

Precise. Rugged. Universal.

AD-/Thermo-/Dual-Scan SMB/CAN

- ▶ Durable device family for the measurement of analog voltages and temperatures
- ▶ **AD-Scan:**
14 differential inputs: -3,5 V to +16 V
- ▶ **Thermo-Scan:**
14 NiCr-Ni inputs: -100 °C to +1372 °C
- ▶ **Dual-Scan:**
7 NiCr-Ni inputs: -100 °C to +1372 °C
7 differential inputs: -3,5 V to +16 V
- ▶ Data communication via Serial Measuring Bus (SMB) to calibration systems, PCs, ...
- ▶ Cascading of up to 8 devices in SMB mode or up to 100 devices via CAN bus
- ▶ For Calibration and Measuring systems from ATI, Bosch, dSPACE, ETAS, IAV, National Instruments, Vector, CSM, ...
- ▶ High-speed CAN bus connection



AD-Scan, Thermo-Scan and Dual-Scan belong to the xx-Scan device family. They collect measurement data and transmit it to a host (PC/laptop, data logger), running special recording software. The communication between xx-Scan devices and the host is either done using the SMB bus (Serial Measuring Bus defined by Bosch) or alternatively via a high-speed CAN bus.

The currently measured values and the state of operation are permanently shown on the back-lit LCD. The power supply of 8 V to 32 V can be passed through from device to device, according to all xx-Scan devices.

Because of their easy handling and the excellent price-performance ratio the xx-Scan devices are well suitable for a wide range of applications, particularly for auto-motive measurement systems.

Communication via SMB bus

Communication via **SMB bus** is fully compatible and without any limitation to all "SMB bus only" devices of the xx-Scan family.

Using selectable device addresses it is possible to cascade up to 8 devices of different types and in arbitrary order on a standard RS232C interface. xx-Scan devices can be also used with an USB interface via USB / RS232 adaptor. Control of the measurement process and data recording is supported by

standard software of leading suppliers like INCA from ETAS, VISION from ATI, CalDesk from dSPACE, CANape from Vector and others.

Communication via CAN bus

The **measurement data can be transmitted with full resolution and speed via High-Speed CAN bus.**

Configuration for the CAN bus is done like other xx-Scan devices with the **CSM Config Tool**. It is a very easy to use Windows based application, which allows to configure CAN bus parameters, device type as well as type and number of measurement channels. Device specific settings are **stored permanently in the device** itself. All settings are passed to an configuration file, which is compatible with the industry standard **CANdb** from Vector.

Thermo-Scan

The Thermo-Scan provides **14 inputs** for connection of **NiCr-Ni thermocouples** (type K). Due to digital alignment and linearization with online cold junction compensation, Thermo-Scan achieves a typical measuring accuracy of ± 1 °C throughout the entire measuring range from -100 °C up to +1372 °C. A broken sensor connection is automatically recognized and shown on the display. Approximately every 100 ms the temperature values are updated.

AD-Scan

The AD-Scan records analog differential voltages from -3,5 V up to +16 V with a resolution of 5 mV. The **14 input channels** are measured cyclically, corrected online and memorized in the device. Approx. every 10 ms all measured values are completely updated in the memory.

Using **High Speed Mode**, **1 channel** can be measured and sent cyclically with **1 ms** via CAN bus, **2 channels** with **2 ms**.

Dual-Scan – half and half

Dual-Scan provides **7 inputs** for connection of **NiCr-Ni thermocouples** (type K). Due to digital alignment and linearization with **online cold junction compensation**, Dual-Scan achieves a typical measuring accuracy of ± 1 °C throughout the entire measuring range from -100 °C to +1372 °C. A **broken sensor connection** is automatically recognized. Approx. every 150 ms the temperature values are updated in the internal buffer or sent via CAN bus.

Dual-Scan provides another **7 inputs for analog differential voltages** from -3,5 V to +16 V with a resolution of 5 mV. They are cyclically measured, stored and updated in the internal buffer approx. every 15 ms in SMB mode, or sent via CAN bus.

Software interface

The measurement values are available **as physical values**, volt for AD-/Dual-Scan and degrees Celsius for Thermo-/Dual-Scan.

Especially via the **CAN bus**, the measured values are transmitted **completely**, with **full resolution** and with a **transmission rate up to 1 Mbit/s**. The CAN bus parameters can be **configured** via the serial RS232 interface.

Both, the SMB protocol and the CAN bus transmission can be integrated very simple and efficiently into specific applications.

The leading manufactures of **Calibration Tools** for automotive engineering offer **interfaces for the xx-Scan** devices, e.g. Bosch, ETAS, IAV, ATI, Siemens, dSPACE, Kleinknecht, etc.

xx-Scan and UniCAN

xx-Scan modules are also well suitable as a measurement modules for stand alone data acquisition with our data loggers UniCAN and UniCAN 2 for diagnosis and measurement on the CAN bus.

CSM DKD Calibration Service

We recommend a calibration interval of 1 year.

For further technical information and references please ask our technical sales and distribution partners.

Specifications AD-/Thermo/Dual-Scan SMB/CAN

Technical data	AD-Scan	Thermo-Scan	Dual-Scan	
Inputs	14 Differential Inputs	14 NiCr-Ni Inputs	7 Differential Inputs	7 NiCr-Ni Inputs
Measurement Range	-3,5 V to +16,0 V	-100 °C to +1372 °C	-3.5 V to +16.0 V	-100 °C to +1372 °C
Resolution (1 LSB)	approx. 5 mV	1 °C	approx. 5 mV	1 °C
Accuracy (Ta=25 °C)	±8 mV + 1 LSB	typ. ±1 °C	±8 mV + 1 LSB	typ. ±1 °C
Cycle Time	10 ms (14 channels) 1 ms (1 channel), 2 ms (2 channel)	100 ms (14 channels)	15 ms (7 channels)	150ms (7 channels)
Input Protection	±20 V continuous Pulse 8 kV (ESD)	±20 V continuous Pulse 8 kV (ESD)	±20 V continuous Pulse 8 kV (ESD)	±20 V continuous Pulse 8 kV (ESD)
Display	LCD illuminated			
Serial Interface Cascadable Software Protocol	RS232C, 38400 Baud max. 8 devices SMB (optional MODAC)			
CAN interface ¹⁾	CAN 2.0B (active) High-speed CAN (ISO11898) 125 kBit/s up to max. 1 MBit/s (configurable)			
Dimensions (W x H x D)	approx. 105 x 88 x 186 mm	approx. 105 x 72 x 186 mm	approx. 105 x 88 x 186 mm	
Weight	approx. 860 g	approx. 700 g	approx. 860 g	
Operating temperature ²⁾	0 °C to +50 °C			
Humidity	max. 80% (non condensing)			
Power Supply / Over Voltage Protection	8 - 32 V DC 32 V continuous			
Current Consumption/ Power Consumption	typ. 167 mA at 12 V typ. 2.00 W, max. 2.50 W	typ. 188 mA at 12 V typ. 2.25 W, max. 2.75 W	typ. 167 mA at 12 V typ. 2.0 W, max. 2.5 W	
Conformity	CE			

1) The CAN interface (instead of SMB) is chosen as soon as the CAN cable is detected.

2) The device can also be delivered as version without display for an operation temperature of -40 °C up to +85 °C.

Part numbers and Shipping Content:

ART0202026 AD-Scan SMB/CAN LEMO CAN IN, CAN OUT (AD-Scan with LEMO sockets)

Shipping content: AD-Scan, CSM Config Tool, documentation, Calibration certificate according to DIN EN ISO/IEC 17025, SMB connection cable K38, SMB power supply cable K39

ART0202028 AD-Scan SMB/CAN (AD-Scan with Binder socket)

Shipping content: AD-Scan, CSM Config Tool, documentation, Calibration certificate according to DIN EN ISO/IEC 17025, SMB connection cable K38, SMB power supply cable K39, xx-Scan CAN bus Cable Set K43 & K44

ART0202016 Thermo-Scan SMB/CAN LEMO CAN IN, CAN OUT (Thermo-Scan with LEMO sockets)

Shipping content: Thermo-Scan, CSM Config Tool, documentation, Calibration certificate according to DIN EN ISO/IEC 17025, SMB connection cable K38, SMB power supply cable K39

ART0202018 Thermo-Scan SMB/CAN (Thermo-Scan with Binder socket)

Shipping content: Thermo-Scan, CSM Config Tool, documentation, Calibration certificate according to DIN EN ISO/IEC 17025, SMB connection cable K38, SMB power supply cable K39, xx-Scan CAN bus Cable Set K43 & K44

ART0202066 Dual-Scan SMB/CAN LEMO CAN IN, CAN OUT (Dual-Scan with LEMO sockets)

Shipping content: Dual-Scan, CSM Config Tool, documentation, Calibration certificate according to DIN EN ISO/IEC 17025, SMB connection cable K38, SMB power supply cable K39

ART0202063 Dual-Scan SMB/CAN (Dual-Scan with Binder socket)

Shipping content: Dual-Scan, CSM Config Tool, documentation, Calibration certificate according to DIN EN ISO/IEC 17025, SMB connection cable K38, SMB power supply cable K39, xx-Scan CAN bus Cable Set K43 & K44