Press Release			
MCD Elektronik GmbH Hoheneichstr. 52 – 75217 Birkenfeld	Ausgabedatum: 28.10.2014	Seite 1 von 5	ELEKTRONIK GMBH
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For immediate publication	Queries to: Verena Hörter, marketing@mcd-elektronik.de		

## Examination of infotainment systems Controlled Stress

When operating RunIn- and screening test systems, it is often to examine many similar devices. The samples are addressed and stimulated simultaneously through CAN, LIN, RS-232 or I<sup>2</sup>C. In addition, audio signals in infotainment systems must be permanently monitored and currents and voltages under different stress conditions must be monitored and documented as well. Usually appropriate hardware is very complex and expensive but due to this flexible system that can be changed now. The fact that all the devices have to be tested, in this case with a CAN or LIN configuration, makes it impossible to use a common bus for all devices to be tested parallel. The use of many standardized CAN / LIN Bus interfaces or other bus interfaces can be quite expensive and when carrying out concurrent or simultaneous tests of many samples, it would not make sense to implement, from a technical perspective. Multiplexing of the bus signals is complicated and due to the given timing requirements and cycle times, which lie in the milli-second range, it is not implemented. With the "Screening Box" MCD wants an alternative to the above approaches (see picture 1). Such devices, 40 mm wide, can be lined up on a DIN rail where the voltage- and bus-supply the DIN rail Bus connector (RS-485) is carried out. Through its USB interface, all screening boxes are reachable per Din rail. This interface takes place both the parameterization of the boxes and transferring the data to the "Test Manager" from MCD. This system plays a supporting role in many of the manufacturer projects, because it already supports the preparation and execution of the tests in the planning phase. The application engineers can therefore per-

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form the tests with a sample at their desk and qualify. Due to the scalable application of the test, it is then easily transferred to the required number of samples.

## The Core of the Box

Two CAN interfaces with both low-speed and high-speed transceivers provide 11-bit and 29-bit support. The LIN interface is designed for master and slave operation as well as remote software controllable scheduling. Both RS-232 and RS-485 interfaces are available to control the sample. Out of eight digital outputs, two are PWM capable up to 10 kHz switching frequency and 10 bit resolution. The threshold voltage of the eight digital inputs is programmable in the range of 0 V to 30 V; on two inputs one can perform frequency measurements up to 200 kHz. For the measurement of audio signals, there are four differential analog inputs (0-30 V), 12-bit resolution, supplemented by two analog outputs to 0 V to 10 V, load capacity up to a maximum of 10 mA, and 10 bit resolution. For indirect current measurement via shunts there is a differential input with a measuring range of 0 mV to 50 mV and a programmable gain. LED's on the front indicate the operating status of the screening box. By a connectable HMI module with twoline LC display and rotary encoder, the test box can be operated as a stand-alone solution. A non-volatile memory on the module secures the adjustment parameters. All boxes can be configured synchronously via the USB interface. For de-coupling the samples of the measurement control, USB interfaces are electrically isolated. Through customized updates of the firmware, the boxes automatically customize to new tasks. Cyclic messages can be sent and received via the various bus systems.

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## **Practical Test**

The first use of the newly developed screening boxes tested up to 48 Infotainment systems (Figure 2). Two sets of 24 test devices were thereby placed on mobile trolleys, and contacted via a mechanical device. The screening boxes automatically recognize an inserted, contacted DUT and start the test cycle independently. Each inserted infotainment system now goes through the testing process cyclically until the test time is reached. The measured values belonging to the sample are identified by a bar code and stored in a database. You can assign the temperature and the time, and the evaluation of the data is done via the "DataManager", which already processes the incurred measurement data during testing and displays it statistically. During the test, the sample is cyclically supplied with the CAN Bus-sequences which are necessary for sustainability. The various stages of the device fans are reviewed and evaluated on air flow sensors. The recorded currents in the different operating modes are also recorded and checked. Particular emphasis is placed here on the quiescent current of the sample, which hardly drains the battery of the vehicle when the vehicle is turned off. During operation, the audio signals of the sample are continuously tested and checked for errors. By using the newly developed box, the tasks were clearly distributed at the planning stage of the system. The control program "TestManager" handles the test sequence, the data of the screening boxes, assigns the samples and stores the values in a database. The entire run, independent from measurements in the screening boxes, also produce the cyclic signals for the CAN and LIN Buses. The boxes are equipped with an interface to an optional HMI keypad panel, so that the units can also be used for control of EOL or manual function testers. The box is also suitable for use as a gateway for control units with many bus connections.





Picture 1: The interface variety of MCD's "Screening Box" allows various applications.

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Picture 2: MCD's slim Screening Boxes are the functional middlepoint of RunIn- and Screening-Tests.

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