EMCtools

Fiber optic transceiver Microbox

FlexRay, CAN SIC, CAN-FD, High Speed CAN, Low Speed CAN, LIN, K-Line, Low Speed Single Wire CAN, J1850, J1708, SENT, RS-232, RS-485

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Microbox

Introduction and use

Functional tests e.g. in test-labs often require insulated fiber optic busses to control the device under test. For this purpose special transceivers are available. They allow data transmission of signals via fiber optic cables and can be used during susceptibility tests at high field strength. Quite often these transceivers use enhanced filtering at the electrical bus connectors. This filtering affects signals and may have major effect on emission tests.

Our *EMCtools* Microbox was designed for emission and susceptibility tests. Using multilayer technology and sophisticated circuit design full CAN/LIN compliance and the ability to perform tests at electromagnetic fields of 270V/m and above could be achieved. The handy plastic housing allows tests with limited test space.

The *EMCtools* Microbox uses standard multimode fiber optic cables and allows direct connection to the electric bus (e.g. CAN-/LIN-Cab) via SUB-D female connectors.

In combination with a second Microbox or one channel of our *EMCtools* Canbox a complete optical CAN/LIN-bus connection can easily be arranged.

Versions

EMCtools provides different Microbox versions:

1. EMCtools Microbox FlexRay
2. EMCtools Microbox CAN SIC (bus signal improved CAN FD)
3. EMCtools Microbox CAN FD (Flexible Datarate)
4. EMCtools Microbox High Speed CAN
5. EMCtools Microbox Low Speed CAN
6. EMCtools Microbox Low Speed Single Wire CAN
7. EMCtools Microbox LIN
8. EMCtools Microbox K-Line (can also be used for L-Line)
9. EMCtools Microbox J1850 (class B – single wire, VPW)
10. EMCtools Microbox J1708
11. EMCtools Microbox SENT
12. EMCtools Microbox RS-232
13. EMCtools Microbox RS-485

Technical data

max. Bitrate:		
	Flexray:	10Mbit/s
	CAN SIC	max. 1 MBit/s (standard CAN)
		CAN SIC (bus signal improved CAN FD) max. 10 MBit/s
	CAN FD	max. 1 MBit/s (standard CAN)
		CAN FD (flexible datarate) max. 10 MBit/s
	HS-CAN:	max. 1 MBit/s (standard CAN)
		CAN FD (flexible datarate) max. 2 MBit/s
	LS-CAN:	125 kBit/s
	SW LS-CAN:	33 kbit as per J2411 / 100kBis/s in High Speed mode
	LIN:	20 kBit/s
	K-Line:	10,4 kbit/s
	J1850:	10,4 kbit/s
	J1708:	9.6 kBit/s
	SENT:	30 kBit/s – unidirectional
	RS-232:	200 kBit/s
	RS-485:	128 kBit/s

signal delay: HS-CAN/CAN FD: typ. 195ns - Setup: 2 x Microbox TJA1044GTJ, 10m fiber optic cable

power supply: 9 – 15V DC, 50mA

fiber optic: F-SMA, standard multimode optical fiber 62,5/125µm or 50/125µm

                       optional: F-ST connector

bus-connector: 9-pin Sub-D

bus options setting by jumpers:

	FlexRay:	termination - infinite, 90R
	HS-CAN/FD/SIC:	termination - infinite, 120R, 60R, common mode stabilization network
	LS-CAN:	termination - 1k, 560R, 390R, 300R, 120R, 100R
	LS SW-CAN:	termination - 9k1, 3k9, 1k8, 1k, 800R, 270R
	LIN:	LIN-master (pull-up 1kOhm) or LIN-slave (no pull-up) and bus capacitor 1nF/220pF
	K-Line:	510Ω pull up, Bus capacitor 470pf – 8,4nF selectable in steps
	J1850-bus:	bus load - additional 1 primary node, 1 – 36 secondary nodes selectable in steps
	SENT:	Available Input Voltage Threshold V_{IH}: 3.7V, 3.4V, 2.9V, 2.5V, 2.0V (+/- 5%)
	RS-232:	capacitive bus load 0pF, 470pF and 1nF for TX and RX individually
	RS-485:	termination - infinite, 60R, 120R, Biased 120R

ambient temperature: storage/operation: -40ºC – 85ºC (-40 - 185 ºF)