CAPTURE MODULE SERDES GMSL2/3

CAPTURE YOUR GMSL AUTOMOTIVE SENSOR DATA STREAM IN THE CAR WITHOUT INTERFERING WITH THE ORIGINAL NETWORK

DESCRIPTION

The Capture Module Serdes GMSL2/3 from Technica Engineering GmbH is a versatile and powerful device for logging data in automotive applications, such as AD/ADAS. It features 4x GMSL2/3 link lines (8 ports) and 4x SFP+ ports for high-speed and reliable data logging output (up to 10Gbps each).

With a Capture Module Serdes you can capture up to 4 GMSL2/3 sensor data stream point-to-point connections without influencing with the network itself. Sensor data (GMSL forward link) is forwarded from the sensor (connected to the CM deserializer port) to an ECU (connected to the CM serializer port) at the same time it is being captured and sent to logger packetized in ethernet frames using PLP/TECMP protocol. Control data (I2C and GPIO) transmitted using the GMSL reverse link is also forwarded between the sensor and the ECU while it is being captured by the CM.

Designed with durability in mind, the Capture Module SerDes has a robust aluminum anodized case and is compatible with 12-to-24-volt systems, making it suitable for a variety of automotive applications. The device also has two Ethernet ports. These ports can be used for easy configuration through a web server or remote configuration messages as well as for time synchronization (802.1AS gPTP). The module also allows for the import and export of configurations, making it easy to set up and customize for specific needs.

The Capture Module SerDes is ideal for automotive engineers and develo pers who require logging high-speed camera data when developing and testing their AD/ADAS or infotainment applications.

The Capture Modules are a family of devices specifically built to help automotive engineers analyze, debug, and test in-vehicle networks, such as CAN, LIN, FlexRay, and automotive Ethernet, among others. With its advanced features and robust design, the Capture Module SerDes is a valuable asset for automotive engineers and developers working on AD/ADAS systems.

RELATED PRODUCTS

Enhanced Ethernet Switch -H-MTD
Capture Module MultiGigabit
Enhanced Ethernet Switch RJ-45

www.technica-engineering.com/en/products

FACTS

- 4x GMSL2/3 video links (8 ports). MAX96793 GMSL2/3 Serializer used for connections to ECUs and MAX96792A GMSL2/3 Deserializer used for connection to sensors. Variants for HFM and Tyco Mate-AX quad coaxial connectors
- 1 × MQS connector with 1 × Host port for configuration only
- 4x SFP+ Ports for Logging data output (up to 10Gbps each)
- 2x RJ-45 1000BASE-T Ethernet Port for configuration
- Extended voltage range 9 to 24 Volt DC (nominal 12/24 Volt DC)
- Galvanic isolation between battery and camera connection through a dedicated galvanic isolated DC/DC
- 17 to 32 Watt (depending on connected SFP Modules)
- 240 x 131 x 65 mm
- Robust aluminum anodized case with integrated heatsink
- -40°Celsius to 75°Celsius

FEATURES

- Captures the traffic from up to 4x GMSL2/3 sensors link lines (one input and one output for each link line)
- Easy configuration via webserver and remote-control APIs
- Import and export of configurations
- Network Time Synchronization supports several standards (AVNU gPTP / 802.1AS, PTPv2) – allowing the user to synchronize multiple Capture Module variants and other devices
- Source timestamping with 40 ns resolution
- High-speed startup (<400ms)
- TECMP (Technically enhanced capture module protocol) & PLP (Probe Logging Protocol) support
- Support for injecting POC (Power over coax) from the capture module (12V regulated) or bypassing the POC provided by the ECU
- Extended power mode for car integration
- Wake-up/Sleep functionality
- Extended voltage range: 12-to-24-volt automotive battery voltage systems compatible
- Rotary switch for manual configuration of the device IP address (Gbit, RJ-45)
- Possibility to reset to default settings by the rotary switch

MEDIACONVERTER 1000BASE-T1 TC10

CONVERSION BETWEEN STANDARD ETHERNET AND 100/1000BASE-T1 WITH TC10 SUPPORT

technica engineering
Member of KPIT Group

THE MEDIACONVERTER IS AVAILABLE IN TWO VARIANTS

- MediaConverter 1000BASE-T1 MATEnet TC10
- MediaConverter 1000BASE-T1 H-MTD TC10

FITS WELL WITH

- Capture Module 100High TC10
- Enhanced Ethernet Switch MATEnet MACsec
- Capture Module 1000 High MATEnet

DESCRIPTION

The **MediaConverter 1000BASE-T1 TC10** of Technica Engineering establishes a direct point-to-point conversion between Automotive ECUs using 100/1000BASE-T1 Automotive Ethernet and a Standard Ethernet interface (e.g., test PC). In the conversion, no packets are stored or modified the conversion takes place on the physical layer with the highest proven reliability.

This device uses the 88Q2221x Automotive Ethernet PHY supporting wakeup over Ethernet according to the Open Alliance TC10 specification. We ensure a trustworthy and effective tool to our customers who are looking for a cost-efficient, quick, and manageable solution for their testing requirements, with no latency and no packet loss.

The supported wakeup over Ethernet according to the Open Alliance TC10 is used to trigger the startup and shutdown of ECUs in the vehicle network. This is used for the first startup/wakeup of central ECUs, when the car is started by the driver.

The MC 1000BASE-T1 TC10 features bi-directional conversion between Automotive Ethernet standards (100/1000BASE-T1) to, for example, a test PC with a Standard Ethernet network interface card. No customized driver is needed to interact with this MediaConverter.

A convenient housing coupled with DIP switches for ease of configuration, enables the user to interact with the converter in an easy–to–use manner. Its design makes it portable and easy to install in test racks. The metal housing makes it robust with IP20 protection.

The devices can also be accessed using the USB connector to read PHY register values and information about link quality and SQI. With the in-built status LEDs, the operation of the device is transparent and aids the tester to detect link-up and data transmission visually.

Thus, the MC 1000BASE-T1 TC10 is the ideal solution for working quickly and efficiently with the new TC10 technology for Automotive Ethernet without the burden of extra wiring, customized connectors, and vendor specific tools.

FACTS

- 4 × DIP switches for easy configuration
- 5 × Status LEDs
- 1 × Standard Ethernet port (100/1000BASE-T) for connection to a test PC or similar device
- 1 × MATEnet/H-MTD port for 100/1000BASE-T1 Automotive Ethernet
- 1 × MQS connector
- Cable set:
  - Tyco MQS socket
  - 1 × Automotive MATEnet/H-MTD connecting cable
  - Power cabling
  - Standard Ethernet cable
- Voltage requirement: 12/24 Volt DC
- Temperature Range: -40°C to + 85°C
- Robust metal case with black powder coating
- Size: 89 x 72 x 28mm

FEATURES

- Support for wakeup via the BASE-T1 link according to the Open Alliance TC10 specification
- TC10 wakeup can be configured using simple commands in the Media Converter console
- Wake-up/Sleep functionality
- Converts between 100/1000BASE-T1 Automotive Ethernet and 100BASE–TX/1000BASE-T Standard Ethernet
- Force Slave mode and link down (input) and provide link status (output) via special MQS connector
- Debugging possible via Micro USB connection
- Configuration via DIP switches:
  - DIP switch 1: Master/Slave
  - DIP switch 2: 100/1000 Mbps
  - DIP switch 3: IEEE-/Legacy mode
  - DIP switch 4: Frame Generator

www.technica-engineering.com/en/products

MEDIACONVERTER MULTIGIGABIT

CONVERSION BETWEEN AUTOMOTIVE MULTIGIGABIT ETHERNET AND COMMERCIAL ETHERNET SOLUTIONS

technica engineering
Member of KPIT Group

DESCRIPTION

The **MediaConverter MultiGigabit** from Technica Engineering establishes a direct point-to-point conversion between automotive ECUs using 10GBASE-T1 (10 Gbit/s Fullduplex, with 1x Unshielded Twisted Pair (UTP) cable) and any standard Gigabit Ethernet (10 Gbit/s, 10GBASE-T) device. In the conversion, no packets are stored or modified. The conversion takes place on the physical layer with the highest proven reliability.

This device is one of the first implementations of a MultiGigabit physical layer MediaConverter. We ensure a trustworthy and effective tool to our customers that are looking for a cost-efficient, quick, and manageable solution for their testing requirements, with no latency and no packet loss.

The device features bi-directional conversion between Gigabit Ethernet (10GBASE-T) and Automotive Gigabit Ethernet (10GBASE-T1). A massive housing made of galvanized sheet steel, coupled with DIP switches for ease of configuration, enables the user to interact with the converter effortlessly.

No customized driver is needed to interact with this MediaConverter. It communicates with standard Ethernet through an SFP+ slot. It comes with an automotive-grade H-MTD connector and a standard SFP+ slot. Its design makes it portable and easy to install in test racks. The metal housing makes it robust with IP20 protection. The devices can also be accessed using the debug connector for TX/RX register values as well as information regarding link quality and SQI. With the in-built status LEDs, the operation of the device is transparent and aids the tester to detect link-up and data transmission visually.

No extra hardware or software complements are needed to connect the device with a PC or a Laptop. The device can be coupled with any hardware or software tool that runs on standard Ethernet with an RJ-45 connector.

Thus, the MediaConverter MultiGigabit is the ideal solution for working quickly and efficiently with the new 10GBASE-T1 technology without the hustle of extra- wiring, customized connectors, and vendor specific tools.

FACTS

- 4 × DIP switches
- 1 × Standard SFP+ port
- 4 × Status LEDs
- 1 × Transmitter port
- 1 × Receiver port
- 1 × H-MTD port for 10GBASE-T1 Automotive Ethernet
- 1 × MQS connector
- Cable set:
  - Tyco MQS socket
  - 1 × Automotive H-MTD connector
  - Cableset (Power, 10GBASE-T1)
  - Additional optical components
- Voltage requirement: 12/24 Volt DC
- Robust metal case with black powder-coating
- Size: 100 x 93,5 × 27mm

FEATURES

- Allows easy connectivity to ECUs with 2.5/5/10GBASE-T multigigabit Automotive Ethernet ports
- Supports line speed rate matching to be able to adapt to different bandwidths between the 2.5/5/10GBASE-T1 interface T1 line speed and the one negotiated on SFP+ module side
- I/O signals to easily interface to automated systems
- Possibility to update SW via Service micro USB port
- Configuration via DIP switches:
  - DIP switch 1: Master/Slave
  - DIP switch 2: 10G
  - DIP switch 3: 5G
  - DIP switch 4: Not Used

NETWORK INTERFACER 10BASE-T1S

A BRIDGE TO COMMUNICATE BETWEEN THE TWO FUNDAMENTAL TOPOLOGY TYPES OF POINT-TO-POINT ETHERNET AND MULTIDROP BUS ETHERNET (10BASE-T1S)

technica engineering
Member of KPIT Group

DESCRIPTION

The future of Automotive networking is undergoing a transformative shift, where the convergence of point-to-point and Bus topologies is now a reality. In response to this, we introduce our novel 10BASE-T1S Network Interfacer, an innovative Ethernet bridge that closes the gap between these two evolving technologies.

With a total of 5 Ethernet ports, our Interfacer acts as a communication hub, seamlessly routing data between 10BASE-T1S and point-to-point ports.

Users have the freedom to configure the 10BASE-T1S ports as coordinators or followers, while also configuring network parameters such as Node Count or Node ID values or even bus termination. These can be made using either the device's convenient DIP switches or the intuitive WEB GUI interface. This allows to customize the behavior and performance of the 10BASE-T1S ports to align precisely with your specific network requirements by configuring standard parameters.

Moreover, traffic distribution configuration provides flexibility for advanced network setups, robust monitoring, and in-depth analysis. You can easily monitor and analyze traffic on 10BASE-T1S ports by mirroring it to designated ports, which allows troubleshooting, performance analysis, and network monitoring.

Remote firmware updates are supported through a user-friendly website, simplifying the process of ensuring your device is always equipped with the latest firmware enhancements.

Seamlessly integrating with other products, our 10BASE-T1S Interfacer empowers you to create expansive simulation, monitoring, and analysis systems, making it an indispensable tool for shaping the future of automotive networking.

FITS WELL WITH

- Capture Module 10BASE-T1S
- SFP Module 100/1000BASE-T1

FACTS

- 3 x 10BASE-T1S ports with MQS connector
- 1 × USB-Ethernet port
- 1 × RJ-45 100BASE-T Standard Ethernet port
- 1 × SFP port
- Voltage requirement: 12/24 Volt DC
- Power consumption: 5/10 Watt
- Robust metal case with black powder coating
- Size: 99,5 × 93 × 32mm

FEATURES

- 3x 10BASE-T1S ports acting as coordinator or follower
- Easy configuration via web server or dedicated UDP frames
- High-speed startup
- DIP switch for manual configuration of the device 10BASE-T1S ports
- WEB GUI interface for configuring multiple parameters
- Extended power mode for car integration
- PLCA (Physical Layer Collision Avoidance) Support

www.technica-engineering.com/products-and-tools

CAPTURE MODULE 10BASE-T1S

CAPTURE AUTOMOTIVE 10BASE-T1S ETHERNET TRAFFIC IN THE CAR WITHOUT INTERFERINT THE ORIGINAL NETWORK

DESCRIPTION

The Capture Module 10BASE-T1S from Technica Engineering is a state-of-the-art technical hardware product that offers advanced capabilities for comprehensive automotive network monitoring and analysis. It can be used to spy on 10BASE-T1S traffic up to six links simultaneously without disrupting network topology, thus delivering a reliable and accurate solution for network diagnosis. The device captures traffic and logs that it encapsulated in Ethernet frames over 1Gbit interfaces using open TECMP protocol.

The device is built to incorporate high-speed startup of less than 200ms and a startup buffer, it ensures data capturing can start quickly and accurately. It also supports Network Time Synchronization (802.1AS gPTP automotive profile support in GM/Master/Slave roles) and hardware timestamping, making the product ideal for the latest trends in the automotive industry.

Moreover, it incorporates 10BASE-T1S events logging capabilities which allows the devices to react to situations such as a beacon being received, end-of-stream delimiter error, PLCA symbols detected/missing or PLCA empty cycle. The product provides deep insights into the network, enabling effective optimization.

Among other characteristics, it also includes individual LED status and error per link, making it easy to monitor network status, wide input voltage range of 6.5-to-32-volt DC ensuring it can be used in automotive environments and effortless configuration through a webserver interface.

The Capture Module 10BASE-T1S from Technica Engineering is an ideal solution for working quickly and efficiently with 10BASE-T1S technology enabling network monitoring and analysis. Order now and experience the next level of 10BASE-T1S network analysis!

FACTS

- 6x 10BASE-T1S links (12 ports) using Microchip LAN8670 PHY
- Network Time Synchronization (802.1AS gPTP automotive profile support in GM/Master/Slave roles)
- Source Hardware Timestamping of all captured traffic
- High-speed startup <200ms
- Startup buffer including time correction for buffered frames (before time sync)
- Wake-up capable (IN/OUT)
- Rotary switch for manual configuration of the device IP address (Gbit, RJ-45)
- Individual LED status and error per link
- Wide voltage range: 6.5-to-32-volt DC
- Robust galvanized sheet steel with black powder coated housing
- Size: 36x166,5x130mm

FEATURES

- Frame encapsulation for detailed logging information in open Technically Enhanced Capture Module Protocol (TECMP)
- Configurable advanced filters with multiple actions and protocols options (LinkUp/Down, MACSec Header ...)
- 10BASE-T1S events logging: Beacon received, end-of-Stream delimiter error, PLCA Symbols detected/missing, PLCA Empty Cycle...
- Easy configuration via webserver or via dedicated UDP frames