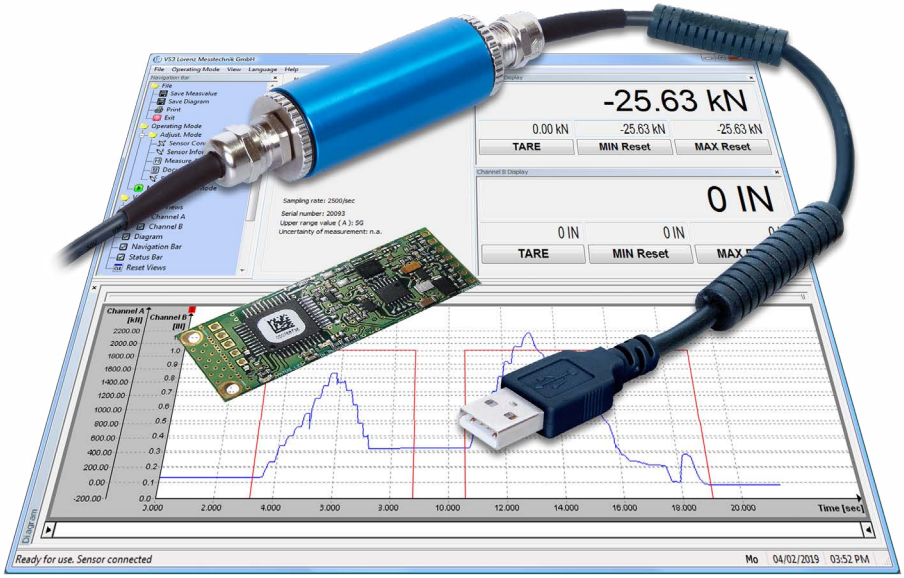
Lorenz® messtechnik gmbh

Data sheet

USB-Sensor-Interface LCV-USB3
with Configuration and Evaluation Software



Performance Features

- Supply of the measuring system via PC USB port
- Fast measurement of up to 5000 meas./s
- Up to 16 bit resolution
- Input ranges for mV, V and mA
- Digitally switchable analogue input filter
- Integrable in large sensors as board
- Adjustment and control signal switch via software
- Level of protection IP67

Application

- Research and development
- Process measuring and control technology
- Automotive engineering
- Energy and environmental technology
- Mechanical engineering

Description

The sensor interface LCV-USB3 is connected between sensor and PC. In this way, analog sensor signals will be digitized with up to 16 bit resolution.
By the measuring rate of 5000 measurements/s per measuring channel, high-dynamic measurements can be achieved. The measured values are transferred to a PC via the USB interface and visualized by means of software. If a control signal is integrated in the sensor, an automatic adjustment can be carried out and checked at any time (measuring chain monitoring).
Following sensor output signals can be digitally converted and conveniently displayed and evaluated via the free evaluation software:

.../DMS (Strain gauges)	Input Range ±3 mV/V (Excitation 4V ≤20 mA)
.../U5/U10	Input Range ±5V/±10V (Sensor supply 12V ≤80 mA)
.../I0/I4/I10/I12	Input Range 0/4 ... 20 mA (Sensor supply 12V ≤80 mA)
../LP (Linear potentiometer)	Input range 0 ... 5V (Sensor supply 4V ≤20 mA)
.../PT100 (Temperature probes)	Input range -200 ... 860 °C (Sensor supply 4V ≤20 mA)
.../TTL (Quadrature encoder: for speed/angle measurement)	Input range 5V TTL (Sensor supply 5V ≤85 mA)

Many standard sensors, such as force-, torque-, displacement or pressure sensors can be used with the LCV-USB3. The sensor parameters can be stored in the LCV-USB3. After a single parameterization, each sensor is automatically recognized by the software. Thus, the measurement can be immediately started after the connection of the sensor through the USB-connector.
The robust metal housing with high protection level allows fast fixation by screw-clamps or cable ties. The board module can also be integrated in larger sensor.
The connection to LabVIEW and/or integration in-house programs is possible with the freely available driver package.

Technical Data

USB-Sensor-Interface LCV-USB3										
Type LCV-USB3/...	DMS	U5	U10	I0	I4	I10	I12	LP	PT100	TTL
Article-No. board[1]	117721	117722	117723	117724	117923	117924	117925	118244	118245	118243
Article-No. LCV-USB3 in the measuring line	117725	117726	117727	117728	117926	117927	117928	118286	118287	118285
Input range	±3 mV/V	±5V	±10V	0 ... 20 mA	4 ... 20 mA	10 ±10 mA	12 ±8 mA	0 ... 5V	-200 ... 860 °C	5V TTL
Measured values	±30000 digits	±25000 digits		0 ... 20000 digits				0 ... 25000 digits	-6400 ... 27520 digits	±32511 digits
Resolution	1 mV/V ≙ 10000 digits	1V ≙ 5000 digits	1V ≙ 2500 digits	1 mA ≙ 1000 digits				1V ≙ 5000 digits	32 digits/K	0.25 degree
Evaluation Side										
Zero point	0 digits									
Output format	16 bit signed Int.									
Input resistance	>1 MΩ			-						
Rated burden	-			62 Ω						
Measuring rate	max. 5000 meas./s									
Temperature drift	4 bit/10 K									
Linearity error	±32 digits									
Accuracy	±32 digits									
Supply from USB	4 ... 6VDC ≤350 mA									
Cable length LCV-USB3 - evaluation	2 m									
Sensor Side										
Sensor supply	4V ≤20 mA	12V ≤80 mA						4V ≤20 mA	4V ≤20 mA	5V ≤85 mA
Cable length LCV-USB3 - sensor	1 m (max. 3 m)									
Miscellaneous										
Rated temperature range	10 ... 40 °C									
Operating temperature range	0 ... 50 °C									
Storage temperature range	-10 ... 70 °C									
Dimension (Ø x L)	25 x 115 mm (incl. screw joint)									
Level of protection	IP67									
Weight of LCV-USB3 in the measuring line	0.3 kg									

Options

Article-No.	Description	Type
115134	Adjustment amplifier with simulator	mV/V / ±10V / 0/4 ... 20 mA
110120	Digital input at channel B	LCV-USB3/TR-EXT
113591	Input range ±4.5 mV/V per channel	LCV-USB3/SI-USB/-RS485/-ETH/-USB3/4.5 mV/V
114104	Sensor exc. LPM 4V max. 20 mA, input range LPM 5V	LCV-USB3/LPM
115125	Adjustment linear potentiometer	LCV-USB3/SI-USB/SI-USB3/LPM

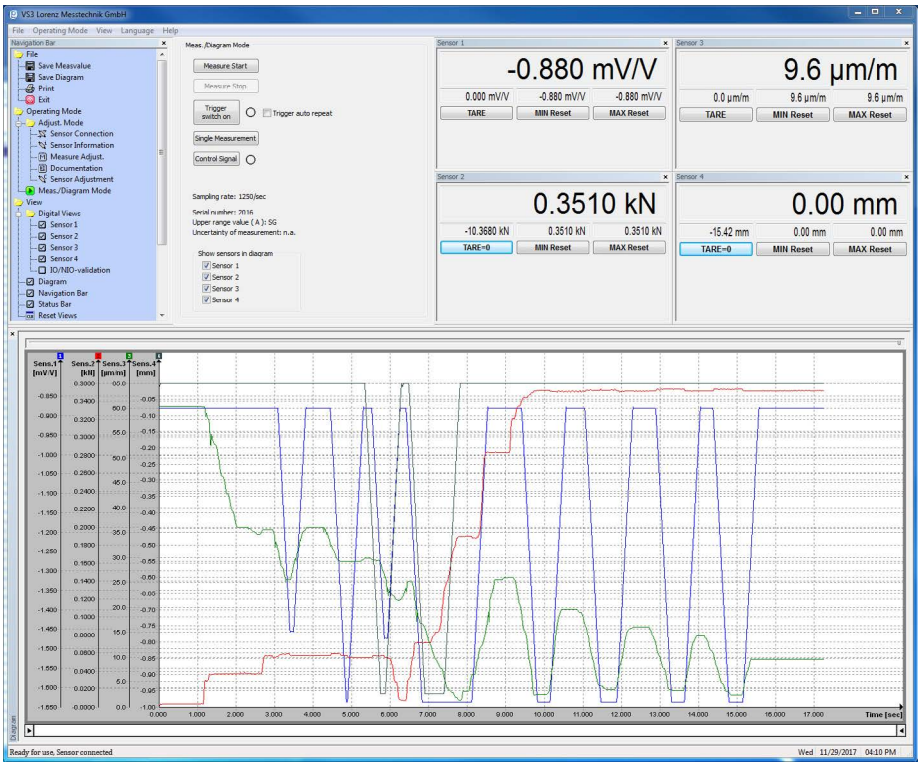
Calibrations mV/V[2]

Article-No.	Description	
401010	Proprietary calibration acc. to ISO 10012	10 steps
401011	Proprietary calibration acc. to ISO 10012	20 steps

[1] Integrable in large sensors

[2] Lorenz-Standard:
- Supply voltage 5V, calibration range ±1 mV/V in 10 steps, calibration range ±2 mV/V in 10 or 20 steps
- Language of the Certificate: German and English
- Calibration at DC: Normal K3608, if so display above Keithley 2000 or Lorenz VS3 (Lorenz amplifier with USB interface)
- Calibration at 225 Hz: Normal K3608, if so display above HBM MGCplus + ML38
- Calibration at 225 Hz: Normal BN100A, if so display above HBM DMP40

Configuration and Evaluation Software VS3



The configuration and evaluation software serves for easy evaluation and graphical visualisation of the evaluated data on a PC. The software allows direct read-in of measured data into a text file in CSV-format through the USB port of a PC. This enables further analyses with a commercially available spreadsheet program at any time.

Technical data	
Type	VS3[3]
Interface	USB
Protocol	Lorenz Standard Protocol
System requirements	Windows 7 - 10 32/64 Bit Dual-Core from 1.8 GHz (with diagram)

Highlights at a glance	
Conversion in physical values	✓
Simultaneous measuring	Up to 2 input channels[4] with LCV-USB3
Automatic scaling of y-Axis	✓
Graphical display of the measured variables	✓
Automated or manual storage in a CSV- and BMP-file	✓
Print-out of the diagram with date and definable superscription	✓
Scaling function of the input variable to any display value with unit	✓
Resettable minimum value memory for each measured value	✓
Resettable maximum value memory for each measured value	✓
Floating averaging	✓
Simple evaluations (OK/NOK)	✓
Tara for each measured Size	✓

[3] Software/driver download: https://www.lorenz-messtechnik.de/phplogin/login_en/html/software.php
[4] LCV-USB3 with option “LCV-USB3/TR-EXT“ has two input channels.