, NTFS, exFAT	
Linux FS	ext3, ext4, XFS, JFS, VFAT	
Ethernet Share	Samba / CIFS 1.0, 2.0, 2.1, 3.0 NFS v2, v3, v4	
Cloud Services	Amazon AWS S3, IBM® Aspera®	
Drive en/decryption	Microsoft Azure, Microsoft Bitlocker	
File encryption	OpenSSL based	
Mechanics	19inch, 8.5U, 472 mm (W) x 442 mm (D) x 378 mm (H), 45 kg	
Power Supply	100 – 240 V, 47 – 63 Hz AC~	
Power Consumption	up to 800W + 100W per STORAGE	
IP Class	IP20	
Humidity	90 % non-condensing	
Approvals	CE, FCC, VCCI, RoHS, REACH,	

DATALynx ATX4

Automotive 19“ Vehicle Server

High End Server Performance for use in the automotive area



DATALynx ATX4

Generation EP2, EP3 & SX2

4U / 19inch Vehicle Server

DATALynx, the b-plus series for high performance computing solutions, achieves the next level for in-vehicle applications. With a completely new designed b-plus 100A DC Power Supply and an extremely powerful and fully integrated liquid cooling setup, the DATALynx ATX4 enables maximum CPU and GPU performance from -10 °C to +60 °C operating without throttling.

Add-On PCIe

With several 1.5U Add-ons, the system can be scaled from a multi-I/O recording setup up to a deep learning and AI configuration with 5 high-power NVIDIA GPUs.

Add-On B2S

The dual B2S extension enables compatibility to BRICK2 STORAGE solutions including NVMe based cartridges up to 48 Gbit/s sustained write performance per device.

Highlights

- EP2: AMD EPYC™ 7002 series
- EP3: AMD EPYC™ 7003/2 series
- SX2: Intel® 2nd Gen Xeon® Scalable

- 1250 W DC Power Supply with 6 – 32 V IN
- Up to 2250W DC PSU max.
- 1600 W AC Power Supply optional
- Up to 768 GB DDR4-3200 ECC RDIMM
- All storage options exchangeable
- Liquid cooled CPU and Power Supply
- Operating temperature of +60 °C at full load
- µC based System control and monitoring
- Multiple Add-ons for extensions
- b-plus XTSS 802.1AS compatible

Watch the video and learn more about the **DATALynx ATX4**

DATALynx ATX4

Automotive 19“ Vehicle Server
High End Server Performance for use in the automotive area

Specifications

	Generation EP2	Generation EP3	Generation SX2
Part Number	B16047-DLY-EP2-XXXX	B16047-DLY-EP3-XXXX	B16047-DLY-SX2-XXXX
Processor	AMD EPYC™ 7002	AMD EPYC™ 7002 or 7003	2nd Gen Intel® Xeon® Scalable
Mainboard	Supermicro H11SSL-i	Supermicro H12SSL-i	Supermicro X11DPH-T
Memory	8x 8-64GB DDR4-3200		12x 8-64GB DDR4-2933
USB	2x USB 2.0, 4x USB 3.0	6x USB 3.0	6x USB 3.0
LAN	2x 1000Base-T	2x 1000Base-T	2x 10GBase-T
Management	IPMI with 1x LAN, 1x VGA, 1x Serial		
3.5in Bay	OS storage swap rack: 2x SATA SSD 2.5” AHCI or RAID1		
5.25in Bay	Data storage swap rack: 8x 2.5” SATA, 4x U.2 NVMe, 1x 3.5” SATA or Cover		
PCIe Extensions	Industrial NVIDIA GeForce RTX 3000/4000 series, NVIDIA Tesla or NVIDIA Quadro/RTX Multiple PCIe extensions from Intel, Mellanox, HighPoint, StarCooperation, Solectrix, Vector, Peak, StarTech, Delock, …		
(g)PTP / XTSS	802.1AS compatible b-plus Quad-X550 (4x 10GBase-T) ethernet extensions with GPS, UART, NMEA and PPS in/out in base system or optional in Add-on XTSS		
Base Power Supply	DC: 6 - 32 V DC, 9 - 32 V permanent, 1250 W AC: 100 - 127 V / 60 Hz / 1000W and 200 - 240 V AC / 50 Hz / 1600W		
Add-on PSU	DC: optional 6 - 32 V DC, 9 - 32 V permanent, 500 W per Add-on PCIe AC: optional 100 - 127 V / 60 Hz / 750W and 200 - 240 V AC / 50 Hz / 750W per Add-on PCIe		
GPIO	Configurable Ignition/Terminal 15 CMOS Reset, 2x GPI trigger input (with Pwr/Rst Button function), 2x 5V/2A out, 2x 12V/1A out		
HMI	20x4 character LCD display für system control and monitoring		
SIODI	b-plus API and OS Tooling for component monitoring and I/O control incl. environmental sensors µC based system log and diagnostic		
OS	Ubuntu 20.04, Ubuntu 22.04 or Windows 10 IoT Enterprise SAC/GAC pre-installed		
Mechanics	Base: 4U, 19inch, 442 mm (W) x 475 mm (D) x 176 mm (H), ~23 kg without extensions Add-on: 1.5U, 19inch, 442 mm (W) x 475 mm (D) x 66 mm (H), ~ 6.5 kg without extensions		
Temperature	-10 °C to +60 °C operating, -35 °C to +85 °C non-operating for DC versions 0 °C to +40 °C operating, -20 °C to +70 °C non-operating for AC versions		
IP Class	IP20		
Humidity	max. 90% non-condensing		
Vibration	Approved according LV124 specification with 6.5 m/s² amplitude at full system load		
Approvals	CE – EN 55032 (Class A) / EN 55035, RoHS, REACH		
AC Variants	EN 61000-3-2, EN 61000-3-3		
DC Variants	ISO 7637-2, LV124 partly approved On request: FCC, VCCI, ECE R10, E1, E13		

System Add-ons

Add-on GPU

Add-on (top) with integrated liquid cooling, 850W extra DC Power Supply and PCIe 5.0 x16 interface for high power graphics >300W, e.g. RTX 4090

Add-on 5.25“

Mechanical Add-on for 2 additional 5.25" bays, e.g. 2x 3.5" HDD swap rack

Add-on B2S

Add-on (bottom) for two x-STORAGE slots. The add-on is actively cooled and includes a PCIe 3.0/4.0 switch, µC based FAN control and power management. It supports cartridge Hot-Add/Hot-Remove and OS disk services for storage exchange during operation for NVMe based solutions.

Add-on PCIe

Add-on (bottom) for PCIe extension cards. The add-on is actively cooled with µC based FAN control and an optional power supply. Possible slot configurations:

- 2x8: 2x dual slot PCIe 4.0 x8 1x Mainboard PCIe x16 BreakOut with 8+8 Bifurcation
- 4x4: 4x single slot PCIe 4.0 x4 1x Mainboard PCIe x16 BreakOut with 4+4+4+4 Bifurcation
- 4x8: 4x single slot PCIe 4.0 x8 2x Mainboard PCIe x16 BreakOut with 8+8 Bifurcation

Optional:

- Extra 500W DC or 750W AC Power Supply
- 802.1AS Extension

EDSwitch 10G

Managed Ethernet Switch for automotive applications

EDSwitch 10G

12 or 20 Port Industrial Managed Switch

The high flexible EDSwitch 10G series offers different versions with or without PoE support to match your specific needs. The 12 or 20 port versions of the device provide 4x 1/10 Gigabit Ethernet SFP+ uplinks and result in a cost-effective and reliable industrial solution where high-throughput and high-reliability is fundamental.

EDSwitch 10G supports up to 20 Gigabit ports in different configurations, either Copper, PoE or Fiber. Specifically designed for bringing power through Ethernet cable virtually anywhere, a maximum output Power over Ethernet of 240 W over a maximum of 8 PoE/PoE+ ports is available (802.3af/at).

It is CE and FCC compliant and designed to withstand the harshest surroundings and the most demanding EMC environments. Its fanless and EMC optimized design ensures reliable operations within -40 and +70 °C. This includes that no packet is lost with all ports running full power and makes it suitable for almost every application.

Highlights

Maximum Flexibility

- Up to 16 10/100/1000 RJ45 ports
- Or 100/1000 BASE-X SFP slots
- Plus 4 dedicated 1/10G uplink SFP+ slots

Outstanding Power

- Maximum of 30 W PoE power per port
- Up to 240 W power budget
- Up to 8x 802.3af/ 802.3at PoE/PoE+ Power over Ethernet ports

Key Features

- 128 Gbit/s high-performance
- Non-blocking switching fabric
- IEEE 1588v2 Precision Time Protocol HW-based E2E transparent clock
- Wide temperature range from -40 °C to +70 °C
- Security features based on IEC62443-4-2
- CE/FCC compliant
- Redundancy through ITU-T G.8032 ERPS Ring, RSTP, STP, MRP (Client)

EDSwitch 10G

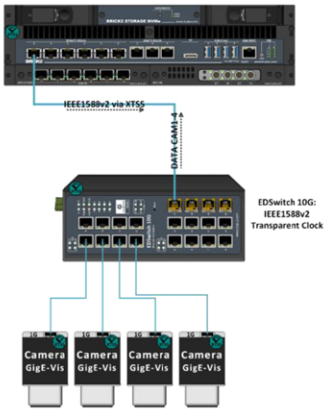
Managed Ethernet Switch for automotive applications

Use Cases

Timesync

EDSwitch 10G offers the possibility to have "ptp-enabled" devices like GigE-Vision cameras synchronized to a grandmaster clock like b-plus BRICK2 or ATX4 with XTSS service.
EDSwitch 10G can combine data streams from multiple Gigabit devices to a single 10G upstream port to save Ethernet ports on the recording unit.

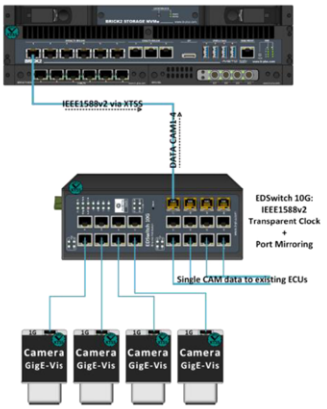
Moreover, EDSwitch 10G has restricted 802.1AS support. Contact b-plus support if you require 802.1AS time synchronization for your devices.



Port Mirroring

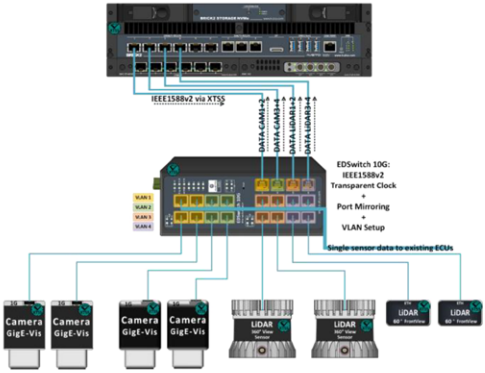
Besides to the timesync feature, EDSwitch 10G offers the possibility to forward Ethernet data simultaneously to existing ECU(s) and a recorder unit like b-plus BRICK2 and AVETO.app.

With the option to create two independent mirroring sessions in the switch firmware, you can send two separate 10G connections to an ECU and also to a recorder unit.



Selective VLAN

Another option which EDSwitch 10G offers is the possibility to configure VLANs on the switch.
This enables the management of the data flow from different Ethernet sources over separated 10G upstream ports to the recorder unit.
The port mirroring feature can run in parallel to keep the data forwarding to existing ECU(s).



Specifications and Approvals

Switch Properties

Priority Queues	8
VLAN Table	4096
MAC-Based VLAN	512
VLAN ID Range	VID 1 to 4094
Trunk Group	4
Static IGMP Groups	128
Dynamic IGMP Groups	256
MAC Table Size	16K
Packet Buffer Size	1.5 MB
Jumbo Frame	9216 Byte

Ethernet

Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) IEEE 802.3ab for 1000BaseT(X) IEEE 802.3z for 1000BaseX IEEE 802.3ae for 10 Gigabit Ethernet Fiber IEEE 802.3x for Flow Control, back pressure flow control IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1Q for VLAN Tagging IEEE 802.1p for Class of Service IEEE 802.1X for Authentication IEEE 802.3ad for Port Trunk with LACP IEEE 802.3az for Energy Efficient Ethernet
Protocols	IPv4, IPv6, IGMPv1/v2/v3, IGMP Snooping, GARP, GMRP, GVRP, SNMPv1/v2c/v3, SNMP Inform, ICMP, Telnet, SSH, DHCP Relay/Client, BootP, TFTP, SMTP, SMTP (Gmail), RMON, HTTP, HTTPS, Syslog, MRP (Client), LLDP, 802.1x, EAP, RADIUS, TACACS+, Mirror port, QoS, ACL, ITU-T G.8032 ERPS Ring, STP, RSTP, MSTP, Compatible Ring/Chain, U-Ring, NTP Server/Client, Serial Console, Modbus/TCP, IEEE 1588 PTP V1/V2, UDLD, Security, Trunk, LACP, MLD, 802.1Q VLAN, Port-Based VLAN, MAC-Based VLAN, IP-Subnet-Based VLAN, Protocol-Based VLAN, QinQ, 802.1x, ARP spoof Prevention, DHCP snooping, IP source Guard, Dynamic ARP Inspection, DHCP relay Agent TU-T G.8032 ERPS Ring, STP, RSTP, MSTP, Compatible Ring/Chain, U-Ring
Redundancy	Network Synchronization: NTP Server/Client, SNTP
Time Synchronization	Precision Network Synchronization: Default setting with active: IEEE1588v2 E2E TC (Hardware) - ns accuracy Optional alternatively selectable via software: IEEE1588v1 and IEEE1588v2 OC/BC (Software) Optional selectable 802.1AS protocol forwarding which is hosted on the HW based transparent clock Contact b-plus support for more information about this feature.
Automation Profiles	Modbus/TCP device status registers provided

EDSwitch 10G

Managed Ethernet Switch for automotive applications

Specifications and Approvals

Power	
Input Voltage	9-57 VDC for Non-PoE mode 45-57 VDC for 802.3af mode 51-57 VDC for 802.3at mode
Input Current (System)	Max. 2.2 A @ 12 VDC (without PoE) Max. 3.3 A @ 45 VDC (support up to 8 ports at 15.4 W per PoE port) Max. 5.2 A @ 51 VDC (support up to 8 ports at 30 W per PoE port)
Power Consumption (System)	Max. 26.4 W @ 12 VDC (without PoE) Max. 148.5 W @ 45 VDC (support up to 8 ports at 15.4 W per PoE port) Max. 265.2 W @ 51 VDC (support up to 8 ports at 30 W per PoE port)
Connector	5-Pin 5.08 mm lockable terminal block
Reverse Polarity Protection	Yes
Interfaces	
RJ45 Ports	Up to 16 10/100/1000BASE-T(X) auto negotiation speed
Fiber Optics Ports	Up to 4 100/1000BASE-X SFP slots plus dedicated 4x 1000BASE-X or 10GBASE-X SFP+ slots
LED Indicators	PWR1, PWR2, Alarm, Run, Ring, Ring Master, RJ-45 Link/Speed, SFP Link, PoE on selected variants
Console	RS232 (RJ45 connector), optional: cross over console cable
Relay Output	2 Relay outputs with current carrying capacity of 1A @ 24 VDC
DIP Switches	Ring control
Button	Reset button
Housing	SPCC metal housing, ruggedized heat-sink
Protection Class	IP30
Dimension (W x H x D)	EDSwitch 10G 12 Port: 76 x 200 x 160 mm EDSwitch 10G 20 Port: 95 x 200 x 160 mm
Weight	2,500 g
Installation	DIN-rail, wall mount (optional kit)
Operating Temperature	-40 °C ~ 70 °C (-40 °F ~ 158 °F)
Storage Temperature	-40 °C ~ 85 °C (-40 °F ~ 185 °F)
Ambient Relative Humidity	5 % ~ 95 %, 55 °C (non-condensing)
Approvals	CE, FCC, RoHS, REACH
Shock	MIL-STD-810G Method 516.5
Drop	MIL-STD-810F Method 516.5
Vibration	MIL-STD-810F Method 514.5 C-1 & C-2
MTBF	20 Years

Order Information Accessories

Name	Part Number	Description
EDSwitch 10G WMK-450-Black	B24008-EDS-002-0001	Aluminium wall mount kit, black Suitable for 12-port device
EDSwitch 10G WMK-450-Black Large	B24008-EDS-002-0003	Aluminium wall mount kit - large, black Suitable for 20-port device
EDSwitch 10G CBL-RJ45(8P)-DB9(F)-90-C	B24008-EDS-002-0002	RJ45 to DB9 Female cross over console cable, 90 cm For serial connection to switch CLI 10GBASE-T SFP+ 30M IND SFP-10G-T-I
10GBASE-T SFP+ 30M IND SFP-10G-T-I	B24004-ICO-001-0112	SFP+ Copper RJ45 30m Transceiver, 10GBASE-T standard as specified in IEEE Std 802.3. Compatible: EDSwitch 10G

Order Information

Name	Part Number	Description
EDSwitch 10G 12 Port: 8x RJ45, 4x SFP+	B24008-EDS-124-0800	Industrial Managed Ethernet-Switch IEEE1588v2 HW-Based E2E Transparent Clock 12 ports in total ·4 ports 10G ETH (SFP+ slot) ·8 ports 1G ETH (RJ45)
EDSwitch 10G 20 Port: 16x RJ45, 4x SFP+	B24008-EDS-204-0G00	Industrial Managed Ethernet-Switch IEEE1588v2 HW-Based E2E Transparent Clock 20 ports in total ·4 ports 10G ETH (SFP+ slot) ·16 ports 1G ETH (RJ45)
EDSwitch 10G 20 Port: 12x RJ45, 4x SFP, 4x SFP+	B24008-EDS-204-0C04	Industrial Managed Ethernet-Switch IEEE1588v2 HW-Based E2E Transparent Clock 20 ports in total ·4 ports 10G ETH (SFP+ slot) ·12 ports 1G ETH (RJ45) ·4 ports 1G ETH (SFP slot)
EDSwitch 10G 12 Port: 8x PoE, 4x SFP+	B24008-EDS-124-8000	Industrial Managed Ethernet-PoE-Switch IEEE1588v2 HW-Based E2E Transparent Clock 802.3af/802.3at PoE/PoE+ ports 12 ports in total ·4 ports 10G ETH (SFP+ slot) ·8 ports 1G ETH w PoE (RJ45)
EDSwitch 10G 20 Port: 8x PoE, 8x RJ45, 4x SFP+	B24008-EDS-204-8800	Industrial Managed Ethernet-PoE-Switch IEEE1588v2 HW-Based E2E Transparent Clock 802.3af/802.3at PoE/PoE+ ports 20 ports in total ·4 ports 10G ETH (SFP+ slot) ·8 ports 1G ETH w PoE (RJ45) ·8 ports 1G ETH (RJ45)
EDSwitch 10G 20 Port: 8x PoE, 4x RJ45, 4x SFP, 4x SFP+	B24008-EDS-204-8404	Industrial Managed Ethernet-PoE-Switch IEEE1588v2 HW-Based E2E Transparent Clock 802.3af/802.3at PoE/PoE+ ports 20 ports in total ·4 ports 10G ETH (SFP+ slot) ·8 ports 1G ETH w PoE (RJ45) ·4 ports 1G ETH (RJ45) ·4 ports 1G ETH (SFP slot)

MDILink QX035 FPDLinkIII

Measurement Data Acquisition with FPD-Link III Interface

Measurement Data Interface

The MDILink Measurement Data Interface is a 4 channel FPGA based measurement data interface with FPDLinkIII serializer and deserializer for lossless raw data acquisition in ADAS and AD environments.

With the MDILink you get a SerDes measurement data converter that allows a smooth transition from the development stage and validation results to series production.

Highlights

- Optimized for high bandwidth data throughput
- Up to 2,9 Gbit/s for each camera
- 2x 10 Gb Ethernet downstream ports
- Time synchronization IEEE 1588 PTP and gPTP

- Modular design
- Flexible FPGA SoC architecture
- Configuration via web interface
- Built in Data Generator
- Full transparent TAP in mode
- Robust design for rough environment

Features

Interfaces		
FPDLinkIII	2x RX serial link in	DS90UB954-Q1
	2x TX serial link out	DS90UB953-Q1
Connector	Fakra	
Power over coax	PoC forwarding	external or TX forward (ECU)
Backchannel	I2C backchannel communication and logging	host to sensor and MDILink to sensor
Internal	MIPI CSI2, 4 channel	
Downstream	2x 10Gb Ethernet	configurable channel assignment
Management	1Gb Ethernet	configuration via website
time synchronization	IEEE 1588 PTP and 802.1AS gPTP	
tap mode	full transparent tap mode	
Data-format	ASAM CMP* b-plus RX-API	
Architecture	FPGA SoC	

Specifications

Electrical Specification		
Supply Voltage	wide range 8 - 32 V	6,5 V crank safe
Power consumption	typ. 15 W	Up to 25 W
	external power on (ignition) control	
Power over Coax	6 – 15 V max. 300 mA	external supply, separate for channel 0 and cannel 1
Environment Specification		
operation Temperature	-25 °C to +70 °C	
non operation	-40 °C to +85 °C	
Relative Air Humidity	maximum 90 %, non-condensing	
Mechanical Specification		
Dimensions	159,7 mm (W) x 140 mm (D) x 38 mm (H)	mounting, without connectors
Weight	approx. 0,8 kg	
Certification	CE, RoHS, REACH	

Order Information

Name	Part Number	Description
MDILink QX035 1FCT1FCT-2	B21671-MDI-001-0002	Measurement Data Interface (LVDS, SerDes) 2x FPDLinkIII TAP coaxial Link to 2x 10GbE, including cables for power and Ethernet
Network cable M12	2001931	Network cable M12-X male plug 8-pin to RJ45, 2 m
Power Cable	2001932	Open end power cable w/ M12-A female plug 2 m, 5 wires, 0.75 mm²
Power Cable PoC	2001934	Open end power cable w/ M12-A female plug 3 m, 4 wires, 0.5 mm²

MDILink QX035 CSI2 TAP

Measurement Data Acquisition with FPD-Link III Interface

Measurement Data Interface

The MDILink Measurement Data Interface is a 4 channel FPGA based measurement data interface with four CSI2 ports for lossless raw data acquisition in ADAS and AD environments.

With the MDILink you get a CSI2 measurement data converter that allows a smooth transition from the development stage and validation results to series production.

Highlights

- Optimized for high bandwidth data throughput
- Up to 4,28 Gbit/s for each camera
- 2x 10 Gb Ethernet downstream ports
- Time synchronization IEEE 1588 PTP and gPTP

- Modular design
- Flexible FPGA SoC architecture
- Configuration via web interface
- Built in Data Generator
- Full transparent TAP in mode
- Robust design for rough environment

Features

Interfaces		
CSI2	2x in	
	2x out	
Connector	iPass+ HD	mini-SAS HD SFF-8643
Backchannel	I2C backchannel communication and logging	host to sensor and MDIInk to sensor
Downstream	2x 10Gb Ethernet, M12 connector	configurable channel assignment
Management port	1Gb Ethernet, M12 connector	
time synchronization	IEEE 1588 PTP and 802.1AS gPTP	
tap mode	full transparent TAP mode	
Data-format	ASAM CMP* b-plus RX-API	
Architecture	FPGA SoC	

Specifications

Electrical Specification		
Supply Voltage	wide range 8 - 32 V	6,5 V crank safe
Power consumption	typ. 15 W	Up to 25 W
	external power on (ignition) control	
Environment Specification		
operation Temperature	-25 °C to +70 °C	
non operation	-40 °C to +85 °C	
Relative Air Humidity	maximum 90 %, non-condensing	
Mechanical Specification		
Dimensions	159,7 mm (W) x 140 mm (D) x 38 mm (H)	without connectors
Weight	approx. 0,8 kg	
Certification	CE, RoHS, REACH	

Order Information

Name	Part Number	Description
MDILink QX035 1CCT1CCT-2	B21671-MDI-001-0004	Measurement Data Interface 2 channel CSI2 TAP to 2x 10GbE, including cables for power and Ethernet

Order Information accesories

Name	Part Number	Description
mini-SAS cable	A1003781	mini-SAS cable, SFF-8087 > SFF-8643, for MDILink to sensor board connection, 0.5 m length
Network cable M12	2001931	Network cable M12-X male plug 8-pin to RJ45 2 m
Power Cable	2001932	Open end power cable w/ M12-A female plug 2 m, 5 wires, 0.75 mm

MDILink QX035 GMSL2 TAP

Measurement Data Acquisition with FPD-Link III Interface

Measurement Data Interface

The MDILink Measurement Data Interface is a 4 channel FPGA based measurement data interface with GMSL2 serializer and deserializer for lossless raw data acquisition in ADAS and AD environments.

With the MDILink you get a SerDes measurement data converter that allows a smooth transition from the development stage and validation results to series production.

Highlights

- Optimized for high bandwidth data throughput
- Up to 4,28 Gbit/s for each camera
- 2x 10 Gb Ethernet downstream ports
- Time synchronization IEEE 1588 PTP and gPTP

- Modular design
- Flexible FPGA SoC architecture
- Configuration via web interface
- Built in Data Generator
- Coaxial or shielded twisted pair interface
- Full transparent TAP in mode
- Robust design for rough environment
- GPIO forwarding and backwarding

Features

Interfaces		
GMSL2	2x RX serial link in	MAX9295A
	2x TX serial link out	MAX9296A
Shielded twisted pair version	H-MTD® – High-Speed Modular Twisted-Pair connector	neutral coding Z water blue
Coaxial version	Fakra	
Power over coax	PoC forwarding	external or TX forward (ECU)
Backchannel	I2C backchannel communication and logging	host to sensor and MDILink to sensor
Internal	MIPI CSI2, 4 channel	
Downstream	2x 10Gb Ethernet	configurable channel assignment
Management	1Gb Ethernet	configuration via website
time synchronization	IEEE 1588 PTP and 802.1AS gPTP	
tap mode	full transparent TAP mode	
Data-format	ASAM CMP* b-plus RX-API	
Architecture	FPGA SoC	

Specifications

Electrical Specification		
Supply Voltage	wide range 8 - 32 V	6,5 V crank safe
Power consumption	typ. 15 W	Up to 25 W
	external power on (ignition) control	
Power over Coax	6 – 15 V max. 300 mA	external supply, separate for channel 0 and cannel 1
Environment Specification		
operation Temperature	-25 °C to +70 °C	
non operation	-40 °C to +85 °C	
Relative Air Humidity	maximum 90 %, non-condensing	
Mechanical Specification		
Dimensions	159,7 mm (W) x 140 mm (D) x 38 mm (H)	mounting, without connectors
Weight	approx. 0,8 kg	
Certification	CE, RoHS, REACH	

Order Information

Name	Part Number	Description
MDILink QX035 TAP 1GCT1GCT-2	B21671-MDI-001-0003	Measurement Data Interface (LVDS, SerDes) 2x GMSL2 TAP coaxial Link to 2x 10GbE, including cables for power and Ethernet
MDILink QX035 TAP 1TCT1TCT-2	B21671-MDI-001-0007	Measurement Data Interface (LVDS, SerDes) 2x GMSL2 TAP shielded twisted pair Link to 2x 10GbE, including cables for power and Ethernet

MDILink QX035 GMSL2 4EP

Measurement Data Acquisition with FPD-Link III Interface

Measurement Data Interface

The MDILink Measurement Data Interface is a 4 channel FPGA based measurement data interface with GMSL2 serializer and deserializer for lossless raw data acquisition in ADAS and AD environments.

With the MDILink you get a SerDes measurement data converter that allows a smooth transition from the development stage and validation results to series production.

Highlights

- 4 channel GMSL2
- Time synchronization IEEE 1588 PTP and gPTP
- 2x 10 Gb Ethernet downstream ports
- Modular design
- Flexible FPGA SoC architecture
- Configuration via web interface
- Optimized for high bandwidth data throughput
- Robust design for rough environment

Features

Interfaces		
GMSL2	4x serial link in RX	MAX9295A
Connector	Fakra	
	power over coax	external supply
Backchannel	I2C backchannel communication and logging	
Internal	MIPI CSI2, 4 channel	
Downstream	2x 10Gb Ethernet, M12 connector	configurable channel assignment
Management	1Gb Ethernet, M12 connector	configuration via website
time synchronization	IEEE 1588 PTP and 802.1AS gPTP	
Data-format	ASAM CMP* b-plus RX-API	
Architecture	FPGA SoC	

Specifications

Electrical Specification		
Supply Voltage	wide range 8 - 32 V	6,5 V crank safe
Power consumption	typ. 15 W	Up to 25 W
	external power on (ignition) control	
Power over Coax	6 – 15 V max. 300 mA	external supply, separate for channel 0 and cannel 1
Environment Specification		
operation Temperature	-25 °C to +70 °C	
non operation	-40 °C to +85 °C	
Relative Air Humidity	maximum 90 %, non-condensing	
Mechanical Specification		
Dimensions	159,7 mm (W) x 140 mm (D) x 38 mm (H)	mounting, without connectors
Weight	approx. 0,8 kg	
Certification	CE, RoHS, REACH	

Order Information

Name	Part Number	Description
MDILink QX035 2GCE2GCE-2	B21671-MDI-001-0006	Measurement Data Interface (LVDS, SerDes) 4x GMSL2 to 2x 10GbE, including cables for power and Ethernet

Order Information Accessoires

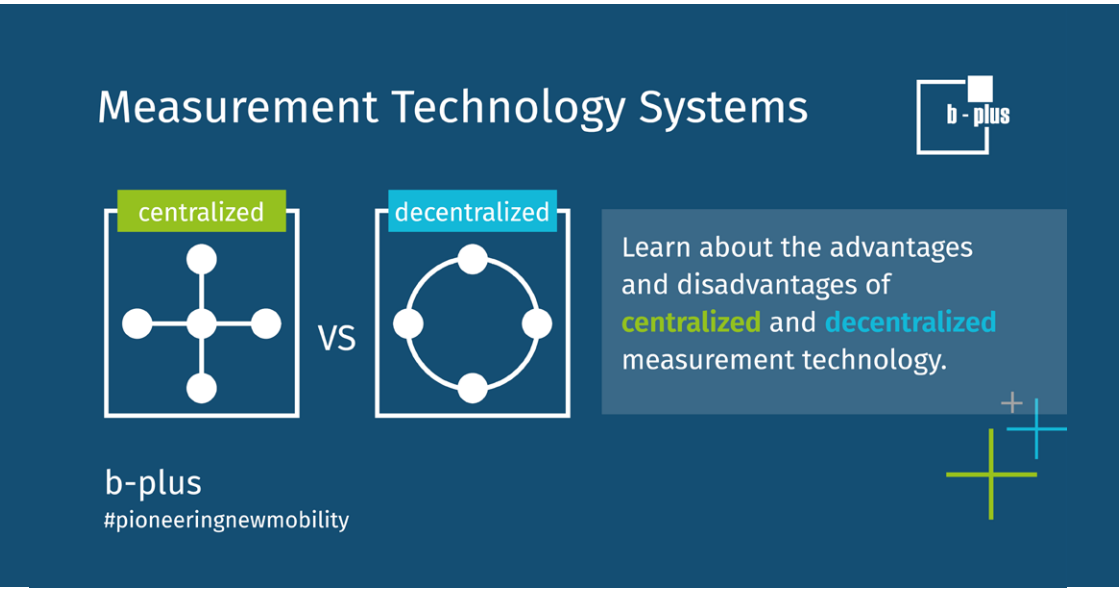
Name	Part Number	Description
Network cable M12	2001931	Network cable M12-X male plug 8-pin to RJ45 2 m
Power Cable	2001932	Open end power cable w/ M12-A female plug 2 m, 5 wires, 0.75 mm

Should I choose central or decentralized measurement technology? The answer: it depends!

You are often faced with decisions to make and the answer you'd like to give is: I want it all and I want it now!

Talking about measurement data, this was the common answer the past years. Nowadays, we're handling such an amount of test data, that in the first place you decide to only collect valued data, you need for the specific development case and secondly you optimize the way of data collecting.

When collecting measurement data, we distinguish between central and decentral measurement systems. This short article will oppose the two systems and make clear the respective advantages and disadvantages as your decision base. **Little hint: ask yourself first about your sensor constellation!**



Decentralized measurement technology is characterized by its easy expandability. Call it mix & match: Customers can combine the components with existing tools, e.g. their measurement adapters. Also, the parts can easily be exchanged when out of guarantee or defective. That's the hardware view, but also data quality is higher regarding time: the time stamping close to the sensor is possible. The converter can be placed next to the sensor (e.g. front camera) and the cabling still will be structured. One MDI can convert up to 4 cameras - with a single cable to the recorder.

Much flexibility brings disadvantages from another perspective: you need more products and a 2-step-cabling. Also, more power supplies are affordable, the heat generation is higher what leads to higher expenses. You need more space in the test vehicle and have a more complex mounting and configuration of the measurement system components.

The **central measurement technology** is easily described with: one for all. All components are united in one hardware. In case of a data transfer failure, the origin can be traced faster to which camera or other sensor the defective cable belongs to. The best is, you know what you get. The power dissipation and mounting dimensions can be predicted and won't lead to further expanses. You turn on the power from one computer and its power supplies keeps within limits, because the converters can use the power supply from the recorder and don't have to be powered separately.

You know what you get but you also are limited in the modularity. The size and number of products are fixed and cannot be expanded flexibly. In case you would like to change the sensor environment, you need to switch to decentralized solutions anyways.

In general, the size of the computer is decisive. So, make yourself clear, what is your testing environment and where the priorities lay in. If you are sure about size and need no expandability, central measurement technology is your way to go. If you would like to stay flexible for adjustments, a decentralized measurement system is the right one for you.

If you are not sure about it, let's talk and we will find the best solution for your test environment.

Get in touch with us
to discuss your indiviual solution: **sales@b-plus.com**

MDLake 100G

Mobile Data Lake for ADAS/AD

Mobile Data Lake

MDLake is a small form factor network storage unit designed for mobile SAN applications. It combines high-bandwidth data center technology with automotive requirements to enable the next generation of raw sensor data recording in ADAS/AD development.

Based on RDMA technology RoCE v2, the MDLake allows a data throughput of 80 Gbit/s via single-link or up to 128 Gbit/s for dual-link configurations by offloading the processing unit in your recorder.

NVMe over Fabrics (NVMe-oF) secures best compatibility by connecting the MDLake storage partitions as a local storage device.

With two multi-port compatible 100 Gbit/s QSFP28 Ethernet interfaces you can connect any recorder via active optical cable (AOC), passive optical network (PON) or direct attach copper (DAC) solutions including daisy chaining.

Highlights

- Mellanox BlueField I/O Processing Unit IPU
- 16 core ARM SoC with 32 GB DDR4
- RoCE v2 and NVMe-oF datacenter technology
- 30 TB to 256 TB Storage JBOF (RAID0)
- 2x 100 Gbit/s QSFP28
- 80 to 128 Gbit/s sustained write performance
- µC based System control and monitoring
- Integrated ARM SoC
- Up to +60 °C operating temperature (full load)
- 6.5 – 32 V automotive DC power supply
- Windows and Linux support
- Trusted Storage with encrypted drives according TCG OPAL 2.0

Specifications

	MDLake 100G – c-temp	MDLake 100G – e-temp
Part Number	B17038-MDL-1CX-XXXX	B17038-MDL-1EX-XXXX
Operating Temperature	0 °C ~ +50 °C	-10 °C ~ +60 °C
SSD Quantity	16	8
Sustained Write	1x 80 Gbit/s to 2x 64 Gbit/s	1x 80 Gbit/s to 2x 40 Gbit/s
Storage Capacity	16x 3.84 TB (60T), 16x 7.68 TB (120T)	8x 7.68 TB (60T)
SSD type	1U Short Device Form Factor SFF-TA-1006 (E1.S)	
Power Supply	6.5 – 32 V DC, 10 – 32 V permanent, 400 W max., 250 W typical Ignition/Terminal 15 input	
HMI	16x2 character LCD display für system control and monitoring	
OS Support	Windows Client (with NVMe-oF Initiator), Windows Server, Linux	
Configuration	10/100M Ethernet Management Port and Web interface	
Compatibility	Any RoCE/NVMe-of compatible Ethernet Interface Verified: NVIDIA/Mellanox ConnectX-5 & ConnectX-6 solutions	
Mechanics	320 mm (W) x 380 mm (D) x 44 mm (H), ~5.2 kg	
IP Class	IP20	
Humidity	5 - 93 % non-condensing	
Vibration	Approved according LV124 specification with 6.5 m/s^2 amplitude at full system load	
Approvals	CE, FCC, VCCI, RoHS, REACH, EN 55032 (Class A) / EN 55035, EN 610000-6-2, EN 61000-6-4, ISO 7637-2 and LV124 partly approved; On request: ECE R10, E1, E13	
Packaging	delivery in 550 x 500 x 94 mm Flightcase (P/N B17038-MDL-001-A004)	

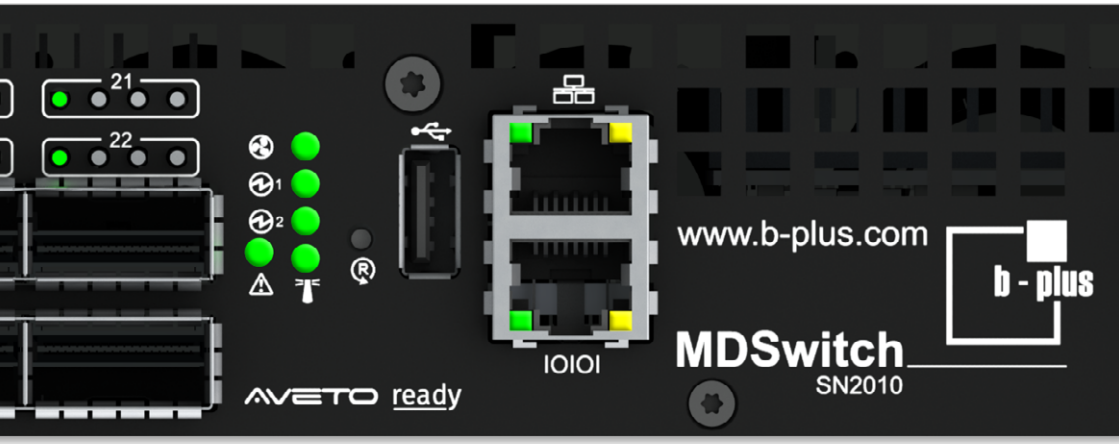
Accessories

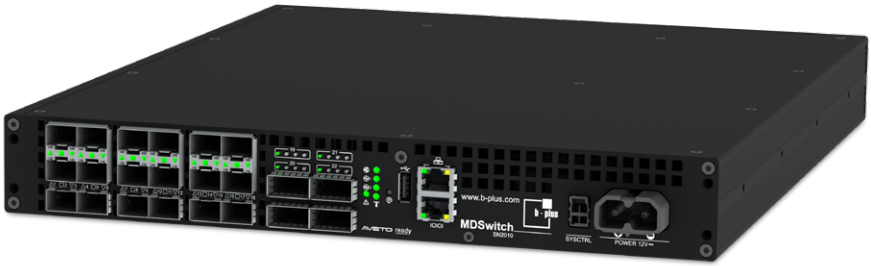
Part Number	Name	Description
B17038-MDL-001-A001	19"/1U Mounting Angle	Mounting angle for 19inch rack mount
B17038-MDL-001-A002	19"/1U Frame (Device)	Swappable rack mount option (Part 1/2) for device
B17038-MDL-001-A003	19"/1U Frame (Rack)	Swappable rack mount option (Part 2/2) for rack
B09003-PWR-002-0360	360W AC/DC Power Supply	External 13.8V/26A power supply
B24004-ICO-001-0311	Transceiver 100GBase-SR4	Optical 100G transceiver QSFP28 to SR4
B24004-ICO-003-XXXX	DAC Ethernet cables	100GbE QSF28 DAC, different lengths
B24004-ICO-004-XXXX	Connection Sets	Sets for connecting MDLake to any BRICK or PC System
B24004-ICO-005-XXXX	Passive Optical cables	100GbE SR4 optical cables, different lengths

Watch the video and learn more about **MDLake**

MDSwitch SN2010

High Performance Ethernet Switch for mobile applications





MDSwitch SN2010

22 Port Mobile Datacenter Switch

The Ethernet Switch MDSwitch SN2010 expands the b-plus AVETO product portfolio with a high performance switch of the data center class for the mobile application, for instance in test vehicles.

Provided with a high performance ASIC, 4 100 GbE and 18 10/25 GbE ports, a flow rate up to 1.7 Tb/s can be achieved. An extremely optimized latency behavior complements this enormous throughput.

22 ports are usable very flexibly in a range from 1 Gb/s to 25 Gb/s. 4 of these ports are usable up to 100 Gb/s.

MDSwitch SN 2010 supports a variable and scalable network of high performance components in a mobile environment.

A unique optional SW-complement like XTSS enlarges the very wide-ranging features of the special TSN-functions in the field of time synchronization. Therefore, it ensures the smooth cooperation, e.g., with AVETO network participants.

The 12 V power supply with a supplementary ignition management simplifies the use in test vehicles significantly.

Highlights

Zero Packet Loss
- True cut-through latency
- Speeds of 1/10/25/40/50/56/100GbE
- Easy deployment and maintenance

Unprecedented Performance
- Line rate performance at all times
- Storage and server applications run faster
- Software Defined Networking (SDN) support
- Running Mellanox Onyx

Key Features
- Throughput 3.2 Tb/s
- 1.26 billion packets per second
- 16 40/56/100GbE ports
- 300 nsec for 100GbE port-to-port
- Flat latency across L2 and L3 forwarding
- Side by side configuration
- XTSS TSN time synchronization feature
- 57 W (ATIS) power consumption
- RoHS compliant

MDSwitch SN2010

High Performance Ethernet Switch for mobile applications

Features

Layer 2 Feature Set
- IGMP V2/V3, Snooping, Querier
- VLAN 802.1Q (4K)
- Q-In-Q
- 802.1W Rapid Spanning Tree
- BPDU Filter, Root Guard
- Loop Guard, BPDU Guard
- 802.1Q Multiple STP
- PVRST+ (Rapid Per VLAN STP+)
- 802.3ad Link Aggregation (LAG) & LACP
- 32 Ports/Channel - 64 Groups Per System
- Port Isolation
- LLDP
- Store & Forward / Cut-through mode of work
- HLL
- 10/25/40/50/56/100 GbE
- Jumbo Frames (9216 Bytes)

Layer 3 Feature Set
- 64 VRFs
- IPv4 & IPv6 Routing inc Route maps:
- BGP4, OSPFv2
- PIM-SM & PIM-SSM (inc PIM-SM over MLAG)
- BFD (BGP, OSPF, static routes)
- VRRP
- DHCPv4/v6 Relay
- Router Port, int Vlan, NULL Interface for Routing
- ECMP, 64-way
- IGMPv2/v3 Snooping Querier

Synchronization
- XTSS TSN Support
- NTP

Quality of Service
- 802.3X Flow Control
- WRED, Fast ECN & PFC
- 802.1Qbb Priority Flow Control
- 802.1Qaz ETS
- DCBX – App TLV support
- Advanced QoS - qualification, 802.1AB
- Shared buffer management

Management & Automation
- ZTP
- Ansible, SALT Stack, Puppet
- FTP \ TFTP \ SCP
- AAA , RADIUS \ TACACS+ \ LDAP
- JSON & CLI , Enhanced Web UI
- SNMP v1,2,3
- In-band Management
- DHCP, SSHv2, Telnet
- SYSLOG
- 10/100/1000 ETH RJ45 MNG ports
- USB Console port for Management
- Dual SW image
- Events history
- ONIE

Network Virtualization
- VXLAN EVPN – L2 stretch use case
- VXLAN Hardware VTEP – L2 GW
- Integration with VMware NSX & OpenStack, etc.

Software Defined Network (SDN)
- OpenFlow 1.3:
  - Hybrid
  - Supported controllers: ODL, ONOS, FloodLight, RYU, etc.

Docker Container
- Full SDK access through the container
- Persistent container & shared storage

Monitoring & Telemetry
- What Just Happened (WJH)
- sFlow
- Real time queue depth histograms & thresholds
- Port mirroring (SPAN & RSPAN)
- Enhanced Link & Phy Monitoring
- BER degradation monitor
- Enhanced health mechanism
- 3rd party integration (Splunk, etc.)

Security
- USA Department of Defense certification – UC APL
- System secure mode – FIPS 140-2 compliance
- Storm Control
- Access Control Lists (ACLs L2-L4 & user defined)
- 802.1X - Port Based Network Access Control
- SSH server strict mode – NIST 800-181A
- CoPP (IP filter)
- Port isolation

XTSS TSN Features

Specification Support
- Time synchronization according to IEEE 802.1AS-2020
- Time synchronization according to IEEE 1588 with UDP as communication protocol and “peer to peer” or “end to end” as delay measurement mechanism
- Multi time domain support – up to 10 domains simultaneously
- Extended configuration options to support devices not fully compliant with IEEE 802.1AS or IEEE 1588

Setup and Logging
- Service runs in dedicated docker container
- Detailed logging of events (e.g. new grandmaster) and configuration changes (e.g. priority changed)
- Remote monitoring of service-related parameter (port states, priorities, grandmaster ID, …) via console application (Windows and Linux support)

Configuration
- Remote configuration via graphical user interface (Windows and Linux support)
- Possibility to enable or disable time synchronization distribution of any interface separately
- Varying protocol types for different interfaces (e.g., 802.1AS on interface 1 and 1588 UDP – “peer to peer” on interface 2)

Specifications

Power Specifications

Typical power with passive cables (ATIS): 57 W

Input voltage: 12 V DC

Physical Characteristics

Dimensions:
44 mm H x 320 mm W x 350 mm D

Weight: 4.5 kg

Supported Modules and Cables

- QSFP+/QSFP28 short and long range optics
- QSFP+/QSFP28 to QSFP28 DAC cable
- QSFP breakout cables
  - 100 GbE to 4x 25 GbE DAC, optical
  - 100 GbE to 2x 50 GbE DAC, optical
- QSFP+ breakout cables 40GbE to 4x10GbE DAC, optical
- QSFP+/QSFP28 AOC
- SFP 10GBase-T via QSFP to SFP Adaptor
- 1000BASE-T and 1000BASE-SX/LX/ZX modules
- SFP+/SFP28 short and long range optics
- SFP+ to SFP+ DAC cable 0,5 m to 5 m
- SFP+/SFP28 AOC
- 1000BASE-T and 1000BASE-SX/LX/ZX modules
- 10GBASE-T module
- SFP28 to SFP28 DAC cables
  - For server ports:
  - 0.5 m-1.5 m: Any DAC
  - 2 m: MCP2M00-A002E30N
  - 2.5 m: MCP2M00-A02AE26N
  - 3 m: MCP2M00-A003E26N
  - For SN2010 to SN2010 connection (only use ports 3, 6, 9, 12, 15, 18):
  - 2 m: Any DAC

  For connection with other switches:
  - AOCs/transceivers only

Order Information

Name	Part Number	Description
MDSwitch SN2010	B24043-MDS-004-0001	Ethernet Switch 22 Port 10/25GbE & 100GbE Onyx OS 12VDC

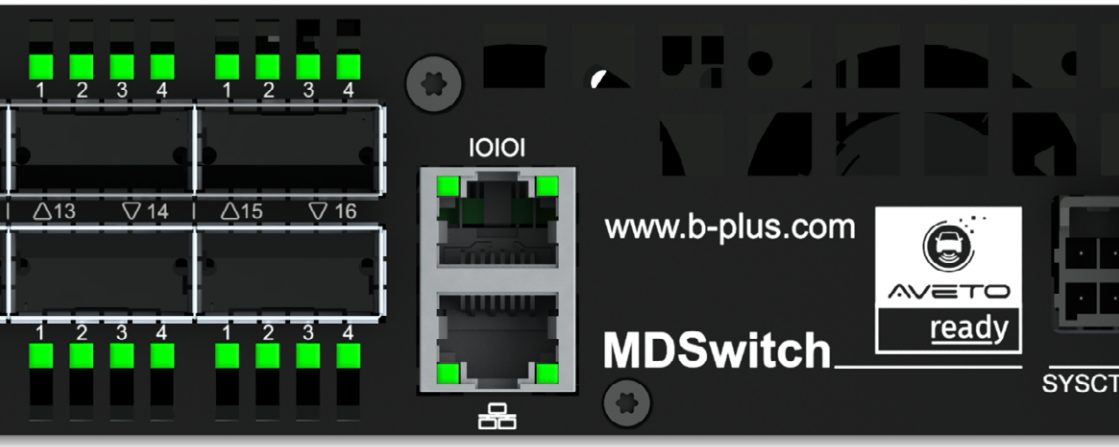
Order Information Accessories

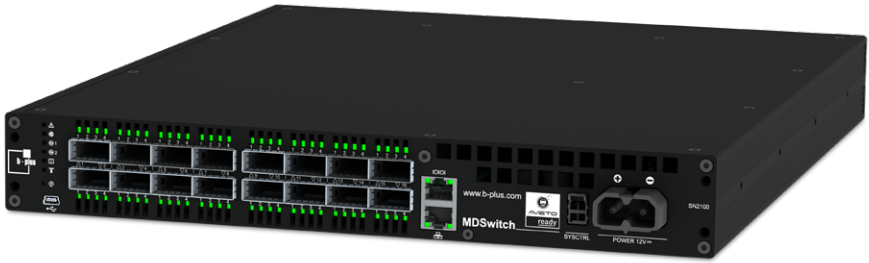
Name	Part Number	Description
QSFP+ to SFP+ Adapter	B24004-ICO-002-0111	QSFP+ to SFP+ Adapter
10GBASE-T SFP+ 30M	B24004-ICO-001-0111	10GBASE-T SFP+ Copper RJ45 30 m Transceiver / xDSwitch
100G DAC Cable 0,5m	B24004-ICO-003-0105	DAC Ethernet cable, QSFP28 100 Gb/s, 0.5 m, black
360W AC/DC Power Supply	B09003-PWR-002-0360	360 W AC/DC Power Supply, 13.8 V/26 A Out
BRICK installation set 44mm for ITEM Profile 20	B17575-BIM-001-0044	BRICK installation set 44 mm for ITEM Profile 20

Other QSFP and SFP-modules or cables and mechanical integration kits on request.

MDSwitch SN2100

High Performance Ethernet Switch for mobile applications





MDSwitch SN2100

16 Port Mobile Datacenter Switch

The Ethernet Switch MDSwitch SN2100 expands the b-plus AVETO product portfolio with a high performance switch of the data center class for the mobile application, for instance in test vehicles.

Provided with a high performance ASIC and 16 100 GbE ports, a flow rate up to 3.2 Tb/s can be achieved. An extremely optimized latency behavior complements this enormous throughput.

All 16 ports are usable very flexibly in a range from 1 Gb/s to 100 Gb/s. Up to 64 10/25 GbE ports are possible, for example.

MDSwitch SN 2100 supports a variable and scalable network of high performance components in a mobile environment.

A unique optional SW-complement like XTSS enlarges the very wide-ranging features of the special TSN-functions in the field of time synchronization. Therefore, it ensures the smooth cooperation, e. g., with AVETO network participants.

The 12 V power supply with a supplementary ignition management simplifies the use in test vehicles significantly.

Highlights

Zero Packet Loss
- True cut-through latency
- Speeds of 1/10/25/40/50/56/100GbE
- Easy deployment and maintenance

Unprecedented Performance
- Line rate performance at all times
- Storage and server applications run faster
- Software Defined Networking (SDN) support
- Running Mellanox Onyx

Key Features
- Throughput 3.2 Tb/s
- 2.38 billion packets per second
- 16 40/56/100GbE ports
- Up to 64 10/25-ports / up to 32 50GbE ports
- 300 nsec for 100GbE port-to-port
- Flat latency across L2 and L3 forwarding
- XTSS TSN time synchronization feature
- Under 6 W per port
- RoHS compliant

MDSwitch SN2100

High Performance Ethernet Switch for mobile applications

Features

Layer 2 Feature Set

- IGMP V2/V3, Snooping, Querier
- VLAN 802.1Q (4K)
- Q-In-Q
- 802.1W Rapid Spanning Tree
- BPDU Filter, Root Guard
- Loop Guard, BPDU Guard
- 802.1Q Multiple STP
- PVRST+ (Rapid Per VLAN STP+)
- 802.3ad Link Aggregation (LAG) & LACP
- 32 Ports/Channel - 64 Groups Per System
- Port Isolation
- LLDP
- Store & Forward / Cut-through mode of work
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64 VRFs

- IPv4 & IPv6 Routing inc Route maps:
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- PIM-SM & PIM-SSM (inc PIM-SM over MLAG)
- BFD (BGP, OSPF, static routes)
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- ECMP, 64-way
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Synchronization

- XTSS TSN Support
- NTP

Quality of Service

- 802.3X Flow Control
- WRED, Fast ECN & PFC
- 802.1Qbb Priority Flow Control
- 802.1Qaz ETS
- DCBX – App TLV support
- Advanced QoS- qualification, 802.1AB
- Shared buffer management

Management & Automation

- ZTP
- Ansible, SALT Stack, Puppet
- FTP \ TFTP \ SCP
- AAA , RADIUS \ TACACS+ \ LDAP
- JSON & CLI , Enhanced Web UI
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- 10/100/1000 ETH RJ45 MNG ports
- USB Console port for Management
- Dual SW image
- Events history
- ONIE

Network Virtualization

- VXLAN EVPN – L2 stretch use case
- VXLAN Hardware VTEP – L2 GW
- Integration with VMware NSX & OpenStack, etc.

Software Defined Network (SDN)

- OpenFlow 1.3:
  - Hybrid
  - Supported controllers: ODL, ONOS, FloodLight, RYU, etc.

Docker Container

- Full SDK access through the container
- Persistent container & shared storage

Monitoring & Telemetry

- What Just Happened (WJH)
- sFlow
- Real time queue depth histograms & thresholds
- Port mirroring (SPAN & RSPAN)
- Enhanced Link & Phy Monitoring
- BER degradation monitor
- Enhanced health mechanism
- 3rd party integration (Splunk, etc.)

Security

- System secure mode – FIPS 140-2 compliance
- Storm Control
- Access Control Lists (ACLs L2-L4 & user defined)
- 802.1X - Port Based Network Access Control
- SSH server strict mode – NIST 800-181A
- CoPP (IP filter)
- Port isolation

XTSS TSN Features

Specification Support

- Time synchronization according to IEEE 802.1AS-2020
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Setup and Logging

- Service runs in dedicated docker container
- Detailed logging of events (e.g. new grandmaster) and configuration changes (e.g. priority changed)
- Remote monitoring of service-related parameter (port states, priorities, grandmaster ID, …) via console application (Windows and Linux support)

Configuration

- Remote configuration via graphical user interface (Windows and Linux support)
- Possibility to enable or disable time synchronization distribution of any interface separately
- Varying protocol types for different interfaces (e.g. 802.1AS on interface 1 and 1588 UDP – “peer to peer” on interface 2)

Specifications

Power Specifications

Typical power with passive cables (ATIS): 94.3 W

Input voltage: 12 V DC

Physical Characteristics

Dimensions: 44 mm H x 320 mm W x 350 mm D

Weight: 4.5kg

Supported Modules and Cables

- QSFP28, SFP28 short and long range optics
- QSFP28 to QSFP28 DAC cable
- QSFP breakout cables 100GbE to 4x 25GbE and 40GbE to 4x 10GbE DAC, optical
- QSFP breakout cables 100GbE to 2x 50GbE DAC, optical
- QSFP AOC
- SFP 10GBase-T via QSFP to SFP Adaptor

Order Information

Name	Part Number	Description
MDSwitch SN2100	B24043-MDS-002-0001	Ethernet Switch 16 Port 100GbE Onyx OS 12VDC

Order Information Accessories

Name	Part Number	Description
QSFP+ to SFP+ Adapter	B24004-ICO-002-0111	QSFP+ to SFP+ Adapter
10GBASE-T SFP+ 30M	B24004-ICO-001-0111	10GBASE-T SFP+ Copper RJ45 30 m Transceiver / xDSwitch
100G DAC Cable 0,5m	B24004-ICO-003-0105	DAC Ethernet cable, QSFP28 100 Gb/s, 0.5 m, black
360W AC/DC Power Supply	B09003-PWR-002-0360	360 W AC/DC Power Supply, 13.8 V/26 A Out
BRICK installation set 44mm for ITEM Profile 20	B17575-BIM-001-0044	BRICK installation set 44 mm for ITEM Profile 20

Other QSFP and SFP-Modules or Cables and mechanical integration kits on request.

NETLion 1000

Automotive Ethernet Development Tool for 100BASE-T1 and 1000BASE-T1

Automotive Ethernet Development Tool for 100/1000BASE-T1 Networks

The NETLion 1000 is a development tool for 100/1000BASE-T1 networks. It helps the user with logging and analysis of data traffic or with the conversion of 100/1000BASE-T1 physical layers to 100BASE-TX/1000BASE-T Ethernet.

It converts up to two 100/1000BASE-T1 signals to 100BASE-TX/1000BASE-T Ethernet. You can use two independent bi-directional converter channels.

During the operating mode “Network TAP”, you can decouple data of the two 100/1000BASE-T1 line ends and transmit data to the two 100BASE-TX/1000/BASE-T interfaces with no interference on the communication in the 100/1000BASE-T1 network.

NETLion 1000 has a configuration Ethernet port where you can access the web interace. With the NETLion 1000 web interface you can see signal quality, occurring errors, as well as the status of the device. For automation, NETLion 1000 provides a common gateway interface (CGI) to change the device settings.

Highlights

Three Devices in One
- Dual Media Converter
- Network TAP
- Cable Tester

LEDs for
- 100/1000BASE-T1 Signal Quality
- Operation Mode
- Status
- Master/Slave
- Ethernet Port Speed

Web & SW-Interface
- For the view of diagnosis data and further PHY adjustments
- Modes for compliance tests of 100/1000BASE-T1

Simple Configuration
- Basic configuration without PC (DIP switches)
- Common Gateway Interface (CGI)
- Extended configuration via Web interface

Specifications

Operating Temperature	-40 °C to 75 °C ambient	
Supply Voltage	9 V to 48 V	
Maximum Electrical Current	1 A (9 V)	
IP Protection Class	IP20	
Housing Dimensions	127 mm (W), 105 mm (D), 26 mm (H)	
Weight	290 grams	
Approvals	CE, FCC, VCCI, KC, RoHS, REACH	
Interfaces	1x MGMT Port, RJ45 2x 100BASE-T1/1000BASE-T1, MATEnet 2x 100BASE-TX/1000BASE-T, RJ45	Management port 802.3bw / 802.3bb IEEE 802.3 Clause 40 (formerly IEEE 802.3ab)

Block Diagram of the System

Decoupling of data of one 100/1000BASE-T1 line in both directions without influence of the communication

Conversion of two 100/1000BASE-T1 signals in standard 100BASE-TX/1000BASE-T Ethernet signals (bi-directional)

Order Information

Name	Part Number	Description
NETLion 1000 C2T	B18005-NEL-001-0001	100/1000BASE-T1 – 100BASE-TX/1000BASE-T Dual Media Converter & Network TAP
NETLion 1000 C2	B18005-NEL-001-0002	100/1000BASE-T1 – 100BASE-TX/1000BASE-T Dual Media Converter

Watch the video and learn more about the **NETLion 1000**

NETLion 10G

Automotive Ethernet Development Tool for 2,5/5/10GBASE-T1

Automotive Ethernet Development Tool for 2,5/5/10GBASE-T1 Networks

NETLion 10G is a development tool for 2,5/5/10GBASE-T1 networks. It helps the user with logging and analysis of data traffic or with the conversion of 2,5/5/10GBASE-T1 physical layers to 2,5/5/10GBASE-T Ethernet.

It converts up to two 2,5/5/10GBASE-T1 signals to 2,5/5/10GBASE-T Ethernet. You can use two independent bi-directional converter channels.

During the operating mode “Network TAP”, you can decouple data of the two 2,5/5/10GBASE-T1 line ends and transmit data to the two 2,5/5/10GBASE-T interfaces with no interference on the communication in the 2,5/5/10GBASE-T1 network.

The NETLion 10G has a configuration Ethernet port where you can access the web interface. With the NETLion web interface you can see signal quality, occurring errors, as well as the status of the device. For automation, NETLion 10G provides a common gateway interface (CGI) to change the device settings.

Highlights

Two Devices in One
- Dual Media Converter
- Network TAP

LEDs for
- 2,5/5/10GBASE-T1 Signal Quality
- Operation Mode
- Status
- Master/Slave
- Ethernet Port Speed

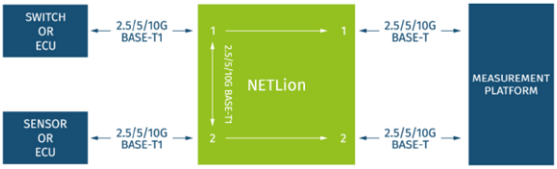
Web & SW-Interface
- For the view of diagnosis data and further PHY adjustments
- Modes for compliance tests of 2,5/5/10GBASE-T1

Simple Configuration
- Basic configuration without PC (DIP switches)
- Common Gateway Interface (CGI)
- Extended configuration via Web interface

Specifications

Operating Temperature	Min -40 °C, max tbd (ambient)	
Supply Voltage	9 V to 32 V	
Maximum Electrical Current	tbd	
IP Protection Class	IP20	
Housing Dimensions	121 mm (W), 110 mm (D), 50 mm (H)	
Weight	tbd	
Approvals	CE, FCC, VCCI, ICES, KC, RoHS, REACH	
Interfaces	1x MGMT Port, RJ45 2x 2,5/5/10GBASE-T1, H-MTD 2x 2,5/5/10GBASE-T, RJ45	Management port IEEE 802.3ch IEEE 802.3an / 802.3bz

Block Diagram of the System



Decoupling of data of one 2,5/5/10GBASE-T1 line in both directions without influence of the communication

Conversion of two 2,5/5/10GBASE-T1 signals in standard 2,5/5/10GBASE-T Ethernet signals (bi-directional)

Order Information

Name	Part Number	Description
NETLion 10G C2T	B18085-NEL-001-0001	2,5/5/10GBASE -T1 – 2,5/5/10GBASE -T Dual Media Converter & Network TAP
NETLion 10G C2	B18085-NEL-001-0002	2,5/5/10GBASE -T1 – 2,5/5/10GBASE -T Dual Media Converter

Watch the video and learn more about the **NETLion 10G**

Automotive Ethernet development tool NETLion faster than ever

From all automotive Ethernet development tools, the NETLion is the Swiss Army Knife. Now, the indispensable development tool is upgraded and ensures a reliable data transfer with up to 10 Gbit/s speed.

With advancing technology in the automotive sector, the demands on an Ethernet converter are also rising. For high-resolution sensor technology that requires high frame rates, such as high-resolution 4K cameras, speeds of 100 or 1000Mbit/s are no longer enough. Data can be lost if the data transfer speed is not suitable. With the 2.5G, 5G and 10Gbit/s options of the NETLion 10G, b-plus closes this gap and continues to ensure reliable data transfer without data loss.

Ethernet converters are used whenever automotive Ethernet is to be converted to standard PC Ethernet. The NETLion can be used in two modes. In media converter mode it converts up to two 2.5G, 5G or 10G signals to PC Ethernet and thus supports multiple standards with one device. In TAP mode, data can be decoupled from both directions of transmission and read out separately from each other. Users can decouple each connected device individually, examine it, and precisely trace and assign any errors.

The monitoring of safety-relevant systems in the vehicle is only possible with reliable and precise data. “We only operate on layer 1, which means that there is no modification of the data streams”, explains Florian Rabbauer, Product Manager of NETLion 10G. Furthermore, the NETLion 10G has a very low and well-defined latency due to its real-time transmission, which ensures a reliable time synchronization of the data.

To make the use of the NETLion 10G as easy as possible, there are several options available for the configuration. The simplest one is done via the DIP switches on the hardware. Users are able to start immediately without any additional software. The converter can be configured easily via the Master/Slave mode.

+ Complementary Software Solutions

Software and Hardware from one source

AVETO.dps

High Performance Raw Data Logging

AVETO.dps is a revolutionary solution for high-performance raw data logging that combines the stability of a classic data logger with the flexibility of an open platform. Developed for demanding data acquisition, it enables the processing and recording of data at speeds over 100 Gbit/s. With its architecture, AVETO.dps offers high system stability and efficient resource management.

It supports multiple data sources and advanced data formats such as PCAPNG and MDF4. Precise time stamping is ensured by the XTSS time synchronization service, positioning AVETO.dps as a comprehensive solution for collecting, recording and analyzing raw data in the ADAS/AD environment.

Highlights

- Stable yet flexible design
- Industry standards for interfaces
- Scaleable hard- and software stack

Visualization and Architecture

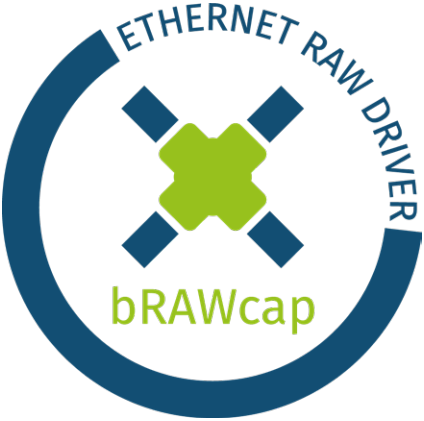
- Trusted cage on own bare metal virtualization
- Guest OS in virtual box for visualization and processing separated
- Support for virtual interfaces in the guest OS

Software Interface

- REST API for monitoring, control and configuration
- DDS - data distribution service for raw data

- Password protected SMB Share
- Generic access from the application
- Guest OS to drop files

Watch the video and learn more about **AVETO.dps**



bRAWcap

Low Level Windows Network Driver

With bRAWcap, we create a tool for high-performance recording on 10G Ethernet interfaces. The tapping of data packets is highly effective and loss-free. bRAWcap is optimized to enable fast sending and receiving of high data rates with a minimum use of CPU resources.

Unlike other drivers, bRAWcap already operates on OSI layer 2. This allows insight down to Ethernet level and into the optional VLAN tags (IEEE 802.1Q). To enable temporal correlation of the packets, RX/TX timestamps are also generated for each packet.

With bRAWcap, you get a centralized way to access the Ethernet interfaces that are assigned to it. This feature provides seamless integration and operation of your software without having to interfere with the operating system (OS).

Highlights

- Low Level Windows Ethernet Driver

- Receive single packets without additional buffer handling
- Receive multiple packets by configurable API buffer(s) with callback registration

- VLAN tagging support
- Custom byte mask packet filtering
- (De)activate packet indication forwarding to network stack
- Dynamic config of driver receive buffers

- Selective direction configuration for receive modes
- Multiple timestamp modes (system time, QPC, Hardware timestamp) based on adapter support

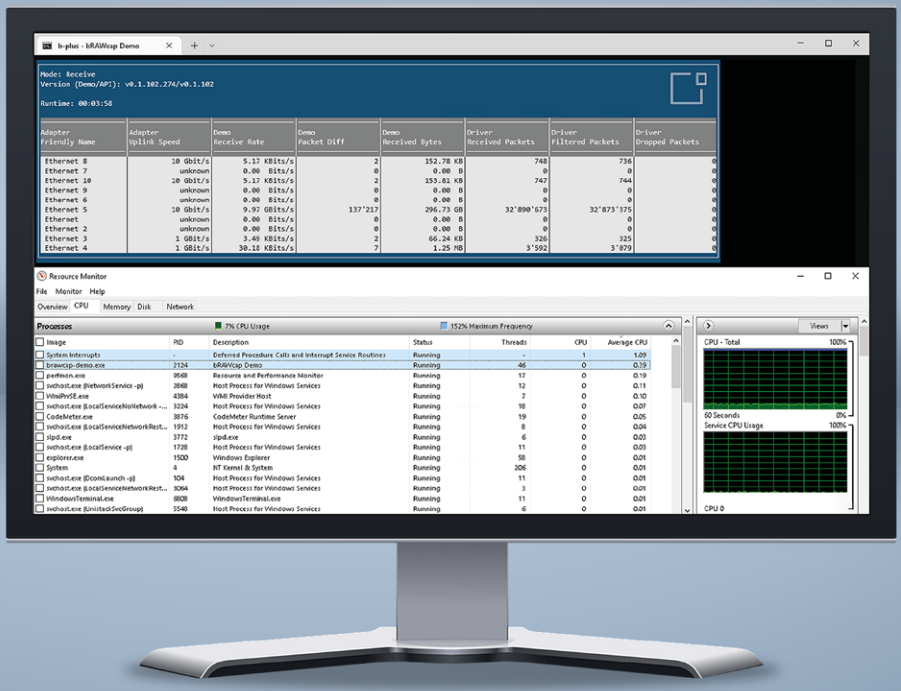
Watch the video and learn more about **bRAWcap**

Series Announcement for Windows driver bRAWcap

Software solution for efficient tapping and replay on 10G Ethernet interfaces available in full-featured version

With the new Windows driver bRAWcap, b-plus offers a solution for efficient tapping and replaying of data packets on 10G Ethernet interfaces. Due to the optimization, very high data rates can be processed with minimal CPU resource usage under Windows for the first time. Information such as VLAN tags as well as receive and transmit timestamps during data transport become accessible with the driver.

Learn more about the LWF-Driver **bRAWcap** and get the **free demo version**



When recording raw data on 10G Ethernet interfaces, drivers under Windows reach their limits. When handling high data rates, the CPU can be overloaded. Several sources of error exist, such as packet loss or an unstable system. Such scenarios represent an unnecessary waste of time. With the b-plus driver bRAWcap they can be easily solved and avoided.

bRAWcap makes it possible to get the most out of the existing Windows software and related software packages. The move to Linux is therefore not necessary. The driver can be easily retrofitted and seamlessly integrated into the Windows software environment. Operation is possible immediately.

A key feature of bRAWcap is the ability to operate at OSI layer 2. Users gain insight down to the Ethernet level and can view optional VLAN tags (IEEE 802.1Q). To enable temporal correlation of packets, receive and transmit timestamps are also generated for each packet when available. Raw data capturing is not possible with standard Windows drivers.

User-defined byte masks can be used to easily filter packets, enable or disable packet tapping, and forward the desired data to the network stack. Dynamic configuration enables optimal adjustment to the given environment.

+ Complementary Software Solutions

Software and Hardware from one source

SIODI

Smart I/O Driver Interface

The Smart I/O Driver Interface (SIODI) is a sophisticated software layer designed to enhance the operability and integration of vehicle systems. It serves as a comprehensive solution for monitoring and accessing the system status, ensuring that the health of the system is maintained and any necessary adjustments are made proactively.

With its hardware integration capabilities, SIODI supports a wide range of b-plus hardware, allowing for a harmonious operation within the system. It offers generic access to all supported in vehicle platforms, which means that it can be used as a universal interface across different hardware configurations within the vehicular technology ecosystem.

Highlights

- Enables advanced system monitoring and management for efficiency during test drives

- Generic access to b-plus in vehicle platforms
- Encapsulates hardware access
- OS Service for Windows and Linux

- Monitors and accesses system status
- Identifies and manages xSTORAGE
- Manages system health
- Integrates supported hardware

XTSS

Time Synchronization

Timing is crucial in distributed multi-sensor systems, where data travels through various software and systems, encountering delays and clock jitter. This can result in out-of-order data at the recording unit, affecting sensor data fusion and accuracy. To address this, time-stamping each data packet is vital for reliable data.

With XTSS b-plus provides an advanced time synchronization solution in the AVETO toolbox. The solution offers wide configurability, plug-and-play capability, and exceptional accuracy. Users benefit from the flexibility to configure XTSS to their specific needs, seamlessly integrate it into existing systems, and rely on its precise time synchronization for various applications.

Highlights

- **Zero Packet Loss**

- **Cluster Time Synchronization**
  provides sync over Ethernet base on gPTP (IEEE 802.1AS-2020) and PTP (IEEE1588v2)
- **Platform Time Synchronization**
  synchronizes clocks of the interfaces of a measurement platform via hardware

- Hardware based Time Sync architecture
- GPS integrated (can be Time Master)
- External Time Master via Ethernet (802.1AS or gPTP / UPD), PPS, and NMEA input
- XTSS-TR / UDP Time Relay to synchronize external support of multi domain structure
- Configuration tool and API for Windows and Linux

CONiX Testfleet Solution

Bring yor ADAS and AD systems into series production faster.

The CONiX Testfleet Solution is a smart cloud-based software solution to manage test vehicle fleets.

Operation area

The CONiX Testfleet Solution was developed specifically for test vehicles in the field of validation. Therefor it supports you with the structured preparation and organization of entire fleets. Furthermore it administrates the execution of test and validation drives. And it enables a comprehensive evaluation and detailed analysis of test drives and associated data.

Benefits

Remotely monitor measurement technology, sensors and vehicle systems of your test vehicles with the software. The CONiX Testfleet solution creates the optimal interface between the test drivers, the fleet managers and the developers. It reduces down times and speeds up the entire development process.

Highlights

Remotely monitor measurement technology, sensors and vehicle systems of your test vehicles with the CONiX Testfleet solution

- Continuous connection to the vehicles
- Secure and protected data transmission
- Open API interface to transfer any signals and metadata
- Flexible system architecture to enable integration into existing systems
- Wide variety of functions to cover use cases for
  - Test fleet manager
  - Test vehicle driver
  - Engineer
  - Developer
- Access to the web application at anytime and anywhere
- Comprehensive evaluation and detailed analysis of test drives and associated data

Feature Highlights

Vehicle Localization	Localize all vehicles of your fleet
Display of Vehicle Status	Detect system failures immediately Prevent downtimes
Test Drive Management	Get an overview of test drives Quick evaluation of the quality of the test drive
Version Management	Detection of obsolete/wrong system states Preventing test drives with incorrect software status
Labelling	Individual generation of relevant metadata Immediate information of driving scenes
Component Management	Get an overview of the vehicle setup Minimize administrative efforts
Issue Tracker	Minimization of error states Minimization of administrative effort
Campaign Management	Planning of dedicated driving campaign Evaluation of campaign goals
Data center	Evaluating key performance indicators Increasing efficiency of test fleets
Data exchange between vehicle and backend	Live transfer of individual metadata and files Configuration of the test setup Execution of updates Minimization of maintenance effort

Further Features

Fleet Management	Event Management
Chat	Health Monitoring
Agent management	Drive Evaluation
Task Management	Storage Management
Data Transfer	Vehicle Management
Shift Management	User Management

Watch the video and
learn more about the
CONiX Testfleet Solution

Structured Test Fleet Management for Higher Campaign Success

The CONiX Testfleet Solution now with new „Campaign Manager“ feature

With the release of the CONiX Testfleet Solution Version 3.3.0 b-plus launched the new “Campaign Manager” function. It allows test fleet managers, developers, test drivers, and engineers to manage test campaigns effortlessly and optimize existing processes. With this extension, b-plus responds to increasing requirements such as growing data streams in the vehicle, larger test fleets, and a higher need for transparency in data segmentation and structure.

Learn more about the **CONiX Testfleet Solution** and get the **free trial**

The Campaign Manager is a cloud-based tool designed to simplify the planning, execution, monitoring, and evaluation of test drive projects. It allows for straightforward and transparent creation and monitoring of entire test campaigns.

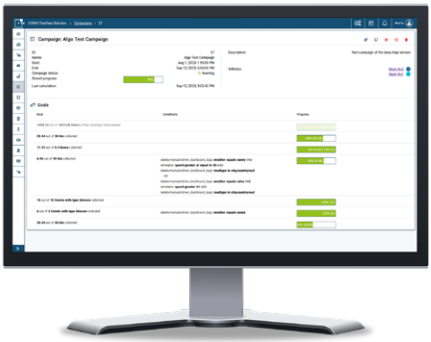
Campaigns are set up based on specific parameters. The campaign objectives are determined during the set-up process. This includes, among other things, test-relevant details such as the test period, the selection of vehicles, metadata to be evaluated, and signals. To achieve these objectives, the Campaign Manager monitors the campaign's progress with automatic calculations and displays them through clear visualizations. Adjusting the parameters afterwards is possible.

Upon completion of the campaign, the collected data is easily evaluated. If refinement of the data basis is necessary, there is the option to expand the data with an additional campaign. This allows more scenarios to be represented and improves the quality of the results.

The Campaign Manager optimizes the management of test fleets and increases efficiency, data quality, and competitiveness in the speed of function validation.

About CONiX Testfleet Solution

The CONiX Testfleet Solution was developed as a cloud-based software solution specifically for the management of test vehicles in the validation environment and supports development teams in the structured preparation and organization of entire fleets, execution of test and validation drives, and the overarching evaluation and detailed analysis of test drives and their data.

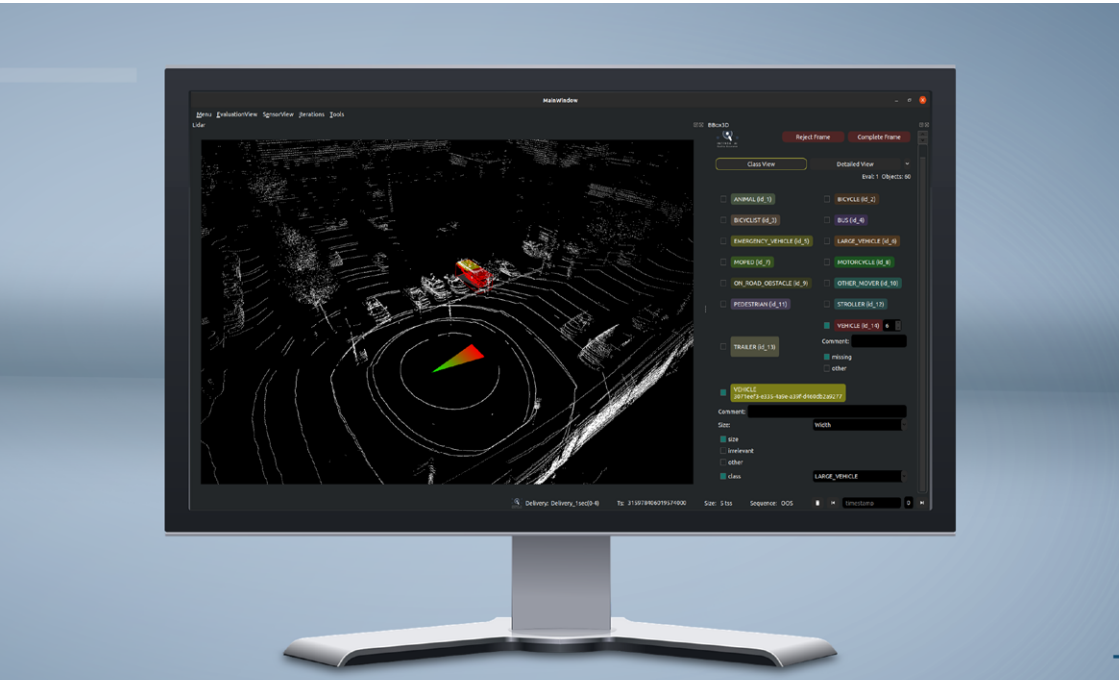


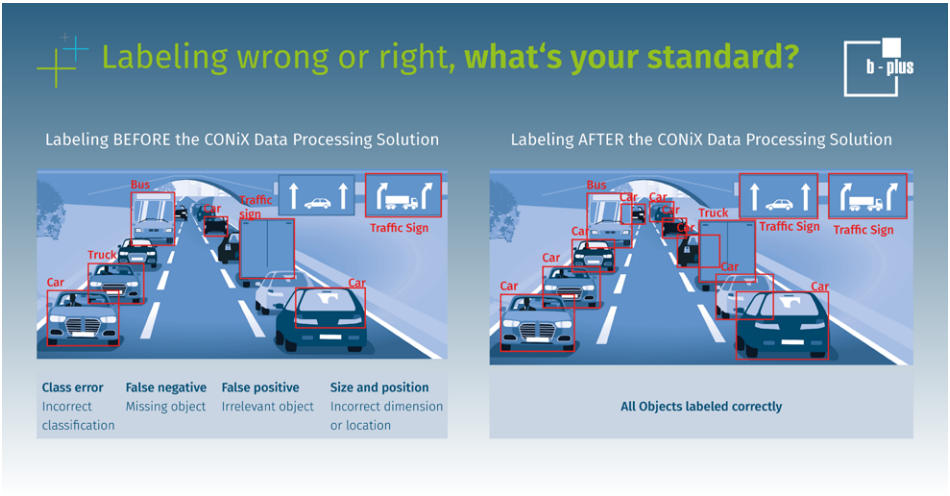
Optimized Data Quality for AI Systems

b-plus expands its portfolio with CONiX Data Processing Solution

With the CONiX Data Processing Solution, b-plus introduces a tool that optimizes data systems and enables significantly improved AI systems across all industries. The goal of this product solution is to ensure and enhance the quality of the data used to enrich AI systems. Thanks to the CONiX Data Processing Solution, high-quality test data can be generated and accurately labeled more effectively. structure.

Learn more about the
CONiX
Data Processing Solution





The „With the recently added CONiX Data Processing Solution to b-plus's portfolio, we offer companies the opportunity to address all key factors in the realm of high-quality training data," explains Marius Reuther, Product Manager at b-plus. „Our offering includes not only comprehensive data analysis but also data quality optimization and complete transparency in the data processing process. A true game-changer for efficient data processing."

The following features distinguish the CONiX Data Processing Solution:

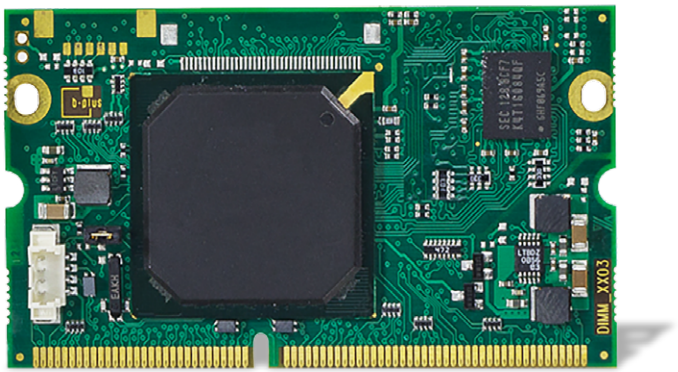
- **Evaluation of data sets and labels:** A Quality Assurance Report visualizes data quality and label errors, along with recommendations for improvement.
- **Specification creation:** Specifications are tailored precisely to the use case with extensive experience in handling data sets.
- **Labeling expertise:** Customers receive comprehensive support in selecting the appropriate partner for their labeling project.
- **Intelligent data capture:** Adaptive real-time algorithms provide metadata to raw data during capture, control the recording process, and ensure greater transparency and efficient storage management.

The CONiX Data Processing Solution was developed to address the biggest challenges faced by customers in dealing with AI systems, including inadequate model performance due to poor data quality, lack of metrics on data quality, scenes, and labeling, or opaque labeling processes due to the volume and complexity of data.

With the CONiX Data Processing Solution, users can obtain high-quality data for training their neural networks. Regardless of the industry or sensor type, whether radar, camera, or lidar, the solution is suitable for all companies in need of exceptional data for training their neural networks.

DIMMBoard DX86

DIMM-PC® Computer-on-Module



SODIMM 144 COM Solution

DIMMBoard DX86 is nearly compliant to the DIMM-PC® module specification in fit & functions. The core unit is a x86 compliant Vortex86DX SoC by DMP clocked at 600 MHz for passive cooled operation.

Due to the extremely low power consumption of 4 W it's the ideal solution for mobile embedded devices. The SoC supports embedded operating systems like DOS, WinCE, WinXP embedded and Linux on µSD.

Highlights

- 32-Bit x86 DMP Vortex86DX processor
- 256 MB DDR2 Memory onboard
- Operating temperature -40 °C to +70 °C
- Support for legacy interfaces like ISA or LPT

- Long term availability
- Credit card sized Computer-on-Module
- Headless operation without graphics controller
- Extended temperature variant with conformal coating

Specifications

Variant	DIMMboard DX86	DIMMBoard DX86 EXT
Part Number	B13500-DIM-001-0001	B13500-DIM-001-0002
Operating Temperature	0°C ~ +60°C	-40°C ~ +70°C
Conformal Coating	No	Yes
CPU	DMP Vortex86DX SoC, 32-Bit x86 compliant, 16 KB L1, 256 KB L2 Cache	
CPU clock	600 MHz without heatsink, up to 1000 MHz with cooler	
RAM	256 MB DDR2 onboard	
Boot device	SD card, USB or Ethernet	
Flash	Onboard micro-SD card socket	
GPIO	10 programmable 3.3 / 5 V GPIO	
PS/2	1x Keyboard	
LPT	Rev 1.0 compliant (DMA, Serial IRQ support)	
ISA	16-bit ISA bus @ 8.33 MHz, 5 V tolerant	
Serial	2x TTL, 16C550 compliant, full featured with 16 byte FIFO, 50 to 460.8 kBaud	
Ethernet	1x Fast Ethernet IEEE802.3U 100Base-T	
USB	4x USB 1.1 / 2.0 (1x via onboard connector)	
Watchdog	30.5 µs to 512 s	
OS Support	DOS, WinCE, WinXP emb. Linux, QNX	
Dimensions	86 x 40 x 8 mm	
Power Supply	5 V DC +/-5%	
Power Consumption	3-4 W @ 600 MHz	
Console Redirection	Yes, COM1	

PIONEERING
NEW MOBILITY

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