

Features

The OptoLyzer MOCCA compact is an out of the box automotive bus interface incorporating most of the current automotive buses. The device can be used for application tests, stimulation and verification, as well as gateway applications.

Together with various PC software solutions, OptoLyzer MOCCA compact builds tool solutions covering all test, stimulation and verification tasks during a typical development process. To build such a setup, OptoLyzer MOCCA compact can be easily connected to a PC via high speed USB 2.0. The PC software can be a solution from K2L, various third parties or even customized (through K2L API).

Hardware Platform Interfaces

- Six CAN buses
 - Four with high-speed
 - Two configurable for high-, low-speed or single wire
- Six LIN buses
- MOST25¹, MOST50 or MOST150 (optional)
- S/PDIF coaxial input and output for audio streaming over MOST[®]
- Analog audio input and headphone output for audio streaming over MOST
- ECL support/trigger interface
- FlexRay[™]
- Ethernet standard interface with 10/100 Mbit/s
- Relay to switch external loads of up to 5 A
- USB 2.0 port for client PC connection

Use Cases

- Rapid prototyping
- Connecting field bus networks
- Device simulation
- Rest bus simulation
- Testing
- Network analysis
- Monitoring
- Tracing
- Performing stress tests

Properties of Buses

OptoLyzer MOCCA compact is intended to be used as stimulation, test, and monitoring device for automotive field buses with DUTs connected. Therefore, the bus interfaces are designed to behave as passive as possible.

CAN

The typical accuracy of CAN time stamps is 500 μ s.

High-Speed Transceiver

High-speed CAN buses complying with ISO11898-2 are terminated with 120 Ω at each end. Therefore, OptoLyzer MOCCA compact does not terminate the bus. The transmission speed range is from 40 kbit/s to 1 Mbit/s.

Fault Tolerant Transceiver

Fault tolerant CAN buses usually have a distributed termination. The value of the termination in each node depends on the number of nodes in the network. To avoid effects on the total impedance of the network, OptoLyzer MOCCA compact has a weak termination of 5.6 k Ω . Communication over the fault tolerant transceivers has an upper limit of 125 kbit/s.

Single Wire Transceiver

The single wire CAN is terminated with 9.1 k Ω . The transmission speed for single wire CANs is 33 kbit/s & 83 kbit/s.

Sleep Mode

OptoLyzer MOCCA compact can put all supported buses into sleep mode and transition from sleep mode to wake-up mode via a CAN interface.

LIN

The accuracy of LIN time stamps is 1 μ s. The system supports a maximum transmission speed of 20 kbit/s (in total). LIN master, slave and spy functionality is supported. OptoLyzer MOCCA compact is able to transition from sleep mode to wake-up mode via the LIN bus.

MOST

For MOST25 implementations, the INIC's clock mode can be changed to support 44.1 kHz or 48 kHz networks. For MOST50 and MOST150 implementations, the default of 48 kHz is supported. The integrated SpyNIC[®], INIC and StressNIC chips ensure the feature set of OptoLyzer MOCCA compact. The accuracy of MOST time stamps is 500 μ s. For optical MOST networks, the emitted light power on the FOT can be switched between 0 dB and -3 dB by software at runtime. The ring can also be interrupted by disabling the optical transmitter.

MOST25¹

Access to the INIC is performed by MediaLB 3-Pin with 512Fs.

MOST50

Access to the INIC is performed by MediaLB 3-Pin with 1024Fs.

MOST150

Access to the INIC is performed by MediaLB 6-Pin with 2048Fs.

MOST Spy

Full spy functionality (control, async and allocation) is available for all three MOST speed options and a node is realized at the same time. The accuracy of MOST spy time stamps is 1 μ s.

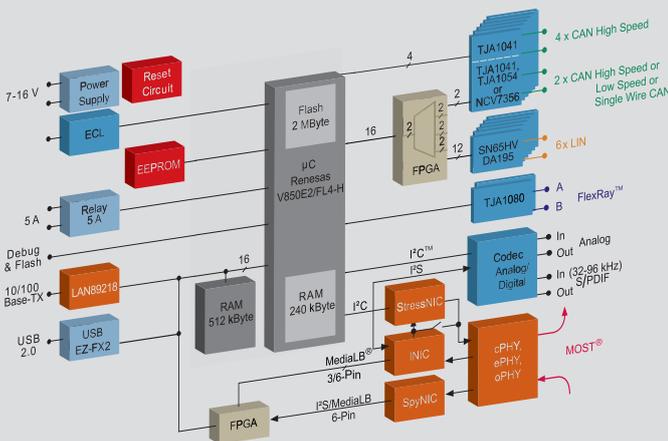
FlexRay

The accuracy of FlexRay time stamps is 500 μ s. The termination depends on the bus topology. OptoLyzer MOCCA compact can be installed in various topologies, therefore a termination in the device is not implemented. The system does not run as bus guardian. OptoLyzer MOCCA compact provides one FlexRay bus with two channels. The bus is capable of transmitting up to 10 MBit/s (in total) according to the "Electrical Physical Layer Specification Version 2.0". OptoLyzer MOCCA compact is able to transition from sleep mode to wake-up mode via the FlexRay bus.

Ethernet

The accuracy of Ethernet time stamps is 500 μ s. OptoLyzer MOCCA compact supports Auto-MDIX, which allows the LAN interface to be connected via straight and crossed patch cables. A 10BASE-T and 100BASE-TX physical layer is also supported.

Block Diagram



Deliverables

OptoLyzer MOCCA compact hardware

The hardware provides access to all automotive networks.

OptoLyzer MOCCA compact firmware

The OptoLyzer MOCCA compact firmware is the operational software for the hardware, allowing users to:

- Implement the physical interface to the field buses
- Implement object model functionality
- Generate time stamps for input and output messages
- Monitor DUT power for start-up time measurement via relay

Software Support

- Automotive Test System (ATS) - Test and simulation
- OptoLyzer Studio or OptoLyzer Suite - Analysis and verification

μ Controller (32 bit)	Renesas V850E2/FL4-H @ 160 MHz
RAM	512 kB external
Flash	2 MB internal
Dimensions (h x w x d)	45 x 112 x 116 mm
Weight	ca. 360 g
Ambient temperature range	-40 °C ... +70 °C
Operating voltage range	7 ... 16 V
Current consumption (operation)	500 mA
Current consumption (sleep)	< 1 mA
Relay for external load	Potential free shutter, max. 5 A / 12 V DC
Low speed CAN transceiver	Philips TJA 1054
High speed CAN transceiver	Philips TJA 1041
Single wire CAN transceiver	OnSemi NCV7356
FlexRay transceiver	Philips TJA 1080
LIN transceiver	SN65HVDA195
MOST physical layer	MOST25 optical (oPHY), MOST50 electrical (ePHY), MOST150 coaxial (cPHY) and optical
LAN	Microchip LAN89218
USB	Cypress EZ-USB 2.0
S/PDIF	Out: Cirrus CS8406 In: Cirrus CS8422

¹ MOST25 features are covered by MOCCA compact V 2.3 hardware



K2L is committed to working toward a sustainable environment. We endeavor to make continual improvements in natural resource conservation through efficient product design and global operations thereby reducing greenhouse gas emissions generated by our products and facilities. Our environmental life cycle process seeks to reduce our carbon footprint through product life and recyclability and efficient use of materials, energy and transportation. We remain committed to promoting smart energy policies across our organization.

Although the information in this document has been checked and is believed to be accurate, no responsibility is assumed for inaccuracies. K2L reserves the right to make changes to product descriptions and specifications at any time without notice. Contact your local K2L sales office to obtain the latest product descriptions and specifications before placing your product order. The provision of this information does not convey any licenses under any patent rights or other intellectual property rights of K2L or others. All sales are expressly conditional on your agreement to the terms and conditions of the most recently dated version of K2L's standard Terms of Sale Agreement dated before the date of your order. Products may contain design defects or errors which may cause a product's functions to deviate from published product specifications. Errata, listing these design defects or errors are available

upon request. K2L products are not designed, intended, authorized or warranted for use in any life support or other application where product failure could cause or contribute to personal injury or severe property damage. Any and all such uses without prior written approval of an Officer of K2L and further testing and/or modification will be fully at the risk of the customer. Copies of this document or other K2L literature, as well as the Terms of Sale Agreement, may be obtained by visiting K2L's website at <http://www.k2l.de>. The K2L logo is a trademark of K2L. Other names mentioned may be trademarks of their respective holders. All claims made herein speak as of the date of this material. The company does not undertake to update such statements. (12/15) Copyright © 2015 K2L GmbH & Co. KG ("K2L"). All rights reserved.

WEEE-Reg.-Nr. DE 79600900