Lorenz® messtechnik gmbh

4 Channel USB-Sensor-Interface SI-USB3 with Configuration- and Evaluation Software

Data sheet



Performance Features

- Competitive “plug & measure” concept
- Fast measurement of up to 5000 meas./s per measuring channel
- Input ranges for mV/V, V and mA
- Input ranges for linear potentiometer, temperature probe PT100 and quadrature encoder
- Input ranges combinable with one another
- Digitally switchable analogue input filter
- Full synchronicity of all measuring channels
- Adjustment and control signal activation via software
- Free LabVIEW- and DLL-drivers

Application

- Mobile test measurements by laptop
- Experimental setups in test laboratories
- Measuring and control devices
- Diagnosis measurements in chemical industries
- PC-based recordings of strain characteristics in biotechnology

Description

The sensor interface SI-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 +5V ≤170 mA)
.../PT100 (Temperature probes)	Input range -200 ... 860 °C (Sensor supply 4V ≤20 mA)
.../TTL (Quadrature encoder: For torque sensors with speed / angle measurement)	Input range 5V TTL (Sensor supply 5V ≤85 mA)

Many standard sensors, such as force-, torque-, displacement- and pressure sensors, linear potentiometers, temperature probes PT100 etc., can be used with the SI-USB3. The sensor parameters can be stored in the SI-USB3. After a single parameterization, each sensor is automatically recognized by the software.
The voltage supply of the SI-USB3 is provided by an external mains adapter, or by a polarity-protected mains connector. The connected sensors are directly supplied with voltage through the measuring amplifier which eliminates the need for separate sensor supply voltage.
The low-pass filter 2nd order allows filtration of unwanted frequencies. Here you can distinguish between 4 cutoff frequencies.
The connection to LabVIEW or integration into own programs is possible with the freely available driver package.

Technical Data

USB-Sensor-Interface SI-USB3										
Type of basic unit	**SI-USB3**									
Article-No.	116610									
Type of board SI-USB3/...	**DMS**	**U5**	**U10**	**I0**	**I4**	**I10**	**I12**	**LP**	**PT100**	**TTL**
Article-No.	116611	116612	116613	116614	116615	116616	116617	116618	116619	117840
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
Connection technology	4-wire	-	-	2- or 3-wire				3-wire	4-wire	-
Evaluation Side										
Zero point	0 digits									
Output format	16 Bit Signed Int.									
Input resistance	>1 MΩ (only for DMS/U5/U10/LP)									
Rated burden	62 Ω (only for I0/I4/I10/I12)									
Low-pass filter 2nd order	30/300/1000/3000 Hz									
Measuring rate	max. 5000 meas./s									
Temperature drift	4 Bit/10 K									
Linearity error	±32 digits									
Accuracy	±32 digits									
Supply voltage of mains adapter[1]	100 ... 240VAC									
Output of mains adapter	24VDC, 1.25 A									
Supply voltage SI-USB3	10 ... 30VDC ≤880 mA									
Sensor Side										
Sensor supply	4V ≤20 mA	12V ≤80 mA						5V ≤170 mA	4V ≤20 mA	5V ≤85 mA
Cable length SI-USB3 - sensor	3 m (max. 5 m)									
Miscellaneous										
Electrical connection[2]	Strain gauges (DMS)/U5/U10/I0/I4/I10/I12/LP/PT100/TTL: D-SUB-Socket, 15-pin USB: USB-B-Socket									
Cable length SI-USB3 - PC	3 m									
Rated temperature range	10 ... 40 °C									
Operating temperature range	0 ... 50 °C									
Storage temperature range	-10 ... 70 °C									
Dimension (LxWxH) SI-USB3	130 x 190 x 60 mm									
Level of protection	IP20									
Material SI-USB3	Aluminum									
Weight SI-USB3	1.2 kg									

[1] Mains adapter included in scope of delivery at first order.
[2] Interface cable SI-USB3 for evaluation, cable length 3 m included in scope of delivery at first order.

Order Example

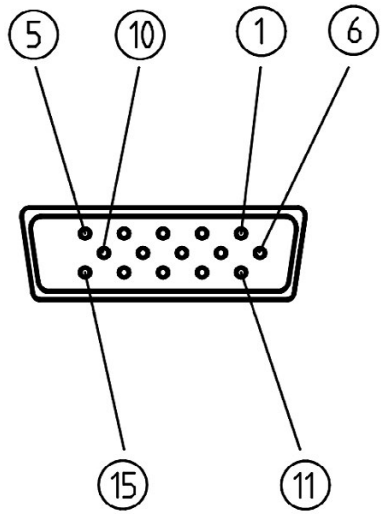
Type	Article-No.				
SI-USB3	**116610**				
Board of SI-USB3		Sensor 1	Sensor 2	Sensor 3	Sensor 4
DMS	116611	x	**X**	**X**	x
U5	116612	x	x	x	x
U10	116613	x	x	x	x
I0	116614	x	x	x	x
I4	116615	x	x	x	x
I10	116616	x	x	x	x
I12	116617	x	x	x	x
LP	116618	x	x	x	x
PT100	116619	**X**	-	-	**X**
TTL	117840	x	-	x	-

SI-USB3 with 2 USB-sensor-interfaces for SG (DMS)-sensors and 2 USB-sensor-interfaces for PT100-sensors, incl. configuration and evaluation software VS3. Order-code:

116610-2*116611-2*116619

Connection Assignment

15-pin	DMS, U5, U10, I0, I4, I10, I12, LP, PT100, TTL	
Pin 1	Ground (supply 4V and 12V)	0V; 1-Wire GND
Pin 2	+12V (active supply)	12VDC
Pin 3	NC	-
Pin 4	Signal angle A	5V TTL
Pin 5	Signal angle B	5V TTL
Pin 6	Ground	0V
Pin 7	NC	-
Pin 8	Supply	4VDC
Pin 9	NC	-
Pin 10	Control signal or TEDS	L <2.0V; H >3.5V or 1-Wire DATA
Pin 11	Signal (+) (active or passive)	mV/V; ±5V; ±10V; 0/4 ... 20 mA
Pin 12	Signal (-) (when active connect to ground)	0V
Pin 13	Ground	0V
Pin 14	NC	-
Pin 15	+5V reference voltage	5VDC



Options

Article-No.	Description	Type
115134	Adjustment amplifier with simulator	mV/V / ±10V / 0/4 ... 20 mA
113591	Input range ±4.5 mV/V per channel	LCV-USB3/SI-USB/-RS485/-ETH/SI-USB3/4.5 mV/V

Accessories

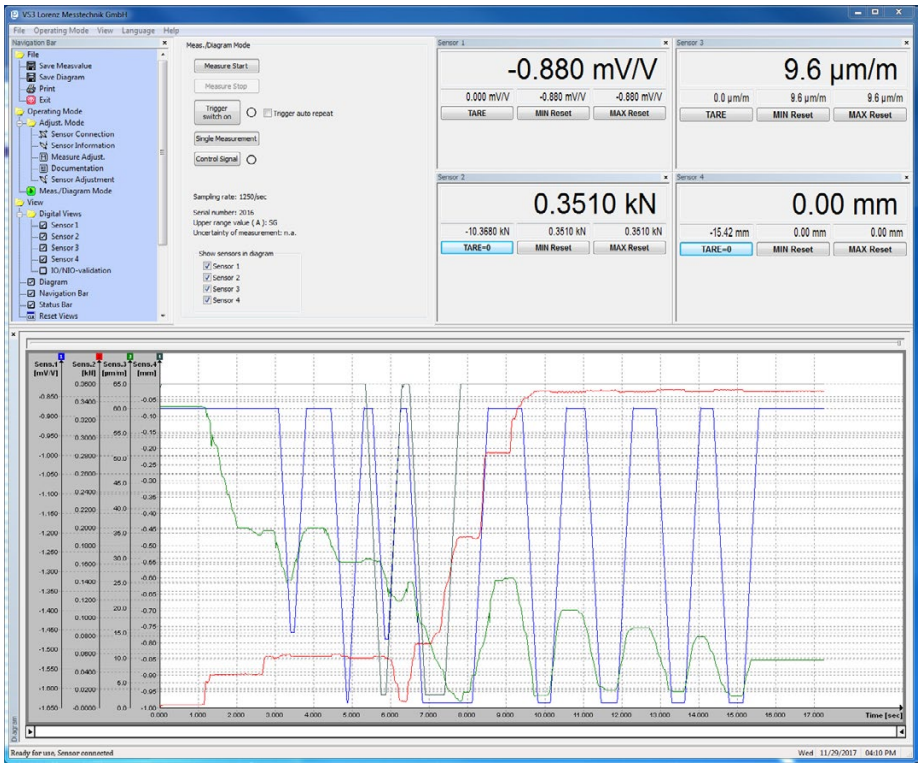
Article-No.	Description	Type
116620	Wall mounting 	SI-USB3/WB
116621	Tower foot 	SI-USB3/TF
113273	USB interface cable	USB-A-Connector/USB-B-Connector, 3 m/PVC
10293	D-SUB-Connector, 15-pin	KSSH15
10477	Connection cable for passive sensors, 3 m, with 5-pin female cable connector and 15-pin D-SUB male cable connector	KDM5/A-KSSH15/A-3 m/PVC
10365	Connection cable for passive sensors, 3 m, with 7-pin female cable connector and 15-pin D-SUB male cable connector	KDM7/A-KSSH15/A-3 m/PVC
10269	Connection cable for passive sensors, 3 m, with 6-pin female cable connector and 15-pin D-SUB male cable connector	KD6/A-KSSH15/A-3 m/PVC
10621	Connection cable for passive sensors, 3 m, with 12-pin female cable connector and 15-pin D-SUB male cable connector	KD12/A-KSSH15/A-3 m/PVC
118093	Connection cable for active sensors, 3 m, with 8-pin female cable connector and 15-pin D-SUB male cable connector	KDM8/A-KSSH15/A-3 m/PVC
10622	Connection cable for active sensors, 3 m, with 12-pin female cable connector and 15-pin D-SUB male cable connector	KD12/B-KSSH15/A-3 m/PVC

Calibrations mV/V[3]

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

[3] 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 VS2 (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[4]
Interface	USB
Protocol	Lorenz Standard Protocol
System requirements	Windows® 7 - 10 32/64 Bit[5] Dual-Core from 1.8 GHz (with diagram)

Highlights at a glance	
Conversion in physical values	✓
Simultaneous measuring	Up to 4 input channels
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	✓

[4] Software/driver download: https://www.lorenz-messtechnik.de/phplogin/login_en/html/software.php
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