

EMCtools

Fiber optic transceiver Microbox

FlexRay, 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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EMCtools – lab life made easy

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

Technical data

| | | |
|---------------------------------|----------------|--|
| max. Bitrate: | Flexray: | 10Mbit/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: | 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: -40°C – 85°C (-40 - 185 °F) |