



DC Voltage Measuring Amplifier for Strain Gauge Sensors

Type LCV

- Level of Protection IP67
- High Accuracy
- Design-Independent
- Low Temperature Drift
- Direct Connection to PLC
- 12V - 28 V DC Supply
- Reduced Perturbations
- Integrable in Large Sensors
- Many Output Versions



DESCRIPTION:

The LCV was designed for the adaption between SG-Sensor and evaluation. The interference-prone SG-Signals are raised to standardized output levels at the sensor, directly. By this, the noise immunity and the accuracy of measurement is decisively increased.

The LCV is connected between the supply line of sensor and signal acquisition (e.g. PLC). The robust tube-housing with high level of protection also allows application in rough environments. A screw clamp is sufficient for fastening. At large sensors, a circuit board module can be integrated.

The supply of 12...28 V DC is suitable for automotive and industrial applications. High flexibility is ensured by the analog output versions.

For very slow measurements; a 50 Hz- 3 dB filter can be pre-configured as an option.

An optional external control switch allows to activate the 100 % calibration control in the sensor (if available, see data sheet) with a control signal, externally. By this, the calibration and the subsequent calibration can be checked at any time.

Scope of Delivery

If the LCV is ordered with a Lorenz-Sensor, it will be mounted and calibrated together exactly.

If the LCV is ordered without a sensor, a not calibrated assembly set (amplifier module, tube-housing, screw connection) is delivered. All output versions can be configured by solder jumpers. In option, the amplifier module can be pre-calibrated to a value, determined by the customer. At initiation the zero point still needs to be adjusted, only.

TECHNICAL DATA:

Type	LCV-U10	LCV-U5	LCV-I0	LCV-I4	LCV-I10	LCV-I12
Output	0...±10V	0...±5V	0...20mA	4...20mA	10±10mA	12±8mA
Art. No.	100430	100626	101177	100432	100956	101018

Evaluation Side

Supply	Supply voltage	12...28 V DC
	Ripple	<10%
	Current consumption	max. 70 mA
Signal Output Voltage	Output signal U-Out	0 ...±10 V max.: 2 mA
	Ripple	<10 mV
	Gain drift	<0.015%/10 K
	Zero point drift	<0.015%/10 K
	Linearity	<0.02%
	Output resistance	<1 Ω
	Cut-off frequency	1 kHz -3 dB
Signal Output Current	Output signal I-Out	0...20 mA at 0...400 Ω
	Ripple at 400 Ω	<10 mV
	Gain drift	<0.02%/10 K
	Zero point drift	<0.02%/10 K
	Linearity	<0.02%
General	Cable length for evaluation	U5/ U10: 3 m (max.10 m) I0/ I4/ I10/ I12 3 m (max.100 m)

Sensor Side

Supply	Sensor supply	5.00 V 20 mA short-circuit resistance
	TC Excitation voltage	<25 ppm/K
Signal Input	Sensor sensitivity	0.35...3.5 mV/V
	Input resistance	10 ⁹ Ω
General	Cable length to sensor	1 m (max. 3 m)

Miscellaneous

Nominal Temperature Range	+10...+50 °C
Service Temperature Range	0...+60 °C
Storage Temperature Range	-10...+70 °C
Dimensions (Ø x L)	25 x 115 mm (incl. Screw joint)
Level of Protection	IP 67

Options	Art. No.	Function
LCV/50Hz	100563	Filter 50 Hz -3 dB
LCV/sensitivity	110564	mV/V calibrated characteristic value
LCV/range	110565	kOhm range resistance
LCV/KE	103760	External control (5V...28V=On)



Sensor-Interface with USB

Type LCV-USB

- Supply via USB
- Up to 16 Bit Resolution
- Input for mV, V and mA
- Fast Measurement up to 5000/s
- Calibration and Control Trigger via Software
- Integrable in many Sensors by SMD-Miniaturization



DESCRIPTION:

The sensor interface LCV-USB is inserted between sensor and PC.

Thus, analog sensor signals with up to 16 Bit resolution are digitized.

With the high dynamics of up to 5000 measurements/s, fastest measuring tasks are realizable.*

The measured values are transferred and visualized by the software via the USB interface.

If 100% calibration control is integrated in the sensor (see data sheet), an automatic calibration can be accomplished, which is auditable at any time (monitoring of the measuring chain).

3 different sensors types are scheduled for the connection:

USB-SG Excitation 4 V max. 20 mA
Signal: 0.35...3.2 mV/V

USB-U5 Excitation 12 V max. 80 mA
Signal: 0...±1 V...0...±5 V

USB-I_mA Excitation 12 V max. 80 mA
Signal: 0...20 mA/4...20 mA
(Option: 10±10 mA/12±8 mA)

At USB-I_mA, 2 or 3-wire connection is possible, commercially available sensors can be adapted.

The practical housing with a high level of protection allows fast fixation by a screwing clamp.

In larger sensors, the circuit board module can be integrated as well.

TECHNICAL DATA:

Type	LCV-USB-SG	LCV-USB-U5	LCV-USB-I20_mA
Art. No.	108368	108369	108370
Supply	from USB		4...6 V DC max. 350 mA
Excitation	SG		4 V max. 20 mA
	U5		12 V max. 80 mA
	I_mA		12 V max. 80 mA
Measured Values	SG		0..±3 mV/V = 0 ±30000 Digits
	U5		0..±5 V = 0 ±25000 Digits
	I_mA		0..20 mA = 0 ±20000 Digits
Resolution	SG		1 mV/V = 10000 Digits
	U5		1 V = 5000 Digits
	I_mA		1 mA = 1000 Digits
Zero Point	SG / U5 / I_mA		0 Digits
Output Format	16bit signed int		
Input Resistance	SG		200 GΩ
	U5		1,3 MΩ
	I_mA Burden		62 Ω
Measuring Rate	max. 5000 meas./s*		
Temperature Drift	4 Bit/10 K		
Linearity Error	±5 Bit		
Accuracy	±5 Bit		

Miscellaneous

Max. Cable Length to Sensor	3 m
USB Cable Length Max.	5 m
Nominal Temperature Range	+10...+40 °C
Service Temperature Range	0...+50 °C
Storage Temperature Range	-10...+70 °C

Option	Art. No.	Function
LCV-USB-VS	108436	Measuring and evaluation software

*Limited to 200 meas./s at the operation of the LCV-USB-VS Software with Windows®.

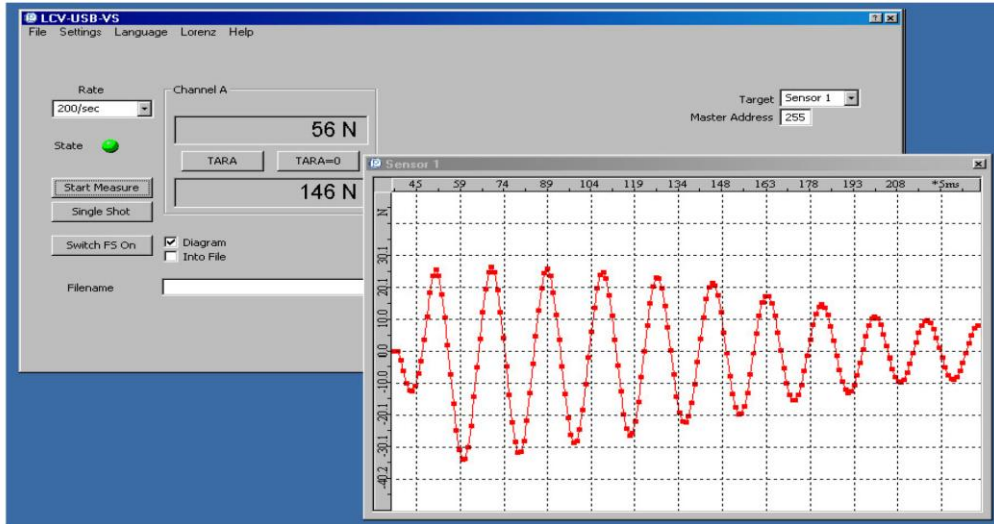
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Measuring and Evaluation Software

Type LCV-USB-VS

- Graphical presentation of a measurement channel
- Setting and controlling of LCV-USB and digital sensors
- Automatic scaling of Y-axis
- Saving up to 4 sensors in file instantly



DESCRIPTION:

Measuring- and evaluation-software for easy evaluation and graphic representation at a pc.

The visualization software for LCV-USB and digital sensors in CSV-format allows the direct input of measured data into a text file via USB and/or a serial interface. Files in CSV-format can be read-in to Excel® directly.

This software allows the parallel read-in of up to four sensors into a file in CSV-format.

The configuring and read-out of configuration data and the testing of the communication protocol with digital sensors as well as LCV-USB can be carried out with the evaluation-software.

TECHNICAL DATA:

Type	LCV-USB-VS
Art. No.	108436
Interface	USB (for operation with 1 LCV-USB) RS485-interface (for operation with 1 digital sensor)
Protocol	Lorenz Standard Protocol in all LCV-USB and all sensors with RS485-Interface
Meas. rate 1-channel	max. 200 Meas./s (instant graphical presentation, depending on PC though)
Long-term Measurement	(with instant graphical presentation)
Channels	up to 4 channels
System requirements	Win2000® and higher Interfaces for the sensors (USB and/or RS485) 1 additional. USB for upgrade-hardware min.: P3, 700 MHz (without diagram) min.: P4, 2.8 GHz (with diagram)

	Basic version	With upgrade-hardware
Conversion in physical units	✓	✓
Instant measurement	1 Sensor	max. 4 sensors
Graphical presentation of a channel	✓	✓
Saving into file	-	✓
Mathematic linkage with a constant	✓	✓
Calibration function	✓	✓
Configuration block-editor	✓	✓
Command overview	✓	✓
Calculation of average value	-	✓
Tara	-	✓

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